

# Oracle® Spatial Studio

## Guide



Release 23.2

F87068-02

February 2024



Oracle Spatial Studio Guide, Release 23.2

F87068-02

Copyright © 2019, 2024, Oracle and/or its affiliates.

Primary Author: Lavanya Jayapalan

Contributors: Chuck Murray, Mamata Basapur, Daniel Cuadra, Honglei Zhu, Roberto Mercado Mariscal, Carol Palmer, L.J. Qian, David Lapp, Siva Ravada

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, MySQL and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

# Contents

## Preface

---

Audience	xii
Documentation Accessibility	xii
Related Resources	xiii
Conventions	xiii

## Changes in this Release for this Guide

---

## 1 Introduction to Oracle Spatial Studio

---

1.1 About Oracle Spatial Studio	1-1
1.2 Spatial Studio Terminology	1-1
1.3 Spatial Studio Metadata and Connection Management	1-2
1.4 Spatial Studio Best Practices	1-3

## 2 Administering Oracle Spatial Studio

---

2.1 Prerequisites and Recommendations for Spatial Studio	2-2
2.2 Downloading and Installing Spatial Studio	2-3
2.2.1 Installing and Configuring the Spatial Studio Quick Start	2-3
2.2.2 Installing Spatial Studio on Oracle WebLogic Server	2-5
2.2.2.1 Preventing a Spatial Studio Admin User from General WLS Administration	2-6
2.2.3 Installing Spatial Studio on Apache Tomcat	2-7
2.2.3.1 About the Spatial Studio WAR Archive for Tomcat	2-8
2.2.3.2 Configuring Tomcat Users for Spatial Studio	2-8
2.2.4 Installing Spatial Studio from Oracle Cloud Marketplace	2-9
2.3 Upgrading Spatial Studio	2-9
2.3.1 Prerequisite Tasks for Upgrading Spatial Studio	2-9
2.3.2 In-Place Upgrade	2-10
2.3.3 Out-of-Place Upgrade	2-10
2.4 Setting Up the Spatial Studio Metadata Schema	2-11

2.5	Connection Requirements for Database Users of Spatial Studio	2-12
2.6	Changing the Configuration Using the sgtech_config.json File	2-13
2.6.1	Allow HTTPS-ONLY Access	2-13
2.6.2	Connecting to the Spatial Studio Metadata Schema	2-14
2.6.3	Caching Metadata Objects	2-15
2.6.4	Importing Additional Configuration Files in Spatial Studio	2-15
2.6.5	If the Spatial Studio Repository Schema Password Has Been Changed	2-18
2.7	Recovery from Lost Master Key	2-18
2.8	Enabling IDCS as Identity Provider in Spatial Studio	2-20
2.8.1	Prerequisite Requirements for Setting Up IDCS with Spatial Studio	2-20
2.8.1.1	Determining the IDCS Console URL	2-21
2.8.2	Adding Spatial Studio Role as a Group in IDCS	2-22
2.8.3	Creating an Application in IDCS	2-25
2.8.4	Copying IDCS Settings into Spatial Studio's Configuration File	2-31
2.8.5	Testing IDCS Login	2-32
2.9	Mapping External User Principals to Built-In Spatial Studio Roles	2-33
2.10	Using a CA-Signed SSL Certificate in the Quick Start Installation	2-35
2.10.1	Preparing a CA-Signed Certificate and Private Key for the Spatial Studio Server	2-35
2.10.2	Configuring the Spatial Studio Server to Use a Java Keystore	2-36
2.10.3	Configuring Reverse Proxy for the Quick Start Installation	2-37

## 3 Using Oracle Spatial Studio

---

3.1	Logging in to Spatial Studio	3-3
3.1.1	About Internationalization in Spatial Studio	3-4
3.2	Getting Started Using Spatial Studio	3-6
3.3	About Tokens in Spatial Studio	3-6
3.3.1	Generating an Access Token	3-7
3.3.1.1	Generating Access Tokens Programmatically	3-8
3.3.2	Copying the Access-Generator Token	3-10
3.4	Spatial Studio Active Project Page	3-10
3.5	Spatial Studio Projects Page	3-12
3.5.1	About Published Projects	3-12
3.6	Spatial Studio Datasets Page	3-13
3.6.1	About Creating a Dataset From the Datasets Page	3-15
3.6.1.1	Creating a Dataset from Database Tables or Views	3-16
3.6.1.2	Creating a GeoRaster Dataset	3-17
3.6.1.3	Creating a GeoJSON URL Dataset	3-19
3.6.1.4	Creating an OGC WMS Dataset	3-20
3.6.1.5	Creating a Dataset by Uploading a File	3-21
3.6.1.6	Creating a Dataset Using a File URL	3-24

3.6.1.7	Creating a Dataset from Cesium Datasets	3-25
3.6.2	About Spatial Analysis Datasets	3-26
3.6.2.1	Saving Selected Features on a Map Into a Dataset	3-26
3.6.2.2	Saving Pins on a Map Into a Dataset	3-28
3.6.3	Datasets with Issues	3-29
3.6.3.1	Enabling Spatial on a View-Based Dataset with Latitude and Longitude Columns	3-30
3.6.4	Geocoding a Dataset	3-31
3.6.5	Reverse Geocoding a Dataset	3-34
3.6.6	Enabling Spatiotemporal for a Dataset	3-36
3.6.6.1	Configuring Spatiotemporal for Live Moving Objects Dataset	3-37
3.6.6.2	Configuring Spatiotemporal for Live and Non-Moving Objects Dataset	3-38
3.6.6.3	Configuring Spatiotemporal for Non-Live Moving Objects Dataset	3-39
3.6.6.4	Configuring Spatiotemporal for Non-Live and Non-Moving Objects Dataset	3-40
3.6.6.5	Configuring Spatiotemporal for OGC WMS Datasets	3-42
3.6.6.6	Configuring Spatiotemporal for GeoJSON URL Datasets	3-42
3.6.7	Preparing a Non-Spatial Dataset for Analysis	3-43
3.6.8	Exporting a Dataset to GeoJSON	3-44
3.6.9	Updating Statistics for Datasets	3-45
3.6.10	About Cache in Spatial Studio	3-47
3.6.10.1	Pre-Cache	3-48
3.6.10.2	Purge Cache	3-50
3.7	Spatial Studio Connections Page	3-51
3.7.1	Creating an Oracle Database Connection	3-53
3.7.2	Creating a Cloud Connection to an Autonomous Database Instance	3-55
3.7.3	Creating an OGC WMS Connection	3-56
3.7.4	Migrating Database Connections	3-58
3.8	Spatial Studio Administration Page	3-60
3.8.1	Uploading a Map Symbol	3-61
3.8.2	Managing Safe Domains	3-62
3.8.3	Adding a Custom Basemap	3-65
3.8.4	Editing a Custom Basemap	3-66
3.8.5	Managing System Notifications	3-67
3.8.6	Viewing and Managing Server Logs	3-68
3.9	Spatial Studio Jobs Page	3-70
3.10	Visualization in Oracle Spatial Studio	3-72
3.10.1	Using a Table Visualization	3-73
3.10.2	Using a Map Visualization	3-74
3.10.2.1	Visualizing a Point Map	3-74
3.10.2.2	About GeoRaster Data Visualization	3-75
3.10.2.3	About Hexagonal Data Visualization Using H3 Aggregations	3-77

3.10.2.4	About Custom Map Regions Visualization	3-79
3.10.2.5	Visualizing Spatiotemporal Datasets	3-84
3.10.2.6	Visualizing OGC WMS Maps as a Dataset	3-99
3.10.3	Using a Cesium Map Visualization	3-101
3.10.3.1	Visualizing a 3D Tileset Using a Cesium Map	3-101
3.10.3.2	Visualizing CZML Data Using a Cesium Map	3-103
3.10.4	Styling a Map Layer	3-104
3.10.4.1	Applying a Render Style For a Point Layer	3-105
3.10.4.2	Applying Style for a GeoRaster Layer	3-107
3.10.4.3	Applying Data-Driven Style to a Map with H3 Aggregations	3-109
3.10.4.4	Applying Predefined Colors to a Map Layer	3-110
3.10.4.5	Applying Predefined Symbols to a Map Layer	3-111
3.10.4.6	Applying Predefined Colors to Symbols	3-113
3.10.4.7	Applying Custom Map Symbols to a Map Layer	3-114
3.10.4.8	Applying an Animated Map Symbol to a Map Layer	3-115
3.10.4.9	Applying Style to a CZML Cesium Map Layer	3-116
3.10.4.10	Applying Style to a Map Layer Using a GeoJSON URL Dataset	3-117
3.10.4.11	Setting Selection Tolerance on a Map Layer	3-118
3.10.4.12	Adding a Pin on a Map	3-119
3.10.4.13	Applying Map Backgrounds	3-120
3.10.4.14	Using the Redline Map Tool	3-121
3.10.5	Adding Interactions to a Map Visualization	3-123
3.10.5.1	Configuring and Viewing an Info Window	3-124
3.10.5.2	Configuring and Viewing a Tooltip	3-124
3.10.6	Multiple Visualizations on a Canvas	3-125
3.10.7	Configuring a Map Visualization	3-126
3.10.8	Searching Locations and Features on a Map	3-128
3.11	Performing Analyses in Spatial Studio	3-129
3.11.1	Determining the Geometries Within a Specified Distance	3-130
3.11.2	Determining the N-Nearest Geometries	3-132
3.11.3	Determining the Geometries Filtered By Non-Spatial Attributes	3-133
3.11.4	Summarize By Region Analysis	3-135
3.11.5	Creating Lines to Connect Latitude/Longitude Pairs	3-137
3.11.6	Finding the Shortest and Quickest Route	3-138
3.11.7	Editing a Spatial Analysis	3-141

## 4 REST API in Oracle Spatial Studio

---

4.1	Using cURL with Spatial Studio REST APIs	4-2
4.1.1	Listing Available Datasets	4-3
4.1.2	Example Workflow With the Spatial Studio REST Endpoints	4-4

4.1.2.1	Creating a New Dataset From an Existing Table	4-5
4.1.2.2	Reading a Single Row of Data From a Dataset	4-6
4.1.2.3	Performing Reverse Geocoding	4-7
4.1.2.4	Checking the Reverse Geocoding Task Status	4-7
4.1.2.5	Verifying the Result of Reverse Geocoding	4-8
4.2	Accessing Spatial Studio REST API Programmatically	4-8
4.2.1	Displaying a Spatial Studio Dataset in a Standalone MapLibre JavaScript Map as Vector Tiles	4-9
4.2.2	Displaying a Spatial Studio Dataset as GeoJSON	4-13
4.2.3	Displaying a Spatial Studio GeoRaster Dataset as Image Tiles	4-14

## 5 Spatial Studio Accessibility Information

---

5.1	About Oracle Spatial Studio Accessibility	5-1
5.2	Oracle Spatial Studio Features that Support Accessibility	5-1
5.2.1	Keyboard Access with Spatial Studio	5-1
5.2.2	Screen Reader Readability with Spatial Studio	5-2
5.2.3	Flexibility in Font and Color Choices with Spatial Studio	5-2
5.2.4	No Audio-only Feedback with Spatial Studio	5-2
5.2.5	No Dependency on Blinking Cursor and Animation with Spatial Studio	5-2
5.2.6	Screen Magnifier Usability with Spatial Studio	5-2
5.3	Highly Visual Features of Oracle Spatial Studio	5-2

## A Spatial Studio OpenAPI Specification for the REST API Endpoints

---

## B Third-Party License Information for Spatial Studio

---

## Index

---

## List of Figures

---

2-1	WLS Admin Console for Deploying Spatial Studio	2-5
2-2	Workflow to Handle Multiple Configuration Files	2-16
2-3	Default IDCS Instance on the Federation Page	2-21
2-4	IDCS Console URL	2-22
2-5	IDCS Login	2-23
2-6	Adding an IDCS Group	2-23
2-7	Step-1: Group Details	2-24
2-8	Step2: Assign Users to a Group	2-25
2-9	List of Groups	2-25
2-10	Adding an Application	2-26
2-11	Add Application Dialog	2-27
2-12	Add Confidential Application: Details Page	2-27
2-13	Configuring Client Details	2-28
2-14	Configuring Token Issuance Policy	2-28
2-15	Configuring Authorization	2-29
2-16	Confirmation Dialog	2-29
2-17	Confirmation for Activating Application	2-30
2-18	Assigning Groups to an Application	2-30
2-19	Assigning Non-Admin Users	2-30
2-20	Profile Menu	2-33
3-1	Spatial Studio Main Page	3-1
3-2	Spatial Studio Login Page	3-4
3-3	Internationalization Support in Spatial Studio	3-5
3-4	Getting Started Page	3-6
3-5	Creating a New Access Token	3-8
3-6	Active Project Page	3-10
3-7	Datasets Page	3-13
3-8	Creating a Dataset	3-15
3-9	Select the Data Source	3-17
3-10	Creating a GeoRaster DataSet	3-18
3-11	Creating a Dataset from GeoJSON	3-20
3-12	Selecting the WMS Layer to Create a WMS Dataset	3-21
3-13	Create dataset from shapefile	3-23
3-14	Creating a Dataset from a File URL	3-24
3-15	Options for Creating a Cesium Dataset	3-25



3-16	Saving Selections	3-27
3-17	Visualizing Saved Selections	3-28
3-18	Saving Pins on a Map Layer	3-28
3-19	Warnings on a Dataset	3-29
3-20	Creating a Latitude/Longitude Index on a View-Based Dataset	3-31
3-21	Geocode Addresses	3-32
3-22	Geocoding Status	3-33
3-23	Reverse Geocoding	3-35
3-24	Enabling Spatiotemporal for a Dataset	3-37
3-25	Enabling Spatiotemporal for Historical Data	3-39
3-26	Enabling Spatiotemporal for Standard Filtering Datasets	3-41
3-27	Enabling Spatiotemporal for OGC WMS Dataset	3-42
3-28	Joining to a Spatial Dataset	3-43
3-29	Appended Non-spatial and Spatial Properties	3-44
3-30	Exporting to GeoJSON	3-45
3-31	Gathering Statistics In Progress	3-46
3-32	Displaying Gathered Statistics	3-47
3-33	Dataset Cache Options	3-48
3-34	Configuring Zoom Levels for Pre-Caching Task	3-49
3-35	Refresh Map Data Layer	3-50
3-36	Connections Page	3-51
3-37	Create Connection	3-52
3-38	Creating a Connection to the Oracle Database	3-54
3-39	Creating a Connection to an Autonomous Database Instance	3-56
3-40	Creating an OGC WMS Connection	3-57
3-41	Migrate Option for a Database Connection	3-59
3-42	Migrate Database Connection	3-59
3-43	Administration Page	3-60
3-44	Uploading a Map Symbol	3-62
3-45	Safe Domains	3-63
3-46	Adding a OGC WMS Map	3-66
3-47	Editing a Custom Basemap	3-67
3-48	System Notifications	3-68
3-49	Service Logs	3-69
3-50	Jobs Page	3-71
3-51	Tabular Visualization	3-73
3-52	Map Visualization	3-75

3-53	GeoRaster Data Visualization	3-76
3-54	Creating an H3 Aggregation Dataset	3-77
3-55	Map Data Visualization Using Hexagonal Binning	3-79
3-56	Creating Custom Map Shapes	3-81
3-57	Create a Custom Region	3-82
3-58	Displaying the Custom Shapes on the Target Dataset	3-83
3-59	Cesium Timeline Widget	3-85
3-60	Timeline Settings	3-87
3-61	Adding a Map Layer to the Timeline	3-88
3-62	Configuring Animation Settings	3-90
3-63	Applying Standard Filtering on a Map Layer	3-93
3-64	Configuring Animation for an WMS Dataset	3-95
3-65	Visualizing WMS Dataset with Spatiotemporal Data	3-95
3-66	Context Menu for a Map Layer	3-97
3-67	Visualizing an OGC WMS Data Layer	3-100
3-68	3D Cesium Map Visualization	3-102
3-69	Cesium Map Visualization Using a CZML Dataset	3-104
3-70	Applying a Cluster Style	3-105
3-71	Applying a HeatMap Style	3-106
3-72	Applying a Symbol Style	3-107
3-73	Raster Configuration for GeoRaster Map Layer	3-108
3-74	Applying Data-Driven Color Styling for H3 Map Layer	3-110
3-75	Color Coding a Map Layer	3-111
3-76	Symbols and Symbol Set	3-112
3-77	Custom Symbol Styling in Map Visualization	3-113
3-78	Color-Coded Symbols	3-114
3-79	Using a Custom Map Symbol in Visualization	3-115
3-80	Animated Map Symbol	3-116
3-81	Applying Filters for CZML Map layer	3-117
3-82	Data-Driven Styling for GeoJSON URL Map Layer	3-118
3-83	Setting the Selection Tolerance	3-119
3-84	Pin a Location on the Map	3-120
3-85	Changing a Map Background	3-121
3-86	Redline Map Tool	3-121
3-87	Redlining Areas in Map Visualization	3-122
3-88	Viewing Info Window on a Map Visualization	3-124
3-89	Viewing a Tooltip on Map Visualization	3-125

3-90	Multiple Map Visualizations	3-125
3-91	Visualization Settings	3-127
3-92	Searching Features on the Map	3-129
3-93	Spatial Analysis Operations	3-130
3-94	Spatial Analysis - Within Distance Configuration	3-131
3-95	Spatial Analysis - Within Distance Visualization	3-132
3-96	Nearest Neighbors Analysis	3-133
3-97	Non-Spatial Attributes Filter	3-134
3-98	Non-Spatial Filter Analysis	3-135
3-99	Summarize By Region	3-136
3-100	Summarize By Region Visualization	3-136
3-101	Configuring Lat/Lon Line Analysis	3-137
3-102	Visualizing Latitude/Longitude Line Analysis	3-138
3-103	Route Analysis Configuration	3-140
3-104	Spatial Route Analysis Visualization	3-141
3-105	Modify Spatial Analysis Parameters	3-143
4-1	Displaying Vector Tiles of a Dataset in the MapLibre Application	4-13
4-2	Displaying a GeoRaster Dataset in the MapLibre Application	4-19

# Preface

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Resources](#)
- [Conventions](#)

## Audience

This document is intended for users of the Spatial Studio tool who have one or more of the following responsibilities:

- Administering Spatial Studio. Such users install the tool, and create and manage database users of the tool.
- Using Spatial Studio. Such users are typically data analysts or application developers, or both.



### Tip:

If you choose to print the PDF version of this book, and if you do not want to include the licensing details in the printout, print **only pages 1 (title page) through the last page of the last chapter**. (Most of the content of the book consists of license details in Appendix A.)

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

### Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

---

## Related Resources

For more information, see these Oracle resources:

- Oracle Technical Resources (formerly called Oracle Technology Network) page: <https://www.oracle.com/database/technologies/spatialandgraph.html> (and look for Spatial Studio)
- *Oracle Spatial Developer's Guide*

## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

# Changes in this Release for this Guide

## New Features for Oracle Spatial Studio Release 23.2.1

- Added support for using an animated map symbol on a map visualization. See [Applying an Animated Map Symbol to a Map Layer](#) for more information.
- Added support for creating access tokens programmatically. See [Generating Access Tokens Programmatically](#) for more information.
- Added support for uploading and styling a map layer using custom map symbols.
  - See [Uploading a Map Symbol](#) for more information.
  - See [Applying Custom Map Symbols to a Map Layer](#) for more information.
- Added support for changing the Spatial Studio server logging level. See [Viewing and Managing Server Logs](#) for more information.
- Added spatial analysis support for transforming latitude/longitude pairs into lines connecting these coordinates. See [Creating Lines to Connect Latitude/Longitude Pairs](#) for more information.
- Added spatial analysis support for calculating and storing the shortest and quickest route to a location. See [Finding the Shortest and Quickest Route](#) for more information.
- Added the new Redline map tool for creating, editing, exporting, and deleting Redline objects on a map layer. See [Using the Redline Map Tool](#) for more information.
- Added Cesium Timeline support for spatiotemporal data visualization.
  - See [Enabling Spatiotemporal for a Dataset](#) for more information.
  - See [Visualizing Spatiotemporal Datasets](#) for more information.
- Added support for animating historical data that contains `TIMESTAMP` or `DATE` columns.
  - See [Configuring Spatiotemporal for Non-Live Moving Objects Dataset](#) for enabling spatiotemporal on a dataset containing historical data.
  - See [Visualizing Non-Live Moving Objects Dataset](#) for more information.
- Added support for two new access tokens - streaming and refreshing a dataset, and embedding private published projects. See [Generating an Access Token](#) for more information.
- Added support for showing vector tile boundaries in map visualization. See the **Show tile boundaries** option in [Configuring a Map Visualization](#) for more information.
- Added support for searching a map by feature ID. See [Searching Locations and Features on a Map](#) for more information.

- Added support for creating a dataset by importing geospatial data directly from an external file URL.  
See [Creating a Dataset Using a File URL](#) for more information.
- Added support for using your own (CA-signed) X.509 certificate in Spatial Studio Quick Start Installation.  
See [Using a CA-Signed SSL Certificate in the Quick Start Installation](#) for more information.

### Upgrading to Spatial Studio 23.2.0

If you are running a Spatial Studio version:

- **Earlier than 22.3.0:** You must first download and successfully log into Spatial Studio 22.3.0. This is because a new version control mechanism is introduced for the metadata schema in 23.1.0 and Spatial Studio expects any existing metadata schema to already be at the version of Spatial Studio 22.3.0. Then you can upgrade to Spatial Studio 23.2.0. Otherwise, Spatial Studio version 23.2.0 will log the following SEVERE error message and abort the startup process.

```
!!! Spatial Studio ver. 22.3.0 must be run at least once against your repository schema before upgrading to this version !!!
```

See [Upgrading to Spatial Studio 22.3.0](#) for more information.

- **22.3.0 or later:** See [Upgrading Spatial Studio](#) to upgrade to Spatial Studio 23.2.0.

# 1

## Introduction to Oracle Spatial Studio

Oracle Spatial Studio is a visual tool for working with spatial data in Oracle Spatial format.

- [About Oracle Spatial Studio](#)  
Oracle Spatial Studio, also referred to as Spatial Studio, is a free tool that lets you connect with, visualize, explore, and analyze geospatial data stored in and managed by Oracle Spatial.
- [Spatial Studio Terminology](#)  
This section introduces the key concepts and domain objects of Oracle Spatial Studio.
- [Spatial Studio Metadata and Connection Management](#)  
This section provides conceptual information about the metadata schema and the connections object in Spatial Studio.
- [Spatial Studio Best Practices](#)  
This section describes the best practice recommendations when working with Spatial Studio.

### 1.1 About Oracle Spatial Studio

Oracle Spatial Studio, also referred to as Spatial Studio, is a free tool that lets you connect with, visualize, explore, and analyze geospatial data stored in and managed by Oracle Spatial.

Spatial Studio is a multiuser Java EE application that can be used as a standalone tool (Quick Start) or deployed to WebLogic Server.

Before you can use Spatial Studio, you must download the kit from Oracle Technical Resources (formerly called Oracle Technology Network), install the software, and perform certain administrative actions like creating database users that are authorized to use the tool, and managing those users.



#### Note:

Spatial Studio is **not** the Spatial map visualization component (formerly called "MapView"), which is not an end-user "tool" but rather a separate and distinct component.

The map visualization component is documented in [Spatial Map Visualization Guide](#).

### 1.2 Spatial Studio Terminology

This section introduces the key concepts and domain objects of Oracle Spatial Studio.



- **Connection:** Connections are user-created; they provide details so that the Spatial Studio can load user data from an external data source, typically a specific database schema.
- **Dataset:** A dataset is the basic organizational unit of a user's data.
- **Project:** A project is where data visualization and analysis occur. It represents a “workspace” that can be saved and reopened.
- **Published Project:** A published project is a snapshot of the visualizations and analyses that a user has created in a project. It provides an easy way of sharing what users have created within their organization.
- **Analysis:** An analysis is typically one or more (spatial) operations performed on one or more datasets. The operation types and their parameters for an analysis are all stored as part of a *project*. The result of any analysis can be visualized, just like any other dataset.
- **Metadata schema (repository):** The metadata schema for Spatial Studio is an Oracle Database that contains the repository where all Spatial Studio metadata is centrally managed.
- **User:** Spatial Studio's end users, which are typically business analysts and administrative users. These users are NOT database schema owners; rather they are application users, whose information is typically stored in an LDAP-like directory and whose authentication is carried out by WebLogic Server.
- **Public Dataset:** A public dataset is one with a GeoJSON endpoint that can be accessed without having to log onto the Spatial Studio first. A public dataset is always visible to all the Spatial Studio users and can be used in their projects.
- **Public Published Project (PPP):** A public published project is a published project where all the datasets involved are public datasets, and the published project itself is also made public. You can embed the visualizations of a public published project in other web applications, or can be viewed standalone in a web browser, without having to log onto Spatial Studio server first.

## 1.3 Spatial Studio Metadata and Connection Management

This section provides conceptual information about the metadata schema and the connections object in Spatial Studio.

Spatial Studio stores all of its own metadata (such as the definitions of all the datasets and connections created by different users) in a single Oracle Database schema known as the metadata schema, or repository.

This metadata schema is one that Spatial Studio must be able to connect to during initial start up, because all of its essential metadata and states are stored there. This metadata schema can be an Oracle Database devoted solely to Spatial Studio use, or it can be any schema potentially used for other purposes as well, as long as the schema is provisioned for use by Spatial Studio, with the minimum necessary privileges.

The main types of connections are created by Spatial Studio's end users so that they can gain access to a set of data tables stored in potentially several different database schemas, and explore them together in a single project. For each such user-created connection, only its connection details are stored in Spatial Studio's metadata schema, while no actual (raw) data is ever copied or extracted into the metadata schema.

If a schema user name and password are specified when a connection is created in Spatial Studio, this information is securely encrypted before being stored in the metadata schema tables. When a user opens a project that depends on datasets originated from such a connection, then the password is decrypted at that time and a new JDBC connection pool is established. This connection pool is then used by Spatial Studio to run queries against the target table(s) from that connection whenever needed.

By default a connection is **private**, meaning that only the user that created the connection can access it (either in a project or anywhere else). For example, if User A creates a connection, then User B will not be able to see or use that connection or any data from the connection. The only exception is if User B is an admin user, in which case all connections and datasets are fully accessible by User B.

## 1.4 Spatial Studio Best Practices

This section describes the best practice recommendations when working with Spatial Studio.

### Standardize Longitude/Latitude Data on SRID 4326

In Oracle Database, spatial data includes a SRID (spatial reference identifier), which uniquely identifies the coordinate system associated with the data. If you want to perform any spatial analysis operations involving multiple data sets, it is recommended that the data sets have the same SRID.

Many SRIDs can be used for longitude/latitude data, but probably the most widely used is 4326. Oracle recommends that you use SRID 4326 for longitude/latitude geometries unless there is information to indicate otherwise. Also, if you have Oracle tables with longitude/latitude geometries and if the SRID is not consistent across the tables, you are advised to standardize on SRID 4326.

(For detailed information about SRIDs and coordinate system support in Oracle Spatial, see the Coordinate Systems (Spatial Reference Systems) chapter in the Spatial manual.)

The following example transforms geometries that do not use SRID 4326 so that they use SRID 4326. You would need to do these actions for each existing table that does not use SRID 4326. The example assumes a geometry table named TABLE\_1 with a geometry column named GEOM. It also drops the existing spatial index named table\_1\_idx, and later re-creates it.

```
-- Drop the existing spatial index.
DROP INDEX table_1_idx FORCE;

-- Update the spatial metadata.
INSERT INTO user_sdo_geom_metadata
VALUES (
  'TABLE_1', -- table name
  'GEOM',    -- geometry column name
  SDO_DIM_ARRAY(
    SDO_DIM_ELEMENT('Longitude', -180, 180, 0.05), -- 0.05 meter tolerance
    SDO_DIM_ELEMENT('Latitude', -90, 90, 0.05) -- 0.05 meter tolerance
  ),
  4326 -- SRID for 'Longitude / Latitude (WGS 84)' coordinate system
);

-- Update (transform) geometry data to use SRID 4326.
update table_1 set geom = sdo_cs.transform(geom, 4326);
```

```
-- Re-create the spatial index.  
CREATE INDEX table_1_idx  
ON table_1 (geom)  
INDEXTYPE IS MDSYS.SPATIAL_INDEX_V2;
```

 **Note:**

In the CREATE INDEX statement, SPATIAL\_INDEX\_V2 is recommended if the Oracle Database is Release 18 or later. If it is earlier than Release 18, specify just SPATIAL\_INDEX.

# 2

## Administering Oracle Spatial Studio

Administering Oracle Spatial Studio involves certain actions that must be performed before non-administrative users can work with spatial data. If you are an administrative user of Spatial Studio, you must:

- Download the Oracle Spatial Studio application from Oracle Technical Resources (formerly called Oracle Technology Network) and install it.
- Set up a database schema to be the Spatial Studio schema, that is, to hold metadata for Spatial Studio.  
The Spatial Studio schema can be either an existing database schema in which Spatial Studio metadata will be added, or a newly created schema that will be used only for Spatial Studio.
- Configure the newly installed Spatial Studio application.  
When the installation and configuration actions are completed, users can connect to the database, start Spatial Studio, and use its features.

### Note:

The Spatial Studio application can be downloaded in either of the following formats:

- Quick Start: A ready-to-run standalone application packaged in a zip file containing what you need to launch the Spatial Studio web application on your desktop. (You will still need to have JDK 8 64-bit, update 181 or later installed on your desktop, because no Java kit is bundled with this kit.) Quick Start is well suited for personal and development use.
- A WLS-optimized EAR (Enterprise Application Archive) file. This `.ear` file can be deployed to an existing WebLogic Server domain administered by an organization's WLS or middleware administrator.  
This is the recommended installation and deployment method if you intend for multiple end users to access the same Spatial Studio web application.

A given person or database user can be *both* an administrative user and a non-administrative user, *or* can be *only* an administrative user or a non-administrative user.

- [Prerequisites and Recommendations for Spatial Studio](#)  
This section describes the prerequisites and recommendations that apply for using Spatial Studio.
- [Downloading and Installing Spatial Studio](#)  
Spatial Studio must be downloaded and installed before anyone can use it to perform interesting work on spatial data.
- [Upgrading Spatial Studio](#)  
This section describes the process to upgrade your existing Oracle Spatial Studio deployment to 23.2.0.

- [Setting Up the Spatial Studio Metadata Schema](#)  
You must set up a database schema to be the Spatial Studio schema, which will hold metadata used by the Spatial Studio application.
- [Connection Requirements for Database Users of Spatial Studio](#)  
This section describes the connection requirements for database users to work on Spatial Studio.
- [Changing the Configuration Using the sgtech\\_config.json File](#)  
This section describes the configuration of important properties in `sgtech_config.json` file.
- [Recovery from Lost Master Key](#)  
If you accidentally delete or replace the `sgtech_config.json` file, then the master key is lost and the Spatial Studio application will throw an error.
- [Enabling IDCS as Identity Provider in Spatial Studio](#)  
Starting from Oracle Spatial Studio Release 22.1.0, you can log into your Spatial Studio instance using users already managed by your own Oracle Cloud tenancy's IDCS identity domain.
- [Mapping External User Principals to Built-In Spatial Studio Roles](#)  
Spatial Studio supports mapping IDCS and other identity provider principals to the Spatial Studio built-in roles. This enables dynamically granting permissions to users by using custom groups, for instance.
- [Using a CA-Signed SSL Certificate in the Quick Start Installation](#)  
The Spatial Studio Quick Start installation typically comes with a self-signed certificate for handling SSL or HTTPS URL connection encryption.

## 2.1 Prerequisites and Recommendations for Spatial Studio

This section describes the prerequisites and recommendations that apply for using Spatial Studio.

Oracle Spatial must be installed on the database to which any users will connect to perform actions with Spatial Studio. (It is not sufficient to have only Oracle Locator installed.)

The following additional requirements and recommendations apply:

- Java versions: Java 8 (64-bit, update 181 or later); or JDK 11 (64-bit).
- Oracle Database 19c or later. This applies both to the Spatial Studio metadata schema and to all database connections that will be used by Spatial Studio users.

 **Note:**

Oracle Spatial Studio Releases are backward compatible with supported Oracle Database versions.

- Oracle WebLogic Server 12.2.1.3 or later.
- All the privileges listed in section [Setting Up the Spatial Studio Metadata Schema](#) are required for each database user that works with Spatial Studio.

- Quota on the default tablespace for each database user that works with Spatial Studio. ALTER USER statement format: ALTER USER [username] QUOTA [quota value] ON [default tablespace name];  
For example, for a user named `test_user` with default tablespace `users`:

```
ALTER USER test_user QUOTA unlimited ON users;
```

- The default tablespace for the Spatial Studio repository schema should not use compression.

## 2.2 Downloading and Installing Spatial Studio

Spatial Studio must be downloaded and installed before anyone can use it to perform interesting work on spatial data.

Go to <https://www.oracle.com/database/technologies/spatial-studio/get-started.html> to see more information for downloading and installing Spatial Studio.

- [Installing and Configuring the Spatial Studio Quick Start](#)  
Quick Start is an easy method for getting started, and is well suited for personal and development use.
- [Installing Spatial Studio on Oracle WebLogic Server](#)  
Spatial Studio can be deployed to a WebLogic Server domain, the recommended approach if multiple end users will access the same Spatial Studio application.
- [Installing Spatial Studio on Apache Tomcat](#)  
Starting with Oracle Spatial Studio patch release 23.1.1, you can deploy and run the Spatial Studio web application on Apache Tomcat version 9.
- [Installing Spatial Studio from Oracle Cloud Marketplace](#)  
You can provision Spatial Studio to Oracle Cloud from Oracle Cloud Marketplace.

### 2.2.1 Installing and Configuring the Spatial Studio Quick Start

Quick Start is an easy method for getting started, and is well suited for personal and development use.

The Quick Start is packaged in a single zip that contains everything you need to start using Spatial Studio, except for Java (64-bit, update 181 or later) and your own database schemas. Before installing the Quick Start, ensure that you meet the following prerequisite requirements:

- You must have Java installed on your system and the `JAVA_HOME` environment variable is pointing to the full JDK installation of Java SE Development Kit. Note that the Quick start installation requires Java 8 (64-bit, update 181 or later) or JDK 11 (64-bit).
- Ports 8080 and 4040 on your system are not being used by any other (web) applications. Port 8080 is used with the `http://` protocol, while port 4040 is for the `https://` protocol. Although you can direct Spatial Studio to use different ports, 8080 and 4040 are the default.

Note that by default Spatial Studio allows access using `https` only.

If you prefer to enable `http` access, then perform the following steps:

- Edit the `conf/server.json` file in the `Oracle_Spatial_Studio` directory and update the `httpEnabled` property to `true`.

- Edit the `sgtech_config.json` file and update the `https_only` property to `false` (see [Changing the Configuration Using the `sgtech\_config.json` File](#)).
- Restart the Spatial Studio application.
- Verify that the `http` port is opened in the host OS firewall.

You can perform the following steps to install and configure the Spatial Studio Quick Start:

1. Download the Quick Start zip archive `OracleSpatialStudio_qs.zip`.
2. Unzip (extract) the `OracleSpatialStudio_qs.zip` file.

This results in the `Oracle_Spatial_Studio` directory.

3. Navigate to the `Oracle_Spatial_Studio` directory from a command window (Windows) or terminal (Linux or Mac).

This directory contains several `.bat` or `.sh` files.

4. Start the Spatial Studio application by running `start.sh` or `start.bat`.

On Linux or Mac you may need to ensure that the `.sh` files are executable by first running the command: `chmod u+x *.sh`

5. Launch the Spatial Studio web application in your browser using the URL:  
`https://localhost:4040/spatialstudio`

You can login using the default admin user login credentials - `admin/welcome1`. However, it is strongly recommended that you immediately change the password. See the README file in the Quick Start on how to change the (encrypted) password for the admin user.

Also, note the following:

- The default port is 4040. However, you can change the port by editing the `conf/server.json` file in the `Oracle_Spatial_Studio` directory. You must restart the application after you make any change to this file. (The same applies if you change the HTTP port value from the default 8080.)
- The Quick Start provides the following predefined web user login accounts:
  - `admin`: Administrator user account
  - `daustin` and `bruce`: Two regular user accounts

These predefined users and their login passwords are defined in the `conf/jetty-realm.properties` configuration file. The passwords are all stored in encrypted form. Before you start the application for the first time, it is strongly recommended that you change the password of the default administrator user `admin`. See the README file in the Quick Start on how to change the (encrypted) password for the admin user and other regular Spatial Studio users.

Also, all other passwords, such as those used to log into the Spatial Studio metadata schema or for any user-created connections to database schemas, are strongly encrypted everywhere.

- If you wish to configure the Spatial Studio server to use a CA-signed certificate, then see [Using a CA-Signed SSL Certificate in the Quick Start Installation](#) for more information.

- The README file also contains information about starting and stopping the web application. To stop the application, the preferred approach is to start a second terminal or command window, then go to the same `Oracle_Spatial_Studio` folder and run the `stop.bat` or `stop.sh` script.

## 2.2.2 Installing Spatial Studio on Oracle WebLogic Server

Spatial Studio can be deployed to a WebLogic Server domain, the recommended approach if multiple end users will access the same Spatial Studio application.



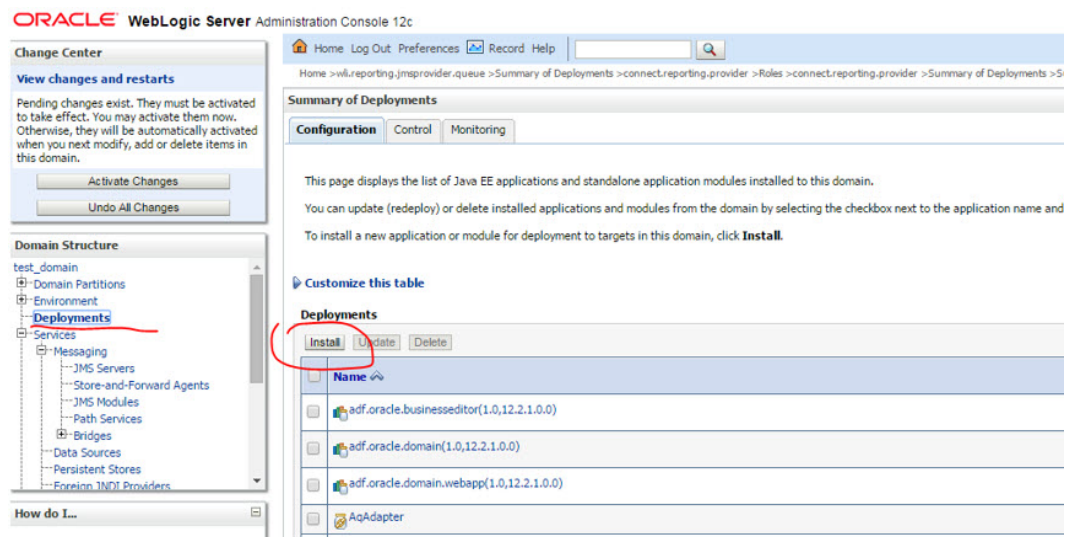
### Note:

A WebLogic Server license is required in order to host Spatial Studio in WebLogic Server for multiple end users.

The general approach for deploying Spatial Studio to WebLogic Server is no different from deploying any other Java EE EAR application. The easiest way to do so is by using the WebLogic Server's Admin console with the following steps. Note that in all or most steps you can accept the default values provided by the WLS Installation Application Wizard.

1. Download the Studio EAR archive from Oracle Technical Resources or eDelivery, and save it to your local system.
2. Log into the target WLS domain's Admin console.
3. Click the **Deployments** link on the left side.
4. Click **Install** button under the Deployments section, as shown in the following figure (note that the exact contents may be different for your instance of WLS).

Figure 2-1 WLS Admin Console for Deploying Spatial Studio



5. On the next page, select the Spatial Studio EAR file downloaded previously, and install it as an application (not as a library).



6. Click through the remaining steps, including selecting the proper target server. You should accept the default options in all cases unless you know exactly what you are doing. Finally, click **Save** to complete the deployment.
  7. If your WLS runs in production mode, you may need to activate the changes to ensure the deployment is activated.
  8. Make sure the newly deployed Spatial Studio application is marked Active; otherwise, you may need to explicitly start it from the WLS administrative console.
  9. Access the Studio application using your managed server's URL with the / `spatialstudio` context root. For example: `http://mycompany.com:7002/spatialstudio`
- [Preventing a Spatial Studio Admin User from General WLS Administration](#)  
If you want to prevent a Spatial Studio administrative user from performing other general WebLogic Server administrative operations, follow the instructions in this topic.

### 2.2.2.1 Preventing a Spatial Studio Admin User from General WLS Administration

If you want to prevent a Spatial Studio administrative user from performing other general WebLogic Server administrative operations, follow the instructions in this topic.

The Spatial Studio application by default allows all WebLogic managed admin users (those who are in WebLogic's **Administrators** group) to log into the Spatial Studio application and assume Admin role inside the Spatial Studio application as well.

However, in some scenarios, your organization may *not* want to provide the WebLogic Server admin account information to the user(s) that will be administering only the Spatial Studio application. In such cases, the WLS system administrator can create a new WLS group with the id value of "**SGTech\_SystemAdmin**" in the default WLS security realm. Then, either create a new user or assign an existing non-WLS-admin user to this group. From then on, this user will assume the admin role of the Spatial Studio whenever logged in, but will not be able to administrate the WLS server in general.

Also, note the following:

- All WLS managed users will be able to log into Spatial Studio by default, but they will be limited to accessing only their own Spatial Studio objects such as connections, datasets, and projects.
- Administrative users of Spatial Studio will have full access to every Spatial Studio object created by everyone.
- When using WebLogic's default embedded LDAP security realm as identity provider, if the user name and the assigned application role name differ only by casing (for example, **admin** and **Admin** respectively), then it is recommended that you adjust both the names to lowercase. This is to avoid case sensitivity issues in Spatial Studio between user, group, and security policies.

## 2.2.3 Installing Spatial Studio on Apache Tomcat

Starting with Oracle Spatial Studio patch release 23.1.1, you can deploy and run the Spatial Studio web application on Apache Tomcat version 9.

The following are the general steps for deploying and running Spatial Studio on Tomcat:

1. Download and install the latest Apache Tomcat version 9.  
See the [Apache Tomcat Documentation](#) for setting up Tomcat.
2. Unzip the Tomcat zip file and configure it as required, such as removing all default web applications found in the `<TOMCAT_HOME>/webapps` directory.
3. Download the Spatial Studio Tomcat specific WAR archive from [Oracle Software Delivery Cloud](#).
4. Copy the downloaded WAR archive into the `<TOMCAT_HOME>/webapps/` directory.
5. Ensure to rename the WAR file to just `spatialstudio.war`.

Note that there is no version or build string in the file name. See [About the Spatial Studio WAR Archive for Tomcat](#) for more information.

6. Configure Tomcat users and roles.  
Ensure to configure the `ADMIN` user for Spatial Studio. See [Configuring Tomcat Users for Spatial Studio](#) for more information.
7. Start the Tomcat server using the startup script in the `<TOMCAT_HOME>/bin` directory.

Note that you may need to wait a few seconds for Tomcat and Spatial Studio to fully initialize before attempting to access the Spatial Studio web application.

8. Launch Spatial Studio in your browser by opening the URL - `https://localhost:8443/spatialstudio`.

Note that in the preceding URL, port `8443` is the default `https` port for Apache Tomcat. If you wish to enable `http` access (default port `8080`), then see [Allow HTTPS-ONLY Access](#) for more information.

You can then log in using one of the users you defined on step-6.

Note that the Spatial Studio access URL uses the default host name and port. If you change the default Tomcat network and port configurations, then you need to adjust the URL accordingly.

If for some reason you cannot access the URL, then you can always check the following log files:

- Tomcat's server logs in the `<TOMCAT_HOME>/logs` directory.
- Spatial Studio's own log files in the `<USER_HOME>/sgtech/logs` directory, where `<USER_HOME>` is the home directory of the operating system user.
- [About the Spatial Studio WAR Archive for Tomcat](#)  
You must download the `spatialstudio_tomcat.war` archive for running Spatial Studio on Tomcat.
- [Configuring Tomcat Users for Spatial Studio](#)  
In order to run Spatial Studio on Tomcat, you need to configure at least one Tomcat user who can act as the administrator for Spatial Studio.

### 2.2.3.1 About the Spatial Studio WAR Archive for Tomcat

You must download the `spatialstudio_tomcat.war` archive for running Spatial Studio on Tomcat.

This archive file bundles all the required dependencies that enables it to run on a freshly downloaded and installed Tomcat instance.

It is important to note the following:

- You must rename the `spatialstudio_tomcat.war` file to **`spatialstudio.war`** when it is placed in the Tomcat's `webapps` directory. This is because Tomcat uses the file name as the web application's context root, and for Spatial Studio it is typically **`/spatialstudio`**.
- If you have an existing Tomcat installation with other web applications running on it or different versions of the dependency libraries are already installed, then there might be issues running Spatial Studio due to library and version conflicts. In such cases, you can raise a service request with [My Oracle Support](#) in order to have the issues resolved.

### 2.2.3.2 Configuring Tomcat Users for Spatial Studio

In order to run Spatial Studio on Tomcat, you need to configure at least one Tomcat user who can act as the administrator for Spatial Studio.

Note that when you access the Spatial Studio web application, the `username` and `password` that you enter in the login page are passed to Tomcat for authentication. Once the user is authenticated, Spatial Studio inspects the result principal. If the principal has a role named **`SGTech_SystemAdmin`**, then the logged in user will be considered an admin user for Spatial Studio.

If your Tomcat instance has already been configured to provide authentication using an external identity provider, then ensure one or some of the users provided by the external identity provider are assigned the **`SGTech_SystemAdmin`** role so they can administrate Spatial Studio.

If your Tomcat installation relies on its simple built-in user management mechanism, then you will likely be adding the role and user to `tomcat-user.xml` configuration file, which is found in the `<TOMCAT_HOME>/conf` directory.

The following simple example defines two users and two roles, with one being **`SGTech_SystemAdmin`** in `tomcat-user.xml` configuration file:

```
<role rolename="role1"/>
<role rolename="SGTech_SystemAdmin"/>
<user username="admin" password="Welcome1" roles="manager-gui, manager-script, SGTech_SystemAdmin"/>
<user username="scott" password="Welcome1" role="role1"/>
```

Once the roles are defined, then you can log into Spatial Studio using either the user name `scott` or `admin`. Since the `admin` user has the **`SGTech_SystemAdmin`** role, the user will be able to administrate Spatial Studio once logged in, whereas `scott` user will just be a regular Spatial Studio user.

## 2.2.4 Installing Spatial Studio from Oracle Cloud Marketplace

You can provision Spatial Studio to Oracle Cloud from Oracle Cloud Marketplace.

See [Deploy Spatial Studio from Cloud Marketplace](#) for more information on deploying Spatial Studio from Cloud Marketplace.

## 2.3 Upgrading Spatial Studio

This section describes the process to upgrade your existing Oracle Spatial Studio deployment to 23.2.0.

### Note:

If you are running a Spatial Studio version **earlier than 22.3.0**, then you must first download and successfully log into Spatial Studio 22.3.0. This is because a new version control mechanism is introduced for the metadata schema in 23.1.0 and Spatial Studio expects any existing metadata schema to already be at the version of Spatial Studio 22.3.0. Therefore, you must log into the 22.3.0 web application at least once, before you can download and run the latest version. Otherwise, Spatial Studio version 23.2.0 will log the following `SEVERE` error message and abort the startup process.

```
!!! Spatial Studio ver. 22.3.0 must be run at least once against your repository schema before upgrading to this version !!!
```

### Tip:

To check the version of your current Spatial Studio installation, log into the web application, then click the **About** menu item from the **Avatar** drop-down menu. The version number gets displayed.

If you are already using Spatial Studio 22.3.0 or a newer version, then the following sections explain the steps for upgrading Spatial Studio in an existing host (in-place upgrade) or when deploying to a new host (out-of-place upgrade).

- [Prerequisite Tasks for Upgrading Spatial Studio](#)
- [In-Place Upgrade](#)
- [Out-of-Place Upgrade](#)

### 2.3.1 Prerequisite Tasks for Upgrading Spatial Studio

Perform the following prerequisite steps to prepare for Spatial Studio upgrade:

1. Stop all running Spatial Studio instances.
2. Take a backup of the following artifacts:
  - Repository metadata schema tables such as:
    - `SGTECH_META_VERSION`

- SGTECH\_OBJECT
- SGTECH\_SYS\_TYPE
- SGTECH\_TASK\_BROKER
- SGTECH\_TASK\_QUEUE

You can export the preceding files to a dump file using the data pump utilities. For example, the following shows a data pump export command, assuming the metadata schema name is **studio\_metadata** with the database service name **orclpdb**:

```
expdp studio_metadata/<password>@orclpdb directory=dumpdir
      dumpfile=spatial_studio_metadata_backup.dmp

tables=SGTECH_META_VERSION,SGTECH_OBJECT,SGTECH_SYS_TYPE,SGTECH_T
ASK_BROKER,SGTECH_TASK_QUEUE
```

- Working directory (generally, `~/ .sgtech`)
  - **sgtech\_config.json** configuration file which is generally located in the working directory
3. Download the Spatial Studio 23.2.0 version and upload it to the host to be upgraded.

## 2.3.2 In-Place Upgrade

Perform the following step for an in-place Spatial Studio upgrade:

- Redeploy the Spatial Studio 23.2.0 application.
  - **For Quick Start:** Rename the old Quick Start folder. Expand the newly downloaded ZIP file and run **start.sh** (Linux) or **start.cmd** (Windows).
  - **For EAR deployment:** Follow the instructions of your application server to delete the old deployment version. Then, deploy the new version and start the application.

## 2.3.3 Out-of-Place Upgrade

Perform the following steps for an out-of-place Spatial Studio upgrade:

1. Create the working directory in the new host.

```
mkdir ~/.sgtech
```

2. Copy the `sgtech_config.json` configuration file from the working directory of the old host to the new host.

```
cp old/sgtech_config.json ~/.sgtech
```

If the **master\_seed** entry in the configuration file is lost, all connection passwords will be broken. If this occurs, proceed with the upgrade, then log into the upgraded Spatial Studio instance, edit each connection by re-entering the password, and reconnect.

3. Deploy the Spatial Studio application.
  - **For Quick Start:** Simply expand the newly downloaded ZIP file and run **start.sh** (Linux) or **start.cmd** (Windows).
  - **For EAR deployment:** Follow the instructions of your application server to deploy the new version and start the application.

When the application is started, the repository database schema will automatically be upgraded.

## 2.4 Setting Up the Spatial Studio Metadata Schema

You must set up a database schema to be the Spatial Studio schema, which will hold metadata used by the Spatial Studio application.

The Spatial Studio schema can be either an existing database schema in which Spatial Studio metadata will be added, or a newly created schema that will be used only for Spatial Studio. The recommended practice is to create a new database user that will be used only by Spatial Studio. The database user for the Spatial Studio schema must have the following privileges:

- CONNECT
- CREATE PROCEDURE
- CREATE SEQUENCE
- CREATE SESSION
- CREATE SYNONYM
- CREATE TABLE
- CREATE TRIGGER
- CREATE TYPE
- CREATE VIEW



### Note:

The `CREATE TRIGGER` privilege is required only if you intend to store and display GeoRaster data in the schema.

For example, when connected as a user with DBA privileges:

```
SQL> create user SPATIAL_STUDIO identified by <password>;
SQL> grant connect, create procedure, create sequence, create session,
create synonym, create table, create trigger, create type, create view to
SPATIAL_STUDIO;
```

When the Spatial Studio application starts running for the first time, it will generate a configuration file in a folder named **.sgtech** under the current user's operating system home folder. The configuration file is named `sgtech_config.json`. This is where Spatial Studio application will be obtaining and storing the connection details in its metadata schema.

After the connection to the metadata schema is established, the Spatial Studio application will automatically check if the required tables and other database objects are already present, and if their versions are up to date with the latest Spatial Studio application software. If these tables are not found, or if the tables require migration, the Spatial Studio application will run the necessary SQL scripts to create or migrate them, all without any intervention from the user.

The Spatial Studio schema will contain the following tables and views:

- `SGTECH_OBJECT`: stores all the domain objects for Spatial Studio.
- `SGTECH_SYS_TYPE`: defines all the known types of domain objects of Spatial Studio.
- `SGTECH_SYS_JSON_SCHEMA`: stores JSON data schema.
- `SGTECH_TASK_QUEUE`: stores long-running jobs of Spatial Studio.
- `SGTECH_TASK_BROKER`: stores job brokers for Spatial Studio.

 **Note:**

Do **not** add, delete, or edit any of the Spatial Studio tables or views or the data within them. They are automatically maintained by Spatial Studio, and should not be modified by users unless directed by Oracle Support.

### Managing Metadata Schema when Running Multiple Instances of Spatial Studio

Spatial Studio prevents you from running multiple application instances each having its own `sgtech_config.json` file from using the same metadata schema. In case you want to run another instance, it is recommended that you copy the `sgtech_config.json` configuration file linked to the initial instance to the system where you want to start the new instance.

Otherwise, any attempt to connect to the same metadata schema from an instance running on a different system is prevented by Spatial Studio with the following warning:

```
The selected repository is already registered to another instance of  
Spatial Studio. Check the system logs for more details.
```

In such a scenario, see [Recovery from Lost Master Key](#) to resolve the issue.

## 2.5 Connection Requirements for Database Users of Spatial Studio

This section describes the connection requirements for database users to work on Spatial Studio.

Each individual user must connect as a database user who is authorized to run Spatial Studio. A Spatial Studio administrator can enable access for the database users.

You can create new database users specifically for Spatial Studio access, or you can modify existing database users to enable Spatial Studio access, or you can do a combination of these approaches.

All database users must have a minimum set of privileges. In addition, each database user that works with Spatial Studio must have quota on its default tablespace. The privilege and quota requirements are explained in [Prerequisites and Recommendations for Spatial Studio](#).

## 2.6 Changing the Configuration Using the `sgtech_config.json` File

This section describes the configuration of important properties in `sgtech_config.json` file.

By default, Spatial Studio will create (if it does not already exist) and use a JSON file named `sgtech_config.json` for most of its essential configuration information.

This file is typically found in the operating system user's home directory, in a subfolder named `.sgtech`. This is true whether you deployed the application EAR to a WebLogic domain or you are just using the Quick Start.

### Note:

You must safeguard the `sgtech_config.json` file and ensure it has a backup on a regular basis. If this file is lost, you will lose the master key that Spatial Studio used to encrypt sensitive information, such as the database schema password for your data connections. This means that next time you start up Spatial Studio, it will no longer be able to decrypt such information, and none of your data connections will be usable, as well as all the datasets in them. In such a scenario, refer to [Recovery from Lost Master Key](#) for more information.

The following topics describe some important properties in the configuration file that a system administrator should be aware of:

- [Allow HTTPS-ONLY Access](#)
- [Connecting to the Spatial Studio Metadata Schema](#)
- [Caching Metadata Objects](#)
- [Importing Additional Configuration Files in Spatial Studio](#)
- [If the Spatial Studio Repository Schema Password Has Been Changed](#)

### 2.6.1 Allow HTTPS-ONLY Access

One of the top level properties in the `sgtech_config.json` config file is ***https\_only***. When this value is set to **true** (the default), Oracle Spatial Studio will actively monitor all incoming requests and only allow requests that were made using SSL. Normal `http://` requests will be denied.

Thus, if you tried to access the Spatial Studio application using an `http://` URL such as `http://localhost:8080/spatialstudio`, and if the value of `https_only` is set to `true`, then you will not be able to log in. In fact, you will not even see the login page itself, because none of the page resources will be accessible by your browser. Similarly, all RESTful requests will be blocked unless accessed using HTTPS.

If you wish to enable `http` access, change the value of `https_only` to `false`, and then restart the Spatial Studio application or the JavaEE container where Spatial Studio is deployed.



Please note that enabling `http` access also requires the following:

- `http` is enabled in the JaveEE container.  
If you are running Spatial Studio Quick Start, then see [Installing and Configuring the Spatial Studio Quick Start](#) which explains how to enable HTTP access in the Jetty container.
- The `http` port is opened in the host OS firewall.

## 2.6.2 Connecting to the Spatial Studio Metadata Schema

Spatial Studio must have access to a set of metadata tables, such as `SGTECH_OBJECT`. These tables are collectively considered the repository of the Spatial Studio application. The database schema that hosts these tables is considered the metadata schema or repository schema of Spatial Studio.

Spatial Studio must be able to establish a connection to this metadata schema as the first step during startup, when the connection details are found in the `sgtech_config.json` file in the `metadata_schema` section.

In an emergency situation, you can also manually edit this section to change or correct the connection details. However, be careful whenever editing this file, because any syntax error can cause Spatial Studio to stop working or fail to restart.

When you manually enter the repository schema connection details in the `sgtech_config.json` file (in the `metadata_schema` section), you must first specify whether `CONTAINER` or `SPATAL_STUDIO` is managing the physical JDBC connections:

```
"metadata_schema" : {
  "connection_manager": "CONTAINER"
}
```

Or

```
"metadata_schema" : {
  "connection_manager": "SPATIAL_STUDIO"
}
```

When `connection_manager` is set to `CONTAINER`, it means the JDBC connections to the Spatial Studio's repository schema are managed through a Java EE data source already created in Jetty (for Quick Start) or WebLogic Server. For example, if there is a data source named `jdbcm/studioMetadata` in the WLS domain, and if you want Studio to connect to the target schema using this data source, the relevant section in `sgtech_config.json` should look like this:

```
"metadata_schema" {
  "connection_manager" : "CONTAINER",
  "container_managed":{
    "jndi_datasource_name" : "jdbcm/studioMetadata"
  }
}
```

**Note:**

As of Spatial Studio Release 19.2, you cannot enter the container-managed connection details in the Spatial Studio application, so manually editing `sgtech_config.json` file is the only supported approach.

However, if you want Spatial Studio to manage the physical connections to its metadata schema, set `connection_manager` to `SPATIAL_STUDIO`, and supply the full set of JDBC connection details, which vary depending on whether the schema resides in an Oracle Autonomous database (which requires a database Wallet for establishing connections), or a regular database on-premises. You can check the inline comments inside the `sgtech_config.json` file for more details, but it is best if you simply log onto Spatial Studio as an admin user and then interactively supply the connection details for the repository schema. Such details will then be automatically saved in `sgtech_config.json` after Spatial Studio verifies the connection.

## 2.6.3 Caching Metadata Objects

During run time as users create connections, datasets, and projects, Spatial Studio is creating, modifying, and storing a large amount of metadata (sometimes called Spatial Studio's "domain objects"), such as the definition of a dataset and all of its columns, or the definition of a project including the full layout of all of its visualizations.

All the metadata objects are permanently stored in the metadata table `SGTECH_OBJECT`, but if the database must be accessed frequently (such as every time you open a project or view the properties of a dataset), performance may suffer. If this occurs, the solution is to **cache** frequently accessed copies of such metadata objects in memory.

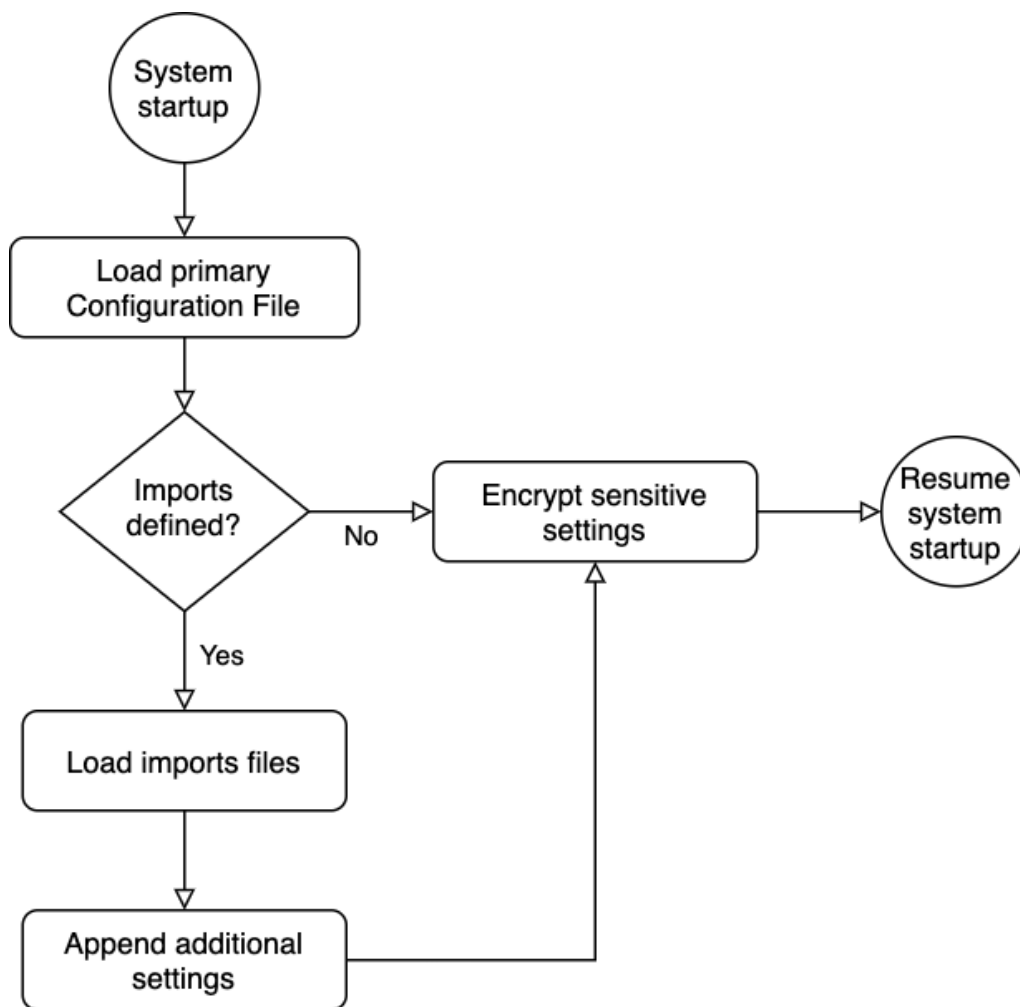
The `cache` section of the `sgtech_config.json` file lets you specify whether to enable such an in-memory cache of metadata objects. If the cache is enabled, then you can further specify how many such objects can be cached and for how long. A general rule is that `max_size` (the maximum number of metadata objects to be cached) should be no less than 1000, but probably should not exceed 10000 unless you have a very large amount of memory allocated to Spatial Studio.

## 2.6.4 Importing Additional Configuration Files in Spatial Studio

Spatial Studio 22.1 allows you to import different configuration files into the main `sgtech_config.json` configuration file.

The following describes the workflow for handling multiple configuration files:

Figure 2-2 Workflow to Handle Multiple Configuration Files



1. At startup, Spatial Studio loads the primary configuration file, `sgtech_config.json`. All the settings defined in `sgtech_config.json` are used as the *base settings*.
2. If the `sgtech_config.json` file contains the `imports` directive, then it loads the import files in the order (top to bottom) in which they are declared. For each loaded import file, the system reads and appends the settings to the *base settings*.
3. Once the *base settings* are all read in, the system encrypts any sensitive items and saves them back to their corresponding file.
4. Spatial Studio resumes loading the rest of the system.

#### Adding imports to `sgtech_config.json`

You can edit the `sgtech_config.json` file and add the new top-level `imports` directive as shown:

```

"imports" : {
  "<import_name>" : {

```

```

    "module" : "<import_file_path>",
    "description" : "<import_description>"
  }
}

```

In the preceding code:

- **<import\_name>**: Name of the import file which must be unique. This is used mainly by Spatial Studio to report errors when loading `imports` files.
- **<import\_file\_path>**: The file path for the `imports` files must be relative to the containing directory of the main configuration file (`~/.sgtech/sgtech_config.json`).
- **<import\_description>**: To describe the purpose of the import. `description` is an optional parameter for the `imports` property.

For example, configure the `metadata_schema` details as shown in the following code in **`sgtech_config.dbsettings.json`** file. The file path can be `~/.sgtech/extras/sgtech_config.dbsettings.json`:

```

{
  "metadata_schema" : {
    "connection_manager" : "CONTAINER",
    "container_managed" : {
      ...
    },
  }
}

```

Also, configure the `jobs` details separately in **`sgtech_config.jobs.json`** following the file path `~/.sgtech/extras/sgtech_config.jobs.json`:

```

{
  "jobs" : {
    "init_threads_count" : 45
  }
}

```

You can now include the preceding two configuration files in the `imports` directive in the main `sgtech_config.json` file (`~/.sgtech/sgtech_config.json`) as shown:

```

{
  "version" : "22.1.0",
  "work_dir" : "",
  "https_only" : true,
  "master_seed" : "<somerandommasterseed>",
  "logging" : {
    "level" : "INFO"
  },
  "imports" : {
    "jobs" : {
      "module" : "extras/sgtech_config.jobs.json"
    },
    "db" : {

```

```
        "module" : "extras/sgtech_config.dbsettings.json",
        "description" : "Database settings optimized for clustering"
    }
}
}
```

### Import Files Requirements

It is important you adhere to the following requirements when handling multiple import files:

- Files for `imports` must be located inside the same directory as the primary `sgtech_config.json` file, or any of its subdirectories.
- Settings included in the `imports` files must not make collision with settings declared already in other configuration files, including the primary `sgtech_config.json` configuration file.
- Since `imports` files can contain sensitive data, only the file owner must have read, write or both access.
- `version`, `work_dir`, `master_seed` and `imports` are settings which are restricted to the primary configuration file, `sgtech_config.json`.

## 2.6.5 If the Spatial Studio Repository Schema Password Has Been Changed

If the Spatial Studio Repository Schema Password has been changed, you must update the `sgtech_config.json` configuration file, as follows:

1. Make a backup copy of the file. For example, copy `~/.sgtech/sgtech_config.json` to `~/.sgtech/sgtech_config.json_backup`.
2. On the Spatial Studio compute node, edit the file `~/.sgtech/sgtech_config.json`.
3. In the `metadata_schema` section, update `database_password` to the desired value.
4. Save the file and then restart the Spatial Studio deployment. To restart if you are using the Quick Start kit, see the README file for the Quick Start; to restart if this is a WebLogic Server deployment, use the WebLogic Server console.
5. Open the Spatial Studio application. You should be able to log in.

You will still have all the artifacts you had created, including other (non-repository) connections, which you can edit as needed.

## 2.7 Recovery from Lost Master Key

If you accidentally delete or replace the `sgtech_config.json` file, then the master key is lost and the Spatial Studio application will throw an error.

The `sgtech_config.json` file includes a `master_seed` property which contains the master key value that enables decryption of encrypted items such as database passwords. It is therefore recommended to backup your `sgtech_config.json` file in a safe location.

However, if you lose the `sgtech_config.json` file, then it is possible to recover from a lost master key by performing the following steps:

1. Stop the Spatial Studio instance by running the following command from the application installation directory:

```
./stop.sh
```

If you installed the application from the Cloud Marketplace, then use the following command:

```
sudo systemctl stop spatialstudio
```

2. Run the following command in your Spatial Studio repository using a SQL client (such as Database Actions, SQL Plus or SQL Developer):

```
DELETE
  "SGTECH_OBJECT"
WHERE
  "TENANTID" = 'GLOBAL'
  AND (
    "ID" IN ('id_sgtech.safe_text.magicword',
'id_sgtech.key_pair.rsa')
    OR "OBJECTTYPE" = 'access_token'
  );
COMMIT;
```

3. Start Spatial Studio by running the following command from the application installation directory:

```
./start.sh
```

If you installed the application from the Cloud Marketplace, then use the following command:

```
sudo systemctl start spatialstudio
```

4. Log into Spatial Studio as the `admin` user.
5. Navigate to the **Connections** page.
6. Right-click on each connection, select **Edit**, and re-enter the password for each connection.
7. Open **Access Tokens** dialog and delete each active token.
8. Navigate to the **Administration** page.
9. Optionally, if you had created a custom basemap with a separate API key, then re-enter the **API Key** by editing the required custom basemap.  
Click **Basemaps** under **Settings** to view and edit your custom basemap.
10. Optionally, if you had created a Cesium basemap with a separate API key, then re-enter the **API Key** by editing the required Cesium basemap.  
Click **Cesium Basemaps** under **Settings** to view and edit your Cesium basemap.

Make sure to back up the `sgtech_config.json` configuration file safely this time so you do not have to repeat this process in the future.

## 2.8 Enabling IDCS as Identity Provider in Spatial Studio

Starting from Oracle Spatial Studio Release 22.1.0, you can log into your Spatial Studio instance using users already managed by your own Oracle Cloud tenancy's IDCS identity domain.

The workflow to setup IDCS as the identity provider for Spatial Studio involves the following three steps:

1. Adding Spatial Studio roles as Groups in IDCS.
2. Creating an Application in IDCS.
3. Copying IDCS settings into Spatial Studio's configuration file.

Before you begin, see [Prerequisite Requirements for Setting Up IDCS with Spatial Studio](#) to ensure that you meet all the prerequisite requirements.

- [Prerequisite Requirements for Setting Up IDCS with Spatial Studio](#)
- [Adding Spatial Studio Role as a Group in IDCS](#)  
You must add the system administrator role supported in Spatial Studio as a group in IDCS.
- [Creating an Application in IDCS](#)  
This section describes the steps to add the Spatial Studio application in IDCS.
- [Copying IDCS Settings into Spatial Studio's Configuration File](#)  
To integrate Spatial Studio with IDCS, you must add the IDCS settings into the `sgtech_config.json` configuration file.
- [Testing IDCS Login](#)  
After all the setup steps are completed, you can test and verify the IDCS login.

### 2.8.1 Prerequisite Requirements for Setting Up IDCS with Spatial Studio

To integrate IDCS with Spatial Studio, you must obtain the following details:

- Identify your **IDCS tenant**: See [Retrieving IDCS Instance details](#) .
- Identify your **IDCS host**: See [Retrieving IDCS Instance details](#) .
- Identify the **Spatial Studio URL**: `https://localhost:4040/spatialstudio/` is the default.
- Setup an **IDCS admin account**: See [About Oracle Identity Cloud Service User Accounts and Groups](#) for details.
- Identify **IDCS console URL**: See [Determining the IDCS Console URL](#) for more information.

#### Retrieving IDCS Instance details

You can obtain the IDCS instance details by inspecting any of the IDCS URLs. For instance, you can inspect the IDCS login URL which you receive in the email when you are added as a user in IDCS. For example, consider the following sample IDCS cloud account login URL:

`https://idcs-54656e616e742d4578616d706c652121.identity.oraclecloud.com/ui/v1/signin`

You can now derive the IDCS instance details from the preceding URL as shown:

- **IDCS tenant:** `idcs-54656e616e742d4578616d706c652121`
- **IDCS host:** `identity.oraclecloud.com`
- [Determining the IDCS Console URL](#)  
OCI tenancies include a default IDCS instance and you can obtain the IDCS console URL using the OCI console.

### 2.8.1.1 Determining the IDCS Console URL

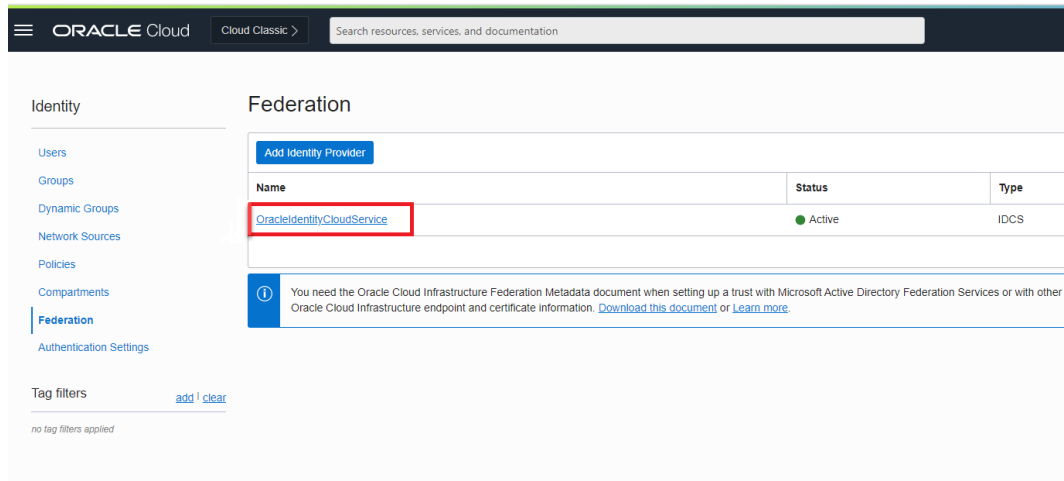
OCI tenancies include a default IDCS instance and you can obtain the IDCS console URL using the OCI console.

Perform the following steps to identify the URL to access IDCS console:

1. Sign in to the OCI console using your Oracle Cloud credentials.
2. Open the navigation menu and select **Identity and Security**.
3. Click **Federation** under **Identity**.

The Federation page opens as shown:

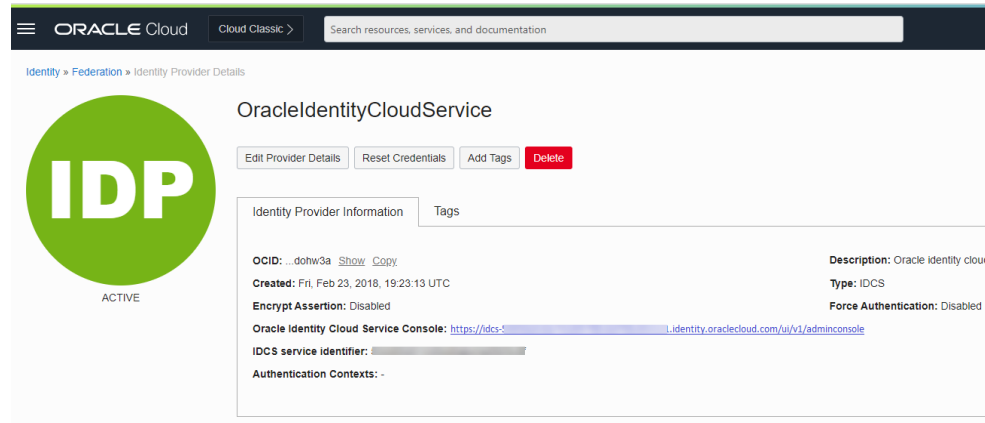
**Figure 2-3 Default IDCS Instance on the Federation Page**



4. Click on the default IDCS instance, shown highlighted in the preceding figure.  
The **Identity Provider Details** page opens.
5. Note the IDCS console URL in the **Oracle Identity Cloud Service Console** field as shown:



Figure 2-4 IDCS Console URL



## 2.8.2 Adding Spatial Studio Role as a Group in IDCS

You must add the system administrator role supported in Spatial Studio as a group in IDCS.

The system administrator role in Spatial Studio is identified by **SGTech\_SystemAdmin**. This implies that the administrator has full access to the entire system.

You need to add this role as an IDCS group. However, the following applies:

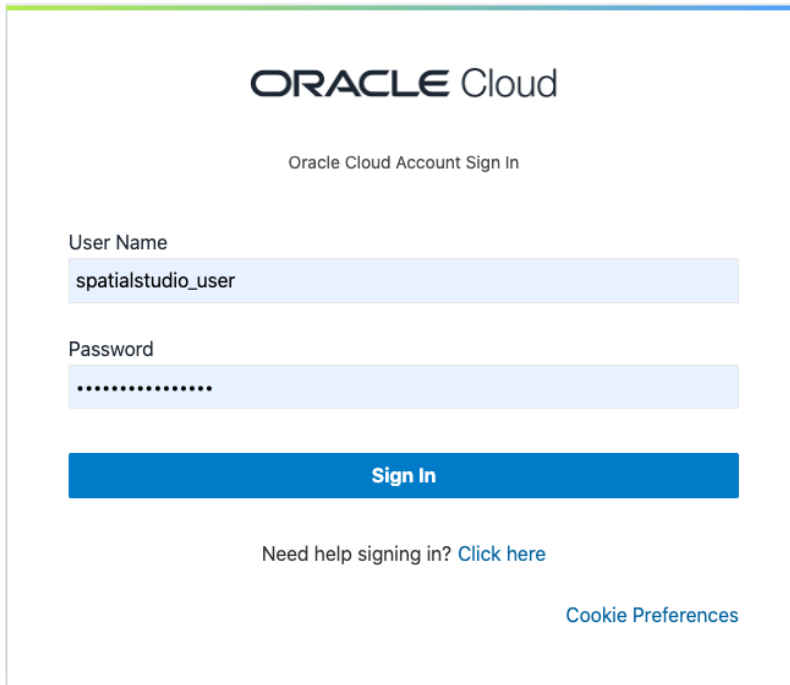
- Users assigned to this group will have admin rights in the Spatial Studio instance that is being set up.
- Users who do not belong to this group will have regular access to the Spatial Studio instance when added to the IDCS application.

As a prerequisite, you must obtain the IDCS console URL. See [Determining the IDCS Console URL](#) for details.

Perform the following steps to create the groups in IDCS:

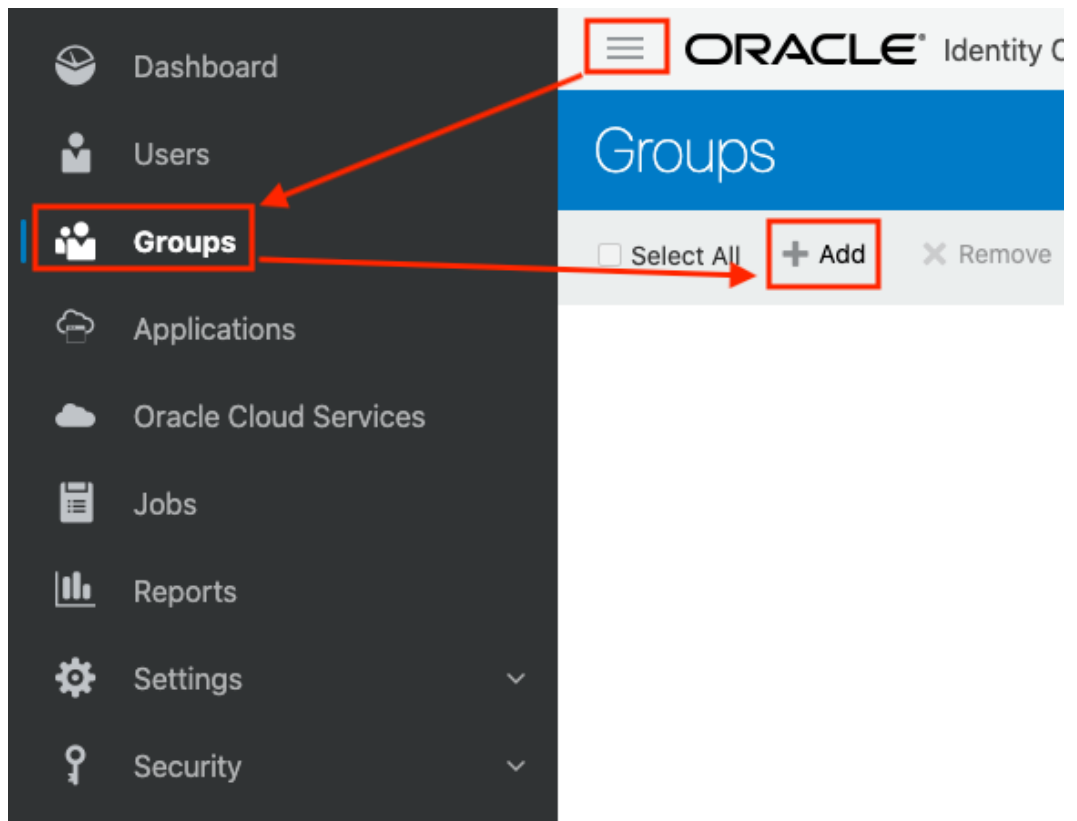
1. Open the IDCS login page using the IDCS console URL in your browser.
2. Enter the ADMIN user credentials and sign in as shown:

Figure 2-5 IDCS Login



3. Open the navigation menu on top left, select **Groups** and click **Add** to create a new group as shown:

Figure 2-6 Adding an IDCS Group



The **Add Group** dialog opens and displays the **Step 1: Group Details** page.

4. Enter **Name** as *SGTech\_SystemAdmin*.  
Note that the role name is case sensitive.
5. Optionally, enter a **Description**.
6. Click **Next** as shown:

**Figure 2-7 Step-1: Group Details**

The screenshot shows a web interface titled "Add Group" with a sub-header "Step 1: Groups Details". It contains the following elements:

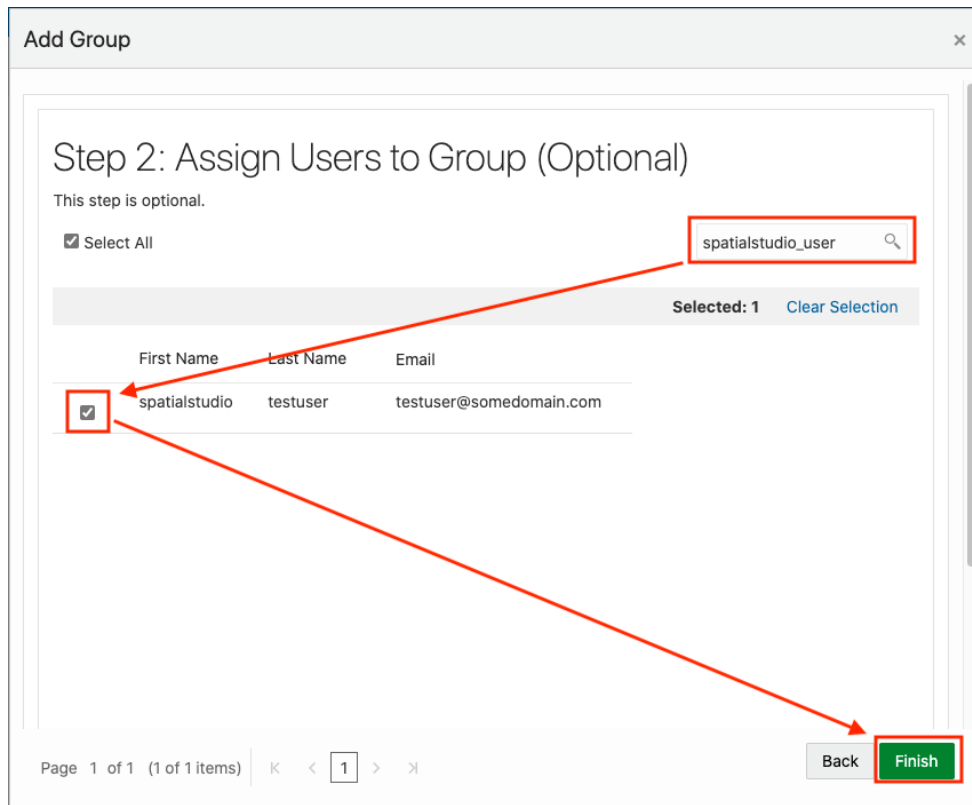
- A text input field labeled "\* Name" containing the text "SGTech\_SystemAdmin". This field is highlighted with a red border.
- A text area labeled "Description" containing the text "System Administrator Role".
- A checkbox labeled "User can request access" which is currently unchecked.
- At the bottom right, there are two buttons: "Next" (highlighted with a red border) and "Finish" (highlighted in green).

**Step 2: Assign Users to Group (Optional)** page opens listing all the existing users.

7. Select the required user and click **Finish**.

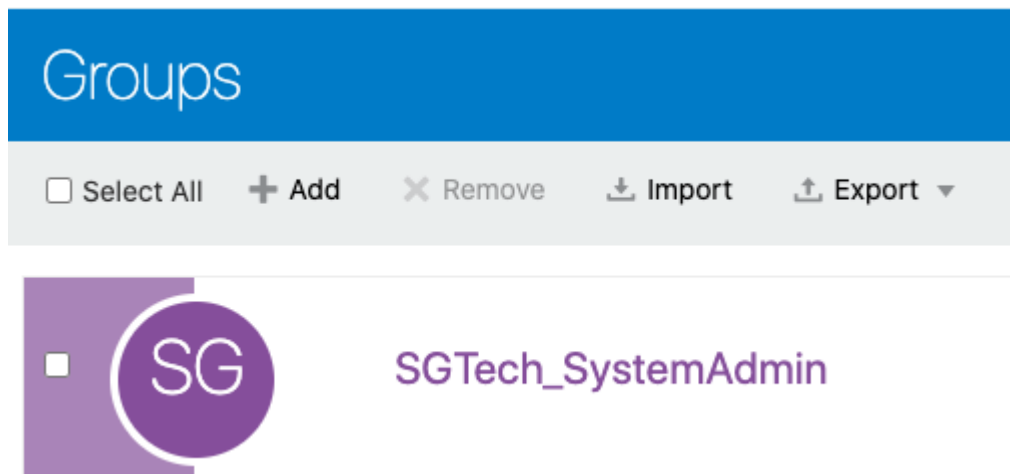
For example, the following figure shows assigning *spatialstudio\_user* to the group role *SGTech\_SystemAdmin*:

**Figure 2-8 Step2: Assign Users to a Group**



8. Verify that the newly added group is listed on the **Groups** page:

**Figure 2-9 List of Groups**



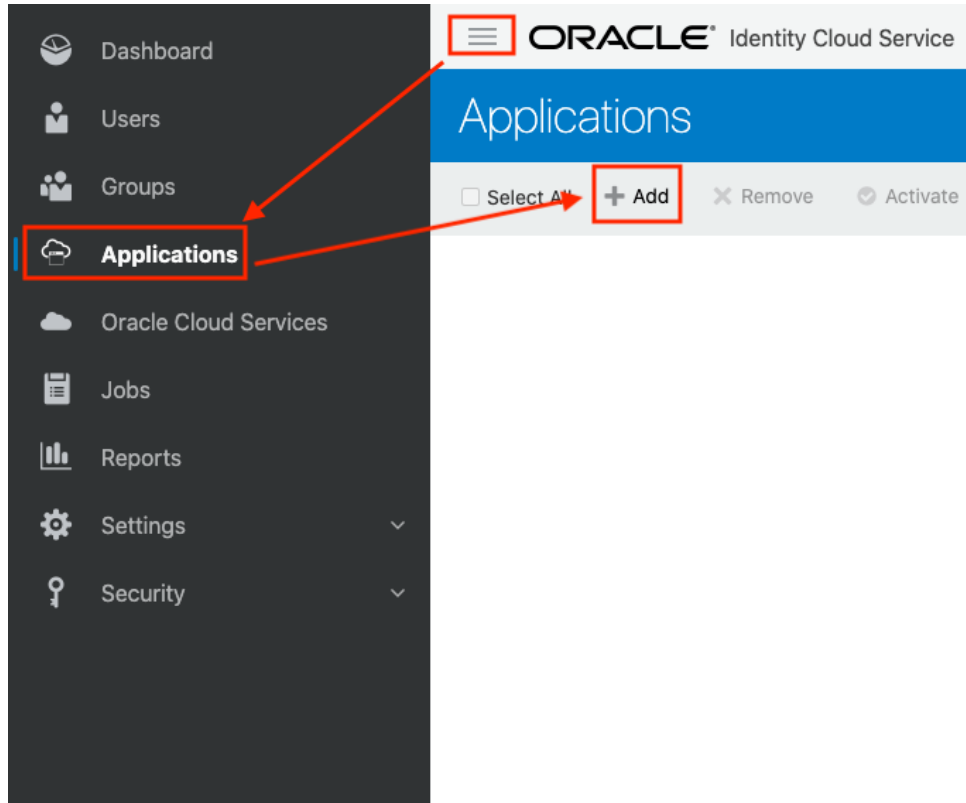
### 2.8.3 Creating an Application in IDCS

This section describes the steps to add the Spatial Studio application in IDCS.

1. Sign in to IDCS using ADMIN user credentials.

2. Open the navigation menu on top left, select **Applications** and click **Add** to add a new application as shown:

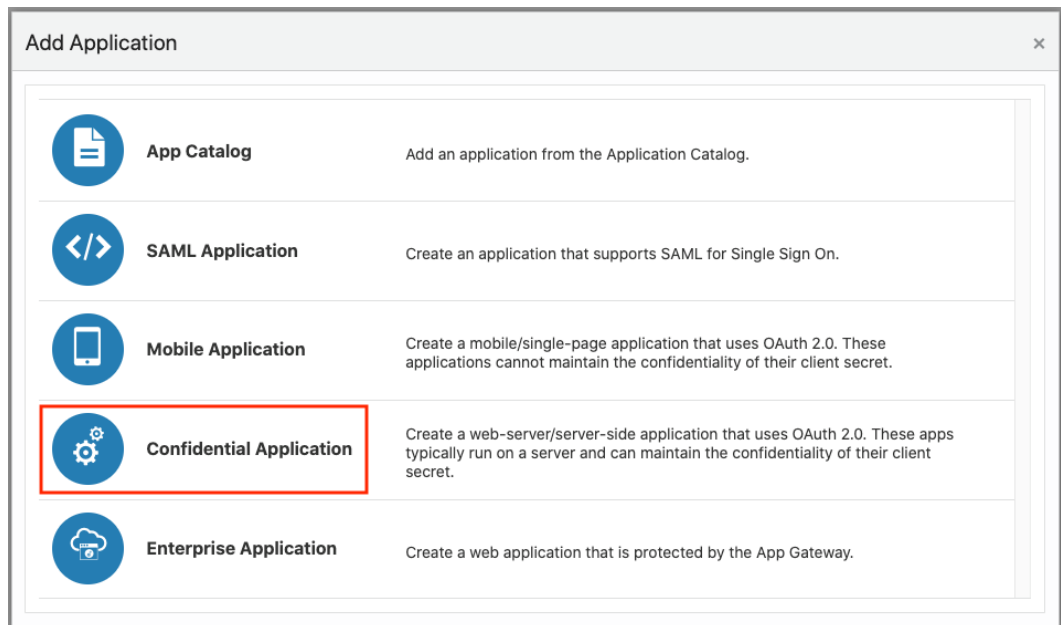
**Figure 2-10 Adding an Application**



The **Add Application** dialog opens.

3. Select **Confidential Application**.

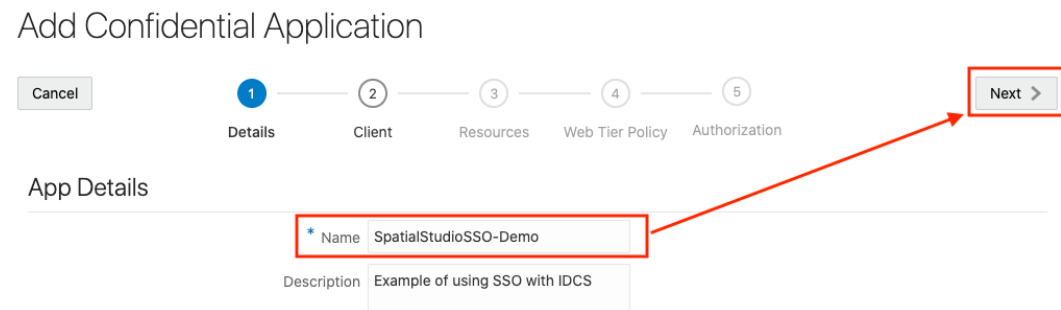
**Figure 2-11 Add Application Dialog**



The **Add Confidential Application** wizard opens displaying the **Details** page.

4. Enter the application **Name**.
5. Optionally, add a **Description** and click **Next**.

**Figure 2-12 Add Confidential Application: Details Page**



The **Client** page opens.

6. Click **Configure this application as a client now** to configure the authorization information for the new application.

Perform the following in the **Authorization** section:

- a. Enable **Client Credentials** and **Authorization Code** for **Allowed Grant Types**.
- b. Enter `<spatial_studio_url>/idcscallback` in **Redirect URL**.
- c. Enter `<spatial_studio_url>` in **Post Logout Redirect URL**.
- d. Optionally, for **Security**, you can enable **Trusted Client** to import a custom certificate.

**Figure 2-13 Configuring Client Details**

Configure this application as a client now  Skip for later

**Authorization**

Allowed Grant Types  Resource Owner  Client Credentials  JWT Assertion  SAML2 Assertion  Refresh Token

Authorization Code  Implicit  Device Code

TLS Client Authentication

Allow non-HTTPS URLs

\* Redirect URL

Logout URL

Post Logout Redirect URL

Security  Trusted Client Certificate

Allowed Operations  Introspect  On behalf Of

ID Token Encryption Algorithm

Bypass Consent

Allowed Client IP Address  Anywhere  In one or more of these network perimeters

Perform the following in the **Token Issuance Policy** section:

- a. Click **Add** under **Grant the client access to Identity Cloud Service Admin APIs** to enable the application to access IDCS APIs. The **Add App Role** window opens listing the application roles.
- b. Select *Me* and *Authenticator Client* and click **Add** to assign these application roles to the application as shown:

**Figure 2-14 Configuring Token Issuance Policy**

**Token Issuance Policy** ⓘ

Authorized Resources  All  Tagged  Specific

**Resources**

Resource	Protected	Scope
No data to display.		

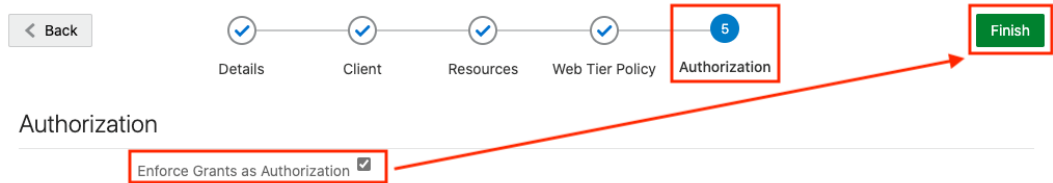
Grant the client access to Identity Cloud Service Admin APIs

App Roles	Protected	
Authenticator Client	No	×
Me	No	×

- c. Click **Next** on the top right of the page to continue.

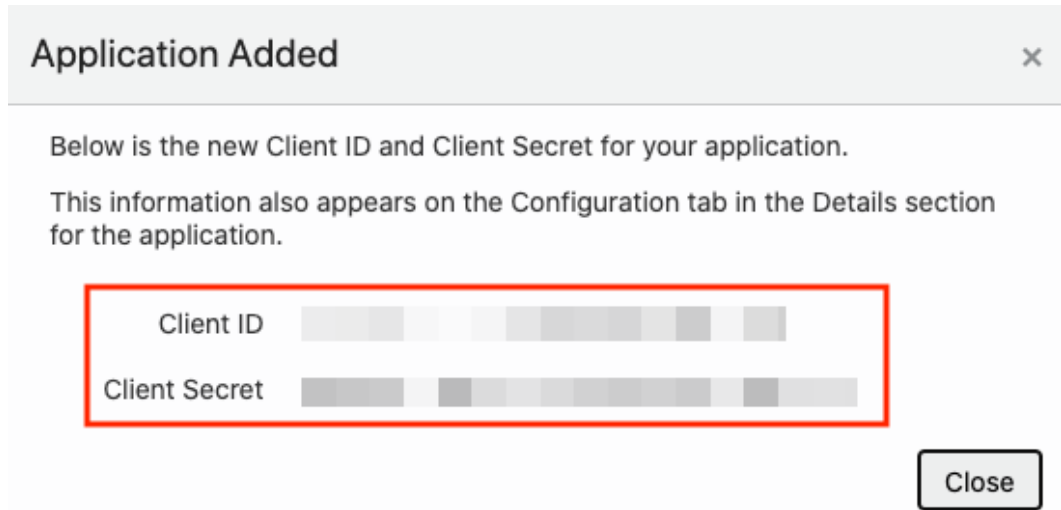
7. Skip **Resources** and **Web Tier Policy** by clicking the **Next** button and navigate to the **Authorization** page.
8. Enable the **Enforce Grants as Authorization** option.
9. Click **Finish**.

**Figure 2-15** Configuring Authorization



The application is added and the **Application Added** dialog box opens.

**Figure 2-16** Confirmation Dialog



10. Note the **Client ID** and **Client Secret** to be used later to complete the configuration.

**Tip:**

You can also obtain the client credentials for the application from the **Configuration** tab in the **General Information** section, once the application is activated.

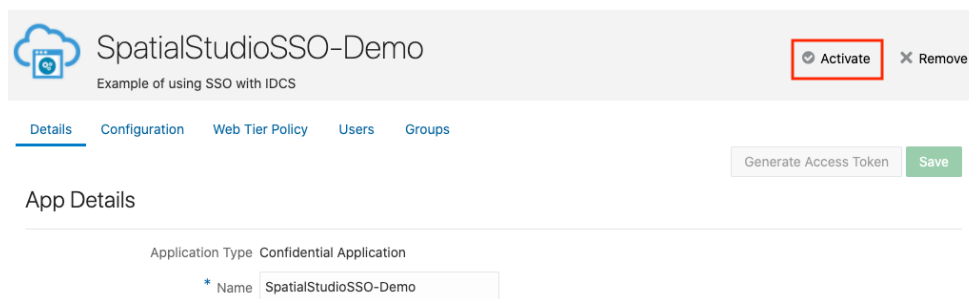
11. Click **Close**.

The new application's **Details** page is displayed.

12. Click **Activate** to grant users access to the application and confirm the operation on the prompt that follows.

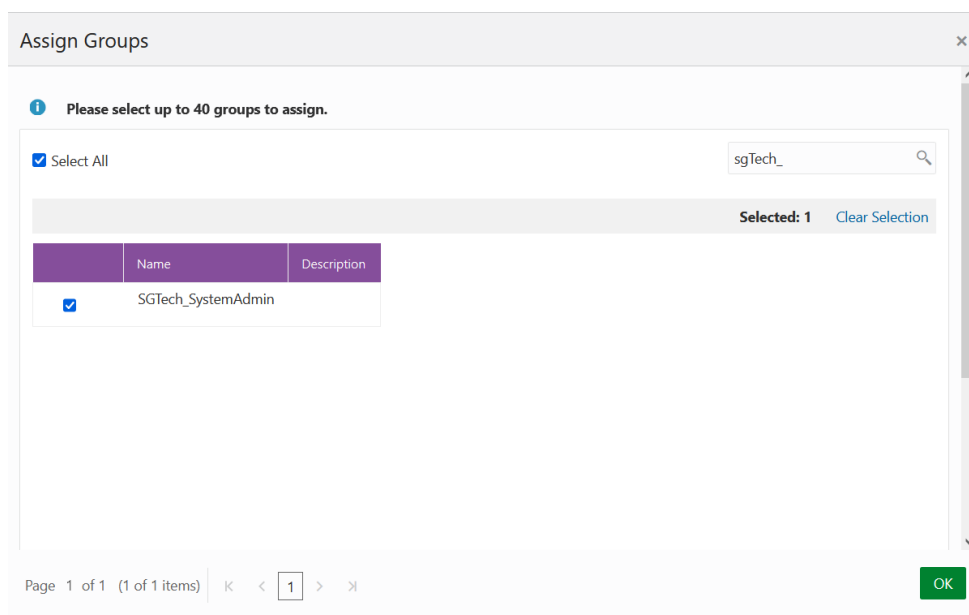


**Figure 2-17 Confirmation for Activating Application**



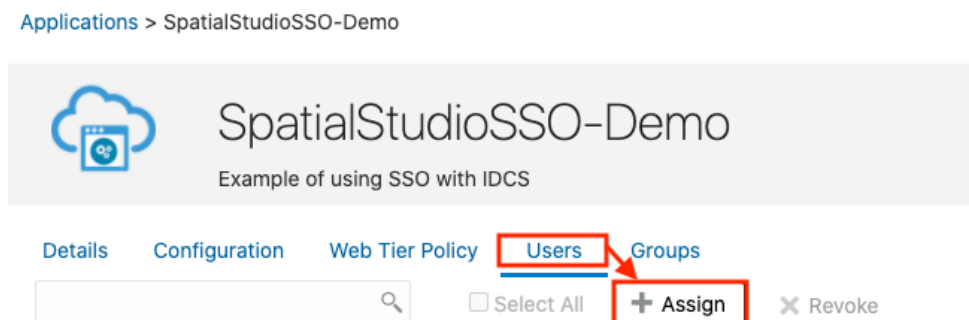
13. Click the **Groups** tab and then click **Assign** to add the group created in [Adding Spatial Studio Role as a Group in IDCS](#) as shown:

**Figure 2-18 Assigning Groups to an Application**



14. Optionally, add non-admin users through the **Users** tab or using other groups.

**Figure 2-19 Assigning Non-Admin Users**



## 2.8.4 Copying IDCS Settings into Spatial Studio's Configuration File

To integrate Spatial Studio with IDCS, you must add the IDCS settings into the `sgtech_config.json` configuration file.

The configuration file is located at `~/.sgtech/sgtech_config.json` path. You can directly append the IDCS settings into the `sgtech_config.json` file. However, the best practice is to have the IDCS settings in a separate configuration file and then import this file into the main configuration file.

Perform the following steps to create a configuration file for the IDCS settings and to import this configuration in `sgtech_config.json`:

1. Create a new empty JSON configuration file in the `~/.sgtech` directory.

For example:

```
~/.sgtech/sgtech_config.idcs.json
```

2. Edit the created file with a file editor of your choice and add the IDCS settings information as shown:

```
{
  "idcs" : {
    "Host" : "identity.oraclecloud.com",
    "ClientTenant" : "<tenant_id>",
    "ClientId" : "<client_id>",
    "ClientSecret" : "<client_secret>",
    "redirectURL" : "https://localhost:4040/spatialstudio/idcscallback",
    "postLogoutRedirectURL" : "https://localhost:4040/spatialstudio/"
  }
}
```

In the preceding file:

- **Host:** IDCS host.
  - **Client Tenant:** IDCS tenant.
  - **ClientId:** Generated when creating the IDCS application.
  - **ClientSecret:** Generated when creating the IDCS application.
  - **redirectURL:** Same as the Redirect URL used when creating the IDCS application.
  - **postLogoutRedirectURL:** Same as the Post Logout Redirect URL used when creating the IDCS application.
3. Save the `sgtech_config.idcs.json` file.
  4. Edit the main `sgtech_config.json` file and add the import configuration as shown:

```
{
  "version" : "23.2.0",
  "work_dir" : "",
  ...
  "jobs" : {
    "init_threads_count" : 15
  },
}
```

```
"imports" : {
  "idcsclient" : {
    "module" : "sgtech_config.idcs.json"
  }
}
```

It is important to note that there can be only one `imports` object in the main `sgtech_config.json` file. Therefore, if an `imports` configuration is already existing in the main `sgtech_config.json` file, then you can add the `idcsclient` entry to the `imports` block as shown:

```
{
  "version" : "23.2.0",
  "work_dir" : "",
  ...
  "jobs" : {
    "init_threads_count" : 15
  },
  "imports" : {
    "idcsclient" : {
      "module" : "sgtech_config.idcs.json"
    },
    "rolesmapping" : {
      "module" : "sgtech_config.security.json"
    }
  }
}
```

5. Save the `sgtech_config.json` file.

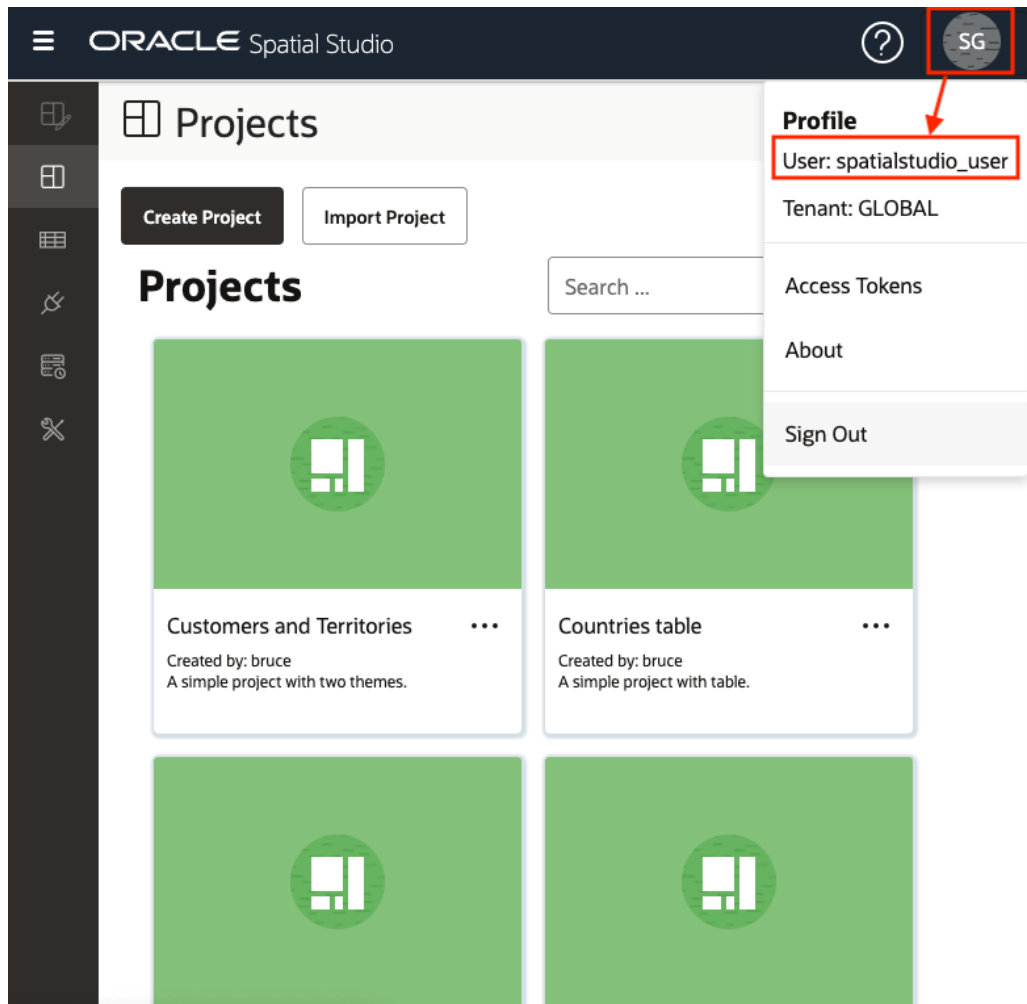
## 2.8.5 Testing IDCS Login

After all the setup steps are completed, you can test and verify the IDCS login.

1. Ensure you have logged out from IDCS.
2. Ensure all Spatial Studio instances are stopped.  
You can stop a Spatial Studio instance by executing `stop.sh` for Linux and `stop.cmd` for Windows.
3. Run Spatial Studio by executing `start.sh` (Linux) or `start.cmd` (Windows).
4. Open the main URL in your browser, once Spatial Studio is running. For example:  
`https://localhost:4040/spatialstudio/`  
The IDCS login screen as shown in [Figure 2-5](#) opens instead of Spatial Studio's standard login screen.
5. Enter your credentials and click **Sign In**.

You will be automatically redirected to the Spatial Studio instance. You can verify the logged in user by clicking on the **Avatar** icon as shown:

Figure 2-20 Profile Menu



6. Click **Sign out** in the **Profile** menu to logout from Spatial Studio.

Note, this will also log you out from any other application that is running on IDCS.

## 2.9 Mapping External User Principals to Built-In Spatial Studio Roles

Spatial Studio supports mapping IDCS and other identity provider principals to the Spatial Studio built-in roles. This enables dynamically granting permissions to users by using custom groups, for instance.

In order to map the principals to Spatial Studio roles, you must add the **security** settings into the **sgtech\_config.json** configuration file.

The configuration file is located at `~/.sgtech/sgtech_config.json` path. You can directly append the security settings into the **sgtech\_config.json** file. However, the best practice is to have the security settings in a separate configuration file and then import this file into the main configuration file.

Perform the following steps to create a configuration file containing the security settings and then import this configuration in **sgtech\_config.json**:

1. Create a new empty JSON configuration file in the `~/.sgtech` directory.

For example:

`~/.sgtech/sgtech_config.security.json`

2. Edit the created file with a file editor of your choice and add the security settings information as shown:

```
{
  "security" : {
    "role-assignments" : [
      {
        "role" : "<role_name>",
        "principals" : [
          "<principal_name>"
        ]
      }
    ]
  }
}
```

In the preceding file:

- **role:** This refers to one of Spatial Studio built-in roles, specifically **SGTech\_SystemAdmin** or **SGTech\_TenantAdmin**. Note that the role name is case-sensitive.
  - **principals:** List of all principals' names that must be mapped to the specified role. For example, `["Power_User_Members", "IT_Support_Team"]`, which might be IDCS or WebLogic Server groups, or properties designated in `conf/jetty-realm.properties` file in QuickStart.
  - **role-assignments:** List of the roles mapping. You can specify as many entries as required.
3. Save the `sgtech_config.security.json` file.
  4. Edit the main `sgtech_config.json` file and add the import configuration as shown:

```
{
  "version" : "23.1.0",
  "work_dir" : "",
  ...
  "jobs" : {
    "init_threads_count" : 15
  },
  "imports" : {
    "rolesmapping" : {
      "module" : "sgtech_config.security.json"
    }
  }
}
```

It is important to note that there can be only one `imports` object in the main `sgtech_config.json` file. Therefore, if an `imports` configuration is already existing

in the main `sgtech_config.json` file, then you can add the `rolesmapping` entry to the `imports` block as shown:

```
{
  "version" : "23.2.0",
  "work_dir" : "",
  ...
  "jobs" : {
    "init_threads_count" : 15
  },
  "imports" : {
    "idcsclient" : {
      "module" : "sgtech_config.idcs.json"
    },
    "rolesmapping" : {
      "module" : "sgtech_config.security.json"
    }
  }
}
```

5. Save the `sgtech_config.json` file.

This grants all users from the groups configured for the **principals**, the respective role that was specified in the **role** configuration, when logging into Spatial Studio.

## 2.10 Using a CA-Signed SSL Certificate in the Quick Start Installation

The Spatial Studio Quick Start installation typically comes with a self-signed certificate for handling SSL or HTTPS URL connection encryption.

However, this is not desirable as the browser always warns you about an insecure connection. Starting with Spatial Studio Release 23.2.0, you can use your own (CA-signed) X.509 certificate.

Review the following sections and perform the steps that apply to your scenario.

- [Preparing a CA-Signed Certificate and Private Key for the Spatial Studio Server](#)  
You can prepare a CA-signed certificate and a private key for the Spatial Studio server.
- [Configuring the Spatial Studio Server to Use a Java Keystore](#)  
You can configure your server to use a Java keystore file containing an X.509 certificate.
- [Configuring Reverse Proxy for the Quick Start Installation](#)  
If your Spatial Studio Quick Start installation is running on the same host, where you already have an Apache HTTP or NGINX server running, then you can simply use a reverse proxy to ensure a secure connection.

### 2.10.1 Preparing a CA-Signed Certificate and Private Key for the Spatial Studio Server

You can prepare a CA-signed certificate and a private key for the Spatial Studio server.

1. Obtain an SSL certificate from a publicly recognized certificate authority (CA).

The certificate is generally presented as two files that are linked to the domain of your web site:

- `yourdomain.crt` (X.509 certificate)
- `yourdomain.key` (private key)

Sometimes the `yourdomain.crt` file is in the PEM format, in which case the file name appears as `yourdomain.pem` or `fullchain.pem`, and the key file may be named like `privatekey.pem`.

However, Java cannot make use of such files directly for SSL support, as these files are generated and supported only by OpenSSL ecosystem tools. Therefore, you must first convert the CA certificate file and the private key file into a Java key store, which can then be used in the Spatial Studio Quick Start.

2. Convert the X.509 certificate and private key into a PKCS12 file using the following `openssl` command:

```
openssl pkcs12 -export -in yourdomain.crt -inkey yourdomain.key \
    -out yourdomain.p12 -name [some-alias] \
    -CAfile yourdomain.crt -caname root
```

Also, note the following while running the preceding command:

- Ensure that you provide a password when requested.
  - Optionally, add the `-chain` option to the command to preserve the full certificate chain when working with a real CA-signed certificate.
  - Apply the same `openssl` command for all CA certificate and private key file extensions.
3. Convert the PKCS12 file into a Java keystore file using the following Java `keytool` command.

```
keytool -importkeystore \
    -deststorepass ChangeIt -destkeypass ChangeIt -destkeystore
yourdomain.keystore \
    -srckeystore yourdomain.p12 -srcstoretype PKCS12 -
srcstorepass [password_from_step2] \
    -alias [some-alias]
```

The preceding command generates a Java keystore file, `yourdomain.keystore`, which is protected with the password `ChangeIt`.

4. Configure the Spatial Studio server to use the Java keystore file.

See [Configuring the Spatial Studio Server to Use a Java Keystore](#) for more information.

## 2.10.2 Configuring the Spatial Studio Server to Use a Java Keystore

You can configure your server to use a Java keystore file containing an X.509 certificate.

This section assumes that you already have a Java keystore file (`yourdomain.keystore`) generated from an X.509 certificate and private key as

explained in [Preparing a CA-Signed Certificate and Private Key for the Spatial Studio Server](#). It is important to note that the keystore file generated in a different manner may not work with Spatial Studio.

1. Edit the `conf/server.json` configuration file in the `Oracle_Spatial_Studio` directory and modify the following three SSL fields to reflect the location of `yourdomain.keystore` file and its password.

```
"sslKeyStorePath": "<path_to_yourdomain.keystore_file>",
"sslKeyStorePassword": "ChangeIt",
"sslKeyManagerPassword": "ChangeIt",
```

2. Optionally, obfuscate your keystore protection password (`sslKeyStorePassword` and `sslKeyManagerPassword`) by performing the following steps.

- a. Navigate to the `Oracle_Spatial_Studio` directory and run the following command.

```
java -cp ./servletContainer/jetty-util-9.4.51.v20230217.jar
org.eclipse.jetty.util.security.Password <
user> ChangeIt
```

The `ChangeIt` password for the `user` is obfuscated and the output is as shown.

```
ChangeIt
OBF:1pam1o661saj1v9ilv941sar1o4g1pdc
MD5:72df16e805e7d9c88437b9ea5f8995d6
CRYPT:b1SK4yQrQaaxo
```

- b. Copy the string starting with `OBF` and update the `sslKeyStorePassword` and `sslKeyManagerPassword` fields in the `server.json` file to use the obfuscated password instead of the plain text password.
3. Restart the Spatial Studio server to make the changes take effect.

You should see a similar log towards the beginning of the console output:

```
2023-07-27 01:31:50.740:INFO:oejus.SslContextFactory:main:
x509=X509@5e5073ab([followed by some organization name or alias info related
to your CA cert])
```

You can now securely access the Spatial Studio Quick Start using the URL `https://yourdomain.com:4040/spatialstudio`.

## 2.10.3 Configuring Reverse Proxy for the Quick Start Installation

If your Spatial Studio Quick Start installation is running on the same host, where you already have an Apache HTTP or NGINX server running, then you can simply use a reverse proxy to ensure a secure connection.

With this approach, you are not required to make any configuration changes to the Spatial Studio server itself.

1. Configure a CA-signed certificate on your Apache HTTP or NGINX server by following the official documentation for the respective server.
2. Reverse proxy the URL `https://yourdomain.com/spatialstudio` to `http://localhost:8080/spatialstudio` in Apache HTTP or NGINX server configuration file.



For instance, if your Apache HTTP server is listening on port 80 and 443 and your Spatial Studio Quick Start is running on port 8080 on the same host, then you can simply add the proxy directive to your Apache HTTP server configuration file as shown:

```
<VirtualHost *:443>
    ServerName yourdomain.com
    DirectoryIndex index.html index.php

    SSLCertificateFile /etc/letsencrypt/live/yourdomain.com/
fullchain.pem
    SSLCertificateKeyFile /etc/letsencrypt/live/yourdomain.com/
privkey.pem
    Include /etc/letsencrypt/options-ssl-apache.conf

    ProxyRequests On
    ProxyPass /spatialstudio http://localhost:8080/spatialstudio
    ProxyPassReverse /spatialstudio http://localhost:8080/
spatialstudio

</VirtualHost>

<VirtualHost *:80>
    ServerName yourdomain.com
    DirectoryIndex index.html index.php
    RewriteEngine on
    RewriteCond %{SERVER_NAME} =yourdomain.com
    RewriteRule ^ https://%{SERVER_NAME}%{REQUEST_URI}
[END,NE,R=permanent]

    ProxyRequests On
    ProxyPass /spatialstudio http://localhost:8080/spatialstudio
    ProxyPassReverse /spatialstudio http://localhost:8080/
spatialstudio
</VirtualHost>
```

**3. Restart the Apache HTTP or NGINX server.**

You can now securely access Spatial Studio using a url like `https://yourdomain.com/spatialstudio`.

# 3

## Using Oracle Spatial Studio

Using Oracle Spatial Studio, you can create one or more projects, each of which can define one or more spatial datasets on which you can perform various spatial operations.

It is important you understand the following terminologies when working on Spatial Studio:

- A **project** contains Spatial Studio objects, such as datasets, that are logically related to some intended usage. For example, a project might be named New England Sales Territories, or Sales Territories and Customers, or Ohio Airports and Counties. When creating a project, you should know the purposes for which you want to identify and analyze spatial data in a geographic area.
- A **dataset** is a collection of spatial features of a specific usage type and geometry type. For example, datasets might include Airports represented by polygon geometries, or Roadways represented by LRS line string geometries, or Accidents represented by point geometries.
- A **connection** specifies information for connecting to an Oracle Database schema where spatial data of interest resides: user name, password, system, port, database name, and so on. (It is similar to a SQL Developer connection.)

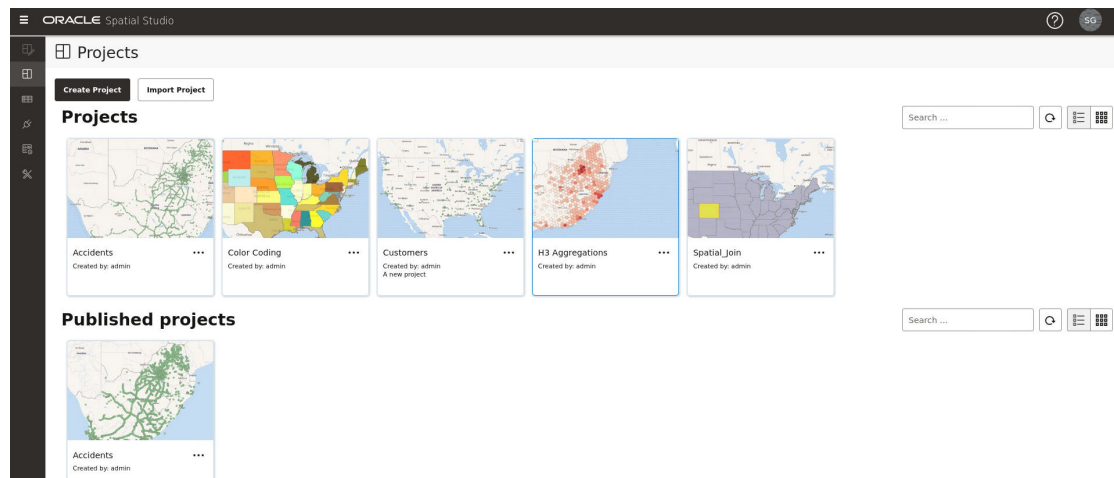


### Note:




See also [Spatial Studio Terminology](#) for more information.

The main landing page for Spatial Studio for a new user is as shown:

**Figure 3-1 Spatial Studio Main Page**



The overall layout of the Spatial Studio user interface comprises of:

- **Header:** The header at the top of the page contains the following buttons:
  - : to display or hide the side navigation menu
  - : to help you get started on Spatial Studio by providing an overview of the tool and links to other tutorial resources
  - : displays the user profile details
- **Side Navigation Menu:** A navigation panel on the left displays the menu items. You can expand or collapse the navigation drawer.
- **User Workspace:** The page specific details for the selected menu option is displayed on the right.

The navigation menu consists of the following menu options:

- **Active Project:** Directs you to the Active Project page where your recent working project is displayed.
- **Projects:** Directs you to the Projects page where all your existing projects and published projects are listed.
- **Datasets:** Directs you to the Datasets page where all the datasets available to you are listed.
- **Connections:** Directs you to the Connections page where all the existing connections (data sources) available to you are listed.
- **Jobs:** Directs you to the Jobs page where the various background jobs started by Spatial Studio to process various requests are listed.
- **Administration:** Directs you to the Administration page where you can monitor the status and activity of Spatial Studio. It contains tabs for Settings, Maintenance, and Monitoring.
- [Logging in to Spatial Studio](#)  
Once you have installed Spatial Studio, either as a standalone tool (Quick Start) or as a Java EE deployment, you can log in to the application.
- [Getting Started Using Spatial Studio](#)  
Spatial Studio includes a page with information and links to help you get started using the tool.
- [About Tokens in Spatial Studio](#)  
Spatial Studio allows you to create different types of access tokens. In addition, starting from Release 23.2.1, a system generated access-generator token is supported for each Spatial Studio user.
- [Spatial Studio Active Project Page](#)  
The Active Project page displays your current working project.
- [Spatial Studio Projects Page](#)  
The Projects page lists all the projects that have been created, both unpublished and published.
- [Spatial Studio Datasets Page](#)  
The Datasets page lets you view and edit existing datasets, and also create new ones.

- [Spatial Studio Connections Page](#)  
The Connections page displays all the existing connections and also allows you to create a new connection.
- [Spatial Studio Administration Page](#)  
You can monitor the status and activity of Spatial Studio in the Administration Page. You can also view server logs, change global system configurations, manage custom basemaps, and configure safe domains.
- [Spatial Studio Jobs Page](#)  
The Jobs page displays details of all the background jobs that run in Spatial Studio.
- [Visualization in Oracle Spatial Studio](#)  
You can visualize your spatial data in Oracle Spatial Studio using different modes of visualization.
- [Performing Analyses in Spatial Studio](#)  
You can perform various spatial analyses (such as filtering by proximity, nearest neighbor analysis and so on) and visualize the results in Spatial Studio.

## 3.1 Logging in to Spatial Studio

Once you have installed Spatial Studio, either as a standalone tool (Quick Start) or as a Java EE deployment, you can log in to the application.

To log in to Spatial Studio:

1. Launch Spatial Studio in your browser using the URL provided for your installation.
  - See [Installing and Configuring the Spatial Studio Quick Start](#) for the URL to access Spatial Studio as a stand alone tool.
  - See [Installing Spatial Studio on Oracle WebLogic Server](#) for the URL details when Spatial Studio is deployed to a WebLogic server.

For example, if you are using the Quick Start deployment, then open the URL, `https://localhost:4040/spatialstudio`, in your browser.

Spatial Studio login page appears as shown:

Figure 3-2 Spatial Studio Login Page

**Welcome to Oracle Spatial Studio**

Please provide login credentials

User Name Required

Password Required

Language  
English ▼

**Login**

2. Enter the **User Name**.
3. Enter the **Password**.
4. Select your preferred language to be used in Spatial Studio from the **Language** drop-down list.
5. Click **Login**.

You are now logged in to Spatial Studio.

- [About Internationalization in Spatial Studio](#)  
Oracle Spatial Studio supports internationalization of its user interface.

### 3.1.1 About Internationalization in Spatial Studio

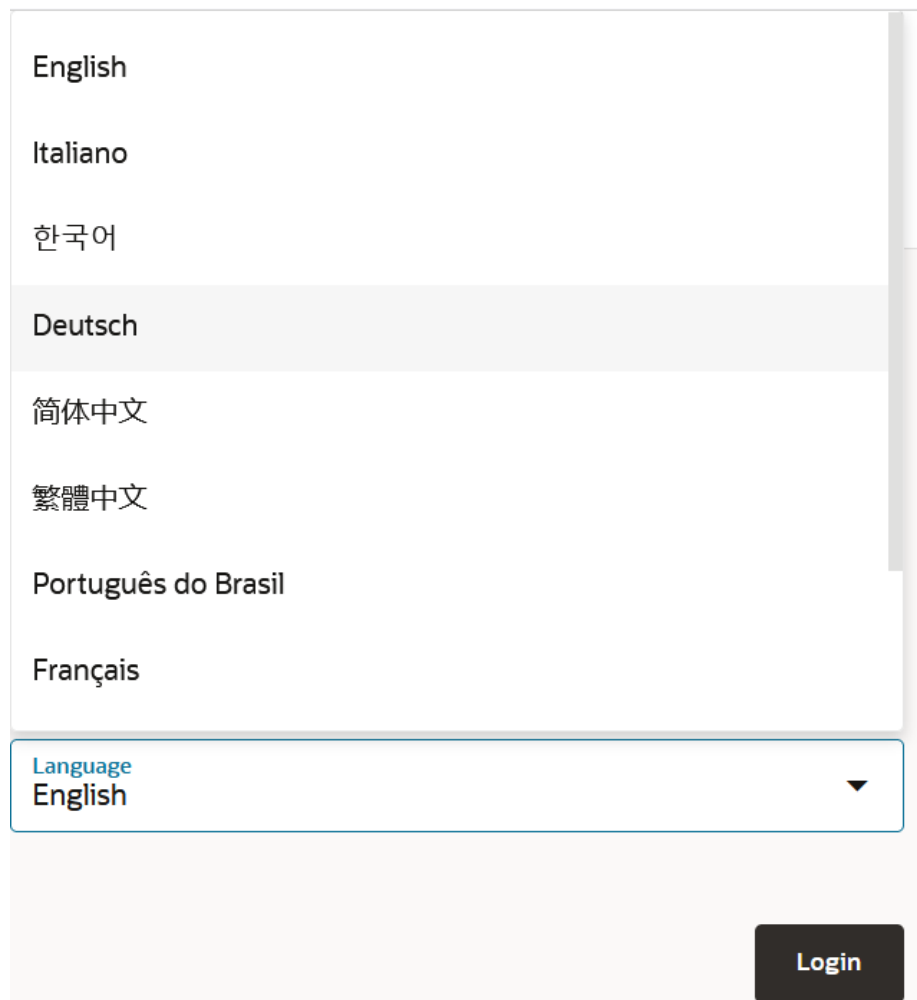
Oracle Spatial Studio supports internationalization of its user interface.

You can choose to adapt the Spatial Studio user interface to use one of the following supported languages when logging in to the application:

- English (default)
- German
- Spanish
- French
- Italian
- Japanese

- Korean
- Portuguese-BR
- Simplified Chinese
- Traditional Chinese

**Figure 3-3 Internationalization Support in Spatial Studio**



Note, however, any server generated messages or errors will continue to be displayed in English. If you want to switch to a different language after logging in, then you must first log out and select the required language when logging in again.

In case you have configured Spatial Studio to use IDCS as the login provider, then there is no explicit language selector. This is because the login dialog belongs to IDCS. In this case, Spatial Studio will check the locale and language settings in your IDCS profile, and use that to automatically select the best matched language from the list of supported languages. For instance, if your IDCS profile has `Canadian French` set as the preferred language, then Spatial Studio will use `French` to display its UI as it does not support `Canadian French`.

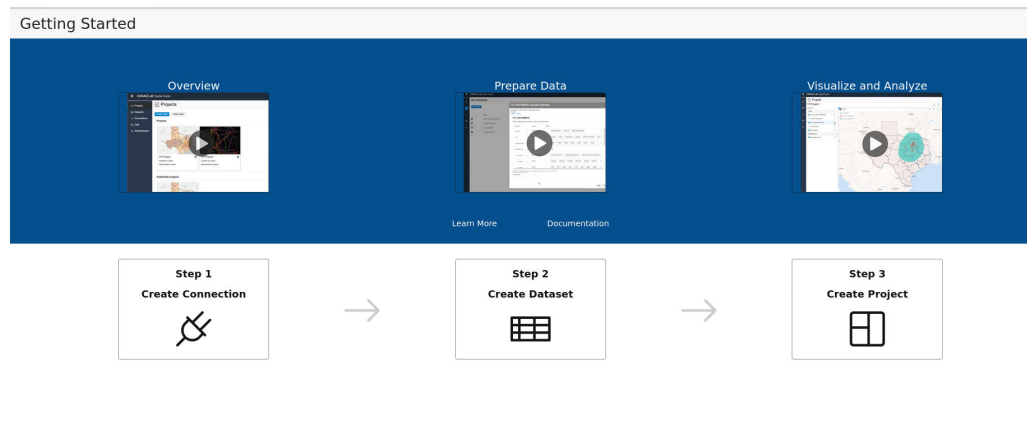
## 3.2 Getting Started Using Spatial Studio

Spatial Studio includes a page with information and links to help you get started using the tool.

To display this page, click the small question mark icon (?) in the top right area of most pages (above the Create button) and click **Getting Started** from the context menu.

The Getting Started page opens as shown:

**Figure 3-4** Getting Started Page



You can learn more about Spatial Studio by clicking one of the following options:

- **Overview:** Watch this video to understand the user interface and see how to perform the available actions.
- **Prepare Data:** Enable your business data for mapping and spatial analysis.
- **Visualize and Analyze:** Explore geographic patterns and relationships in your business data.
- **Learn More:** Visit our video library to learn more about Oracle Spatial Cloud.
- **Documentation:** See *Oracle Spatial Studio Guide* documentation to learn more about administering and using Spatial Studio.
- Get started using Spatial Studio through the following workflow:
  1. **Step 1 - Create Connection:** Begin by creating your database connection.
  2. **Step 2 - Create Dataset:** Create a Dataset and load spatial data.
  3. **Step 3 - Create Project:** Create a Project for visualizing and analyzing the spatial data.

## 3.3 About Tokens in Spatial Studio

Spatial Studio allows you to create different types of access tokens. In addition, starting from Release 23.2.1, a system generated access-generator token is supported for each Spatial Studio user.


The following describes the supported token types:

- **Access Tokens:**
  - **General-purpose token:** Full access to all resources. The token grants read-only or read-write access as required.  
In most cases you should avoid using a general-purpose token as it grants too much access. Instead, generate and use a specific token that applies to your scenario.
  - **Streaming-only token:** Access only to REST endpoints related to dataset streaming. Also, the token grants read-only access that be used only with `HTTP GET` methods.
  - **Streaming and tile refreshing token:** The scope of this token is extended to refresh the existing vector tiles of the streaming dataset on the recent updates.
  - **Embedding Published Projects token:** This token allows embedding of private published projects.

See [Generating an Access Token](#) to create the preceding access tokens.
- **Access-Generator token:** This is a special type of token that is used to (programmatically) create short-lived access tokens (of types shown in the preceding list under Access Tokens).  
This token cannot be created or deleted directly. You can only copy the system generated access-generator token. Note that the system generates this token on a per-user basis. This implies that different Spatial Studio users will have different access-generator tokens.  
  
Also, you can request Spatial Studio to regenerate the access-generator token for you.
  - See [Copying the Access-Generator Token](#) to copy the token.
  - See [Generating Access Tokens Programmatically](#) for using the access-generator token.
- [Generating an Access Token](#)
- [Copying the Access-Generator Token](#)

### 3.3.1 Generating an Access Token

To generate an access token:

1. Click  on the top right corner of the page.
2. Click **Access Tokens** from the drop-down menu.  
The **Access Tokens** dialog opens and the existing tokens are displayed.
3. Click **Create New Token**.

**Create A New Access Token** dialog opens as shown:



Figure 3-5 Creating a New Access Token

**Create A New Access Token**

Create A New Token

Name  
Streaming-Only Token

Valid for (minutes)  
120

Resource type:

All resources

Dataset streaming only

Dataset streaming and tile refreshing

Embedded published projects

Allowed action:

Read Only

Read Write

OK Cancel

4. Enter the token **Name**.
  5. Enter the time **Valid for (minutes)** after which the token expires.  
If you specify -1, then Spatial Studio will never expire the token, unless you explicitly revoke it.
  6. Select **Resource type**.
  7. Optionally, select the **Allowed action** for granting access to a general-purpose token.
  8. Click **OK** to create the token.  
The token gets created successfully.
- [Generating Access Tokens Programmatically](#)  
Your web application can also create or obtain a short-lived access token from Spatial Studio programmatically, by using an Access-Generator Token.

### 3.3.1.1 Generating Access Tokens Programmatically

Your web application can also create or obtain a short-lived access token from Spatial Studio programmatically, by using an Access-Generator Token.

The following provides the Spatial Studio REST API endpoint details to create an access token:

**Endpoint:** /spatialstudio/oauth/v1/user/token?  
name=<NAME>&validTime=<MINUTES>&action=<ACTION>&resourceType=<RESOURCE>

**Required HTTP Request Header:** Name of the header must be **Authorization** and its value must start with **Bearer** followed by a space, then followed by a valid access-generator token string.

The following table describes the query parameters used in the preceding endpoint.

**Table 3-1 Query Parameters**

Query Parameters <sup>1</sup>	Data Type	Description
name	Up to 128 chars (non-null)	Specifies the name of the token to be created.
validTime	An integer x, where $-1 \geq x \geq 9999$	Specifies for how many minutes the new token remains valid. <b>Note:</b> A value of -1 indicates that the token will not expire.
action	enum[read_only, read_write]	Specifies the actions the new token is allowed to perform.
resourceType	enum[dataset_streaming, dataset_streaming_refreshing, embedded_published_project, all]	Specifies the types of resources the new token is allowed to access (act on).

<sup>1</sup> All the query parameters are mandatory.

It is important to note that currently only five different types of tokens can be created with the following combinations of `action` and `resourceType`:

- `action=read_only&resourceType=all`
- `action=read_write&resourceType=all`
- `action=read_only&resourceType=dataset_streaming`
- `action=read_write&resourceType=dataset_streaming_refreshing`
- `action=read_only&resourceType=embedded_published_project`

Any other combination of `action` and `resourceType` (outside the valid combinations shown in preceding list) will be rejected.

The following shows a sample request (using `Curl` command line) to obtain an access token that allows a web application to get the streaming access to a dataset as well as allowing the refreshing of the dataset's vector tiles.


```
curl -X POST 'http://localhost:8080/spatialstudio/oauth/v1/user/token?
name=test123&validTime=60&action=read_write&resourceType=dataset_streaming_refre
shing' --header 'Authorization: Bearer $GENERATOR_TOKEN'
```

The preceding request returns a JSON document containing the new token. Its value is stored in the `token` field in the response:

```
{"name":"test123","token":"eyJ0eXAiOiJzZ3RlY2...", ... }
```

### 3.3.2 Copying the Access-Generator Token

Perform the following steps to copy the access-generator token:

1. Click  on the top right corner of the page.
2. Click **Access Tokens** from the drop-down menu.  
The **Access Tokens** dialog opens.
3. Click **Show Access-Generator Token**.  
The **Access-Generator Token** dialog opens which shows the existing access-generator token.
4. Click **Copy Token** to copy the token string.
5. Optionally, click **Regenerate Token** to request the system to regenerate the access-generator token, and then copy the token.

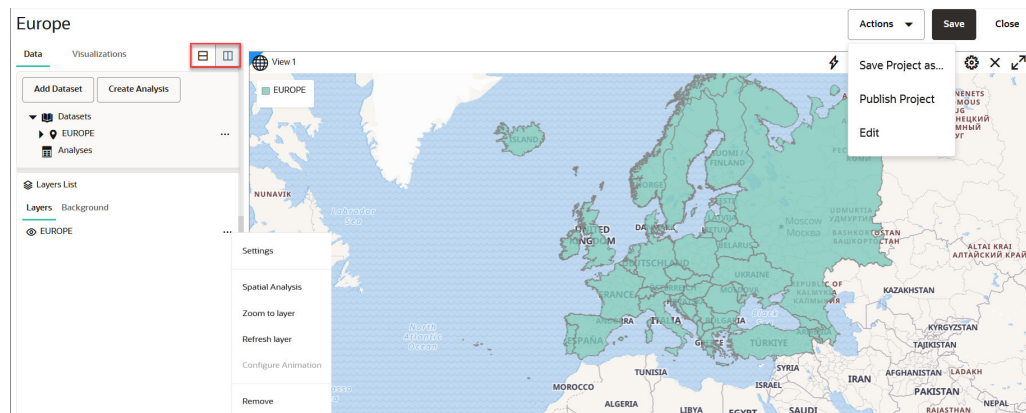
### 3.4 Spatial Studio Active Project Page

The Active Project page displays your current working project.

You can switch to your working project at any time from the other pages when working in Spatial Studio.









The following figure shows a layout of the Active Project page:

**Figure 3-6 Active Project Page**



You can perform the following actions on the Active Project page:

- Creating a table or map visualization.
- Adding or removing datasets from your project.
- Adding or removing data from a visualization layer.
- Organizing the **Layers List** panel to be arranged vertically below or to the right of the project **Data** and **Visualizations** panel using the icons shown highlighted in the preceding figure.

- Adjusting the style setting or the zoom resolution for your visualization layer. You can click the menu selector next to the map layer in the **Layers** tab to display the following available options:
  - **Settings**: Shows display options for Style, Filter, Interaction, and Legend.
  - **Spatial Analysis**: Allows you to perform many spatial operations (All, or filtered by type: Filter, Combine, Transform, Measure), such as Add a buffer of a specified distance, Return shapes having spatial relationship to another, and Calculate area.
  - **Zoom to Layer**: Zooms the display (out or in) to fit the entire layer.
  - **Refresh Layer**: Refreshes the layer to reflect all user actions.
  - **Configure Animation**: Allows you to configure animation settings to visualize a moving object.
  - **Remove**: Removes the layer from the project.
- Using the project management options displayed on the top-right area of the Active Project page:
  - **Actions**: The drop-down menu allows you to:
    - \* **Save Project as**: Creates a new copy of the project.
    - \* **Publish Project**: Publishes the project.
    - \* **Edit**: Allows you to edit the project details (such as, Name, Created By and Description).
  - **Save**: Saves your updates to the project.
  - **Close**: Closes the project.
- Using the map tool bar options on the top right of the map visualization pane:
  - : The **Actions** drop-down menu allows you to:
    - \* **Create Custom Region**: Creates custom region for the selected polygons.
    - \* **Save Selections**: Saves selected features on the map layer to a dataset.
    - \* **Save Pins**: Saves the pins dropped on a map layer to a dataset.
  - : **Search** based on address, latitude or longitude.
  - : The **Measure Menu** allows you to measure liner or radial distances.
  - : The **Select By Shape** drop-down menu allows you to make a rectangular, circular, or a polygonal selection.
  - : The **Clear Menu** allows you to clear selections, pins, tool drawings, or all.
  - : **Refresh Layers** allows you to refresh the map layers.
  - : **Settings** allows you to configure your visualization settings.
  - : **Delete** icon allows you to remove the map visualization from the project.

## 3.5 Spatial Studio Projects Page

The Projects page lists all the projects that have been created, both unpublished and published.

Figure 3-1 shows the layout of the Projects page.

You can perform the following actions on the Projects page:

- You can select a project to work or for viewing the details.
- You can create a new project by clicking **Create Project**.
- You can import a project by clicking **Import** and selecting a project zip file in the **Import Project** dialog.
- You can open, export or delete a project by clicking the **\*\*\*** icon for any of the listed projects.
- You can alter the display settings to have the projects listed as cards or in a tabular format.
- You can search for both unpublished and published projects.



### Note:

For the first two actions, the project will be opened in the **Active Project** page.

- [About Published Projects](#)  
You can share your Spatial Studio project with other users by publishing it.

### 3.5.1 About Published Projects

You can share your Spatial Studio project with other users by publishing it.

Once your project is completed on the **Active Project** page, then you can save and publish the project. The published project gets displayed on the Projects page under **Published Projects**.

You can perform the following actions on a published project:

- **Open:** Opens the project.
- **URL:** Provides the URL for the published project. You can use the URL to embed the project in an external web application through iFrames. However, note that this is typically only used for published projects that contain only public datasets. A public published project can be accessed through its URL by any user on the internet without logging into the Spatial Studio application.
- **Sync with source project:** Keeps the project synchronized with the source.
- **Permissions:** Allows you to make a published project public (or private if it is already public).

Note that this option will be enabled only if all the datasets that are in the published project themselves are already public. In such cases, you may choose to use the **Permissions** option to make the published project itself also be public.

- **Edit:** Allows you to edit the project name and description.
- **Delete:** Deletes the published project.

## 3.6 Spatial Studio Datasets Page

The Datasets page lets you view and edit existing datasets, and also create new ones.

The following figure shows the Datasets page:

**Figure 3-7 Datasets Page**

The screenshot shows the 'Datasets' page in Spatial Studio. At the top left, there is a 'Create Dataset' button. A search bar is located at the top right. The main area contains a table of datasets. A context menu is open over the 'COLO' dataset row, showing various actions like 'Properties', 'Update statistics', 'Create Project', 'Export', 'Permissions', 'Cache', and 'Delete'. The 'COLO' dataset is highlighted in blue.

Dataset Name	Project Name	Created At	Actions
ALUIDENT_GEUJOUN	SPATIAL_STUDIO	2022-07-2112:17:04.489Z	...
ADDRESS	SPATIAL_STUDIO	2022-07-2710:56:27.213Z	...
AIRPC	SPATIAL_STUDIO	2022-12-1315:07:33.406Z	...
AIRPC	SPATIAL_STUDIO	2023-04-0712:19:06Z	...
AIRPC	SPATIAL_STUDIO	2022-12-1916:26:54Z	...
AIRPC	SPATIAL_STUDIO	2022-12-1916:28:38Z	...
AIRPC	SPATIAL_STUDIO	2022-12-1916:33:59Z	...
AIRPC	SPATIAL_STUDIO	2022-12-1910:25:45Z	...
AIRPC	SPATIAL_STUDIO	2022-12-0610:14:01.578Z	...
AIRPC	SPATIAL_STUDIO	2022-12-0614:21:52Z	...
<b>COLO</b>	SPATIAL_STUDIO	2022-12-1315:36:37.581Z	...
CUSTI	SPATIAL_STUDIO	2022-07-2810:55:54.324Z	...
EURO	SPATIAL_STUDIO	2022-07-2112:36:02.081Z	...

Datasets that are displayed on the **Datasets** page belong to one of the following two categories:

- Manually created by clicking **Create Dataset** or when you perform a **Save as** operation with the **Create Dataset** option enabled. This dataset can then be added to the project for visualization.
- Automatically created when you perform spatial analysis, save selected features, or store pins as a map layer. This dataset gets instantly added to the map visualization and also appears listed in the **Datasets** page. Such a dataset is known as a spatial analysis dataset.

You can perform the following actions on the Datasets page:

- You can manually create a new dataset, by clicking **Create Dataset**.
- By clicking **\*\*\*** against any displayed dataset or by right-clicking a dataset row, you can perform the following actions:
  - **Properties:** View or modify properties of the dataset
  - **Update Statistics:** Update the dataset statistics (refer to [Updating Statistics for Datasets](#))

- **Create Project:** Create a new project using the dataset
  - **Add to Active Project:** Add the dataset to the project in the Active Project page
  - **Export:** Export the dataset (in GeoJSON or CSV file format)
  - **Save as:** Make a new copy of the dataset
  - **Permissions:** Configure dataset sharing and permissions
  - **Cache:** Control map tiles pre-caching activities (refer to [About Cache in Spatial Studio](#))
  - **Prepare:** Prepare a dataset for any of the following options:
    - \* **Geocode Addresses:** Add geocoded information such as geographic coordinates to the dataset
    - \* **Clear Address Geocode:** Remove geocoded information from the dataset
    - \* **Reverse Geocode:** Add address information from a set of geographic coordinates to the dataset
    - \* **Create Lat/Lon Index:** Create latitude/longitude index
    - \* **Drop Lat/Lon Index:** Remove latitude/longitude index
    - \* **Create H3 Index:** Prepare an H3 aggregation dataset
    - \* **Join to Spatial Dataset:** Prepare a non-spatial dataset for map visualization by joining to a spatial dataset
    - \* **Validate/Fix geometries:** Validate the geometries in the dataset and also fixes the geometries where it is possible for Spatial Studio to do so in an automatic manner.
  - **Delete:** Delete the dataset
- [About Creating a Dataset From the Datasets Page](#)  
Spatial Studio allows you to create different types of datasets from the Datasets page.
  - [About Spatial Analysis Datasets](#)  
Spatial Studio stores the results of a spatial analysis operation in a spatial analysis dataset. Also, storing selected geographic features or pins on a map layer gets saved as a new spatial analysis dataset.
  - [Datasets with Issues](#)  
All datasets in Spatial Studio must meet certain data requirements in order to be used for map visualization and analysis.
  - [Geocoding a Dataset](#)  
Geocoding is the process of deriving the latitude and longitude coordinates from location details that are geo address types.
  - [Reverse Geocoding a Dataset](#)  
Reverse geocoding is the process of deriving the address information from a set of latitude and longitude coordinates.
  - [Enabling Spatiotemporal for a Dataset](#)  
In order to visualize and animate spatiotemporal data, you must enable **Spatiotemporal** for the dataset on the Datasets page.

- [Preparing a Non-Spatial Dataset for Analysis](#)  
Spatial Studio allows you to prepare a non-spatial dataset for mapping and analysis by joining to a spatial dataset.
- [Exporting a Dataset to GeoJSON](#)  
You can export a dataset from Spatial Studio to GeoJSON.
- [Updating Statistics for Datasets](#)  
The **Update statistics** feature in Spatial Studio gathers statistics of the dataset columns.
- [About Cache in Spatial Studio](#)  
Starting with Spatial Studio release 22.3, all vector tiles generated for all datasets are cached to the file system by default.

### 3.6.1 About Creating a Dataset From the Datasets Page

Spatial Studio allows you to create different types of datasets from the Datasets page.

The following figure describes the supported options to create a dataset:

**Figure 3-8 Creating a Dataset**

#### Create Dataset

Create a dataset from one of the following

Database table/view

Select Connection  
SPATIAL\_STUDIO

GeoJSON URL

OGC Web Map Service

Upload data and create a dataset from one of the following

Local file

File URL

Cesium formats

Create

Cancel

As seen in the preceding figure, you can create a dataset from the following sources:

- Oracle Database table or view using a database connection
- By specifying a GeoJSON URL



- By configuring an OGC Web Map Service
- By uploading dataset files with different formats as supported by Spatial Studio
- By importing geospatial data directly from an external file URL
- By importing 3D Tiles Tileset

The following sections explain in detail the steps to create a dataset using the supported options:

- [Creating a Dataset from Database Tables or Views](#)  
Using a database connection, you can create a dataset from tables and views in the Oracle Database.
- [Creating a GeoRaster Dataset](#)  
Spatial Studio allows you to create Georaster datasets.
- [Creating a GeoJSON URL Dataset](#)  
You can create a dataset by specifying a GeoJSON URL.
- [Creating an OGC WMS Dataset](#)  
Starting with Spatial Studio release 22.3, you can define datasets that are based on the `GetMap` responses from any external OGC (Open Geospatial Consortium) WMS (Web Map Service) services.
- [Creating a Dataset by Uploading a File](#)  
You can create a dataset by uploading a file in a format supported by Spatial Studio.
- [Creating a Dataset Using a File URL](#)  
You can create a dataset by specifying the URL of an external server which hosts the geospatial file.
- [Creating a Dataset from Cesium Datasets](#)  
Spatial Studio supports Cesium map visualization by allowing you to create a dataset from a 3D dataset or a CZML file.

### 3.6.1.1 Creating a Dataset from Database Tables or Views

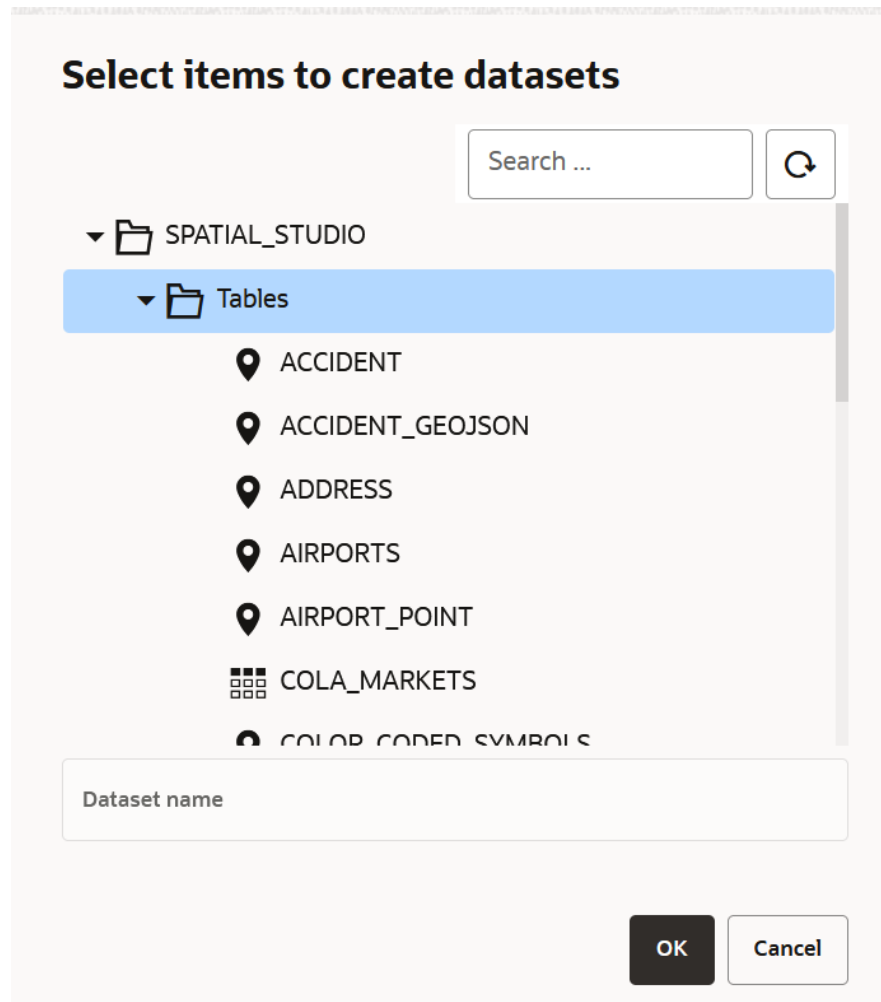
Using a database connection, you can create a dataset from tables and views in the Oracle Database.

Perform the following steps to create a dataset using a database connection:

1. Navigate to the **Datasets** page.
2. Click **Create Dataset**.  
The **Create Dataset** window opens.
3. Select the **Database table/view** option.
4. Select a connection from the **Select Connection** drop-down.
5. Click **Create**.

The **Select items to create datasets** window opens listing all the tables, views and GeoRaster data present in the database.

Figure 3-9 Select the Data Source



6. Select a database item from the list and click **OK**.

 **Tip:**

You can also use the **Search** box to quickly locate your table. This is especially useful or even necessary if your database connection has many tables, as the drop-down list only shows up to 500 tables or views.

The new dataset is added and listed on the Datasets page.

### 3.6.1.2 Creating a GeoRaster Dataset

Spatial Studio allows you to create Georaster datasets.

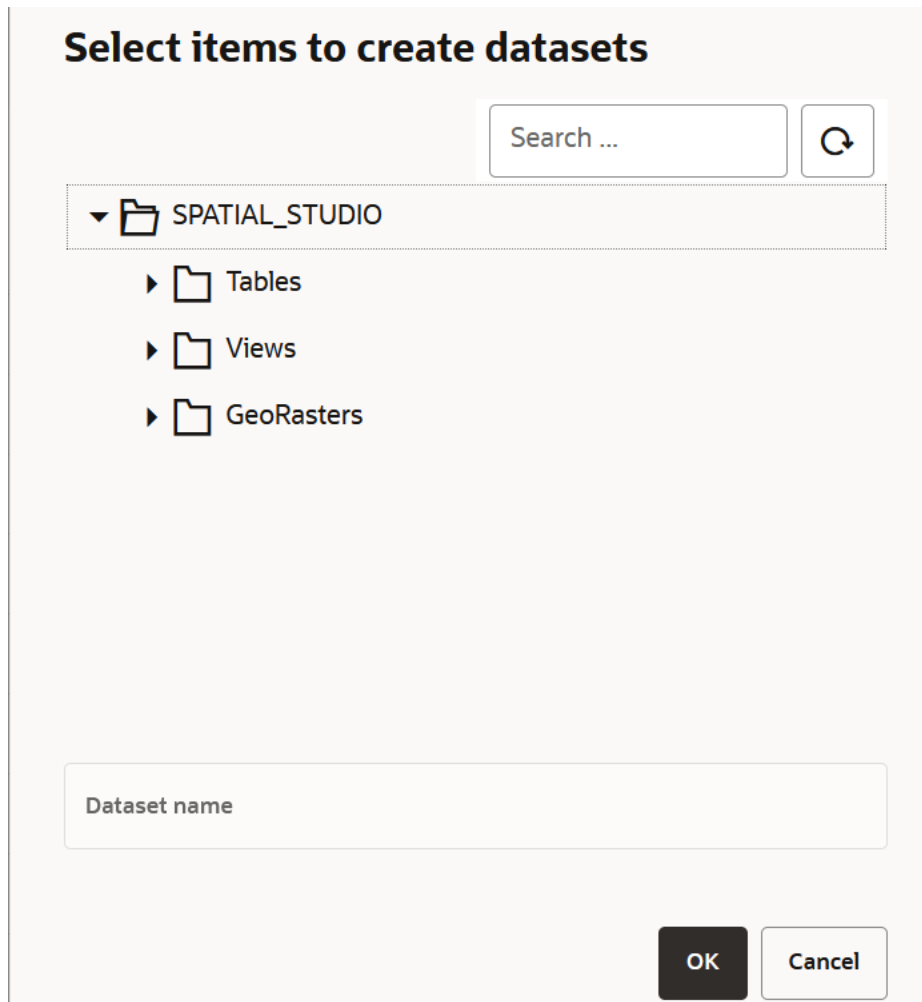
You can create a GeoRaster dataset using the following steps.

The instructions assume that the GeoRaster data is already existing in your database schema.

1. Navigate to the **Datasets** page and click **Create Dataset**.

2. Click **Database table/view**, select a **Connection** and click **Create**.
3. Click **GeoRasters**, select the required **GeoRaster** table and click **OK** as shown:

**Figure 3-10** Creating a GeoRaster DataSet



The **Geo-raster Configuration** dialog opens.

4. Choose a **Selection Mode**.  
The values for the selection mode are:
  - Single Raster
  - Virtual Mosaic
5. Select the GeoRaster column for visualization if you have chosen the **Single Raster** mode. Otherwise, you can skip this step.

 **Note:**

If you have chosen the **Virtual Mosaic** mode, all the Georaster columns are included in the visualization.

6. Click **OK**.

The GeoRaster dataset is configured and the newly created GeoRaster dataset is displayed as a row in the Datasets page.

### 3.6.1.3 Creating a GeoJSON URL Dataset

You can create a dataset by specifying a GeoJSON URL.

It is important to note the following prior to creating a GeoJSON URL dataset:

- A GeoJSON URL based dataset accesses its data directly from the source URL. There is no database table managed in Spatial Studio for this dataset.
- A GeoJSON URL based dataset does not support Spatial Analysis.
- A GeoJSON URL based dataset is subject to the same upload size limit, or 100MB, whichever is smaller.
- If a GeoJSON URL does not support CORS (Cross-Origin Resource Sharing), then Spatial Studio will act as a proxy to the browser requesting the GeoJSON URL data.

Perform the following steps to create a GeoJSON URL dataset:

1. Navigate to the **Datasets** page.
2. Click **Create Dataset**.  
The **Create Dataset** window opens.
3. Select the **GeoJSON URL** option.
4. Specify the **GeoJSON URL** to access GeoJSON data from an external domain for map visualization.

 **Note:**

Ensure you add the external domain used for accessing GeoJSON data to the list of entries in the Safe Domains list.

5. Click **Create**.

**Create dataset from GeoJSON** window opens as shown:

Figure 3-11 Creating a Dataset from GeoJSON

**Create dataset from GeoJSON**

GeoJSON URL:  Dataset name:

Geometry type:  Safe Domain needed:

**Features preview**

mag	place	time	updated	url
3.67	105 km NNW of Charlotte Amalie, U.S. Virgin Islands	1650371534350	1650379869040	https://earthquake.us
2.68	1 km W of Indios, Puerto Rico	1650369119500	1650370400330	https://earthquake.us
2.45	7 km S of Indios, Puerto Rico	1650362518780	1650365000950	https://earthquake.us
2.47000003	4 km SSW of Pāhala, Hawaii	1650357558510	1650357888320	https://earthquake.us
3.91	85 km E of Cruz Bay, U.S. Virgin Islands	1650356709400	1650358522657	https://earthquake.us

6. Optionally, enter a **Dataset name**.
7. Click **Submit**.

The GeoJSON URL dataset gets created with the warning, *No key column was found*. You must resolve the warning in order to use the dataset as a map layer for visualization. See [Datasets with Issues](#) for more details to resolve the warning.

### 3.6.1.4 Creating an OGC WMS Dataset

Starting with Spatial Studio release 22.3, you can define datasets that are based on the *GetMap* responses from any external OGC (Open Geospatial Consortium) WMS (Web Map Service) services.

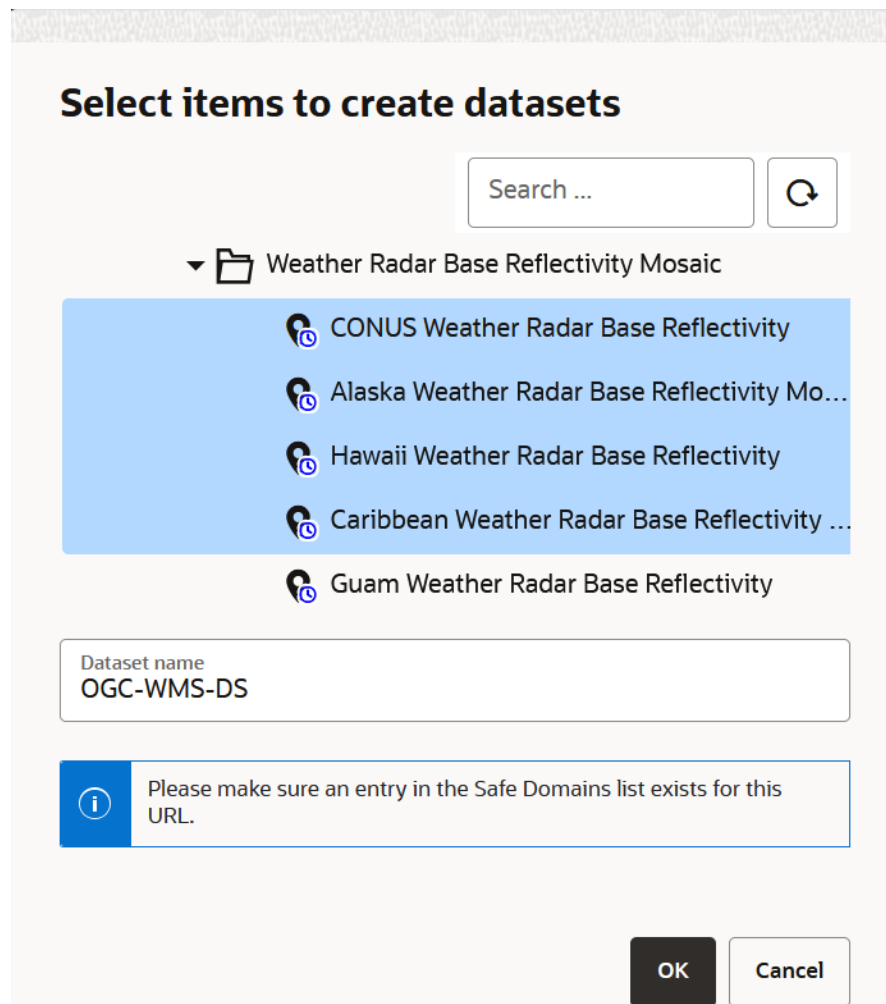
Prior to creating a WMS dataset, ensure that the required OGC WMS connection is created in Spatial Studio.

Perform the following steps to create an OGC WMS dataset:

1. Navigate to the **Datasets** page.
2. Click **Create Dataset**.  
The **Create Dataset** window opens.
3. Select **OGC Web Map Service**.
4. Select the **WMS Connection** to be used from the drop-down list.
5. Explore all the available WMS map layers from the external WMS server and select the required one.

You can *Shift+Click* to select more than one layer. The external WMS server combines multiple layers into a single image as a response to Spatial Studio's requests for the new WMS dataset.

Figure 3-12 Selecting the WMS Layer to Create a WMS Dataset



6. Enter the **Dataset name**.
7. Click **OK**.

The OGC WMS dataset gets created and is displayed on the **Datasets** page. When this WMS dataset is displayed on a map visualization, Spatial Studio will obtain and display the images for both the selected layers.

#### Related Topics

- [Creating an OGC WMS Connection](#)  
You can create a new connection to an external OGC (Open Geospatial Consortium) WMS (Web Map Service) service.
- [Visualizing OGC WMS Maps as a Dataset](#)  
You can visualize an OGC (Open Geospatial Consortium) WMS (Web Map Service) dataset on a map.

### 3.6.1.5 Creating a Dataset by Uploading a File

You can create a dataset by uploading a file in a format supported by Spatial Studio.

The supported file formats are as follows:

- Excel file
- Shapefile
- GeoJSON file
- CSV file
- KML file

Also, note the following:

- WKT or GeoJSON geometry text values in Excel or CSV files are supported. If you are uploading a file with WKT text values, then only WKT strings representing geodetic coordinates (longitude and latitude) are supported.

- Three dimensional coordinates are supported in GeoJSON files.

1. Navigate to the **Datasets** page.

2. Click **Create Dataset**.

The **Create Dataset** window opens.

3. Select the **Local File** option.

4. Upload any one of the supported file types.

5. Click **Create**.

The new dataset is added and listed on the Datasets page.

- [Uploading a Shapefile](#)

You can create a dataset by uploading a shapefile.

### 3.6.1.5.1 Uploading a Shapefile

You can create a dataset by uploading a shapefile.

A shapefile contains the geospatial data which can be referenced in multiple files with specific file extensions. The following lists a few selected files that contribute to shapefile format:

- **.shp** - Stores the geometry data
- **.shx** - Stores the index of the geometry
- **.dbf** - Stores the attribute information of geometry features
- **.prj** - Stores the coordinate system information
- **.cpk** - Specifies the character set to be used

1. Navigate to the **Datasets** page and click **Create Dataset**.

**Create Dataset** window opens as shown in [Figure 3-8](#).

2. Select **Local File**.

3. Click  to upload the shape file.

The **File Upload** window opens.

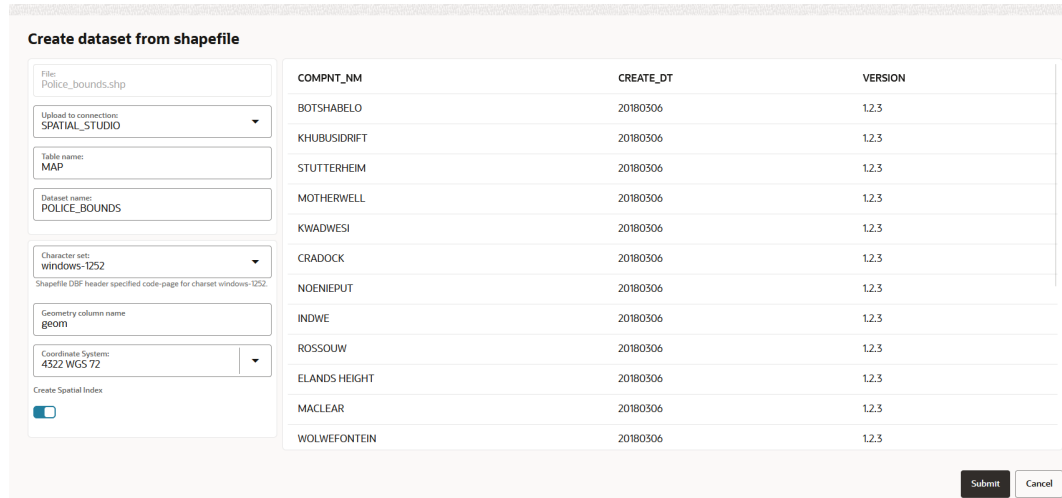
4. Select all the required files from your system.

 **Note:**

It is mandatory to upload .shp, .shx, and .dbf files.

The **Create dataset from shapefile** dialog opens as shown:

**Figure 3-13 Create dataset from shapefile**



COMPNT_NM	CREATE_DT	VERSION
BOTSHABELO	20180306	1.2.3
KHUBUSIDRIFT	20180306	1.2.3
STUTTERHEIM	20180306	1.2.3
MOTHERWELL	20180306	1.2.3
KWADWESI	20180306	1.2.3
CRADOCK	20180306	1.2.3
NOENIEPUT	20180306	1.2.3
INDWE	20180306	1.2.3
ROSSOUW	20180306	1.2.3
ELANDS HEIGHT	20180306	1.2.3
MACLEAR	20180306	1.2.3
WOLWEFONTEIN	20180306	1.2.3

5. Select the connection to upload the shapefile from the **Upload to connection** drop-down list.
6. Optionally, change the **Table name**.
7. Optionally, change the destination **Dataset name**.
8. Optionally, select the **Coordinate System** to be used.
  - If your shapefile includes a .prj file referencing a custom Geographic Coordinate System (GEOGCS), then Spatial Studio will assign a best-matched geodetic SRID from the target Spatial database, as shown in the preceding figure.
  - If your shapefile does not contain a .prj file, then the system uses the default EPSG:4326 GEOGCS.
9. Optionally, select the required **Character set**.

Spatial Studio automatically detects the character set to be used in the following order of priority:

- Extracts the `charset-name` from a .cpg file, if present.
- Uses the character set specified in the .dbf file header.
- Otherwise, uses the default ISO-8859-1.

You can preview the file attributes using the detected character set. However, you can still choose to switch to a different **Character set** and preview the refreshed contents.

10. Click **Submit**.

The dataset gets created from a shapefile.



### 3.6.1.6 Creating a Dataset Using a File URL

You can create a dataset by specifying the URL of an external server which hosts the geospatial file.

Perform the following steps to create a dataset using an external file URL:

1. Navigate to the **Datasets** page.
2. Click **Create Dataset**.  
The **Create Dataset** window opens.
3. Select the **File URL** option.
4. Specify the **File URL** to access the geospatial data from an external domain.

The following file types are supported:

- Excel spreadsheet
  - CSV file
  - KML file
  - Shape files contained in one zip file
5. Click **Create**.

For instance, if you are accessing a CSV file using the file URL, then **Create dataset from a csv file** dialog opens as shown:

**Figure 3-14** Creating a Dataset from a File URL

The screenshot shows a dialog box titled "Create dataset from a csv file". It contains a table with the following data:

FRS_FACILITY_DETAIL_R#	REGISTRY_ID	PRIMARY_NAME	LOCATION_ADDRESS
STRING	NUMERIC	STRING	STRING
https://ofmpub.epa.gov/frs...	110071309886	316 MINING QUARTZ CREE...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071504770	45 PUP GOLD CO. HAMMO...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071444026	ADAIMY NORTON SOUND ...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071445626	ALASKA PROPERTIES & IN...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071504205	ARCTIC STAR MINING NOR...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071513134	BIG SKY EXPLORATION GO...	(UNKNOWN ADDRESS)
https://ofmpub.epa.gov/frs...	110071503144	BROWN (JOHN) NORTON S	(UNKNOWN ADDRESS)

The dialog also includes fields for "File" (national\_single/NATIONAL\_SINGLE), "Upload to connection" (SPATIAL\_STUDIO), "Table name" (NATIONAL\_SINGLE), and "Dataset name" (NATIONAL\_SINGLE). There are "Submit" and "Cancel" buttons at the bottom right.

- a. Select the connection to upload the shapefile from the **Upload to connection** drop-down list.
- b. Optionally, change the **Table name**.
- c. Optionally, change the destination **Dataset name**.
- d. Click **Submit** to create the dataset.

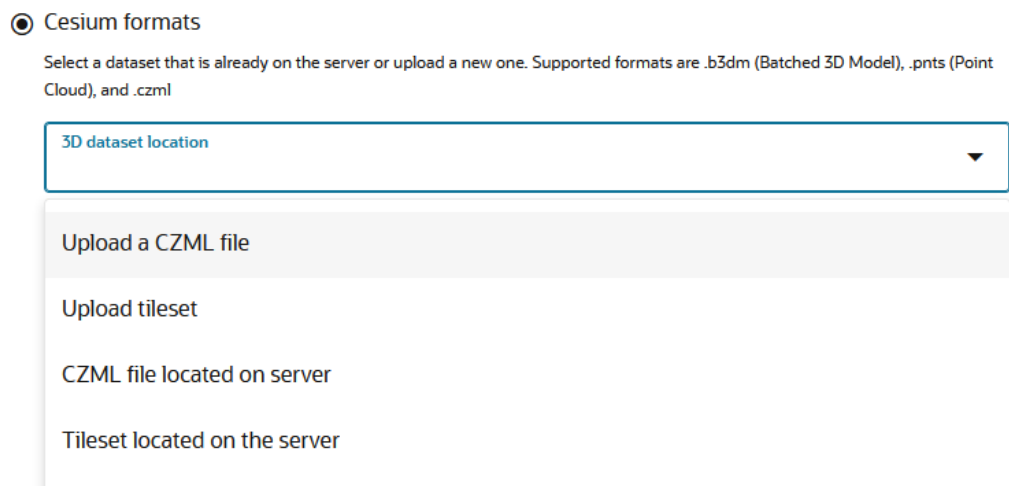
### 3.6.1.7 Creating a Dataset from Cesium Datasets

Spatial Studio supports Cesium map visualization by allowing you to create a dataset from a 3D dataset or a CZML file.

Perform the following steps to create a dataset from Cesium datasets:

1. Navigate to the **Datasets** page.
2. Click **Create Dataset**.  
The **Create Dataset** window opens.
3. Select the **Cesium formats** option.

**Figure 3-15 Options for Creating a Cesium Dataset**



4. Select a **3D dataset location** option.
  - **Upload czml file:** Upload a .czml file.
  - **Upload tileset:** Upload a tileset zip file. The supported formats are:
    - .b3dm: Batched
    - .pnts: Point Cloud

 **Tip:**

You can increase the default size limit for zip files larger than 50 MB by updating the `dataset_max_size` attribute for the `upload` property defined in `<user_home_folder>/sgtech/sgtech_config.json` file.

- **Czml file located on server:** Specify the czml file to be uploaded from the server by entering the **Name** of the .czml file and the **Directory** path.
- **Tileset located on the server:** Specify the tileset file to be uploaded from the server by entering the **Name** of the tileset.json file and the **Directory** path.

 **Note:**

When uploading a CZML file or a tileset file from the server:

- If the file is not under `<SGTECH_HOME>/cesiumdata` or `<SGTECH_HOME>/3d-tilesets` as it may apply, then you must manually migrate the datasets when migrating Spatial Studio.
- You can update the unzipped file limits in the General tab in the Administration page. The following two advanced settings parameters need to be modified:
  - Maximum unzipped item
  - Maximum unzipped total

5. Click **Create**.

The new dataset is added and listed on the Datasets page.

## 3.6.2 About Spatial Analysis Datasets

Spatial Studio stores the results of a spatial analysis operation in a spatial analysis dataset. Also, storing selected geographic features or pins on a map layer gets saved as a new spatial analysis dataset.

When you perform any new spatial analysis operation (such as filtering, combining, transforming existing datasets, and so on) against a data source in map visualization, the results of the analysis are generated into a spatial analysis dataset. Similarly, when you store selected geographic locations or pins on a map layer, the spatial data gets stored as spatial analysis datasets. These datasets get instantly added to the map visualization project and appear under **Analysis** in the Active Project page. You can also view these datasets on the **Datasets** page.

- [Saving Selected Features on a Map Into a Dataset](#)  
You can save selected features on a map layer into a new spatial analysis dataset.
- [Saving Pins on a Map Into a Dataset](#)  
You can save all the pins that you dropped on a map layer into a spatial analysis dataset.

### Related Topics

- [Performing Analyses in Spatial Studio](#)  
You can perform various spatial analyses (such as filtering by proximity, nearest neighbor analysis and so on) and visualize the results in Spatial Studio.

### 3.6.2.1 Saving Selected Features on a Map Into a Dataset

You can save selected features on a map layer into a new spatial analysis dataset.

The following steps enable you to save selected features on a map layer into a dataset.

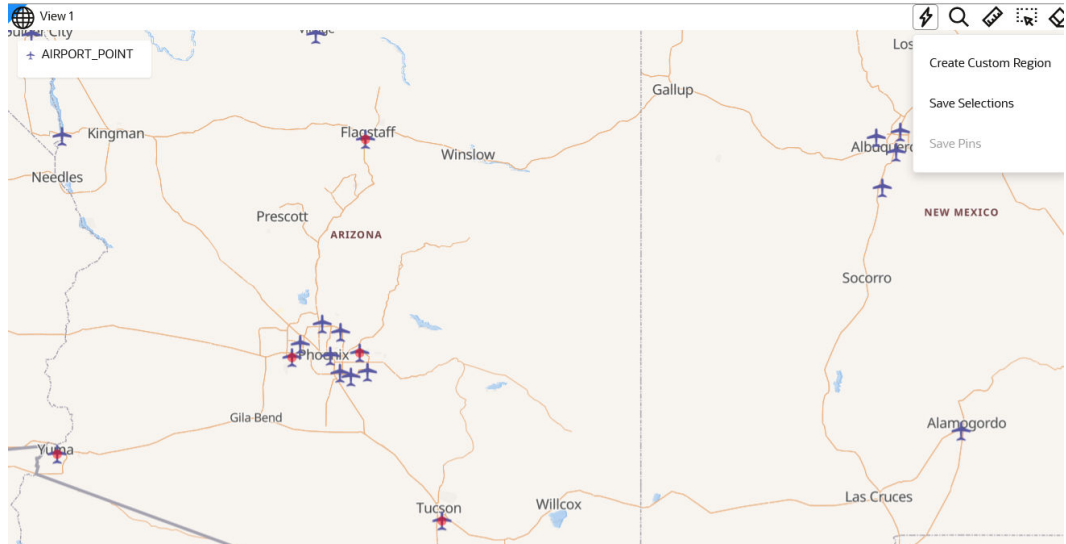
The instructions assume that you have a project opened on your Active Project page.

1. Select the required features to be saved to the dataset.

If you are using a Windows system, you can select multiple features using the keyboard shortcut **Ctrl+Click**.

2. Click the **Actions** icon on the map tool bar.
3. Select **Save Selections** from the drop-down menu.

**Figure 3-16 Saving Selections**



The **Save selections** dialog opens.

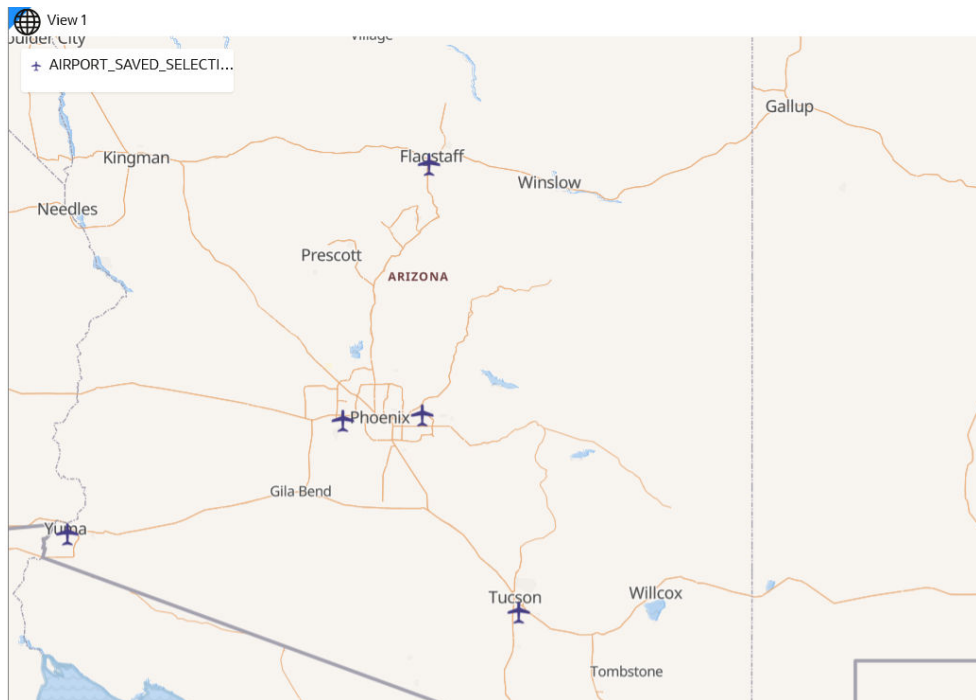
4. Enter the **Analysis name**.
5. Select the required columns from the **Save Selections From** drop-down list.
6. Click **Run**.

The new (analysis) dataset containing the saved selections is created and gets listed under **Analyses** on the left pane in the **Active Project** page. It also appears on the table in the **Datasets** page.

7. Verify the selection, by dragging and dropping the analysis dataset on the map view.

You can now view only selected features on the map layer:

**Figure 3-17 Visualizing Saved Selections**



### 3.6.2.2 Saving Pins on a Map Into a Dataset

You can save all the pins that you dropped on a map layer into a spatial analysis dataset.

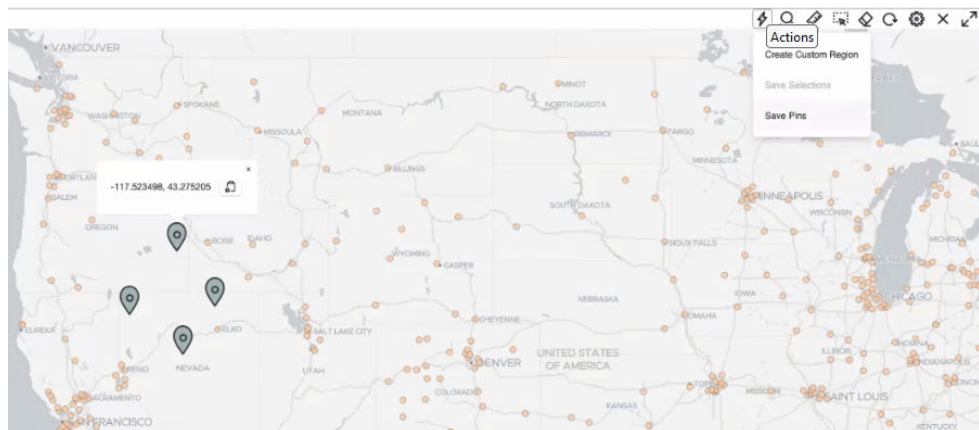
This dataset containing the stored pins can later be used in various spatial analyses.

The following steps enable you to save multiple pins on a map layer into a dataset.

The instructions assume that you have a project opened on your Active Project page and the map layer displayed for visualization contains multiple pins.

1. Click the **Actions** icon on the map tool bar.
2. Select **Save Pins** from the drop-down menu.

**Figure 3-18 Saving Pins on a Map Layer**



The **Save pinned places** dialog opens.

3. Enter the **Analysis name**.
4. Select the required **Connection** for saving the dataset.
5. Click **Run**.

The new dataset containing the pins is created and gets listed under **Analyses** on the left pane in the **Active Project** page. It also appears on the table in the **Datasets** page.

6. Verify the saved pins, by dragging and dropping the analysis dataset on the map view.

The saved pins are displayed as points and not as a pin location on the map layer. This is because the pins get saved to a regular point type dataset. You can now perform various spatial analyses on the map using this dataset layer.

### Related Topics

- [Adding a Pin on a Map](#)

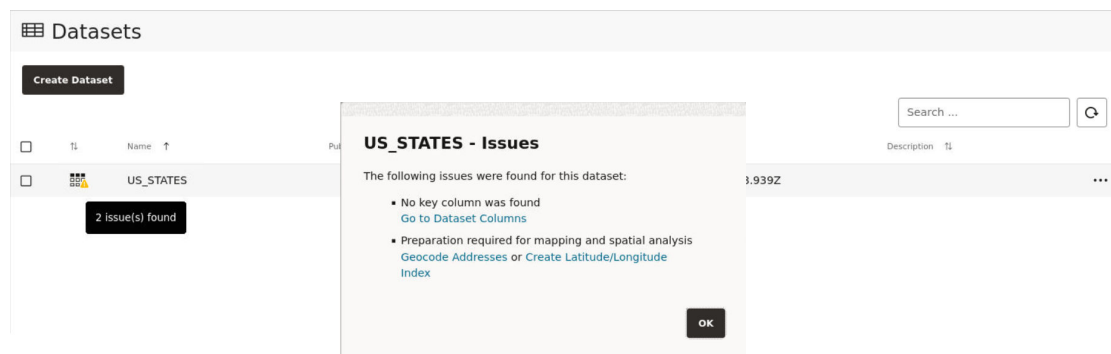
## 3.6.3 Datasets with Issues

All datasets in Spatial Studio must meet certain data requirements in order to be used for map visualization and analysis.

Otherwise, Spatial Studio highlights these datasets with a warning on the Datasets page.

You may click on the warning icon to view the issues. You can then click on the resolution link under the issue to prepare the dataset as required for analysis, as shown:

**Figure 3-19** Warnings on a Dataset



The following table lists a few common issues that are highlighted on a dataset.

**Table 3-2 Selected List of Dataset Issues**

Issue	Cause	Spatial Studio Resolution
No key column was found	Primary key is missing on the dataset.	<ul style="list-style-type: none"> <li>Click <b>Go to Dataset Columns</b> to create a dataset key. The <b>Dataset Properties</b> configuration window opens.</li> <li>Select a column containing unique values and switch ON <b>Use as Key</b>.</li> <li>Click <b>Validate key</b>.</li> <li>Click <b>Apply</b>.</li> </ul>
This dataset needs spatial metadata and index	The geometry column in the dataset does not have the spatial metadata or a spatial index or both.	Click <b>Create Spatial Metadata and Index</b> to create the spatial metadata and index for the geometry column.
Preparation Required for mapping and spatial analysis	<p>It can be due to one of the following reasons:</p> <ul style="list-style-type: none"> <li>The dataset contains address information but the geographic coordinates are missing.</li> <li>Latitude and Longitude index are missing for latitude/longitude data in the dataset.</li> </ul>	<p>Depending on the cause, you may need to perform one of the following:</p> <ul style="list-style-type: none"> <li>Click <b>Geocode Addresses</b></li> <li>Click <b>Create Latitude/Longitude Index</b></li> </ul>

- [Enabling Spatial on a View-Based Dataset with Latitude and Longitude Columns](#)

### 3.6.3.1 Enabling Spatial on a View-Based Dataset with Latitude and Longitude Columns

Spatial Studio allows you to create spatial index on a dataset created from a view containing latitude and longitude columns, thereby enabling you to visualize and analyze views.

The following steps enable you to create latitude/longitude index on a view-based dataset.

The instructions assume:

- You have created a dataset from a view having latitude and longitude columns. See [Creating a Dataset from Database Tables or Views](#) for more information on creating a dataset from a view.
  - This view-based dataset is listed on the Datasets page with a warning icon since the dataset is not spatially enabled for visualization.
1. Navigate to the **Datasets** page.
  2. Click on the warning icon to view the issues on the view-based dataset.
  3. Click **Create Latitude/Longitude Index**.

The **Latitude and Longitude Columns** window opens as shown:

**Figure 3-20** Creating a Latitude/Longitude Index on a View-Based Dataset

**STATES\_VIEW: Latitude & Longitude Columns**

Creating spatial index for the following pair of latitude/longitude columns.

Latitude Column  
LATITUDE

Longitude Column  
LONGITUDE

Reuse lat/lon index on the base table

\* Ensure the base table has a lat/lon index on the selected columns

OK Cancel

4. Select the **Latitude Column**.
5. Select the **Longitude Column**.
6. Select the **Reuse lat/lon index on the base table** checkbox.

Note that irrespective of whether the spatial index on the latitude and longitude columns exists in the underlying base table (or view) or not, you must always select this checkbox. If there is no spatial index in the underlying base table (or view), Spatial Studio will simply update the dataset's metadata and mark it as ready for spatial visualization. This enables you to perform map visualizations, although it may not be as performant as when there is a spatial index in place.

7. Click **OK**.

A background task of type **Create lon-lat** index gets executed. A successful completion of this task on the **Jobs** page indicates that the dataset is spatially enabled for visualization.

You can now use this view-based dataset for visualization on the **Active Project** page.

## 3.6.4 Geocoding a Dataset

Geocoding is the process of deriving the latitude and longitude coordinates from location details that are geo address types.

You can geocode a dataset in Spatial Studio to store the resulting latitude and longitude information as a `SDO_GEOMETRY` column. Optionally, you can also store them in latitude and longitude numeric columns in the underlying database table referenced by the dataset.

Prior to geocoding a dataset, if the Spatial Studio server is running behind a firewall, then ensure you have the correct **Web Proxy** information configured in the Administration page. This is because the Spatial Studio application uses an external Oracle hosted geocoding service which is on the public internet.



You can perform the following steps to geocode a dataset.

The instructions assume that a dataset containing location columns such as address details is already existing in Spatial Studio.

1. Navigate to the **Datasets** page.
2. Right-click on the **dataset name** on which you want to apply geocoding.  
Ensure that the dataset has a valid key column defined.
3. Select **Geocode Addresses** from the **Prepare** context menu.

**Geocode Addresses** dialog opens as shown:

**Figure 3-21 Geocode Addresses**

**CUSTOMER\_DATA: Geocode Addresses**

Use address components to create geometries

Setup Status

Save coordinates in columns

Latitude column  
LATITUDE

Longitude column  
LONGITUDE

Verify or adjust address components to be used to geocode

Address Components	Column	Values
Postal Code	POSTALCODE	21229 34643 60657 64054 73190
--- Select ---	COUNTRY	United States
--- Select ---	ID	499 500 501 502 503 504 505
--- Select ---	LAST_NAME	Bunting Bushby Cutcliffe Emanuel
--- Select ---	FIRST_NAME	Aldis Ediva Jeffy Jozef Miner Nial

You have not selected Country as an address component in your data. If United States

You have not selected State/Province as an address component in your : --- Select ---

Apply Close

4. Click **Setup** tab.
5. Select the **Geo-type** for the geo-attributes to be used for geocoding.  
You must provide sufficient geographic data for successful geocoding. If the address components do not include the country or state attributes, then you must explicitly select either the country or the state in the respective drop-down list shown highlighted in the preceding figure.
6. Optionally, switch ON **Save coordinates in columns** to save the geocoordinates to the dataset and to the underlying database table.
7. Optionally, enter **Latitude column** name and **Longitude column** name, if you switched ON **Save coordinates in columns** in the preceding step.

8. Click **Apply**.

The geocoding process gets initiated and can be monitored on the **Jobs** page. Also, note the following:

- The geocoding process is performed in batches and the default batch size is 50. At any time, you can change the default geocoding batch size under the **General** settings in the **Administration** page.
- If any batch fails, the overall geocoding job will not fail. You will be notified on the failed batch at the end of job completion.
- At the end of the geocoding process, you can view the results in the **Status** tab as shown:

**Figure 3-22 Geocoding Status**

**CUSTOMER\_DATA: Geocode Addresses**

Use address components to create geometries

Setup **Status**

Summary	Ambiguous (231)	Partial Match (0)	Unknown (92)	Failures
<b>Summary</b>				
Geocoded:	YES			
Number of rows:	1000			
Matched:	677			
Ambiguous:	231			
Partial:	0			
Unknown:	92			
<b>Failed rows info</b>				
Number of failed rows:	0			
<a href="#">Retry failed rows</a>				
<b>Query all unmatched rows:</b>				
<pre>SELECT * FROM CUSTOMER_DATA dst JOIN SGTECH\$TABLEB6F686CEC230FE23F937BC4CC6E9C245 temp ON dst.ID = temp.ID WHERE temp.GC_STATUS != 'MATCH'</pre>				
<p><b>i</b> Geocoding status is stored in a companion metadata table for this dataset. You may purge this geocoding metadata to save storage. However the geocoding issues summarized above will no longer be available and geocoding would need to be cleared and performed again to recapture this information.</p> <p style="text-align: center;"><a href="#">Purge geocode result metadata</a></p>				

[Close](#)

- On successful completion of a geocoding job, you can verify that geocoding has been applied by viewing the latitude and longitude columns in the dataset properties and in the input source database table along with the `GC_GEOMETRY` column of data type `SDO_GEOMETRY`.

## 3.6.5 Reverse Geocoding a Dataset

Reverse geocoding is the process of deriving the address information from a set of latitude and longitude coordinates.

You can reverse geocode a dataset in Spatial Studio to add address information to the dataset's table using the following steps.



### Note:

Reverse Geocoding is supported only in point or latitude and longitude datasets.

The instructions assume that a dataset containing the coordinates details is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the **dataset name** on which you want to apply reverse geocoding.
3. Select **Reverse Geocode** from the **Prepare** context menu.
4. Optionally, select and modify the required **Location attributes** as shown in [Figure 3-23](#).

The Input text fields for Location attributes are the column names to be created in the underlying database table for the target dataset.

5. Select the **Advanced** option as required.

The default **Reverse geocode to named roads only** option ensures that for all latitude and longitude coordinates that do not match a named road, the closest street or road name will be obtained while geocoding.

6. Click **Apply**.

You can monitor the **Reverse geocode dataset** background task on the **Jobs** page. A successful completion of the job indicates that reverse geocoding is applied for the data in the dataset.

You can verify that reverse geocoding has been applied to your dataset by viewing the additional address related columns in the dataset properties.

Figure 3-23 Reverse Geocoding

### CUSTOMER\_DATA: Reverse Geocode

Derive location attributes from point locations

**Point locations:**

Lat-Lon Columns

Latitude column LATITUDE	▼
Longitude column LONGITUDE	▼

**Location attributes:**

<input checked="" type="checkbox"/>	Street STREET
<input checked="" type="checkbox"/>	House number HOUSE_NUMBER
<input checked="" type="checkbox"/>	Settlement (City, Town) SETTLEMENT
<input checked="" type="checkbox"/>	Municipality (County, District) MUNICIPALITY
<input checked="" type="checkbox"/>	Region (State, Province) REGION
<input checked="" type="checkbox"/>	Postal Code POSTAL_CODE
<input type="checkbox"/>	Country COUNTRY

**Advanced:**

Reverse geocode to named roads only (default)

Allow reverse geocode to unnamed roads

**Apply** **Close**

## 3.6.6 Enabling Spatiotemporal for a Dataset

In order to visualize and animate spatiotemporal data, you must enable **Spatiotemporal** for the dataset on the Datasets page.

Spatial Studio supports visualization and animation of spatiotemporal map layers using a Cesium Timeline widget (see [Overview of the Cesium Timeline Widget](#)). These map layers can listen to the timeline only if you enable **Spatiotemporal** on the underlying datasets.

### Characteristics of a Spatiotemporal Dataset

Spatial Studio considers a dataset to contain spatiotemporal data if it belongs to any one of the following types.

- **Live Spatiotemporal Dataset:** A dataset which meets the following characteristics is known as a **Live** dataset:
  - The dataset is based on a geometry table or view with a geometry column or pair of latitude/longitude columns.
  - The dataset has one or more entities (that represent an object in the dataset) which are uniquely identified by one of the columns.
  - The dataset's underlying table or view contains a column of the type `TIMESTAMP` or `DATE` (or a qualifying field in the GeoJSON response), that stores the UTC datetime of the entities as they are being observed and recorded.
  - The dataset's underlying table or view must have ongoing inserts with recently obtained location data of entities being observed or monitored.

Spatial Studio considers all the different dataset rows of the same *entity id* as entries representing the entity with different `TIMESTAMP` values. However, they may or may not have varying location coordinates or geometries. Hence, these live spatiotemporal datasets can again be classified as shown:

- **Moving Objects:** For each entity, if the location or geometry change with changing `TIMESTAMP` values, then these datasets are called moving objects datasets. In this case, a trail layer (if it is a qualifying geometry) gets added, which shows the trajectory of the moving object as a line string by fetching data for last *N* seconds (or higher time unit).
  - **Non-Moving Objects:** For each entity, if only certain properties change (and not the location or geometry) with changing `TIMESTAMP`, then these are called non-moving objects datasets. In this case, no trail layer gets added as only the properties change with time.
- **Non-Live Spatiotemporal Dataset:** A dataset with the following characteristics is known as a **Non-Live** dataset:
    - The dataset is based on a geometry table or view with a geometry column or pair of latitude/longitude columns.
    - The dataset's underlying table or view contains a `TIMESTAMP` or `DATE` type column that contains historic time values.

These datasets can again be classified as shown:

- **Moving Objects:** Similar to a **Live** dataset, if this dataset contains entities (that uniquely represent an object in the dataset) with varying `TIMESTAMP`

values, then a trail layer gets added. The trail layer shows the trajectory of the moving object as a line string by fetching data for last *N* seconds (or higher time unit).

- **Non-Moving Objects:** In this configuration, the dataset is just treated to have various rows with different `TIMESTAMP` values (not grouped by any entity id).
- **Time-enabled WMS Dataset:** If a WMS Service offers a time dimension for an image layer selected in a WMS dataset, then that WMS Dataset can be configured as spatiotemporal.
- **GeoJSON URL (external) Dataset:** These types of datasets can be configured to refresh periodically based on an interval value.
- [Configuring Spatiotemporal for Live Moving Objects Dataset](#)
- [Configuring Spatiotemporal for Live and Non-Moving Objects Dataset](#)
- [Configuring Spatiotemporal for Non-Live Moving Objects Dataset](#)
- [Configuring Spatiotemporal for Non-Live and Non-Moving Objects Dataset](#)
- [Configuring Spatiotemporal for OGC WMS Datasets](#)
- [Configuring Spatiotemporal for GeoJSON URL Datasets](#)

### 3.6.6.1 Configuring Spatiotemporal for Live Moving Objects Dataset

Perform the following steps to configure spatiotemporal for a live dataset with moving objects. The instructions assume that such a dataset is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the required spatiotemporal dataset and click **Properties**.

The **Dataset Properties** dialog opens.

3. Click the **Spatiotemporal** tab.

The following dialog is displayed:

**Figure 3-24 Enabling Spatiotemporal for a Dataset**

**Dataset Properties - BOATS**

Overview Columns Settings **Spatiotemporal**

Enable Spatiotemporal

Timestamp (or Date) Column  
TIME\_REPORTED

Data is live

Moving objects

Entry ID Column  
BOAT\_ID

Data Change Rate  
3,000

Altitude Column

Optional, only be used in a Cesium visualization

Live Spatiotemporal dataset's geometry and time (i.e., UTC TIMESTAMP or DATE) columns are often constantly updated by insertion.

Apply Cancel

4. Switch **ON Enable Spatiotemporal**.
5. Select the **Timestamp (or Date) Column**.
  - Both date-type and timestamp-type columns are supported.
  - If using a timestamp-type column, then note that Spatial Studio supports only UTC (Coordinated Universal Time) or GMT (Greenwich Mean Time) time zone for visualizing moving objects.
6. Switch **ON Data is live**.
7. Switch **ON Moving objects**.
8. Select the **Entity ID Column** that identifies a set of unique entities.

The **Entity ID Column** is not a unique column as each entity can have many recordings of its locations in the same table.
9. Specify **Data Change Rate** to indicate the approximate frequency of the live feed updates in the table.
10. Optionally, select the **Altitude Column** for Cesium Map Visualization only.
11. Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization.

#### Related Topics

- [Visualizing Live Moving Objects Dataset](#)  
You can visualize live moving objects on a map in Spatial Studio.

### 3.6.6.2 Configuring Spatiotemporal for Live and Non-Moving Objects Dataset

Perform the following steps to configure spatiotemporal for a dataset containing live real-time data on non-moving objects. Although the data attributes of the different entities can vary with time, the entity locations do not change. The instructions assume that such a dataset is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the required spatiotemporal dataset and click **Properties**.

The **Dataset Properties** dialog opens.
3. Click the **Spatiotemporal** tab.
4. Switch **ON Enable Spatiotemporal**.
5. Select the **Timestamp (or Date) Column**.
  - Both date-type and timestamp-type columns are supported.
  - If using a timestamp-type column, then note that Spatial Studio supports only UTC (Coordinated Universal Time) or GMT (Greenwich Mean Time) time zone for visualizing moving objects.
6. Switch **ON Data is live**.
7. Switch **OFF Moving objects**.
8. Select the **Entity ID Column** that identifies a set of unique entities.

The **Entity ID Column** is not a unique column as each entity can have many recordings of its locations in the same table.

- Specify **Data Change Rate** to indicate the approximate frequency of the live feed updates in the table.
- Optionally, select the **Altitude Column** for Cesium Map Visualization only.
- Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization.

### Related Topics

- [Visualizing Live and Non-Moving Objects Dataset](#)  
You can visualize a spatiotemporal dataset having ongoing inserts of real-time data, but the locations of the data entities do not change.

## 3.6.6.3 Configuring Spatiotemporal for Non-Live Moving Objects Dataset

Perform the following steps to configure spatiotemporal for a dataset containing non-live data on moving objects. The instructions assume that such a dataset is already existing in your database schema.

- Navigate to the **Datasets** page.
- Right-click on the required spatiotemporal dataset and click **Properties**.  
The **Dataset Properties** dialog opens.
- Click the **Spatiotemporal** tab.

The following dialog is displayed:

**Figure 3-25 Enabling Spatiotemporal for Historical Data**

**Dataset Properties - HISTORICAL\_DATA**

Overview Columns Settings **Spatiotemporal**

Enable Spatiotemporal

Timestamp (or Date) Column  
TIME

Data is live

Moving objects

Entity ID Column  
BOAT\_ID

Time Unit  
Seconds

Apply Cancel

- Switch **ON Enable Spatiotemporal**.
- Select the **Timestamp (or Date) Column**.
  - Both date-type and timestamp-type columns are supported.
  - If using a timestamp-type column, then note that Spatial Studio supports only UTC (Coordinated Universal Time) or GMT (Greenwich Mean Time) time zone for visualizing moving objects.



6. Switch **OFF Data is live**.
7. Switch **ON Moving objects**.
8. Select the **Entity ID Column** that identifies a set of unique entities.  
The **Entity ID Column** is not a unique column as each entity can have many recordings of its locations in the same table.
9. Select the **Time Unit**.
10. Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization.

#### Related Topics

- [Visualizing Non-Live Moving Objects Dataset](#)  
You can visualize moving objects with historic timestamp values on a map in Spatial Studio.

### 3.6.6.4 Configuring Spatiotemporal for Non-Live and Non-Moving Objects Dataset

Perform the following steps to configure spatiotemporal for a dataset containing non-moving objects with different timestamp values. The instructions assume that such a dataset is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the required spatiotemporal dataset and click **Properties**.  
The **Dataset Properties** dialog opens.
3. Click the **Spatiotemporal** tab.  
The following dialog is displayed:

**Figure 3-26 Enabling Spatiotemporal for Standard Filtering Datasets**

**Dataset Properties - DIRECTORY**

Overview Columns Settings Spatiotemporal

Enable Spatiotemporal

Timestamp (or Date) Column  
REGISTRATION\_DATE

**i** Only UTC timestamp (or date) values are supported

Data is live

Moving objects

Time Unit  
Years

Apply Cancel

4. Switch **ON** **Enable Spatiotemporal**.
5. Select the **Timestamp (or Date) Column**.
  - Both date-type and timestamp-type columns are supported.
  - If using a timestamp-type column, then note that Spatial Studio supports only UTC (Coordinated Universal Time) or GMT (Greenwich Mean Time) time zone for visualizing moving objects.
6. Switch **OFF** **Data is live**.
7. Switch **OFF** **Moving objects**.
8. Select the **Time Unit**.

The data will be filtered as per the selected time unit.

Also, note that the filtering is applied at the dataset level. This implies that all the layers created out of this dataset will have the same filtering when added to the timeline.

9. Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization.

### Related Topics

- [Visualizing Non-Live and Non-Moving Objects Dataset](#)  
You can visualize a spatiotemporal dataset that simply contains different timestamp values in each row which are not grouped by any entity ids.

### 3.6.6.5 Configuring Spatiotemporal for OGC WMS Datasets

Perform the following steps to configure spatiotemporal for an OGC WMS dataset.

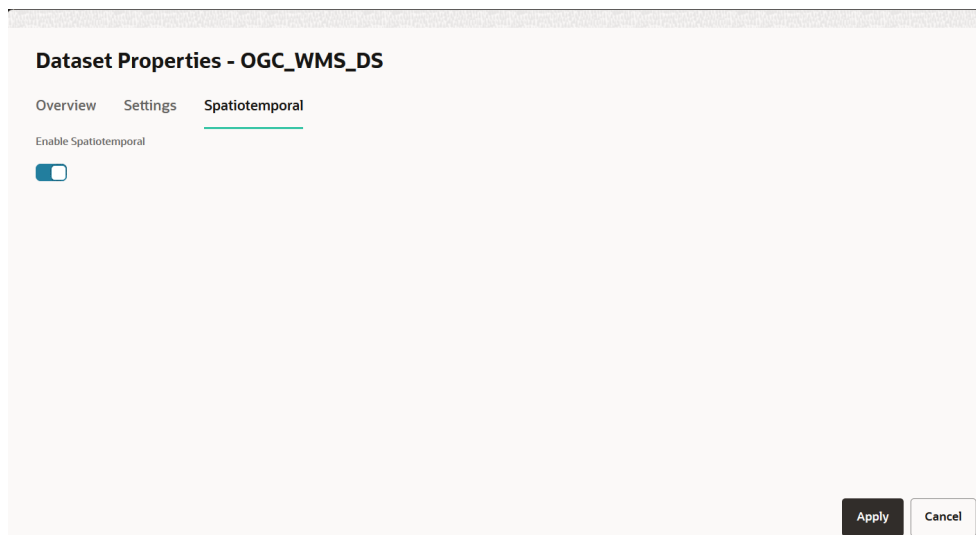
1. Navigate to the **Datasets** page.
2. Right-click on the required OGC WMS dataset and click **Properties**.

The **Dataset Properties** dialog opens.

3. Click the **Spatiotemporal** tab.

The following dialog is displayed:

**Figure 3-27 Enabling Spatiotemporal for OGC WMS Dataset**



4. Switch **ON** **Enable Spatiotemporal**.
5. Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization.

#### Related Topics

- [Visualizing Spatiotemporal Data in OGC WMS Datasets](#)  
You can visualize OGC WMS datasets that contain spatiotemporal data.

### 3.6.6.6 Configuring Spatiotemporal for GeoJSON URL Datasets

Perform the following steps to configure spatiotemporal for a GeoJSON URL based dataset.

1. Navigate to the **Datasets** page.
2. Right-click on the required GeoJSON URL dataset and click **Properties**.  
The **Dataset Properties** dialog opens.
3. Click the **Spatiotemporal** tab.
4. Switch **ON** **Enable Spatiotemporal**.

5. Click **Apply**.

Your dataset is now enabled for spatiotemporal data visualization. Also, note that the dataset will be considered **Live** by default.

### Related Topics

- [Visualizing GeoJSON URL Datasets with Spatiotemporal Data](#)  
You can visualize GeoJSON URL based datasets that contain spatiotemporal data.

## 3.6.7 Preparing a Non-Spatial Dataset for Analysis

Spatial Studio allows you to prepare a non-spatial dataset for mapping and analysis by joining to a spatial dataset.

Note the following highlights about joining two datasets:

- You can only join a non-spatial dataset to a spatial dataset and not conversely.
- It is essential that the non-spatial data in one dataset is linked to the spatial data in the other dataset through a common primary key column.
- You can choose the columns for the newly created joined dataset from the attributes of the datasets associated in the join operation.

The instructions assume that a spatial dataset and a non-spatial dataset having a common primary key data is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the non-spatial **dataset** which you want to join to a spatial dataset.
3. Select **Join to Spatial Dataset** from the **Prepare** context menu.

The following window opens:

**Figure 3-28 Joining to a Spatial Dataset**

**Join Non-spatial Dataset to Spatial Dataset**

Prepare a non-spatial dataset for mapping and spatial analysis by joining to a spatial dataset

Name of join result dataset  
US\_STATES\_POPULATION\_JOINED

Non-spatial dataset \*  
US\_STATES\_POPULATION

Spatial dataset \*  
US\_STATES(SSUSER)

Non-spatial dataset join-column \*  
CODE

Spatial dataset join column \*  
STATE\_CODE

▼ Select columns from non-spatial dataset

<input type="checkbox"/>	Column Name	Data Type
<input checked="" type="checkbox"/>	POPULATION	NUMBER
<input type="checkbox"/>	NAME	VARCHAR2

▼ Select columns from spatial dataset

<input type="checkbox"/>	Column Name	Data Type
<input checked="" type="checkbox"/>	LONGITUDE	NUMBER
<input type="checkbox"/>	STATE_CODE	VARCHAR2

OK Cancel

4. Optionally, enter a dataset name for **Name of join result dataset**.
5. Select the **Spatial dataset** for the join.

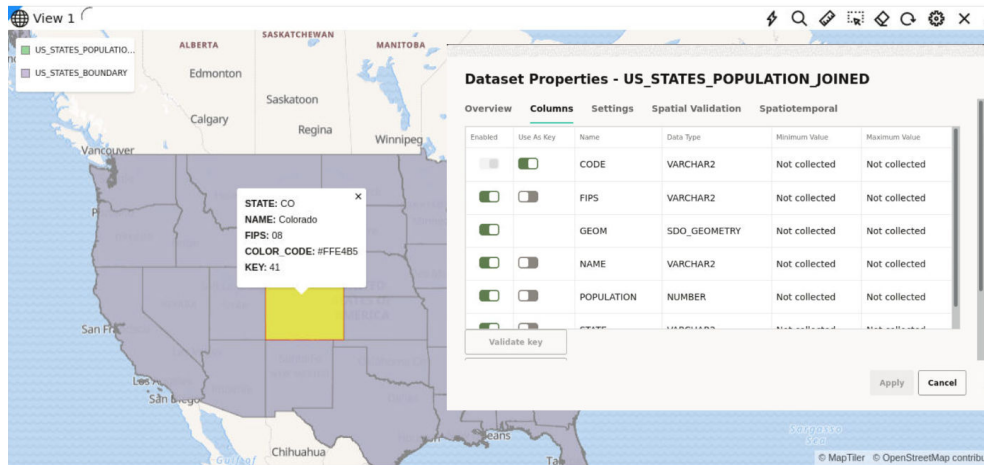
On selection, the primary key associated with the spatial dataset is validated against the non-spatial dataset key. If the datasets key values are not suitable for a join operation, then the following error is displayed:

Dataset key columns to join must be the same data type

6. Optionally, select the required columns for the joined result dataset from the non-spatial and spatial datasets.
7. Click **OK**.

The joined dataset is created and it appears as a row on the Datasets Page. This dataset will contain all the column properties selected from both the spatial and non-spatial datasets. You can verify the properties of the joined dataset both in the **Dataset Properties** window on the Datasets page and when using the dataset for map visualization and analysis on the Active Projects page, as shown:

**Figure 3-29 Appended Non-spatial and Spatial Properties**



### 3.6.8 Exporting a Dataset to GeoJSON

You can export a dataset from Spatial Studio to GeoJSON.

It is possible that your dataset can contain multiple geometry columns. In such a case, Spatial Studio allows you to select a specific geometry column for the export operation.

The instructions assume that a dataset containing the coordinates details is already existing in your database schema.

1. Navigate to the **Datasets** page.
2. Right-click on the **dataset name** which you want to export.
3. Select **Export**.

The dataset **Export** dialog opens as shown:

Figure 3-30 Exporting to GeoJSON

**CUSTOMER\_DATA : Export**

File Format:  
GeoJSON

Simplification

Simplify Geometry Shapes

Decimal places in coordinates:  
5

Select a geometry column:  
GC\_GEOMETRY

Columns to Include:

Select All Unselect All

POSTALCODE

LONGITUDE

COUNTRY

FIRST\_NAME

ID

LAST\_NAME

LATITUDE

OK Cancel

4. Select **GeoJSON** from the **File Format** drop-down list.
5. Optionally, increase or decrease the **Decimal places in coordinates** as required.
6. **Select a geometry column** as required.
7. Select the required columns for the export.
8. Click **OK**.
9. Save the `.zip` file containing the GeoJSON data on your system.

### 3.6.9 Updating Statistics for Datasets

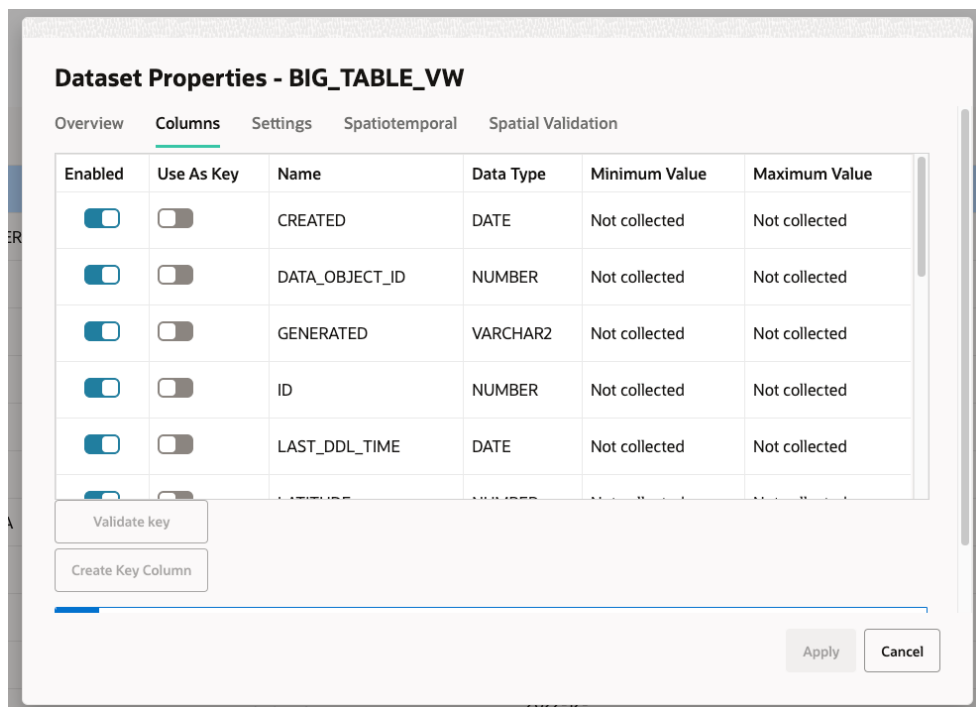
The **Update statistics** feature in Spatial Studio gathers statistics of the dataset columns.

To gather the dataset statistics, right-click on the dataset and select **Update statistics**. For all datasets (except view-based and spatial analysis datasets), this action triggers a single background job which collects the relevant statistical data. Once the job completes successfully on the Jobs page, you can verify the updated statistical data by viewing the **Dataset Properties**.

However, for view-based and spatial analysis datasets, gathering statistics is a two-step process. It implies that two background jobs are triggered:

1. **Gather dataset statistics [basic]**: This job collects the basic statistics such as **Name** and **Data Type** of columns in a dataset. When this job completes successfully, the job in step-2 is triggered.
2. **Gather dataset statistics [full]**: This job collects more detailed statistics such as **Minimum Value**, **Maximum Value**, **Bounding Box**, and unique column values. As long as this job is in the `Processing` status, the view-based dataset may show incomplete information for the **Minimum Value** and **Maximum Value** columns in the **Dataset Properties** dialog:

Figure 3-31 Gathering Statistics In Progress



Once the job status is `Done`, the **Dataset Properties** reflects the gathered statistics.

Figure 3-32 Displaying Gathered Statistics

Enabled	Use As Key	Name	Data Type	Minimum Value	Maximum Value
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CREATED	DATE	2021-10-14T23:53:36Z	2022-07-23T20:04:39Z
<input checked="" type="checkbox"/>	<input type="checkbox"/>	DATA_OBJECT_ID	NUMBER	143	114965
<input checked="" type="checkbox"/>	<input type="checkbox"/>	GENERATED	VARCHAR2	N	Y
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID	NUMBER	349	3345541
<input checked="" type="checkbox"/>	<input type="checkbox"/>	LAST_DDL_TIME	DATE	2021-10-14T23:54:04Z	2022-09-21T20:03:40Z

Validate key

Create Key Column

**i** A Key column is required for many operations and must have unique values and no nulls. When you assign a Key, the column is validated. If no database constraint exists Spatial Studio will create one.

Apply Cancel

Note that for any type of dataset, you must always ensure that this background job completes successfully before performing advanced styling or visualization of a dataset.

### 3.6.10 About Cache in Spatial Studio

Starting with Spatial Studio release 22.3, all vector tiles generated for all datasets are cached to the file system by default.

This cache process automatically begins when you first load a dataset for map visualization and start panning the map or zoom in and out on the map. Therefore, the next time the same dataset is visualized, all the corresponding map layers load faster as the relevant tiles have been already generated and are ready to be loaded. All these generated vector tiles will be saved under:

```
<user_home_folder>/ .sgtech/cache/CACHE_<cache_id>
```

The `<cache_id>` which is part of the folder name is an integer value, calculated based on the dataset `id` and the geometry column being encoded in the vector tiles. A metadata file will be saved inside each `cache` folder to provide human-readable information about where the tiles belong to in a `tiles.json` file. A sample structure of the metadata file is as shown:

```
{
  "DatasetName" : "DATASET NAME",
  "DatasetId" : "8da55629d3ca71aa37d859422a847257",
  "GeometryColumn" : "GEOM_COL_NAME"
}
```

Each vector tile will be encoded and saved to a file that follows a name pattern as shown:

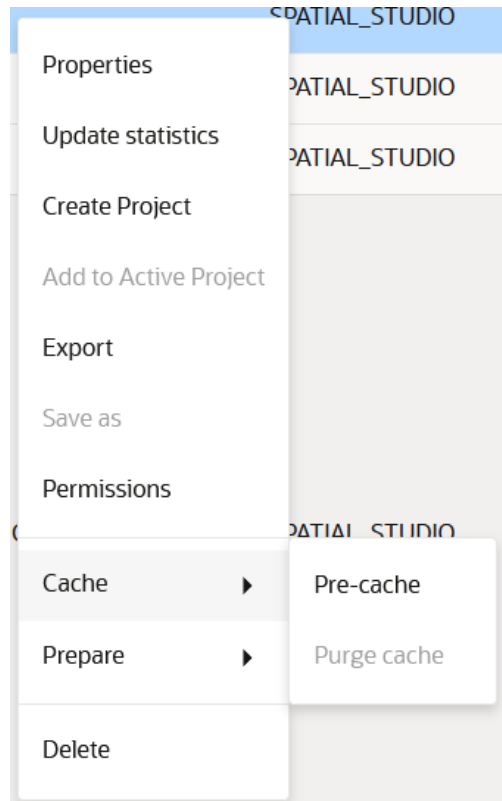


```
<zoom_level>_<x_axis>_<y_axis>.dat
```

All the variables in the preceding name pattern are replaced by an integer and denote the world position where the tile needs to be loaded when looking at a certain viewport of the world map.

The cache options (**Pre-cache** and **Purge cache**) for a dataset can be accessed from the **Datasets** page as shown:

**Figure 3-33 Dataset Cache Options**



- [Pre-Cache](#)  
You can trigger a pre-caching task to start generating vector tiles even before a map is loaded with the dataset for visualization.
- [Purge Cache](#)  
You can wipe the cached tiles by calling the **Purge cache** option.

### 3.6.10.1 Pre-Cache

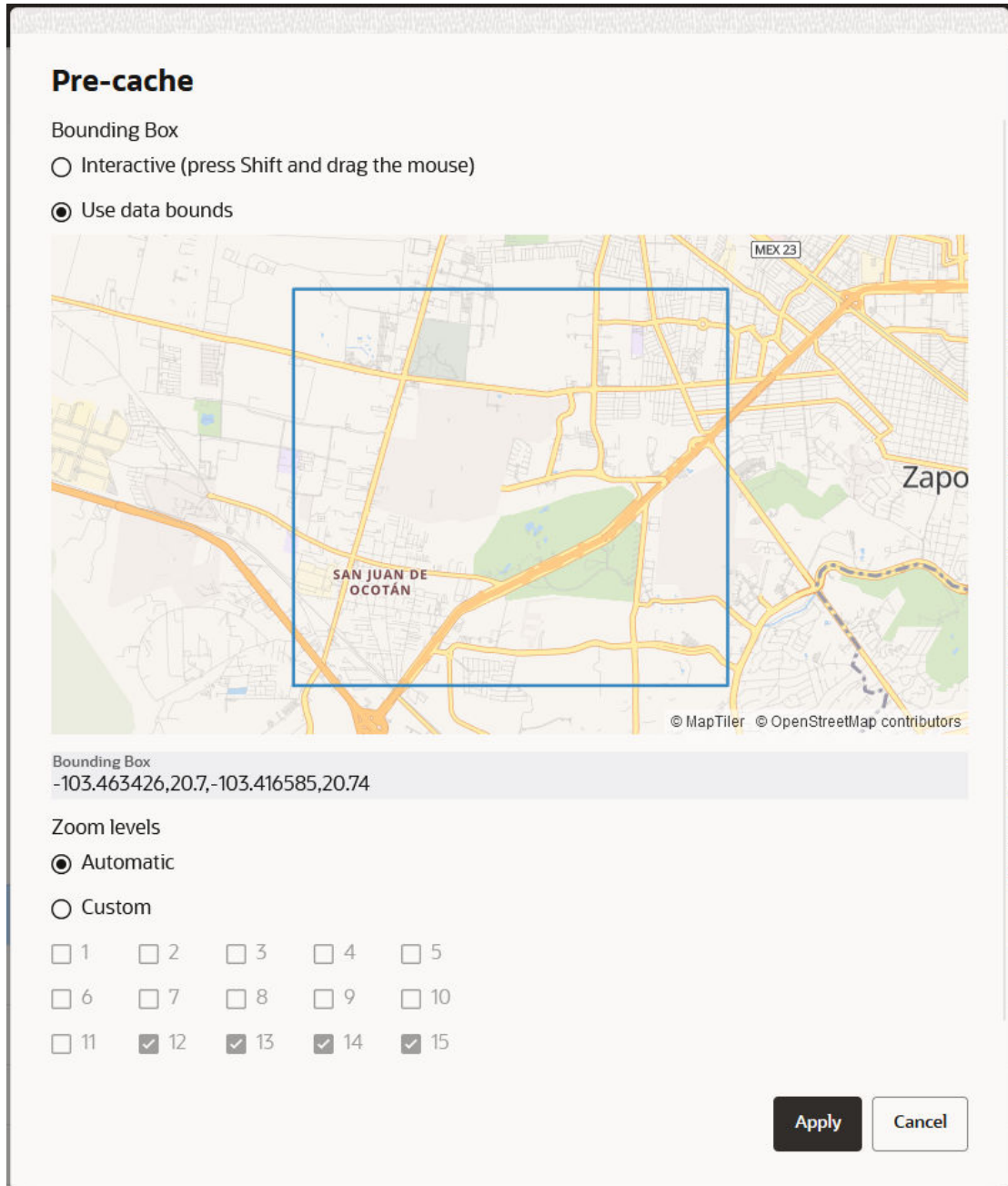
You can trigger a pre-caching task to start generating vector tiles even before a map is loaded with the dataset for visualization.

See [Figure 3-33](#) to access the **Pre-cache** option.

Pre-caching can infer where the data is located and suggest the data bounds for caching. In case if the information is not available, then you can interactively select the part of the world that needs to be included in the pre-caching task. Spatial Studio also

suggests the zoom levels that are best suited for the data. However, you can always override this and configure your own choice for the **Zoom levels**.

**Figure 3-34** Configuring Zoom Levels for Pre-Caching Task



 **Note:**

Based on the complexity of the data and the number of zoom levels to pre-cache, this task could take from a couple of minutes to several hours. Therefore, be cautious on what you opt to include in this process as the database connections and CPU usage could heavily be impacted by this task.

The pre-cached tiles are saved in the file system, following the name pattern discussed in the earlier section. Extra information about the bounding rectangle and zoom levels that were pre-cached are included in the `tiles.json` file as shown:

```
{
  "DatasetName" : "DATASET NAME",
  "DatasetId" : "8da55629d3ca71aa37d859422a847257",
  "GeometryColumn" : "GEOM_COL_NAME",
  "ZoomLevels" : [ 13, 14, 15 ],
  "BoundingBox" : [ -103.455841, 20.708551, -103.421479, 20.73044 ]
}
```

### 3.6.10.2 Purge Cache

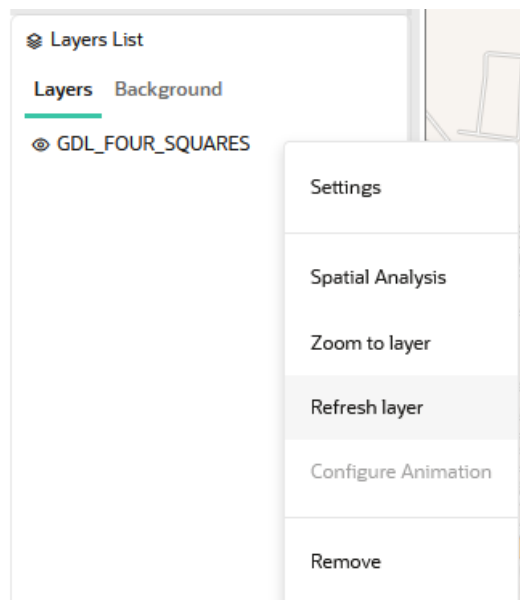
You can wipe the cached tiles by calling the **Purge cache** option.

See [Figure 3-33](#) to access the **Purge cache** option.

This option is helpful whenever the database data changes causing the already generated vector tiles to become stale.

Alternatively, you can also select the **Refresh layer** option for each dataset layer that is added to the map visualization in the **Active Project** page as shown:

**Figure 3-35 Refresh Map Data Layer**



This indirectly triggers a **Purge cache** operation, before generating the vector tiles again.

You must perform a cache purge or layer refresh whenever you apply any of the following changes to a dataset:

- Change the key column of a dataset
- Enable or disable columns of a dataset
- Change the contents of your dataset's source table

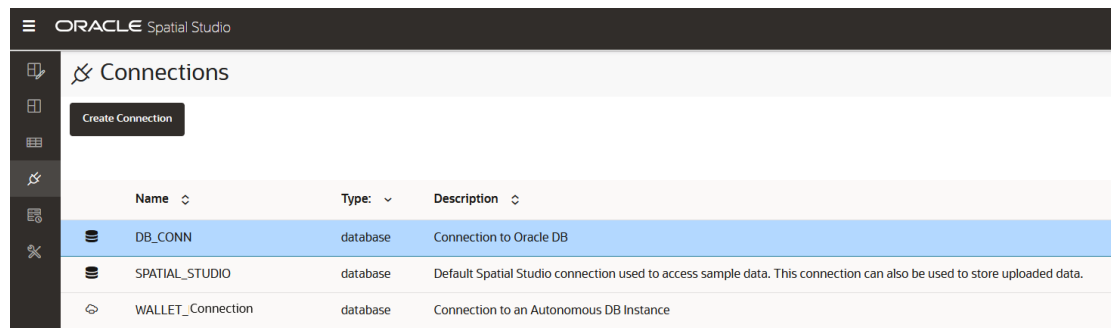
Otherwise, you will be viewing stale data on the map and interacting with this data may also result in errors.

## 3.7 Spatial Studio Connections Page

The Connections page displays all the existing connections and also allows you to create a new connection.

The following figure shows a layout of the Connections page:

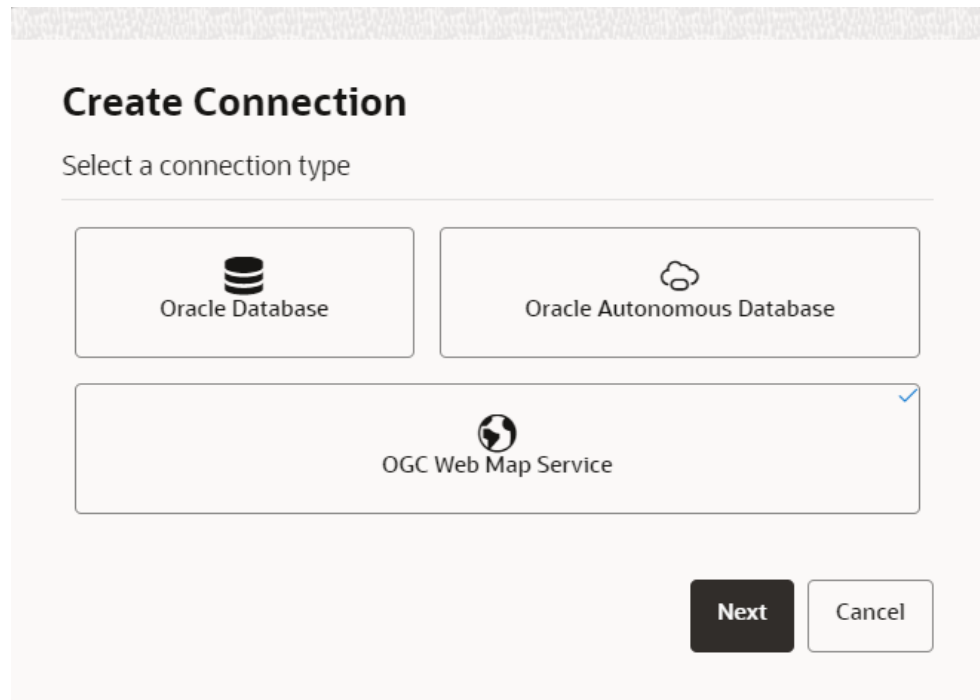
**Figure 3-36** Connections Page



You can perform the following actions on the Connections page:

- You can create a new connection, by clicking **Create Connection**.

Figure 3-37 Create Connection



As seen in the preceding figure, you can create a connection to the following sources:

- **Oracle Database:** You must provide the host, port, schema, and other database authentication details.
- **Oracle Autonomous Database:** You must provide the wallet and the connection details.
- **OGC Web Map Service:** You must provide the URL to connect to the WMS service.
- You can also perform the following actions by clicking the hamburger icon against any displayed connection or by right-clicking a connection row:
  - **Properties:** To view or modify properties of the connection
  - **Edit:** To update the connection details

 **Note:**

You cannot edit the SPATIAL\_STUDIO connection on the Connections page. Instead, refer to [If the Spatial Studio Repository Schema Password Has Been Changed](#) section.

- **Migrate:** To migrate the connection from one environment to another
- **Replace Cloud Wallet:** To replace the cloud wallet for your Autonomous Database Connection
- **Test Connection:** To validate the connection

- **Delete:** To delete the connection along with all its datasets

 **Note:**

You cannot delete the SPATIAL\_STUDIO connection.

- [Creating an Oracle Database Connection](#)  
You can create a Spatial Studio connection to any Oracle Database schema.
- [Creating a Cloud Connection to an Autonomous Database Instance](#)  
You can create a Spatial Studio connection to an Autonomous Database instance.
- [Creating an OGC WMS Connection](#)  
You can create a new connection to an external OGC (Open Geospatial Consortium) WMS (Web Map Service) service.
- [Migrating Database Connections](#)  
You can migrate your connections in Spatial Studio between on-premises and cloud database environments.

### 3.7.1 Creating an Oracle Database Connection

You can create a Spatial Studio connection to any Oracle Database schema.

You can perform the following steps to setup a connection to the database:

1. Navigate to the **Connections** page.
2. Click **Create Connection**.  
The **Create Connection** dialog opens as shown in [Figure 3-37](#).
3. Select **Oracle Database** as the connection type and click **Next**.  
The **Create Connection** dialog open as shown:

**Figure 3-38 Creating a Connection to the Oracle Database**

**Create Connection**

Name  
DB\_CONN

Description  
Connection to Oracle DB

Connection Service

Service/SID  
orclpdb

User  
ssuser

Password  
●●●●●●

Host  
localhost

Port  
1521

OK Cancel

4. Enter the Spatial Studio connection **Name**.
5. Optionally, enter a **Description**.
6. Select the database **Connection** type.

The supported types are:

- **Service**
- **SID**

7. Enter the **Service/SID** value depending on your connection type.
8. Enter the database **User** name and the **Password** for the user.

Note that when the database user password expires, Spatial Studio will prompt you to reestablish the schema connection. Then the **Create Connection** dialog is displayed with prefilled metadata schema details.

9. Enter the **Host** and **Port** details.
10. Click **OK**.

The Oracle Database connection gets created. This **database** type connection is displayed on the **Connections** page.

## 3.7.2 Creating a Cloud Connection to an Autonomous Database Instance

You can create a Spatial Studio connection to an Autonomous Database instance.

As a prerequisite, you must download and save the wallet for your Autonomous Database instance from the Oracle Cloud Infrastructure (OCI) console. See [Download Client Credentials \(Wallets\)](#) for more information.

You can perform the following steps to setup a cloud connection to your Autonomous Database instance:

1. Navigate to the **Connections** page.
2. Click **Create Connection**.  
The **Create Connection** dialog opens as shown in [Figure 3-37](#).
3. Select **Oracle Autonomous Database** as the connection type and click **Next**.  
The **Upload wallet** dialog opens.
4. Drag and drop your saved wallet file or click to upload the wallet from your system.
5. Click **OK**.

The **Create Connection** dialog opens as shown:



Figure 3-39 Creating a Connection to an Autonomous Database Instance

**Create Connection**

Name  
ADB Connection

Description  
Connection to an Autonomous DB Instance

User  
SSUSER

Password  
●●●●●●

Service  
[redacted]\_high ▼

Proxy Host

Proxy Port

OK Cancel

6. Optionally, change the default Spatial Studio connection **Name**.
7. Optionally, enter a **Description**.
8. Enter the Autonomous Database **User** name and the **Password** for the user.
9. Select the appropriate **Service** from the drop-down list.
10. Optionally, enter the **Proxy Host** and **Proxy Port** details.
11. Click **OK**.

The connection to the Autonomous Database instance gets created. This **database** type connection is displayed on the **Connections** page.

### 3.7.3 Creating an OGC WMS Connection

You can create a new connection to an external OGC (Open Geospatial Consortium) WMS (Web Map Service) service.

This enables you to create an OGC WMS dataset which can be used in map visualizations.

Note that a WMS service or server typically offers many individual map layers that can be combined in different orders. The full list of available map layers, as well as many

other important supported functionalities are all advertised by the WMS server through a standard WMS `GetCapabilities` response.

When you create a new WMS connection, Spatial Studio will be querying such capabilities against the external WMS server using the standard `GetCapabilities` call. Based on the result of such a query, you will later be able to choose the required WMS map layers that must be included when creating a new Spatial Studio WMS dataset.

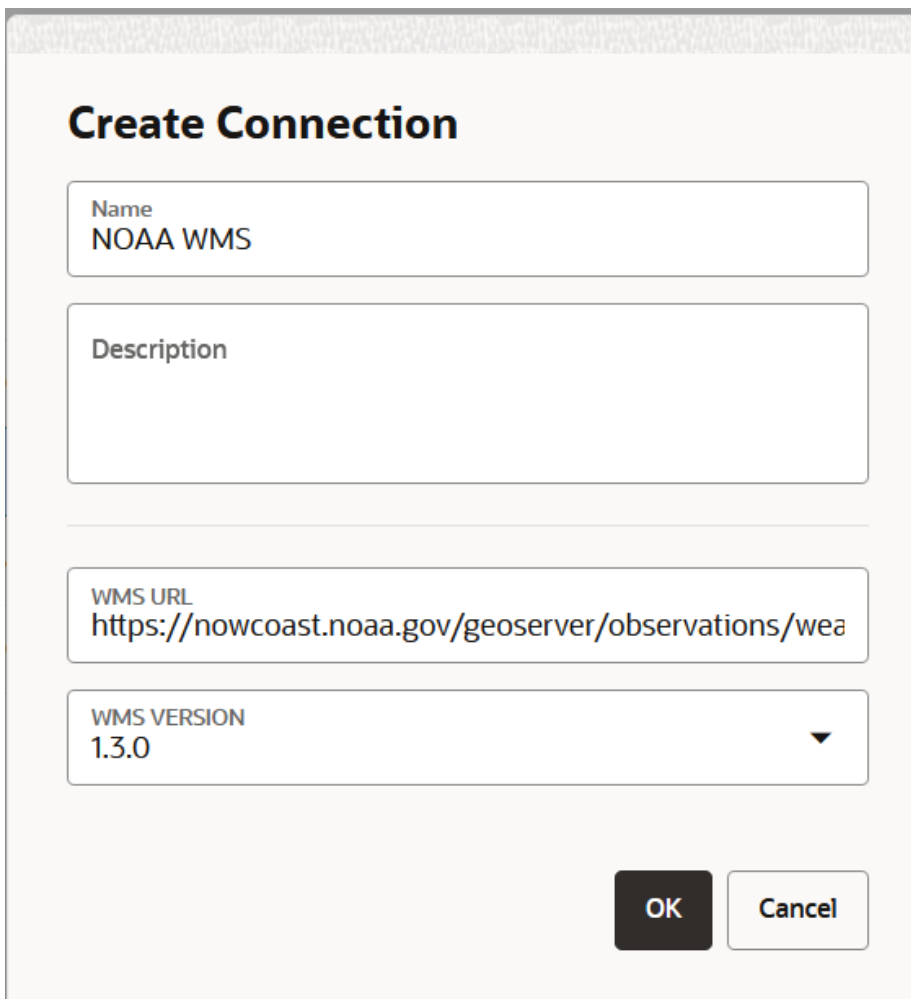
Prior to creating a WMS connection, if the Spatial Studio server is running behind a fire wall, then you must configure the Web Proxy using the **General** panel in the Administration page. This is to enable Spatial Studio to access the WMS server (which can either be running on the same data center or remotely) from the server side.

You can perform the following steps to create an OGC WMS connection:

1. Navigate to the **Connections** page.
2. Click **Create Connection**.  
The **Create Connection** dialog opens as shown in [Figure 3-37](#).
3. Select **OGC Web Map Service** as the connection type and click **Next**.

The **Create Connection** dialog open as shown:

**Figure 3-40** Creating an OGC WMS Connection



**Create Connection**

Name  
NOAA WMS

Description

WMS URL  
https://nowcoast.noaa.gov/geoserver/observations/wea

WMS VERSION  
1.3.0

OK Cancel

4. Enter the connection **Name**.
5. Optionally, enter a **Description**.
6. Enter the **WMS URL** to connect to the WMS service.

Also, note the following:

- Ensure that the **WMS URL** is added to the **Safe Domains** list.
- You can use one of the following two formats for the WMS URL:
  - A complete `GetCapabilities` request, including the version of the WMS specification (1.3.0 is recommended). For instance:  
`https://nowcoast.noaa.gov/geoserver/observations/weather_radar/ows?SERVICE=WMS&VERSION=1.3.0&REQUEST=GetCapabilities`
  - The base URL of the WMS server. For instance:  
`https://nowcoast.noaa.gov/geoserver/observations/weather_radar/ows`

7. Optionally, select the **WMS VERSION**.
8. Click **OK**.

The OGC WMS connection gets created. This **wms** type connection is displayed on the **Connections** page.

Also, the new WMS connection stores the names of all the available map layers (hosted by the WMS service) and a host of other information based on the **GetCapabilities** response as a part of its metadata.

9. Right-click on the newly created connection, select **Test connection**, and verify that the connection tests successfully.

#### Related Topics

- [Creating an OGC WMS Dataset](#)  
Starting with Spatial Studio release 22.3, you can define datasets that are based on the `GetMap` responses from any external OGC (Open Geospatial Consortium) WMS (Web Map Service) services.
- [Visualizing OGC WMS Maps as a Dataset](#)  
You can visualize an OGC (Open Geospatial Consortium) WMS (Web Map Service) dataset on a map.

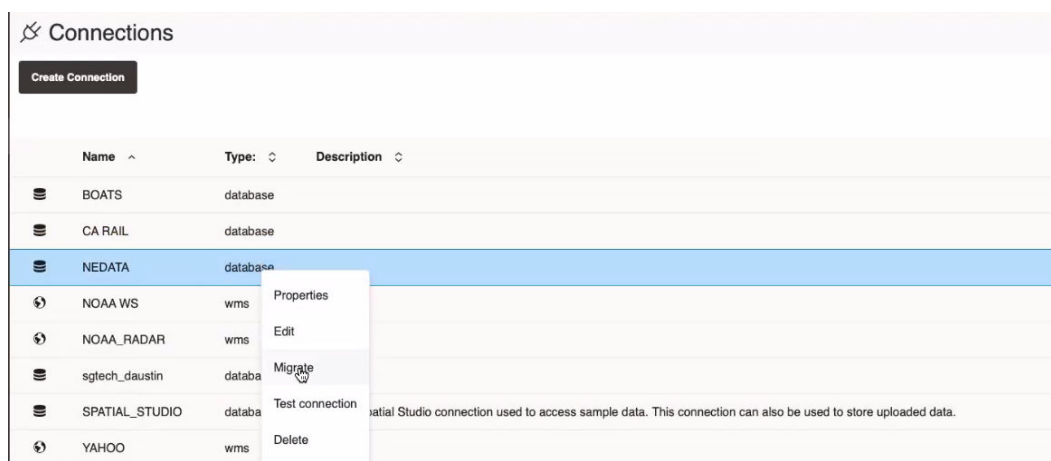
## 3.7.4 Migrating Database Connections

You can migrate your connections in Spatial Studio between on-premises and cloud database environments.

It is possible that you may want to migrate data from your on-premises database to an Autonomous Database instance or the other way around. In such scenarios, you can also migrate the Spatial Studio connection related to the data to the new target data source. Thus, Spatial Studio allows you to continue working with the datasets that were created using the earlier connection properties, without rendering them invalid. You can perform the following steps to migrate a database connection.

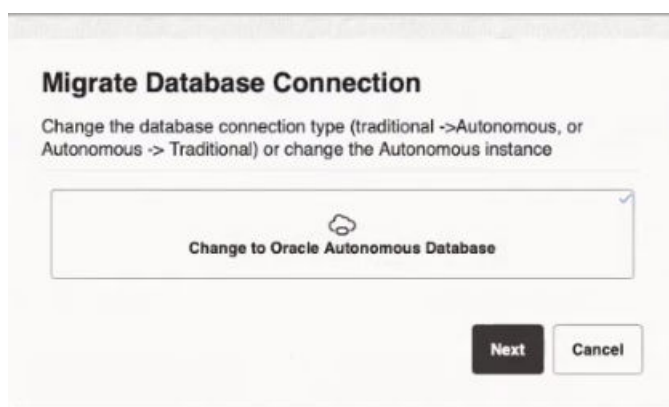
1. Navigate to the **Connections** page.
2. Right-click on the required connection **Name**.

The context menu for the database connection appears as shown:

**Figure 3-41 Migrate Option for a Database Connection**

3. Click **Migrate**.

**Migrate Database Connection** is displayed as shown:

**Figure 3-42 Migrate Database Connection**

Note that in the preceding image, the target environment for migration may vary depending on the current source of the database connection. You can perform the following steps to configure the target environment that applies to you:

- **Migrating from On-Premises Database to Oracle Autonomous Database:**
  - a. Click **Next** and provide the **Upload Wallet** details.
  - b. Click **OK** and provide the database connection details.
- **Migrating from Oracle Autonomous Database to On-Premises Database:**
  - a. Click **Next** and provide the database connection details.
  - b. Click **OK**.

The connection gets updated to the new data source.

## 3.8 Spatial Studio Administration Page

You can monitor the status and activity of Spatial Studio in the Administration Page. You can also view server logs, change global system configurations, manage custom basemaps, and configure safe domains.

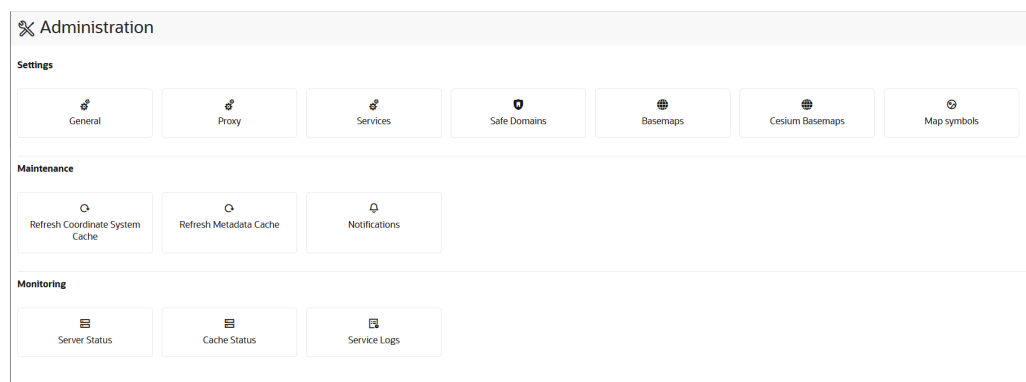
The Administration menu link directs you to the Administration page.

### Note:

You must be logged in as an administrator of Spatial Studio to access this menu option.

The layout the Administration page is as shown:

**Figure 3-43 Administration Page**



The Studio console page comprises of the following sections:

### Settings

- **General:** This section allows changing the GeoCoding service URL, the geocoding batch size, and the web proxy used by the Studio server. It also allows you to customize the frontend branding area of the application.
- **Safe Domains:** This section allows the administrator to manage the white listing of the domains (host names or IP addresses) that are considered safe for loading various types of the resources from the Studio application. See [Managing Safe Domains](#) for more information.
- **Basemaps:** This section allows a quick view of the existing custom basemaps, and in adding or editing custom basemaps. Custom basemaps can be made of either raster or vector tiles, typically hosted on a third party tile server. Additionally, you can also create a custom basemap using a WMS OGC web service.
- **Cesium Basemaps:** This section gives you a quick view of the existing custom basemaps used exclusively for the 3D Cesium Map visualization. It also allows you to add new basemaps to be used by the 3D Map visualizations.

- **Map symbols:** This section allows the administrator to upload custom map symbols in Spatial Studio.

 **Note:**

Each listed host entry for Basemaps and Cesium Basemaps must be present as one of the entries in the Safe Domains list. If the host basemap comes from a domain that is not present in the Safe Domains list, then the basemap may not render correctly when visualizing the map.

### Maintenance

- **Refresh Coordinate System cache:** Use this only when needed to rebuild the text index of the repository database schema's supported Spatial Reference Well Known Text (WKText) definitions. For the shapefile upload, this WKText index is used to automatically match the best SRID.
- **Refresh Metadata Cache:** Spatial Studio typically caches all of the frequently used metadata such as the definitions of Datasets, Connections, and Projects. Sometimes it is required to refresh the whole cache in case some cached metadata becomes stale or out of sync in rare events.
- **Notifications:** You can use this option to set up one or more system notifications. These notifications are displayed across the top of the Spatial Studio application once a user logs in.

### Monitoring

- **Server Status:** This section provides read-only information about the general health and system status of the Spatial Studio server.
- **Cache Status:** This section provides the details of the cache maintained by Spatial Studio.
- **Service Logs:** This section allows loading and viewing a desired number of server-side logs. To reduce the clutter, you can filter the result using the desired logging level. It also allows the administrator to change the logging level. See [Viewing and Managing Server Logs](#) for more information.

In a cluster deployment, both the preceding options display only the information of the particular Spatial Studio instance to which the current session is connected.

- [Uploading a Map Symbol](#)
- [Managing Safe Domains](#)
- [Adding a Custom Basemap](#)
- [Editing a Custom Basemap](#)
- [Managing System Notifications](#)
- [Viewing and Managing Server Logs](#)

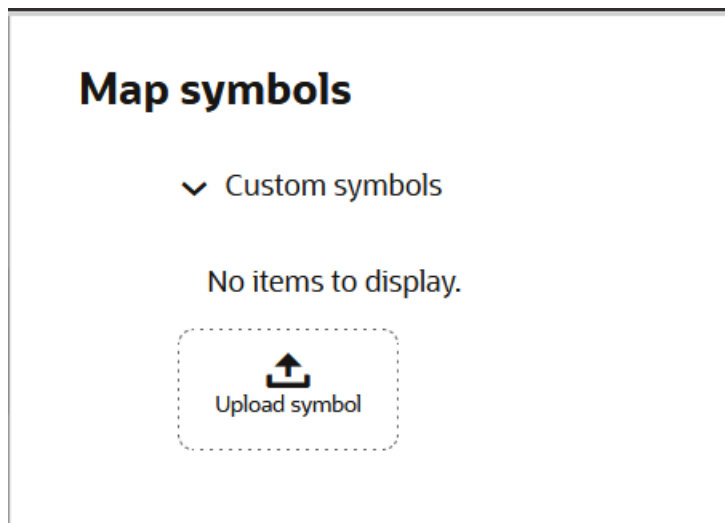
## 3.8.1 Uploading a Map Symbol

Starting with Oracle Spatial Studio version 23.2.0, you can upload custom map symbols (or icons) and also 3D models (in .glb format), which you can use in a Map or Cesium-Map visualization.

Note that only a user with the administrator role can upload the map symbols. However, once uploaded, all the other users can access and use them in their own projects. The following steps enable you to add a custom map symbol in Spatial Studio.

1. Navigate to the **Administration** page.
2. Click **Map symbols** under Settings.  
The **Map symbols** slider opens as shown.

**Figure 3-44** Uploading a Map Symbol



3. Click the **Custom symbols** collapse icon and click **Upload symbol**.
4. Select the required image file in your system for the upload.  
It is important to note the following:
  - Only .png, .gif, .jpg, and .glb file formats are supported.
  - Each file cannot exceed 2 MB in size.
5. Optionally, change the **Symbol name**.
6. Click  to add the custom map symbol.

Once it is uploaded, you can style your data points on a map visualization using the new symbol. See [Applying Custom Map Symbols to a Map Layer](#) for more information.

## 3.8.2 Managing Safe Domains

As an administrator, you can add a domain of a custom basemap or a WMS service to the Content Security Policy directives of your Spatial Studio application. Alternatively, you can edit or delete an existing safe domain.

 **Note:**

If you make any changes to the safe domains list, then it is important that you refresh or reload the browser page to reload the new Content Security Policy.

1. Navigate to the **Administration** page.
2. Click **Safe Domains** under Settings.

The list of safe domains to which Spatial Studio has access is displayed as shown:

**Figure 3-45 Safe Domains**

### Safe Domains

Safe domains that Studio has access to

Domain Name	Connect	Image	Script	Font	CSS Style	
http://elocation.oracle.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>
https://earthquakes.usgs.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>
https://nowcoast.noaa.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>
https://elocation.oracle.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>
http://maps.oracle.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>
https://maps.oracle.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="x"/>

Save Changes
Add...
Cancel

You can choose to perform one of the following actions:

- **Adding a safe domain**
  - a. Click **Add**.  
A new row gets added to the end of the safe domains table list.
  - b. Double-click the **Domain Name** cell of the empty new row to enter the new domain.  
Ensure that you enter only the domain part of an external URL (that is, the protocol, host name or IP address, and port) from which you will be fetching the resources. For instance, `https://wms.mycompany.com:8080` or `https://wms.mycompany.com`.



Note that the protocol is a part of the domain and should be based on the URL of the remote service. For instance, if you defined a WMS data source or a custom base map in Spatial Studio, and the URL to the WMS server or the custom base map's tile server starts with `https://`, then you must use `https://`. If it starts with `http://`, then use `http://`. In case if both the protocols are used (maybe one is used to fetch some resources while the other is used for a different type of resource), then you need to add the domain twice, one with the `http://` protocol and another with the `https://` protocol. Spatial Studio performs safe domain validation strictly based on the value you added to the list.

- c. Select the appropriate check boxes.  
The check boxes represent [Content Security Policy](#) fetch directives.
  - **Connect:** This corresponds to the CSP `connect-src` directive, and indicates whether Spatial Studio is allowed to interact with the domain via script interface (such as AJAX calls).
  - **Image:** this corresponds to the CSP `img-src` directive, and indicates whether Spatial Studio is allowed to fetch images from the domain.
  - **Script:** this corresponds to the CSP `script-src` directive, and indicates whether Spatial Studio is allowed to import or load scripts hosted by the specified domain.
  - **Font:** this corresponds to the CSP `font-src` directive, and indicates whether Spatial Studio is allowed to load font data from the specified domain.
  - **CSS Style:** this corresponds to the CSP `style-src` directive, and indicates whether Spatial Studio is allowed to load stylesheet from the specified domain.


It is important to understand what type of resources you will be fetching from the specific domain. For instance, if you select the check box **Script**, then it implies that you are enabling your browser to fetch Java Script type resources from the domain.

In case if you are adding a safe domain for a WMS data source, then you likely need to enable the following check boxes:

- **Connect:** This is required because Spatial Studio needs to interact with a remote WMS data source to check its capabilities using AJAX calls.
- **Image:** This is needed because eventually Spatial Studio needs to fetch individual WMS map images from the remote WMS server.

Note that when a check box is selected, the domain URL gets added to a list of all the allowed URLs for the corresponding CSP directive. For instance, consider that the domain `https://www.mycompany.com` is added as a safe domain with the **Connect** check box selected. Then, when you reload Spatial Studio, the CSP header loaded by the browser will now include `https://www.mycompany.com` in its `connect-src` directive's list of domain values.

- d. Click **Save Changes**.
  - e. Ensure to refresh or reload the browser page.
- **Editing a safe domain**

- Double-click the required safe domain table row and edit the required details.
- Click **Save Changes**.
- Ensure to refresh or reload the browser page.
- **Deleting a safe domain**
  - Double-click the required safe domain row in the table.
  - Click  and confirm delete by clicking **OK**.
  - Click **Save Changes**.
  - Ensure to refresh or reload the browser page.

### 3.8.3 Adding a Custom Basemap

The following steps enable you to add a custom basemap.

1. Navigate to the **Administration** page.
2. Click **Basemaps** under Settings.

The **Basemaps** window listing all the available basemaps opens.

3. Click **Add Basemap** and click on one of the following basemap types:
  - XYZ Raster tiles
  - OGC WMS
  - Vector tiles
4. Enter **Name** and **URL** for the selected basemap type.
5. Optionally enter **Attribution** and **API Key**.

 **Tip:**

Once you have entered all the required fields, you can preview the basemap by clicking **Quick View**.


6. Click **Save** to add the base map.

For example, the following figure show the **OGC WMS** basemap configuration window:

Figure 3-46 Adding a OGC WMS Map

## OGC WMS

Add an OGC WMS basemap.

 The WMS service must support coordinate system EPSG:3857. The service URL entered below should be a normal WMS request with "bbox={bbox-epsg-3857}"

Name  
Weather

Attribution

OGC WMS URL  
<https://my.sample.com/{apikey}/mywms?bbox={bbox-epsg-3857}&service=WMS&...>

API Key

Quick View

Save Cancel

 **Note:**

It is important to add the domain name to **Safe Domains** in order to enable the Spatial Studio application to access the required service for the basemap.

### 3.8.4 Editing a Custom Basemap

The following steps enable you to edit a custom basemap.

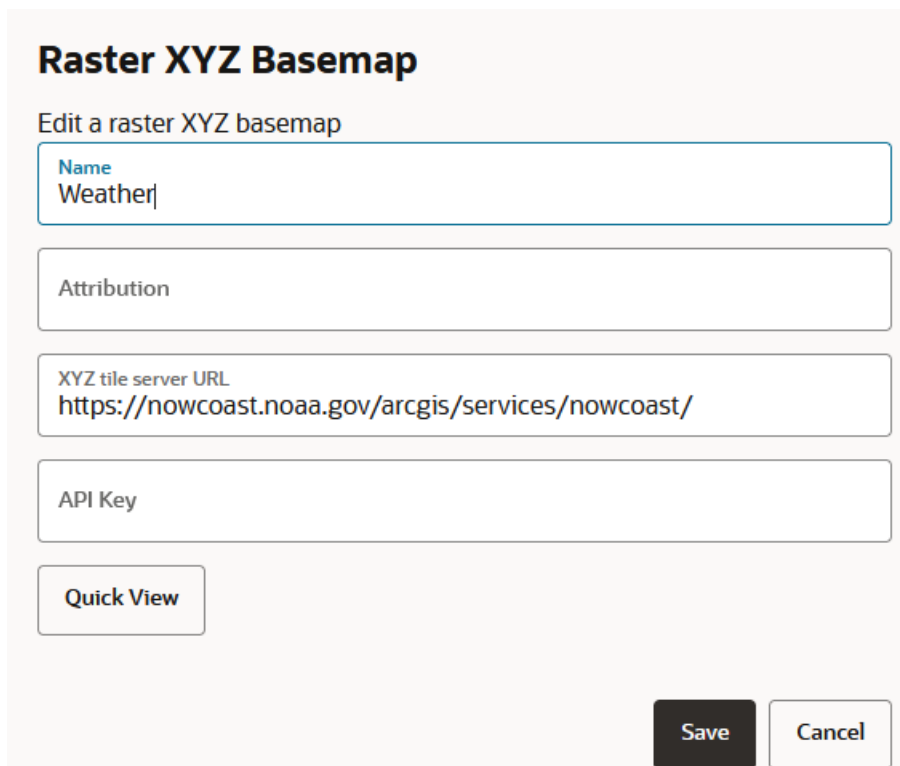
1. Navigate to the **Administration** page.
2. Click **Basemaps** under Settings.  
The **Basemaps** window listing all the available basemaps opens.
3. Click **\*\*\*** against the required custom basemap and click **Edit** from the context menu.

 **Note:**

**Edit** is disabled for predefined Spatial Studio maps.

The custom basemap configuration details are displayed for editing as shown:

**Figure 3-47** Editing a Custom Basemap



**Raster XYZ Basemap**

Edit a raster XYZ basemap

Name  
Weather

Attribution

XYZ tile server URL  
https://nowcoast.noaa.gov/arcgis/services/nowcoast/

API Key

Quick View

Save Cancel

4. Modify the required parameters, such as **Name**, **Attribution**, **URL** or **API Key**.
5. Click **Save**.

The custom basemap details are modified and the updates are shown in the **Basemaps** window.

## 3.8.5 Managing System Notifications

As the Spatial Studio administrator, you can create, edit, or delete system notifications. Spatial Studio supports two types of notifications:

- **Banner:** These notifications are typically used to display informative message such as planned downtime, scheduled updates, and so on. Banner type notifications are displayed across the top of the web application page, just above the built-in Spatial Studio application banner.
- **Show Stopper:** These are messages that will be displayed when the Spatial Studio server is not servicing any requests such as when being investigated for emergency issues or breaches.





You can manage the system notifications as shown in the following steps:

1. Navigate to the **Administration** page.
2. Click **Notifications** under Maintenance.

The **Notifications** window listing all the configured notifications opens.



**Figure 3-48 System Notifications**

### Notifications

Title	Message	Notification Type	Expiration Date	Action
	System Upgrade	BANNER	4/10/23, 12:00 AM	 
Temporarily Unav...	Emergency Server Issues	SHOW_STOPPER	4/4/23, 12:00 AM	 

3. Perform any one of the following required actions.
  - **Create a New Notification**
    - a. Click **Create**.
    - b. Select the **Notification Type**.
    - c. Enter **Severity**, **Expiration Date (in UTC)**, and **Message** for banner notifications.
    - d. Enter **Title**, **Expiration Date (in UTC)**, and **Message** for show stopper notifications.
    - e. Click **OK**.

The new notification appears in the **Notifications** dialog.

- **Edit a Notification**  
Click  against a notification to edit the message details.
- **Delete a Notification**  
Click  against a notification to delete the notification.

## 3.8.6 Viewing and Managing Server Logs

You can always view the most recent log messages generated by the server in your Spatial Studio application.

Perform the following steps to view and manage these server logs.

1. Navigate to the **Administration** page.
2. Click **Service Logs** under Monitoring.  
The **Service Logs** slider opens as shown.

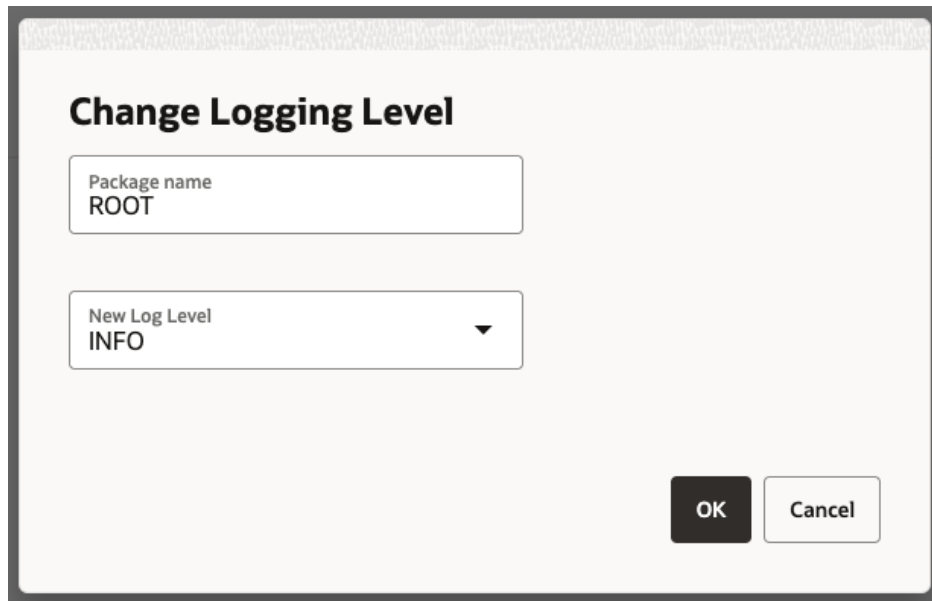
Figure 3-49 Service Logs

## Service Logs

The screenshot shows the 'Service Logs' interface. At the top, there is a box for 'Total entries' with the value '50'. Below it is a 'Crop entries' section with a toggle switch that is currently turned on. Underneath is a box for 'Entries' length' with the value '600'. A dropdown menu for 'Filter by log level' is set to 'INFO'. There are two buttons: 'Load Logs' and 'Change Logging Level'. Below these is a scrollable area titled 'Log Messages' containing the following text:

```
DefaultQuartzScheduler_$_NON_CLUSTERED started.  
  
2023-09-19 13:50:21.829 INFO [qtp5021240-28] o.s.jee.util.MainEntryPageHandler - Read and  
cached index.html contents.  
  
2023-09-19 13:50:21.910 INFO [qtp5021240-14] o.sgtech.services.SharedServices - Plugin  
manager created  
  
2023-09-19 13:50:22.305 INFO [qtp5021240-13] oracle.sgtech.jee.ws.StatusAPI - Connection  
opened in Websocket server.
```

- Optionally, configure any of the following fields to customize the logs that are fetched from the server.
  - Total entries:** This limits how many log messages or records will be loaded from the server.
  - Crop entries:** If switched ON, then any log message with a very long string will be cropped when viewed.
  - Entries' length:** This determines the crop length.
  - Filter by log level:** This drop-down list allows you to filter the server logs so that only those logged at the selected level or higher (more severe in nature) will be fetched from the server for display.  
The supported log levels are:
    - ERROR
    - WARN
    - INFO
    - DEBUG
    - TRACE
  - Load Logs:** Click this button to reload the logs from the server when you change any of the preceding configurations.
- Optionally, click **Change Logging Level** to change the server's logging level.  
**Change Logging Level** window opens as shown.



The **Change Logging Level** button allows the administrator user to dynamically change the logging level used by the server without restarting it.

Sometimes it may become necessary to change the logging level, so that the Spatial Studio server can log more or less messages, or generate `DEBUG` or `TRACE` level messages for a specific functional area in order to diagnose a certain issue. By default, Spatial Studio uses the `INFO` log level, which means only log messages generated at the level `INFO`, `WARN`, or `ERROR` will be written to the log file (default location is `<OS_USER_HOME_DIR>/sgtech/logs/sgtech.log`).

- a. Optionally, change any of the following configuration.
  - **Package name:** This specifies the area of the server that will be affected by the new logging level. If you specify `ROOT` (the default value), then the new logging level will affect all areas or functions of the Spatial Studio server. However, you can also enter a specific Java package name (maybe based on suggestions from your Oracle Support team), such as `oracle.sgtech.jee.api` when debugging issues related to Spatial Studio instance's REST API end points. When a specific package name is entered, then the new log level will only take effect when code from that package is executed.
  - **New Log Level:** This drop-down list allows you to select the new log level to be applied to the server's specific package or the entire server (default `ROOT`).
- b. Click **OK**.

Note that the log files may take a while to be filled with the messages logged at the new level.

## 3.9 Spatial Studio Jobs Page

The Jobs page displays details of all the background jobs that run in Spatial Studio.

The following figure shows a layout of the Jobs page:

Figure 3-50 Jobs Page

Type	Object	Created By	Start Time	End Time	Status
Geocode	ADDRESS	admin	Today, 8:59 AM	Today, 8:59 AM	Terminated
Reverse geocode dataset	ACCIDENT	admin	7/22/2022, 8:33:00 AM	7/22/2022, 8:37:16 AM	Done

You can perform the following actions on the Jobs page:

- Select a job to be displayed in the grid: **Active**, **Past** or **All**.
- Select a refresh interval for the jobs grid.
- View details of a specific job.
- Terminate a job.  
Also, note the following about terminating a job:
  - You can terminate a `Processing` or `Pending` job.
  - You can terminate all job types except `Create lon-lat index jobs`.
  - Upon termination of a job, partial execution results of the job are maintained. You can choose to clear the partial results. For example, you can perform `Clear Address Geocode` after terminating a `Geocode` job.
  - Only jobs related to H3 aggregations such as `Build H3 Index` are completely rolled back when terminated.

The grid table displays the following properties for each job entry row:

- **Type:** The job type, such as "Geocode", "Reverse geocode dataset" and so on.
- **Object:** The entity being altered by the job, which can be a Dataset, Table, Index or other.
- **Created by:** The user that submitted the job.

 **Note:**

System maintenance jobs are created by "\$system" account

- **Start Time:** The scheduled next run time for jobs with `Pending` status or the actual job start time for any other job status.
- **End Time:** The time at which a job completed.
- **Status:** Indicates the state or progress of a job, which can be:
  - Pending
  - Processing
  - Done



- Error
- Terminating
- Terminated

By clicking **\*\*\*** against any job row, you can perform the following actions :

- **View Details:** To view extra information, such as the step at which a `Processing` job is currently running or error details for `Error` or `Terminated` jobs. Also, you can terminate a `Processing` job by clicking **Terminate** when viewing the job details.
- **Terminate:** To terminate a `Processing` or `Pending` job directly. It remains disabled for any other job status.

## 3.10 Visualization in Oracle Spatial Studio

You can visualize your spatial data in Oracle Spatial Studio using different modes of visualization.

Spatial Studio supports the following visualization methods:

- Table
- Map
- Cesium-Map

You can save your visualization as a Project in Spatial Studio. You can rework on a project or publish a project to share the results with other users.

The following sections explain in detail how you can use the various visualization techniques:

- [Using a Table Visualization](#)  
Spatial Studio allows you to visualize your data from the dataset in tables.
- [Using a Map Visualization](#)  
Spatial Studio supports several types of map visualizations.
- [Using a Cesium Map Visualization](#)  
Spatial Studio uses a CesiumJS plugin that allows you to view 3D visualizations using 3D Tiles or CZML data on a Cesium map.
- [Styling a Map Layer](#)  
Spatial Studio allows you to explore different styling options for your map layers, in order to enhance visualization and analysis.
- [Adding Interactions to a Map Visualization](#)  
You can enhance your map interaction by configuring tooltips and info windows for the map layers used in the map visualization.
- [Multiple Visualizations on a Canvas](#)  
You can work on multiple visualizations in Spatial Studio.
- [Configuring a Map Visualization](#)  
Learn how to configure the settings for your map visualization.
- [Searching Locations and Features on a Map](#)  
Using the **Search** option, you can quickly find locations and features on a map.

### 3.10.1 Using a Table Visualization

Spatial Studio allows you to visualize your data from the dataset in tables.

To display your data in a tabular view, you must perform the following steps.

The instructions assume that the dataset for visualization is already added to the project in the Active Project page.

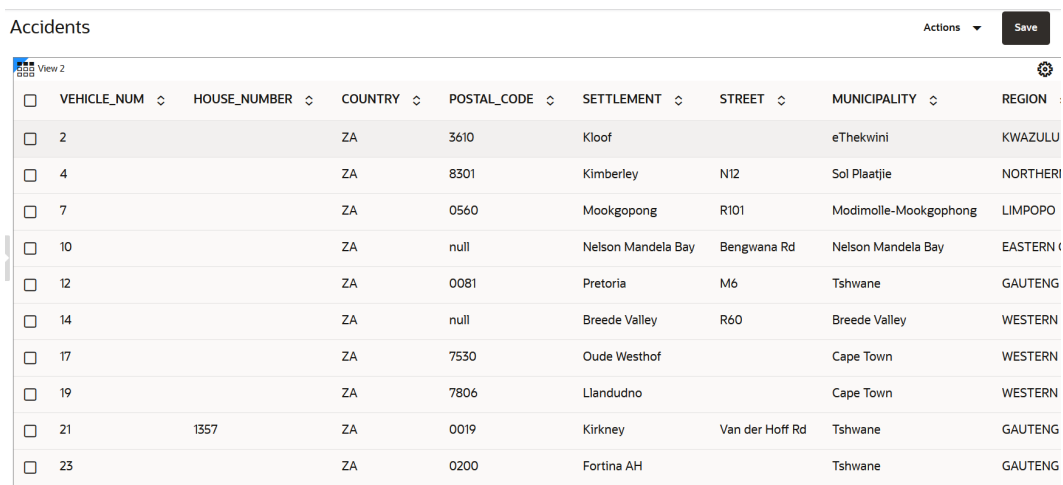
1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Table** from the list to the visualization window on the right to create a table visualization.  
This opens an empty layer in the visualization window.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **dataset** from the list to the empty layer on the right.

#### Note:

You can view only one dataset in a table view. If you want to view multiple datasets, you must create one table view for each dataset.

This opens the data in tabular format for visualization as shown:

**Figure 3-51 Tabular Visualization**



The screenshot shows a table titled "Accidents" with a "Save" button in the top right corner. The table has 9 columns: VEHICLE\_NUM, HOUSE\_NUMBER, COUNTRY, POSTAL\_CODE, SETTLEMENT, STREET, MUNICIPALITY, and REGION. The data is as follows:

VEHICLE_NUM	HOUSE_NUMBER	COUNTRY	POSTAL_CODE	SETTLEMENT	STREET	MUNICIPALITY	REGION
2		ZA	3610	Kloof		eThekwin	KWAZULU
4		ZA	8301	Kimberley	N12	Sol Plaatjie	NORTHERN
7		ZA	0560	Mookgopong	R101	Modimolle-Mookgophong	LIMPOPO
10		ZA	null	Nelson Mandela Bay	Bengwana Rd	Nelson Mandela Bay	EASTERN C
12		ZA	0081	Pretoria	M6	Tshwane	GAUTENG
14		ZA	null	Breede Valley	R60	Breede Valley	WESTERN
17		ZA	7530	Oude Westhof		Cape Town	WESTERN
19		ZA	7806	Llandudno		Cape Town	WESTERN
21	1357	ZA	0019	Kirkney	Van der Hoff Rd	Tshwane	GAUTENG
23		ZA	0200	Fortina AH		Tshwane	GAUTENG

You can easily scroll up or down the table to view the data rows as the table supports infinite scrolling.

You can delete the table visualization by clicking the **X** icon on the top-right.

## 3.10.2 Using a Map Visualization

Spatial Studio supports several types of map visualizations.

The following types of map visualizations are supported:

- Geometry Data Visualization:
  - Point type
  - Line type
  - Polygon / Area type
- GeoRaster Data Visualization
- Hexagonal Data Visualization using H3 Aggregations

The following sections describe how to get started on these visualizations:

- [Visualizing a Point Map](#)
- [About GeoRaster Data Visualization](#)
- [About Hexagonal Data Visualization Using H3 Aggregations](#)
- [About Custom Map Regions Visualization](#)
- [Visualizing Spatiotemporal Datasets](#)  
Starting from Oracle Spatial Studio Release 23.2.0, you can visualize spatiotemporal datasets using the Cesium Timeline widget.
- [Visualizing OGC WMS Maps as a Dataset](#)  
You can visualize an OGC (Open Geospatial Consortium) WMS (Web Map Service) dataset on a map.

### 3.10.2.1 Visualizing a Point Map

Spatial Studio allows you to visualize the location of geographic data as points on maps.

To display your geographic data as maps, you must perform the following steps.

The instructions assume that the dataset for visualization is already added to the project in the Active Project page.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **dataset** from the list to the map view on the right.

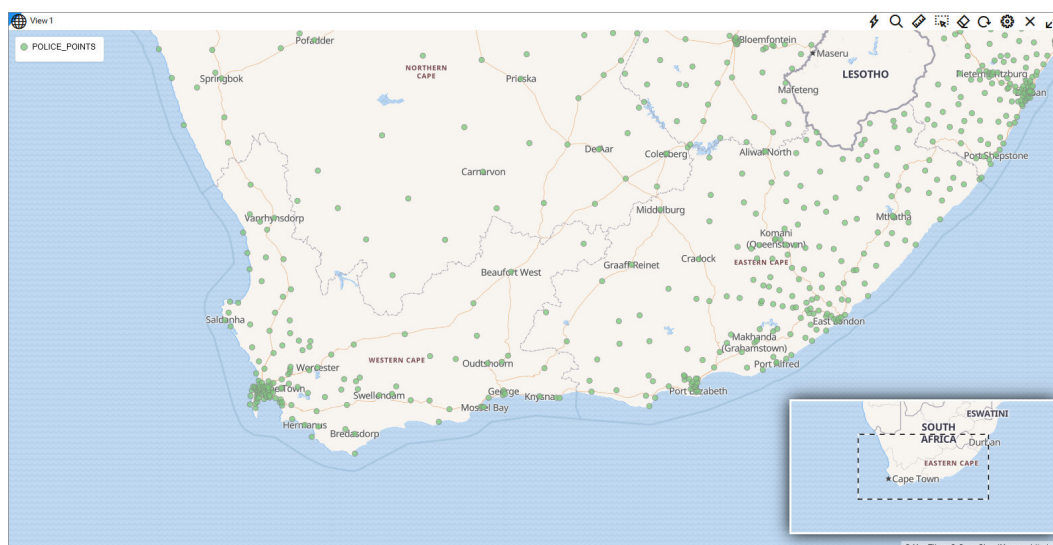


**Tip:**

You can drag and drop multiple datasets in a single action to your map view.

The map layer displays the data points for visualization.

**Figure 3-52 Map Visualization**



- Optionally, you can click **Settings** in the map tool bar and enable **Show minimap** in the **Visualization Settings** dialog.

An inset map showing the overview of the main map is displayed as shown in the preceding figure.



**See Also:**

[Applying a Render Style For a Point Layer](#) to render your map using different rendering styles.

### 3.10.2.2 About GeoRaster Data Visualization

Oracle Spatial Studio allows you to visualize GeoRaster data stored in spatial GeoRaster type in Oracle Database.

Geo-referenced raster data, including satellite imagery, aerial photos from drones, and gridded data, is very useful for mapping applications. It can be directly analyzed, or layered with vector data as a background map for additional context. See Spatial GeoRaster Developer's Guide for more information on GeoRaster data.

- [Visualizing GeoRaster Data on a Map](#)

#### 3.10.2.2.1 Visualizing GeoRaster Data on a Map

You can visualize georaster data on a map using the following steps.

The instructions assume that the GeoRaster dataset is already added to the project in the Active Project page. To create a GeoRaster dataset, see [Creating a GeoRaster Dataset](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **GeoRaster dataset** from the list to the map view on the right.  
A GeoRaster layer is created on the map as shown:

**Figure 3-53 GeoRaster Data Visualization**



You can delete the map visualization by clicking the X icon on the top right.

 **Tip:**

You can enhance your visual display by modifying your Layer Settings using the **Style** tab and **Raster** tab. See [Applying Style for a GeoRaster Layer](#) for more information.

### 3.10.2.3 About Hexagonal Data Visualization Using H3 Aggregations

Oracle Spatial Studio allows you to visualize point-type map data using hexagons with H3 (Hexagonal Hierarchical Spatial Index) aggregations.

Visualizing your map data as hexagons has several advantages:

- It helps you to identify patterns or clusters in a larger point dataset
- Easier interpretation of data, as in a hexagonal cell, all the points are equidistant from the hexagon center-point
- Hexagonal cells are color coded based on the number of datapoints they hold, which enables you to easily understand data patterns

The following sections describe how you can use H3 aggregations in Spatial Studio:

- [Preparing an H3 Aggregation Dataset](#)
- [Visualizing Data With H3 Aggregations](#)

#### 3.10.2.3.1 Preparing an H3 Aggregation Dataset

You can prepare an H3 aggregation dataset by performing the following steps.

The instructions assume that a dataset containing geometric data columns is already loaded to Spatial Studio.

1. Navigate to the **Datasets** page.  
All the datasets loaded to Spatial Studio are shown listed on this page.
2. Select the required dataset **name** and right-click to open the context menu.
3. Click **Create H3 Index** on the **Prepare** submenu.

The **Creating H3 Index** dialog opens as shown:

**Figure 3-54** Creating an H3 Aggregation Dataset

**Creating H3 Index: POLICE\_POINTS**

Geometry Column  
GEOM

Summarize using

Count

Sum

Column to sum

H3 Index Name  
POLICE\_POINTS\_H3

OK Cancel

4. Select the **Geometry Column** for H3 aggregations.
5. Click a **Summarize using** option.  
The values for summarizing are:
  - **Count:** buckets the number of datapoints in each hexagon
  - **Sum:** adds up the values for a specific column in the data set, for all the points that fall in a specific hexagon
6. Select the **Column to sum**, if you have chosen **Sum** to summarize your dataset. Otherwise, you can skip this step.
7. Optionally, modify the **H3 Index Name**.
8. Click **OK**.

An H3 aggregation dataset is created and added as a new row in the Datasets page.

### 3.10.2.3.2 Visualizing Data With H3 Aggregations

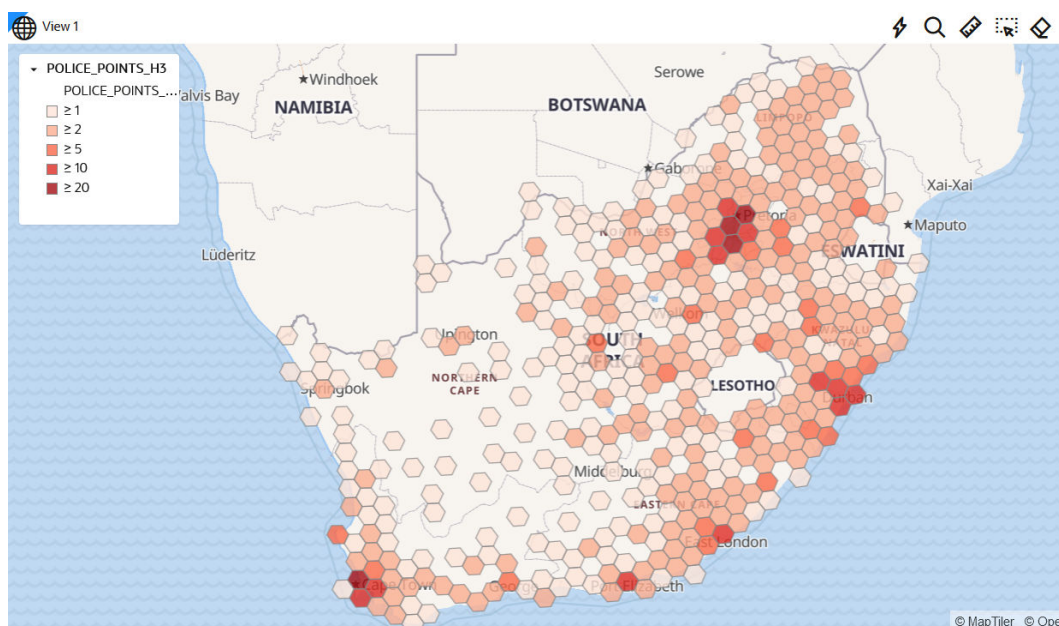
To visualize your map data with H3 aggregations, you must perform the following steps.

The instructions assume that an H3 aggregation dataset is already added to the project in the Active Project page.

To prepare a dataset for H3 aggregation, see [Preparing an H3 Aggregation Dataset](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **H3 Aggregation dataset** from the list to the map view on the right.

A layer showing the hexagonal binning of the data points is displayed on the map as shown:

**Figure 3-55 Map Data Visualization Using Hexagonal Binning**

See [Applying Data-Driven Style to a Map with H3 Aggregations](#) for more information on applying styling for a H3 map layer.

### 3.10.2.4 About Custom Map Regions Visualization

Oracle Spatial Studio allows you to create custom map regions on map layers that support polygon type geometry.

You can create a new map region by selecting multiple polygon shapes and combining them with a new key-value. You can then append or insert this new map region with the new key-value into a target dataset containing all of your other custom map regions, or save it as a new dataset.

These newly created custom shapes are persisted on the underlying database table of the target dataset, and therefore can be used for data visualization or reporting just like any other dataset.

The following are the main characteristics for this feature support:

- The source dataset, that is the dataset whose polygon shapes you will be selecting and then combining into a custom map region, must always be based on an Oracle Database table. Datasets from Oracle views and Studio's Analyses are not currently supported.
- The new regions may or may not be contiguous.
- The target dataset, that is the dataset on which you want to store the newly created custom map regions, will store them in its geo-reference system.
- The target dataset can be a new dataset or an existing dataset in the current project. For a new dataset, you need to specify the connection, the table name, the dataset name, the key-column name of the table, and provide the key value for the new region.



- Only the key value and new geometry value are inserted into the newly created target table. For inserting the new region into an existing dataset, you may provide values for all of the dataset's attributes, or only the required ones.
- An existing targets dataset must meet the following requirements:
  - The geometry metadata information for the target dataset must be available in the SDO\_GEOM\_METADATA view.
  - A spatial index must exist on the geometry column. Note that if a spatial index is not created on the geometry column, then the target data layer cannot be dragged on to the map visualization canvas.

 **Note:**

Prior to Release 22.3, these target dataset requirements were implemented using SQL statements. However, from Release 22.3 onwards, if a new dataset is created to store the regions, then Spatial Studio automatically takes care of updating the geometry metadata and creating a spatial index.

- For a new target dataset, once it is created and the first region is inserted, then the dataset can be manually added to the current active project and added as a layer to the map visualization. For subsequent processing, this new target dataset is treated as an existing target dataset.
- [Creating Custom Regions for Visualization](#)
- [Creating a Target Dataset](#)

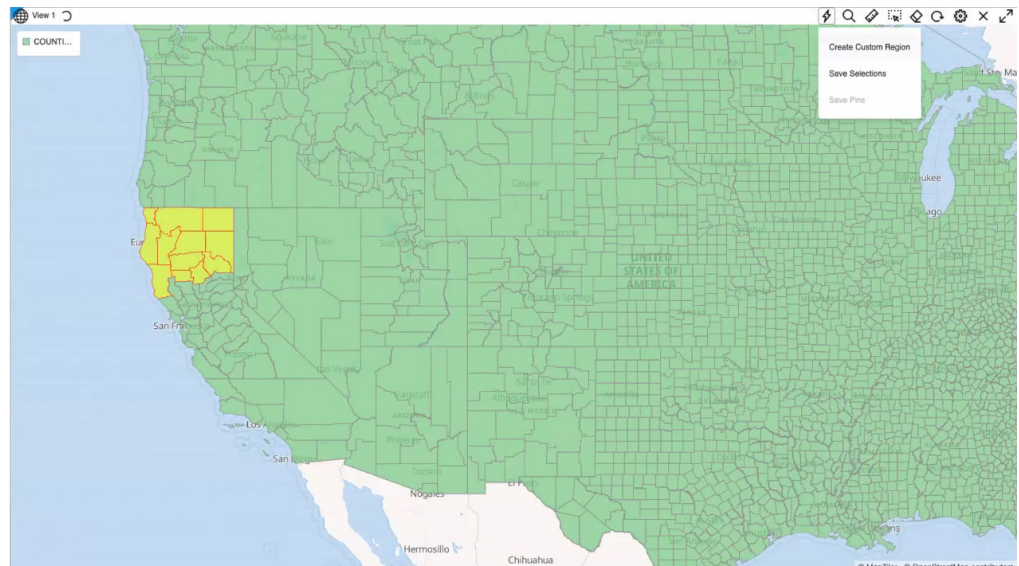
### 3.10.2.4.1 Creating Custom Regions for Visualization

You can create custom polygon regions on the source dataset that contains polygon type geometries and apply them on a target dataset using the follow steps:

The instructions assume that the source and target datasets are already added to your Project in the ActiveProject page.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **source dataset** from the list to the map view on the right.  
A map layer with polygon shapes is created.
5. Create the required custom regions by performing the following steps as many times as required:
  - a. Select the regions for aggregation using the polygon selection tool in the map tool bar.

Figure 3-56 Creating Custom Map Shapes



 **Tip:**

Alternatively, you can also select multiple polygons by using the keyboard shortcut `Ctrl + Click` on a Windows system.


- b. Click , **Actions** icon on the map tool bar and select **Create Custom Region**.  
**Combining shape** dialog opens as shown:

Figure 3-57 Create a Custom Region

**Combining shape**

Combine a set of shapes and append results to existing dataset

Combine shapes in  
COUNTIES.GEOM

Target dataset  
Create new

Include only selected items

Connection  
NEDATA

Table name  
SALES\_TERR

Dataset name  
SALES\_TERR

Key column name  
SALES\_REGION\_NAME

Key value  
Northern CA

**i** Only polygon datasets are allowed as source or target. Target dataset must have a key column defined.

OK Cancel

- c. Select the source dataset from the **Combine shapes in** drop-down list.
- d. Select one of the following desired options for **Target dataset**:
  - **Create new:** To create a new target dataset:
    - i. Enter **Connection**, **Table name**, and **Dataset name** details for the new target dataset.
    - ii. Enter the **Key column name** and the **Key value** that uniquely identifies the custom map region.
  - **Append to existing:** To append the custom polygon shapes to an existing target dataset:
    - i. Select an existing target dataset from the **Append result to dataset** drop-down list.

- ii. Click **Enter new shape attributes** and enter a unique key value for the **Key column name** of the target dataset.
- e. Optionally, switch on or off the **Include only selected items** toggle button:

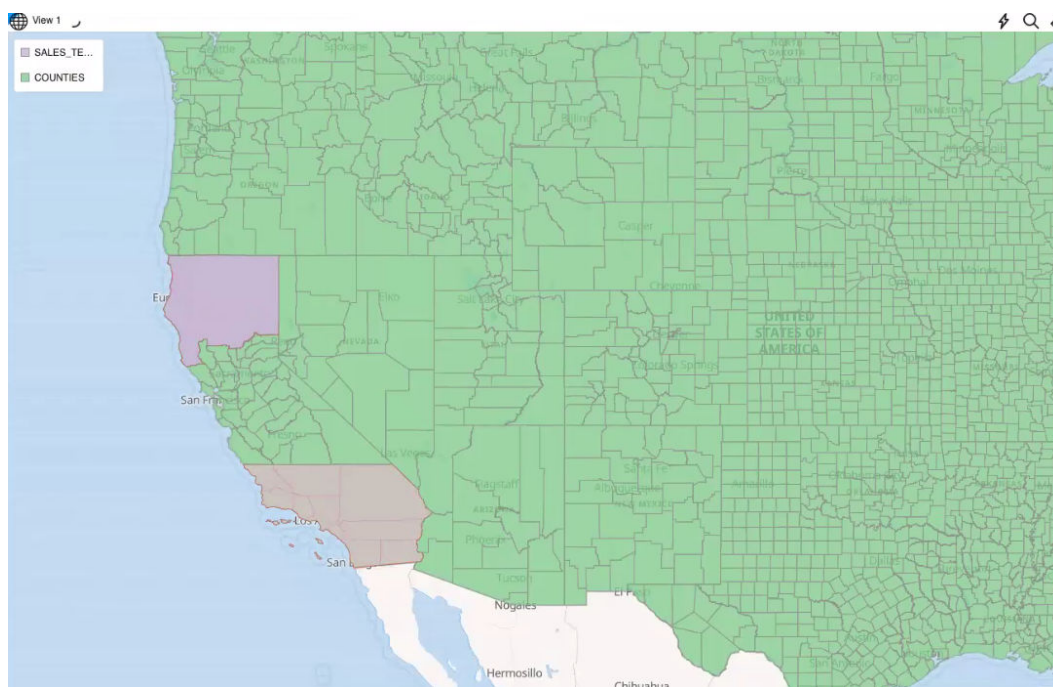
**Caution:**

The whole source dataset may be aggregated into one region if **Include only selected items** is switched off. In this case the process may run for a long time depending on the number of features in the source dataset. Therefore, use this option only if required.

- f. Click **OK** to create the custom map region.
6. Drag and drop the **target dataset** to the map view on the right to view the newly created custom regions.

The following figure shows the newly defined custom regions that were inserted into the target dataset.

**Figure 3-58** Displaying the Custom Shapes on the Target Dataset



### 3.10.2.4.2 Creating a Target Dataset

There are two ways to create a target dataset:

- **By Spatial Studio:** Refer to the [Create New Target Dataset](#) option in the earlier section. Note that you must specify the key column name for the target dataset as the key values are stored in the key column names for the corresponding geometries (custom map regions).
- **By manual process:** Perform the following steps to create a dataset manually:

1. Connect to an Oracle database schema using SQL Developer or any other tools.
2. Create a spatial table as shown:

```
CREATE TABLE affected_regions (region_id NUMBER PRIMARY KEY, geom
SDO_GEOMETRY);
```

3. Insert the spatial table into USER\_SDO\_GEOM\_METADATA view. For example:

```
INSERT INTO USER_SDO_GEOM_METADATA VALUES (
'affected_regions', -- TABLE_NAME
'geom', -- COLUMN_NAME
SDO_DIM_ARRAY -- DIMINFO attribute for storing dimension bounds,
0.5 m as tolerance
(SDO_DIM_ELEMENT ('LONGITUDE', -180, 180, 0.5 ),
SDO_DIM_ELEMENT ( 'LATITUDE', -90, 90, 0.5 )),
4326 -- SRID value for specifying a geodetic coordinate system
);
COMMIT;
```

4. Create a spatial index on the SDO\_GEOMETRY column.

```
CREATE INDEX affected_regions_sidx ON affected_regions(geom)
INDEXTYPE IS MDSYS.SPATIAL_INDEX_V2;
```

5. Create a dataset in Spatial Studio from the database schema used in the preceding steps.

The required target dataset is created. You may use this data layer on to which you can apply the newly created custom map regions.

### 3.10.2.5 Visualizing Spatiotemporal Datasets

Starting from Oracle Spatial Studio Release 23.2.0, you can visualize spatiotemporal datasets using the Cesium Timeline widget.

The following sections provide more information on the Cesium Timeline widget and the supported visualizations.

- [Overview of the Cesium Timeline Widget](#)  
Spatial Studio provides a new standalone Cesium Timeline widget starting from Release 23.2.
- [Configuring the Cesium Timeline Settings](#)  
You can configure custom settings for the Cesium timeline.
- [About Map Layers and the Timeline](#)  
Learn more about the spatiotemporal map layers and the Cesium timeline.
- [Visualizing Live Moving Objects Dataset](#)  
You can visualize live moving objects on a map in Spatial Studio.
- [Visualizing Live and Non-Moving Objects Dataset](#)  
You can visualize a spatiotemporal dataset having ongoing inserts of real-time data, but the locations of the data entities do not change.

- [Visualizing Non-Live Moving Objects Dataset](#)  
You can visualize moving objects with historic timestamp values on a map in Spatial Studio.
- [Visualizing Non-Live and Non-Moving Objects Dataset](#)  
You can visualize a spatiotemporal dataset that simply contains different timestamp values in each row which are not grouped by any entity ids.
- [Visualizing Spatiotemporal Data in OGC WMS Datasets](#)  
You can visualize OGC WMS datasets that contain spatiotemporal data.
- [Visualizing GeoJSON URL Datasets with Spatiotemporal Data](#)  
You can visualize GeoJSON URL based datasets that contain spatiotemporal data.
- [Configuring Animation for Moving Objects Dataset](#)  
You can animate a spatiotemporal map layer of a moving objects dataset based on Cesium map events.
- [Characteristics of Spatiotemporal Map Layers for Moving Objects Dataset](#)  
This section describes the distinct characteristics of the primary and secondary map layers when visualizing a spatiotemporal dataset containing moving objects.

### 3.10.2.5.1 Overview of the Cesium Timeline Widget

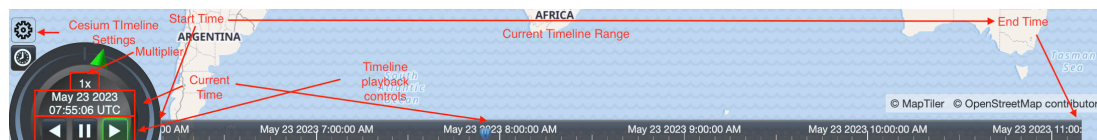
Spatial Studio provides a new standalone Cesium Timeline widget starting from Release 23.2.

The Cesium Timeline widget in Spatial Studio provides the following capabilities:

- Dataset filtering.
- Serves as a hub for controlling all kinds of spatiotemporal data (such as live, historic, moving objects, and so on).  
The only exception being the GeoJSON URL based datasets. These datasets do not cater to Cesium timeline as the external URLs may not have the capability to provide GeoJSON corresponding to a time value, but are rather simply refreshed to provide newer values every  $x$  seconds.
- Offers a scalable solution to add multiple layers of different dataset types at once that can be time-synced as required.

The following figure shows the Cesium Timeline Widget on a map visualization in Spatial Studio.

**Figure 3-59 Cesium Timeline Widget**



The key concepts of the Cesium Timeline are as follows:

- **Cesium Timeline Modes:** The timeline supports two modes of operation. If even one layer corresponding to a **live** dataset is listening to the timeline, then the mode of operation is **LIVE**. Otherwise, the mode of operation is always **HISTORIC**.
- **Cesium Clock Start Time:** Starting point of the current range of timeline. This is the point in time from which the Cesium clock starts ticking.

- **Cesium Clock Stop Time:** Ending point of the current range of timeline. This is the point in time until which the Cesium clock ticks. However upon reaching the end, the timeline behavior depends on the mode:
  - **LIVE:** The timeline will move ahead by updating the start time and stop time values as per the current time.
  - **HISTORIC:** The timeline will loop back to the start time.
- **Cesium Clock Current Time:** The current time frame of the clock. It begins at the Cesium clock start time and ticks every 500ms. Optionally, you can slide the pointer on the timeline manually to set your current time. Also note the following with respect to the type of the spatiotemporal dataset:
  - **Live Spatiotemporal Dataset:** The Cesium clock current time value for such datasets is configured to always be pointing to current UTC time (unless manually changed).
  - **Non-Live Spatiotemporal Dataset:** If no other dataset is added to the timeline, then the Cesium clock for such a dataset automatically sets its range to minimum and maximum of the timestamp column, and the Cesium clock current time starts from the minimum value.
- **Multiplier:** Multiplies to the interval at which the clock ticks (500ms) in order to make the clock jump ahead or rewind accordingly.
- **Timeline Playback Controls:**
  1. **Pause:** Stops the timeline from animating and throwing tick events. The timeline pauses at current timeline frame.
  2. **Forward and Backward Play Buttons:** Makes the timeline animate in the chosen direction and includes the multiplier value (+/- Multiplier \* 500ms)
- **Cesium Timeline settings:** Allows you to control the timeline settings.

#### Related Topics

- [Configuring the Cesium Timeline Settings](#)  
You can configure custom settings for the Cesium timeline.
- [About Map Layers and the Timeline](#)  
Learn more about the spatiotemporal map layers and the Cesium timeline.

### 3.10.2.5.2 Configuring the Cesium Timeline Settings

You can configure custom settings for the Cesium timeline.

Perform the following steps to configure the Cesium Timeline settings in your map visualization.

The instructions assume that you have a project linked to a spatiotemporal dataset and the project is opened on your Active Project page.

1. Click the **Settings** icon in your map tool bar.
2. Switch **ON** the **Show timeline** toggle and click **OK**.

The Cesium Timeline widget appears at the bottom of the map visualization canvas.

3. Click  on the timeline to configure the Cesium timeline settings.

The **Timeline Settings** dialog opens as shown:

Figure 3-60 Timeline Settings

**Timeline Settings**

Start Time (UTC)  
10/08/2023, 05:51 AM

Stop Time (UTC)  
10/08/2023, 10:51 AM

Type or select Multiplier value  
1x

Display Time Zone  
Universal Time Coordinated (UTC)

Autohide time of day

Apply Cancel

- a. Select the **Start Time** and **Stop Time** to set the timeline range.
- b. Enter or select a multiplier value from the **Type or select Multiplier value** list box.  
You can use a preset (Second, Minutes, Hours, Days, Weeks, Month, Year) multiplier or type a value such as 15 or 15x.
- c. Select the **Display Time Zone** in which you want the Cesium timeline to display its current time and timeline labels.
- d. Optionally, switch **ON** the **Autohide time of day**.  
If you opt to autohide time of day, then the time values from the timeline labels are hidden if the timeline range selected is greater than a week.
- e. Click **Apply**.

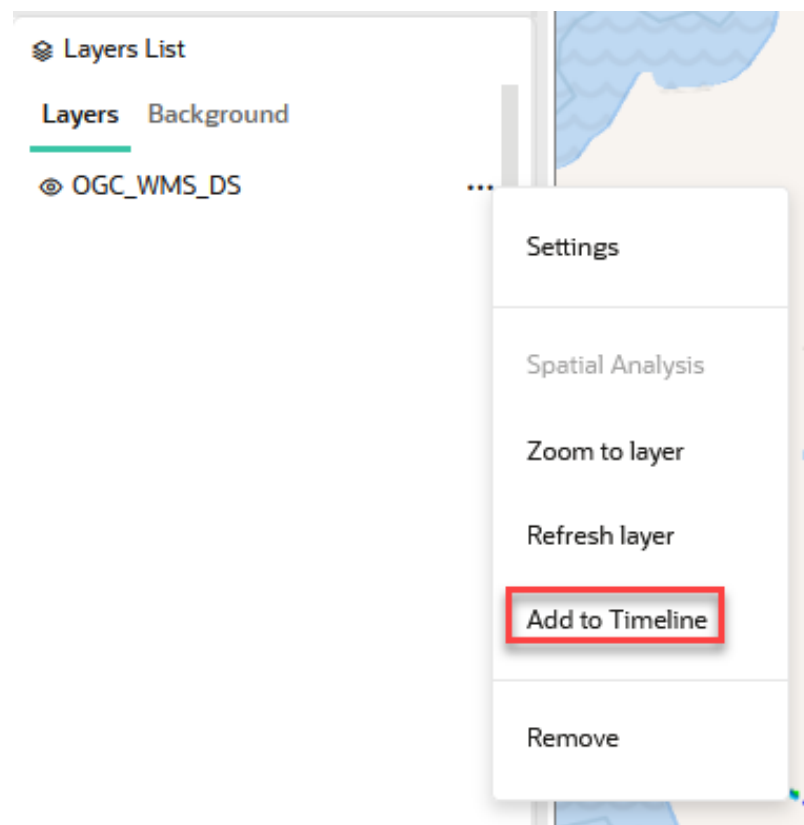
### 3.10.2.5.3 About Map Layers and the Timeline

Learn more about the spatiotemporal map layers and the Cesium timeline.



- In order to add a map layer to the timeline, you must first enable spatiotemporal in the underlying dataset for the map layer. See [Enabling Spatiotemporal for a Dataset](#) for more information.
- You can then add one or more spatiotemporal map layers to the Cesium timeline by performing the following steps:
  - Click the **Settings** icon in your map tool bar and switch **ON** the **Show timeline** toggle to view the Cesium timeline widget at the bottom of the map visualization canvas.
  - Select the **Add to Timeline** option in the context menu of the map layer as shown:

**Figure 3-61 Adding a Map Layer to the Timeline**



The map layer gets added to the timeline.

- Note the following if you add multiple map layers to the timeline:
  - Each of these map layers respond to the timeline events independently. Therefore, you can configure each map layer to have its own properties (such as refresh time) and they then accordingly respond to the listener events. As the timeline events are thrown at every 500ms tick interval, each layer can have its own refresh time (more than 500ms) as to when they want to respond to these events.
  - Also, in case of the map layers for datasets with historic timestamp values, all layers will loop back as per the current timeline range. This may either

correspond to the first layer added to the timeline or it can be a custom range that you set in the timeline settings.

- If a layer corresponding to a live dataset is added to the timeline, then irrespective of the historic dataset layers listening to the timeline already, the timeline will never loop back and will keep moving forward.
- If you make any changes to the underlying dataset properties of a map layer, which is already added to the timeline, such as:
  - \* Disabling the **Enable Spatiotemporal** toggle
  - \* Toggling **Data is Live** and **Moving Objects**Then, the listener gets removed from the timeline. In such cases, it is recommended that you remove the layer from the timeline and add it again after changing the properties.
- If you change the **Time Unit** property of a standard filtering dataset, then this will take effect immediately and the filtering on the map visualization will adhere to the new **Time Unit** value.

#### 3.10.2.5.4 Visualizing Live Moving Objects Dataset

You can visualize live moving objects on a map in Spatial Studio.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Configuring Spatiotemporal for Live Moving Objects Dataset](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.

This lists the various visualization options.

2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.

A default base map is displayed with no data visualization layers.

3. Click the **Data** tab on the left pane in the Active Project page.

This lists all the **Datasets** that are loaded for the project.

4. Click and drag the desired spatiotemporal dataset from the list to the map view on the right.

Two map layers belonging to the dataset are created on the map. The second layer representing the trails of the moving object is added automatically in Spatial Studio. See [Characteristics of Spatiotemporal Map Layers for Moving Objects Dataset](#) for more information on the two map layers.

5. Click the **Settings** icon in your map tool bar.
6. Switch **ON** the **Show timeline** toggle and click **OK**.

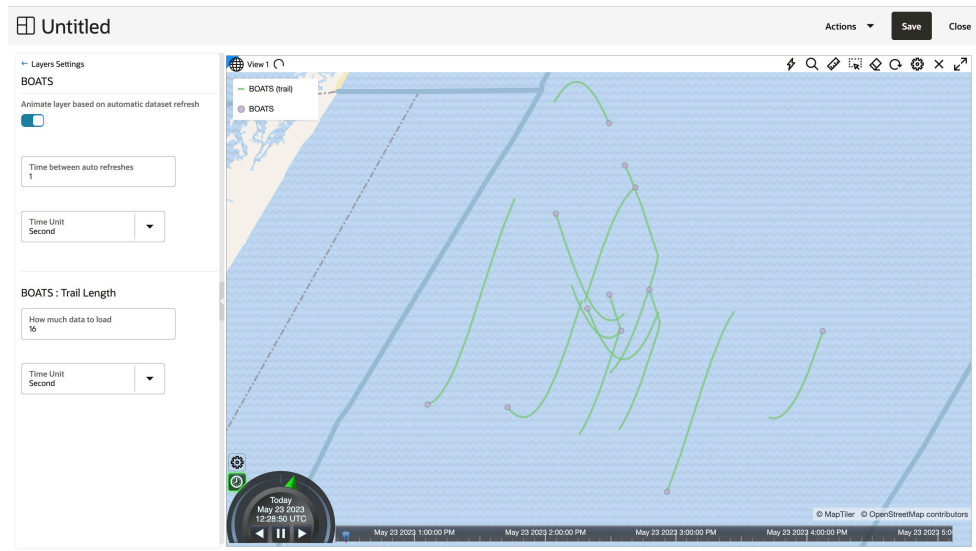
The Cesium timeline widget appears at the bottom of the map visualization canvas. However, the timeline is not operational at this step.

7. Click **\*\*\*** against the primary layer in the **Data** tab of the **Layers** list and click **Add to Timeline**,

Adding a map layer to the timeline will point to the current UTC time and the layer is now listening to the timeline events. However, the timeline is not operational at this step. Optionally, repeat this step to add multiple layers (of different spatiotemporal datasets) to the timeline and listen to its events.

- Configure animation for the map layer by following the steps in [Configuring Animation for Moving Objects Dataset](#).

**Figure 3-62 Configuring Animation Settings**



- Select **Zoom Timeline to Range** in the context menu of the map layer. The timeline is refocused on current UTC time.
- Optionally, configure custom **Start Time**, **Stop Time**, **Multiplier**, and so on from the timeline settings. You can also use the Cesium timeline controls and make the current time pointer slide to a different timeframe.
- Optionally, select **Remove from Timeline** in the context menu of the map layer if you wish the map layer to stop listening to the Cesium timeline.

### 3.10.2.5.5 Visualizing Live and Non-Moving Objects Dataset

You can visualize a spatiotemporal dataset having ongoing inserts of real-time data, but the locations of the data entities do not change.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Configuring Spatiotemporal for Live and Non-Moving Objects Dataset](#) for more information.

- Click the **Visualizations** tab on the left pane in the Active Project page. This lists the various visualization options.
- Click and drag **Map** from the list to the visualization window on the right to create a map visualization. A default base map is displayed with no data visualization layers.
- Click the **Data** tab on the left pane in the Active Project page. This lists all the **Datasets** that are loaded for the project.
- Click and drag the desired spatiotemporal dataset from the list to the map view on the right. Two map layers belonging to the dataset are created on the map.

5. Click the **Settings** icon in your map tool bar.
  6. Switch ON the **Show timeline** toggle and click **OK**.
- The Cesium Timeline widget appears at the bottom of the map visualization canvas. However, the timeline is not operational at this step.
7. Click **☰** against the primary layer in the **Data** tab of the **Layers** list and click **Add to Timeline**.
  8. Select **Configure Animation** from the context menu of the map layer.
  9. Switch ON **Animate layer based on automatic dataset refresh**.

The dataset animates with the Cesium clock events.

10. Specify **Time between auto refreshes** to indicate the frequency of data refresh from the backend. This configuration also determines the smoothness and speed of the temporal animation.

Also, note the following:

- Spatial Studio displays a default frequency value which is same as the **Data Change Rate** value configured on the Spatiotemporal dataset used for the visualization.
  - Only one dataset layer for the geometry animates (attributes change) as per the Cesium clock's current time (which points to the present UTC time value) and the multiplier value (default is 1x). Since the dataset is a streaming entity it will not have data ahead of time. Hence you must not change the default Cesium clock values. If you expect the data to be updated every x minutes, then configure **Time between auto refreshes** to x minutes, but do not change the Cesium timeline range or the multiplier value.
11. Select **Zoom Timeline to Range** in the context menu of the map layer to make the timeline reset to current clock time and a 1x multiplier.  
  
Upon reaching the set end time, the timeline will keep moving ahead and will not loop back.
  12. Optionally, select **Remove from Timeline** in the context menu of the map layer if you wish the map layer to stop listening to the Cesium timeline.

### 3.10.2.5.6 Visualizing Non-Live Moving Objects Dataset

You can visualize moving objects with historic timestamp values on a map in Spatial Studio.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Configuring Spatiotemporal for Non-Live Moving Objects Dataset](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired spatiotemporal dataset from the list to the map view on the right.

Two map layers belonging to the dataset are created on the map. The second layer representing the trails of the moving object is added automatically in Spatial Studio. See [Characteristics of Spatiotemporal Map Layers for Moving Objects Dataset](#) for more information on the two map layers.

5. Click the **Settings** icon in your map tool bar.
6. Switch **ON** the **Show timeline** toggle and click **OK**.

The Cesium Timeline widget appears at the bottom of the map visualization canvas. However, the timeline is not operational at this step.

7. Click **\*\*\*** against the primary layer in the **Data** tab of the **Layers** list and click **Add to Timeline**.

The map layer gets added to the timeline and the timeline will range from minimum value to maximum value of the timestamp column. The current time will point to the min value of the timestamp column and the layer is now listening to the timeline events. However, the timeline is not operational at this step. Optionally, repeat this step to add multiple layers (of different spatiotemporal datasets) to the timeline.

8. Configure animation for the map layer by following the steps in [Configuring Animation for Moving Objects Dataset](#).

9. Select **Zoom Timeline to Range** in the context menu of the map layer.

The timeline is refocused to range from minimum value to maximum value of the timestamp column and current time will point to the minimum value of the timestamp column. This acts as a looping mechanism for a historic dataset.

10. Optionally, configure custom **Start Time**, **Stop Time**, **Multiplier**, and so on from the timeline settings. You can also use the Cesium timeline controls and make the current time pointer slide to a different timeframe.
11. Optionally, select **Remove from Timeline** in the context menu of the map layer if you wish the map layer to stop listening to the Cesium timeline.

### 3.10.2.5.7 Visualizing Non-Live and Non-Moving Objects Dataset

You can visualize a spatiotemporal dataset that simply contains different timestamp values in each row which are not grouped by any entity ids.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Configuring Spatiotemporal for Non-Live and Non-Moving Objects Dataset](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired spatiotemporal dataset from the list to the map view on the right.  
A single map layer is created on the map.

5. Click the **Settings** icon in your map tool bar.
6. Switch **ON** the **Show timeline** toggle and click **OK**.

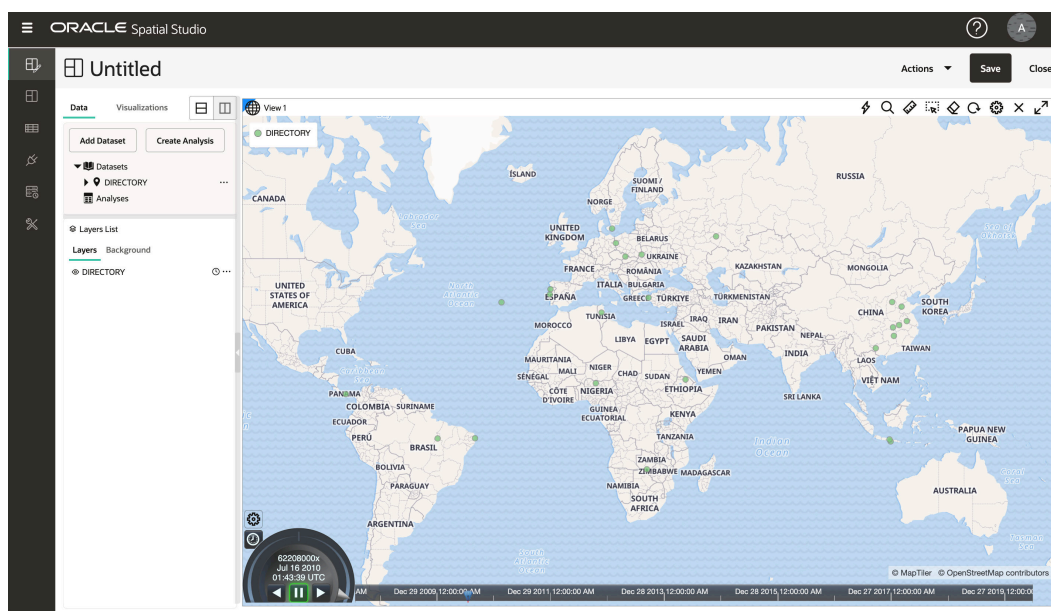
The Cesium Timeline widget appears at the bottom of the map visualization canvas. However, the timeline is not operational at this step.

7. Click **...** against the primary layer in the **Data** tab of the **Layers** list and click **Add to Timeline**.

The map layer gets added to the timeline and the timeline will range from minimum value to maximum value of the timestamp column. The current time will point to the minimum value of the timestamp column and the layer is now listening to the timeline events. Also, the filtering configured for the spatiotemporal settings will automatically be applied and the map layer will be filtered as per the Cesium clock current time. For example, if the Cesium clock current time is Monday, May 22, 2023 5:13 PM and the configured time unit for filtering is `month`, then the map visualization will show all the geometries that have the timestamps between May 1, 2023 and May 31, 2023.

The multiplier of the timeline matches the filtering time unit selected. However, you can also change the time unit at which the dataset is currently being filtered (see [Configuring Spatiotemporal for Non-Live and Non-Moving Objects Dataset](#)).

**Figure 3-63 Applying Standard Filtering on a Map Layer**



8. Select **Zoom Timeline to Range** in the context menu of the map layer.
 

The timeline is refocused to range from minimum value to maximum value of the timestamp column and the current time will point to the minimum value of the timestamp column. This acts as a looping mechanism for a historic dataset.
9. Optionally, select custom **Start Time**, **Stop Time**, **Multiplier**, and so on from the timeline settings. You can also use the Cesium timeline controls and make the current time pointer slide to a different time frame.
10. Optionally, select **Remove from Timeline** in the context menu of the map layer if you wish the map layer to stop listening to the Cesium timeline.

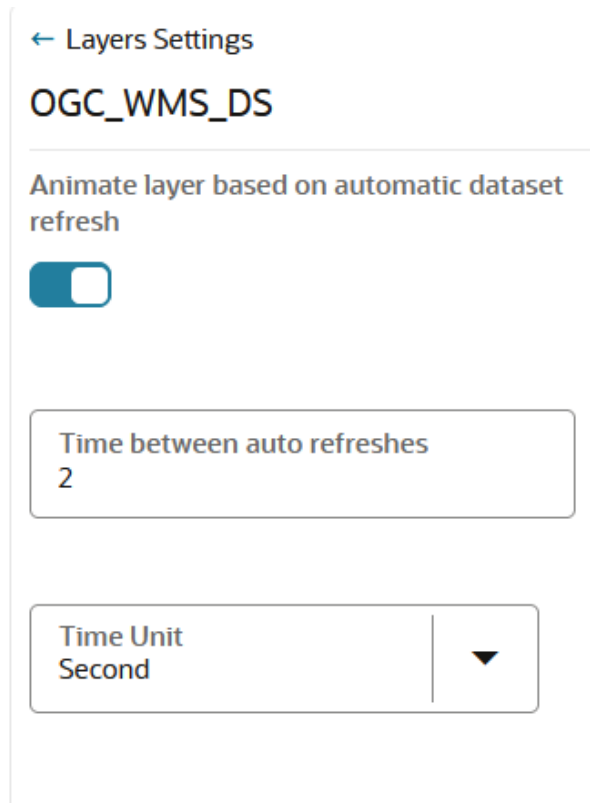
### 3.10.2.5.8 Visualizing Spatiotemporal Data in OGC WMS Datasets

You can visualize OGC WMS datasets that contain spatiotemporal data.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Configuring Spatiotemporal for OGC WMS Datasets](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired spatiotemporal dataset from the list to the map view on the right.  
A single map layer is created on the map.
5. Click the **Settings** icon in your map tool bar.
6. Switch **ON** the **Show timeline** toggle and click **OK**.  
The Cesium Timeline widget appears at the bottom of the map visualization canvas. However, the timeline is not operational at this step.
7. Click **☰** against the map layer in the **Data** tab of the **Layers** list and select **Add to Timeline**.  
The map layer gets added to the timeline. Although the timeline is now listening to the timeline events, it is still not operational.
8. Select **Configure Animation** from the context menu of the map layer.  
The animation configuration dialog opens as shown:

Figure 3-64 Configuring Animation for an WMS Dataset

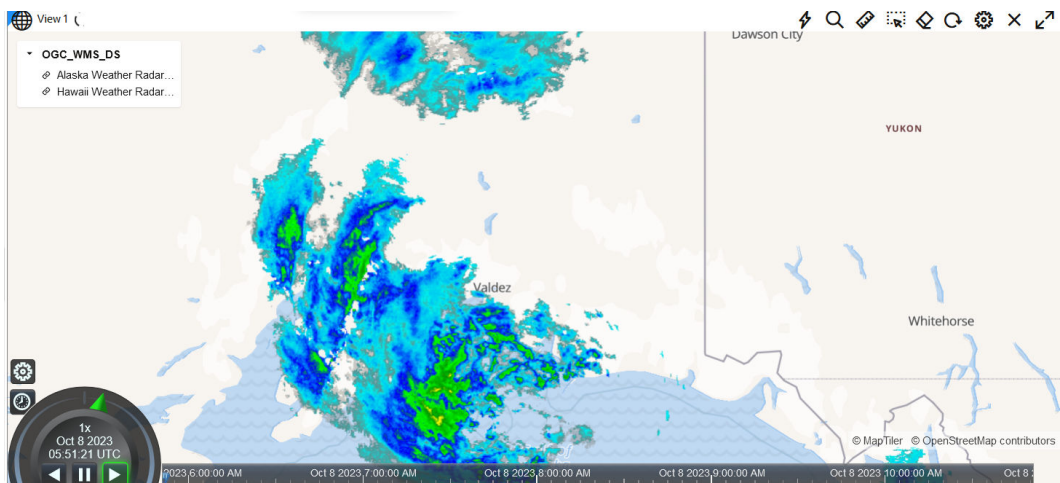


9. Switch ON **Animate layer based on automatic dataset refresh**.

The dataset animates with the Cesium clock events.

The dataset will poll the WMS service to fetch the images as per the time value under the Cesium clock current time.

Figure 3-65 Visualizing WMS Dataset with Spatiotemporal Data



10. Specify **Time between auto refreshes** to indicate the frequency of data refresh from the backend. This configuration also determines the smoothness and speed of the temporal animation.



Also, note the following:

- Spatial Studio displays a default value of 2 seconds for WMS datasets. The effective refresh rates depend on how fast images are fetched from the respective WMS service. Empirically, for WMS data, any data change rate less than 2 seconds is not sufficient to retrieve image and refresh the tiles. It can cause incomplete image loading before the new refresh, or the visualization may remain stuck in refresh state.
- The parameter ignores all the tick events from the timeline if the Cesium clock current time is less than `previousRefreshTime + x seconds` (or any other time unit). For example, if a dataset is supposed to refresh every 30 seconds, then configure this value in **Time between auto refreshes** so that even if the Cesium clock continues to throw tick events for all layers, this layer will ignore any such events.

11. Specify a **Time Unit**.

12. Optionally, select custom **Start Time**, **Stop Time**, **Multiplier**, and so on from the timeline settings. You can also use the Cesium timeline controls and make the current time pointer slide to a different time frame.

 **Note:**

**Zoom Timeline to Range** is disabled for an OGC WMS dataset. This is because each WMS dataset may comprise more than one image layers and it will be inaccurate to choose a time range for any one of these layers automatically. Therefore, use the Cesium timeline settings (see [Configuring the Cesium Timeline Settings](#)) to manually set the appropriate range of the timeline for the specific image layer that you wish to animate.

13. Optionally, select **Remove from Timeline** in the context menu of the map layer if you wish the map layer to stop listening to the Cesium timeline.

### 3.10.2.5.9 Visualizing GeoJSON URL Datasets with Spatiotemporal Data

You can visualize GeoJSON URL based datasets that contain spatiotemporal data.

The following instructions assume that you have enabled spatiotemporal for such a dataset and the dataset is already added to the project in the Active Project page. See [Visualizing GeoJSON URL Datasets with Spatiotemporal Data](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired spatiotemporal dataset from the list to the map view on the right.  
A single map layer is created on the map.

5. Click **☰** against the map layer in the **Data** tab of the **Layers** list and select **Configure Animation**.

 **Note:**

GeoJSON URL based datasets are not dependent on the time values represented by the Cesium Timeline. They are just required to refresh periodically and therefore you need not enable the Cesium Timeline for such datasets.

6. Switch ON **Animate layer based on automatic dataset refresh**.
7. Specify **Time between auto refreshes** to indicate the frequency of data refresh from the backend. This configuration also determines the smoothness and speed of the temporal animation.

The GeoJSON URL map layer is set to refresh periodically based on this configured interval value.

### 3.10.2.5.10 Configuring Animation for Moving Objects Dataset

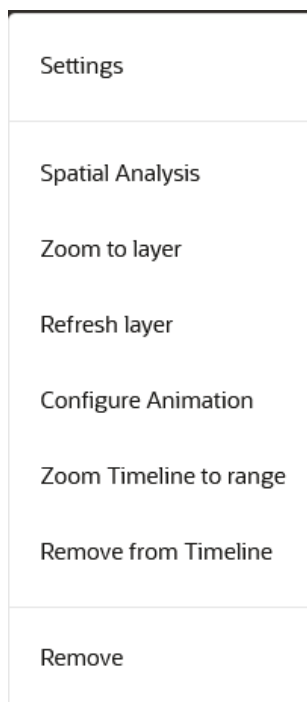
You can animate a spatiotemporal map layer of a moving objects dataset based on Cesium map events.

The instructions assume that the spatiotemporal map layer is already added to the Cesium Timeline.

1. Click **☰** against the primary layer in the **Data** tab of the **Layers** list.

The context menu of the map layer displays the following options:

**Figure 3-66 Context Menu for a Map Layer**



2. Select **Configure Animation**.

The animation settings for the map layer opens.

3. Switch ON **Animate layer based on automatic dataset refresh**.

The dataset animates with the Cesium clock events.

4. Specify **Time between auto refreshes** to indicate the frequency of data refresh from the backend. This configuration also determines the smoothness and speed of the temporal animation.

Also, note the following:

- Spatial Studio displays a default frequency value which is same as the **Data Change Rate** value configured on the Spatiotemporal dataset used for the visualization.
  - All the map layers added to the timeline can individually have their own refresh or animation intervals.
  - The parameter ignores all the tick events from the timeline if the Cesium clock current time is less than `previousRefreshTime + x seconds` (or any other time unit). For example, if a dataset is supposed to refresh every 30 seconds, then configure this value in **Time between auto refreshes** so that even if the Cesium clock continues to throw tick events for all layers, this layer will ignore any such events.
5. Specify a **Time Unit**.
  6. Specify **How much data to load**, the trail length of your moving object. A trail length value of `N` indicates that Spatial Studio must fetch the recent `N` units (unit value as specified in the following step) of data of the moving object during every refresh.

 **Tip:**

If the underlying database table or view contains millions of records, you can limit the map animation to display only the most recent `N` units of data as configured in **Trail Length**.

Note that Spatial Studio displays a default trail length value which is 15 times the **Data Change Rate** value configured on the Spatiotemporal dataset and is rounded to the nearest integer.

7. Specify a **Time Unit** for the trail length.

The animation settings are configured and you can view the animation of moving objects on the map.

 **Note:**

You can choose a symbol and color for your moving object. However, ensure that the symbol you select adheres to the conditions explained in [Characteristics of Spatiotemporal Map Layers for Moving Objects Dataset](#).

### 3.10.2.5.11 Characteristics of Spatiotemporal Map Layers for Moving Objects Dataset

This section describes the distinct characteristics of the primary and secondary map layers when visualizing a spatiotemporal dataset containing moving objects.

- The trails map layer is considered the *secondary* layer to the main layer. If you delete the main layer from the map, then the trails map layer is automatically deleted as well.
- The main layer which shares the same name as the dataset is always a Point-type layer, that you can visualize using either as circle or using symbols or icons. When you use symbols, Spatial Studio will also automatically rotate the symbol based on the direction your object is moving.  
Also note, the current release of Spatial Studio supports only those symbols that naturally point North (or point up) or those that do not represent an inherent direction or angle, such as any rounded symbols.
- The main layer will keep its animation even when you toggle the secondary layer invisible. However, if you toggle the main layer invisible, the trail layer will remain static as no new data is fetched from the backend.
- You cannot switch the main layer to Heatmap or Cluster type.
- You cannot use sticky Tooltip or popup as they cannot stick to the moving object when it moves to new locations.
- Spatial Studio drives the animation of moving objects and their trails by constantly refreshing the main layer's data from the backend. This implies that the base table is queried and the last N seconds of data is fetched by filtering the records based on the `TIMESTAMP` column.
- If you are working in a multi-user or multi-visualization environment or both, you must take care to avoid overloading the database with many animating layer's data refresh queries. For instance, ensure a layer is not refreshing its data too frequently, or fetching too many seconds of data on each refresh, or both.

### 3.10.2.6 Visualizing OGC WMS Maps as a Dataset

You can visualize an OGC (Open Geospatial Consortium) WMS (Web Map Service) dataset on a map.

This is in addition to creating a custom basemap that is based on external WMS maps, and switching to such a basemap in your map visualization. The main issue in using basemaps is that a single map visualization can only have one basemap. For instance, if you are using a basemap based on WMS images, then you can no longer display other background maps, such as OpenStreetMap. Therefore, the geographic context is lost as the WMS images typically do not contain detailed administrative boundaries, or other common features seen on a regular background map.

To overcome this limitation, Spatial Studio allows you to use a regular background map, while adding the WMS map images as a dataset layer on top. As the WMS images are just another dataset, which can be displayed as another layer on the map, you can easily reorder the layers, or toggle the visibility of the WMS images just like with any other map layer.

To visualize an OGC WMS dataset on a map, you must perform the following steps.

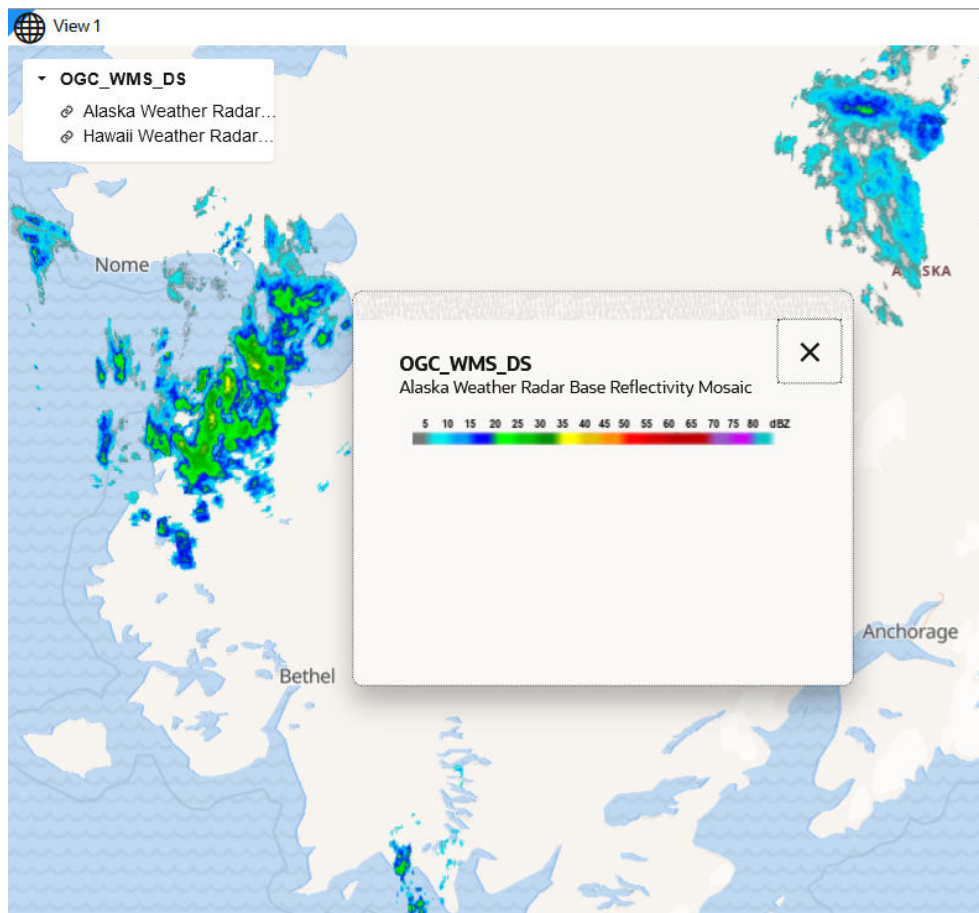
As a prerequisite ensure the following:

- The OGC WMS dataset is created using an OGC WMS connection and exists in Spatial Studio. See [Creating an OGC WMS Dataset](#) for more information.

- The required OGC WMS dataset is added to the project in the Active Project page.
1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
  2. Click and drag **Map** from the list to the visualization window on the right to create a map visualization.  
A default base map is displayed with no data visualization layers.
  3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
  4. Drag and drop the desired **OGC WMS dataset** from the list to the map view on the right.

The OGC WMS data layer gets displayed on the map. The map will automatically zoom to the area covered by the WMS dataset if it is the very first dataset to be added to your map.

**Figure 3-67 Visualizing an OGC WMS Data Layer**



The preceding figure illustrates the weather pattern images (loaded from a WMS service) which are overlaid on top of the OpenStreetMap background.

 **Tip:**

Click the **Image** link on the map legend to view the legend information generated by the WMS service for the OGC WMS map layer.

 **Note:**

When you display a new WMS dataset for visualization, your browser will be sending the WMS image requests directly to the WMS server. You can always refresh the map layer to reflect the current data from the WMS server.

**Related Topics**

- [Creating an OGC WMS Connection](#)  
You can create a new connection to an external OGC (Open Geospatial Consortium) WMS (Web Map Service) service.
- [Creating an OGC WMS Dataset](#)  
Starting with Spatial Studio release 22.3, you can define datasets that are based on the `GetMap` responses from any external OGC (Open Geospatial Consortium) WMS (Web Map Service) services.

### 3.10.3 Using a Cesium Map Visualization

Spatial Studio uses a CesiumJS plugin that allows you to view 3D visualizations using 3D Tiles or CZML data on a Cesium map.

Cesium map allows you to display your real-world geospatial 3D data in a 3D environment. In order to build interactive 3D visualizations using Cesium maps, you can upload one of the following files to Spatial Studio:

- **3D Tileset:** Supports formats are:
  - Point Cloud (.pnts)
  - Batched 3D Model (.b3dm)
- **CZML file:** CZML formatted data in .czml files

It is important to note the following when using a Cesium map visualization:

- Generating 3D Tiles or CZML formatted data file for your geospatial 3D data must be carried out using any third party software outside of Oracle Spatial Studio.
- 3D Tiles and CZML files are stored in the file system on Spatial Studio's server, not in Oracle Database.
- Currently this feature supports only displaying 3D Tiles and CZML data on maps. It does not support 3D analysis.
- [Visualizing a 3D Tileset Using a Cesium Map](#)
- [Visualizing CZML Data Using a Cesium Map](#)

#### 3.10.3.1 Visualizing a 3D Tileset Using a Cesium Map

You can visualize your dataset with 3D Tiles on a Cesium map using the following steps.

The instructions assume that the 3D Tiles are uploaded and the dataset is already added to the project in the Active Project page. To create a dataset with 3D Tiles, see [Creating a Dataset from Cesium Datasets](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Cesium-Map** from the list to the visualization canvas on the right to create a Cesium map visualization.  
A default Cesium map is displayed.

 **Tip:**

You can configure new background Cesium maps by adding maps from the following two sources:

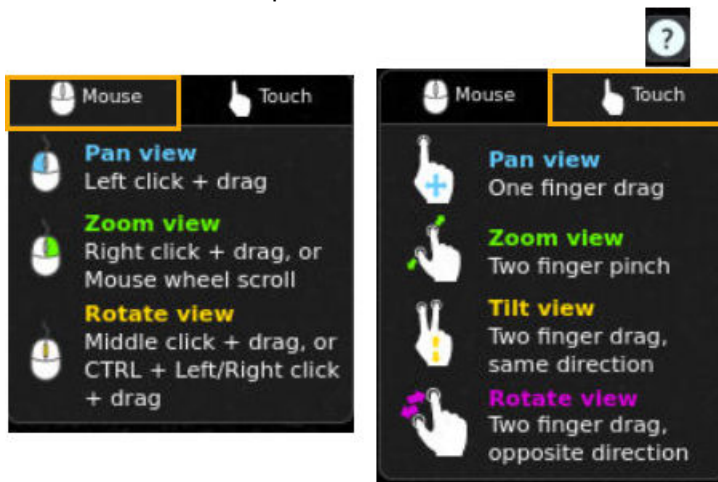
- URL template
- WMTS service

3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **3D Tiles dataset** from the list to the map view on the right.  
A 3D layer is created on the map as shown:

**Figure 3-68 3D Cesium Map Visualization**



To interact with the map, click the ? icon and use either of the following options shown:



### 3.10.3.2 Visualizing CZML Data Using a Cesium Map

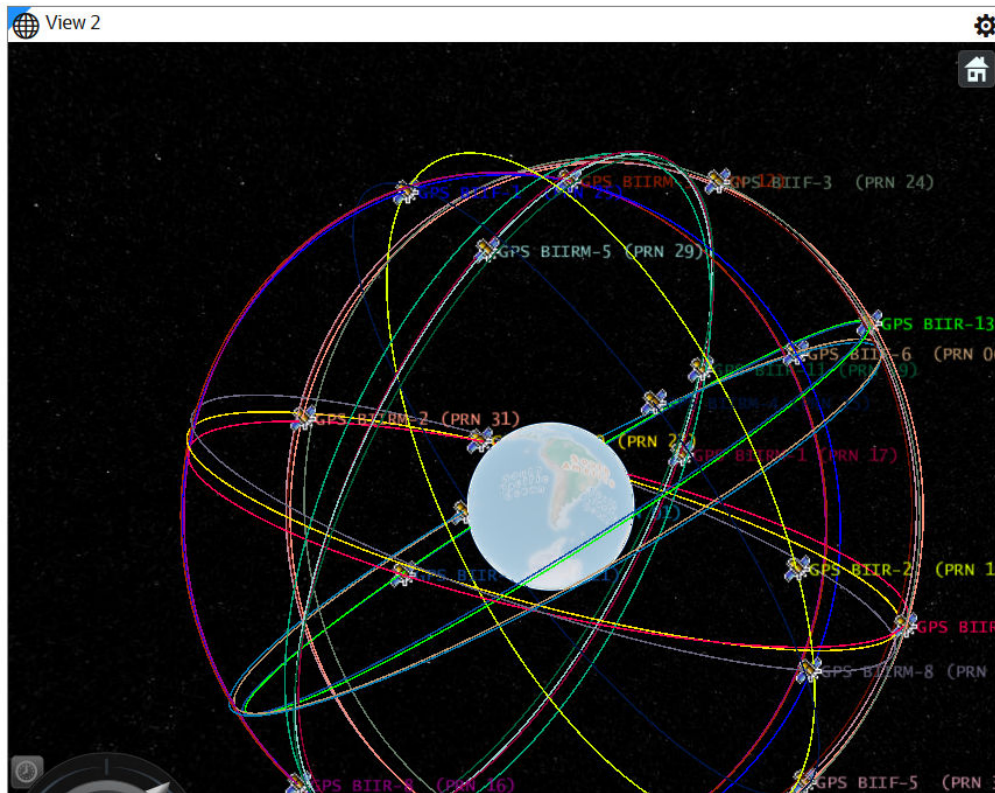
You can visualize your CZML dataset on a Cesium map using the following steps.

The instructions assume that the CZML formatted data is uploaded and the CZML dataset is already added to the project in the Active Project page. To create a dataset using .czml file, see [Creating a Dataset from Cesium Datasets](#) for more information.

1. Click the **Visualizations** tab on the left pane in the Active Project page.  
This lists the various visualization options.
2. Click and drag **Cesium-Map** from the list to the visualization canvas on the right to create a Cesium map visualization.
3. Click the **Data** tab on the left pane in the Active Project page.  
This lists all the **Datasets** that are loaded for the project.
4. Click and drag the desired **CZML dataset** from the list to the map view on the right.  
A 3D layer is created on the map as shown:



Figure 3-69 Cesium Map Visualization Using a CZML Dataset



### 3.10.4 Styling a Map Layer

Spatial Studio allows you to explore different styling options for your map layers, in order to enhance visualization and analysis.

The styling options provided to you may vary depending on the type of data you are mapping.

The following sections describe a few styling techniques for the different data types:

- [Applying a Render Style For a Point Layer](#)
- [Applying Style for a GeoRaster Layer](#)
- [Applying Data-Driven Style to a Map with H3 Aggregations](#)
- [Applying Predefined Colors to a Map Layer](#)
- [Applying Predefined Symbols to a Map Layer](#)
- [Applying Predefined Colors to Symbols](#)
- [Applying Custom Map Symbols to a Map Layer](#)
- [Applying an Animated Map Symbol to a Map Layer](#)
- [Applying Style to a CZML Cesium Map Layer](#)
- [Applying Style to a Map Layer Using a GeoJSON URL Dataset](#)
- [Setting Selection Tolerance on a Map Layer](#)
- [Adding a Pin on a Map](#)

- [Applying Map Backgrounds](#)
- [Using the Redline Map Tool](#)

### 3.10.4.1 Applying a Render Style For a Point Layer

You can render a point map layer using one of the following render style options:

- Circle (default)
- Symbol
- Heatmap
- Cluster

The following steps enable you to apply your preferred render style option.

The instructions assume that you have point map layer displayed on your Active Project page.

1. Click **☰** against the map layer in the **Layers** tab of the **Layers List**.
2. Select **Settings** in the context menu.
3. Configure **Style** and select a **Render Style** option from the drop-down list.

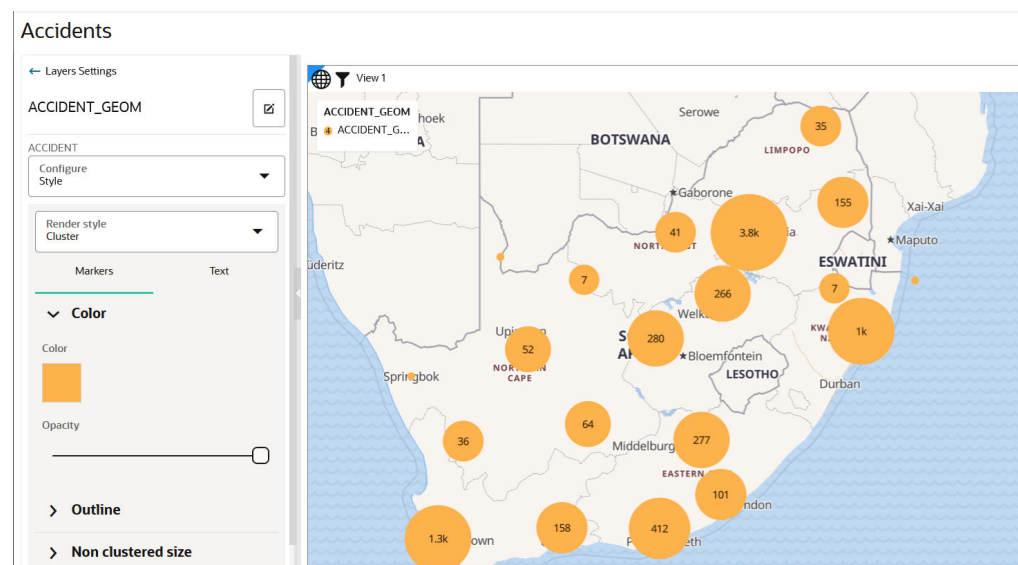
By default, a point map layer always uses Circle to represent the data points.

 **Note:**

Each render style has its own settings.

- If you select **Cluster** as the render style option, the data points on your map are shown clustered depending on the cluster circle size.

**Figure 3-70 Applying a Cluster Style**



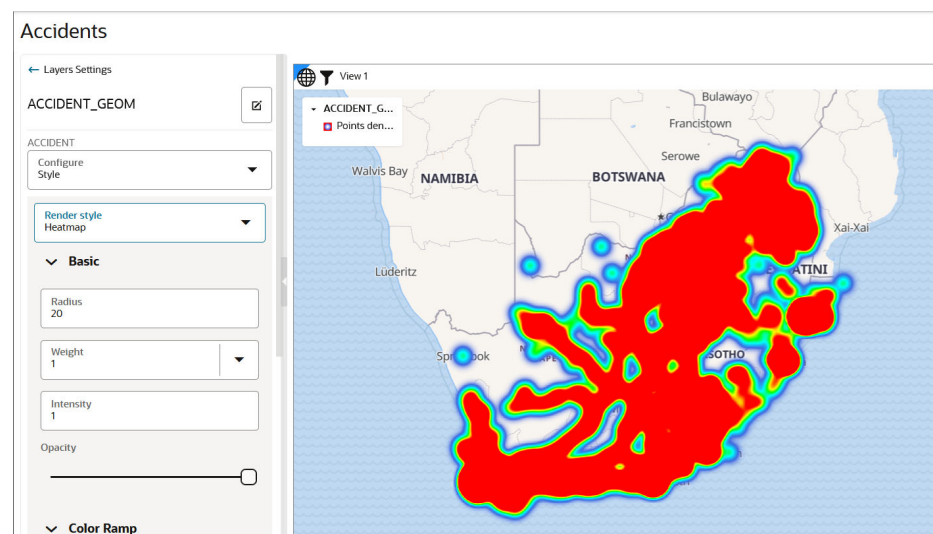
Optionally, you can change the color and the style of the text labels representing the number of points in each cluster.

- If you select **Heatmap** as the render style option, the data points on your map are rendered with continuous colors based on the concentration of points as shown:

 **Note:**

Hot colors represent concentration of points, and cool colors represent sparsity of points.

**Figure 3-71 Applying a HeatMap Style**



Also, you can further customize the Heatmap visualization by changing the **Radius** or **Weight** (or both) in the **Basic** settings panel shown in the preceding figure. The following describes more about these parameters:

- **Radius:** This value defines (in pixel) how far each data point contributes to (influences) the heat of its surrounding area. Its contribution drops to zero for any area beyond this radius with the data point at the center.
- **Weight:** This value defines how much weight a data point contributes to the heat. The default value is set to 1 which means all data points contribute equally to the heat. If you select a numeric column (with zero or positive values) in the **Weight** drop down list, then that value determines the weight contributed by a data point to the heat calculation. For instance, if a data point's weight column has a value of 5, then it is contributing to the heat as if there are five data points at that location (each with the default weight of 1). However, if the weight column contains a negative value, then note that the result is not predictable.
- **Intensity:** This value should always be 1.

**Tip:**

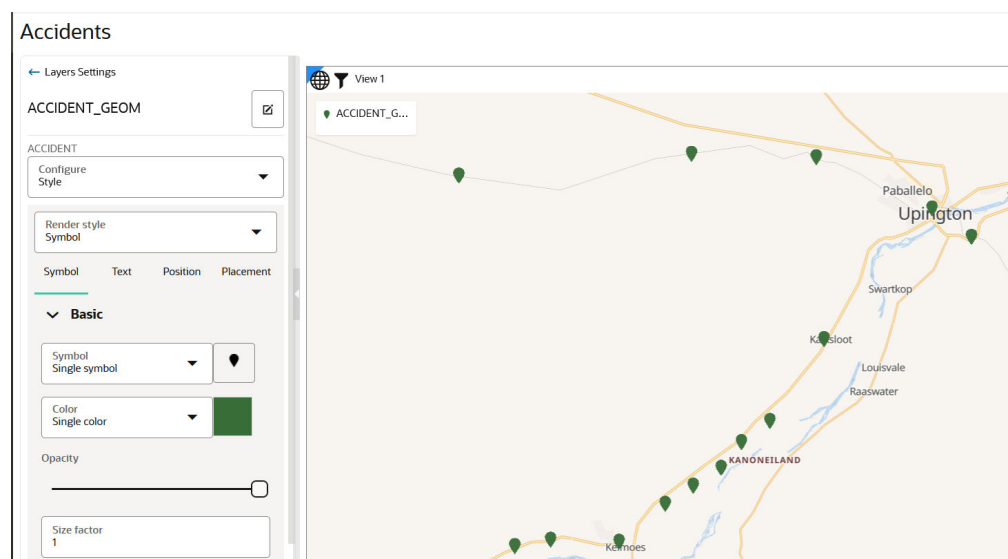
It is recommended that you reduce the default value of the **Radius** parameter to observe a more localized view of point concentrations.

- If you select **Symbol** as the render style option, the data points on your map are rendered with your chosen symbol as shown:

**Tip:**

You can optionally select a color for your symbol.

**Figure 3-72 Applying a Symbol Style**



You can customize the symbol used to represent the data points by clicking the image button next to the **Symbol** drop-down list. Spatial Studio provides several built-in sets of symbols and also supports custom map symbols (icons).

**See Also:**

- [Applying Predefined Symbols to a Map Layer](#)
- [Applying Custom Map Symbols to a Map Layer](#)

The map layer gets rendered with the appropriate style.

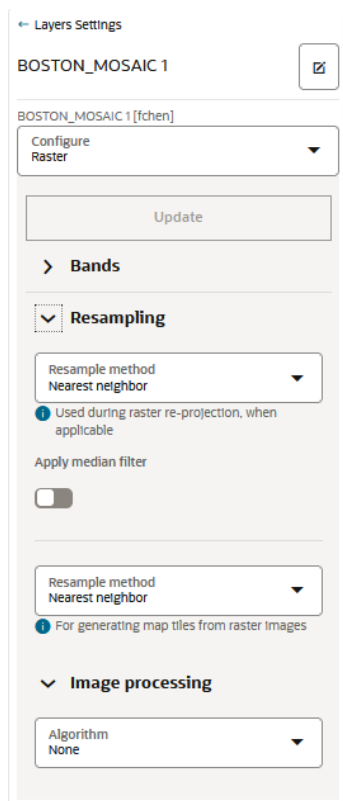
### 3.10.4.2 Applying Style for a GeoRaster Layer

You can style a GeoRaster map layer using the following steps.

The instructions assume that you have a GeoRaster map layer displayed on your Active Project page.

1. Click **☰** against the **dataset** in the **Data** tab of the **Layers** list.
2. Select **Settings** in the context menu.  
The **Layer Settings** panel opens.
3. Optionally, modify any of the following options in the **Style**:
  - **Opacity**
  - **Maximum Brightness**
  - **Minimum Brightness**
  - **Saturation**
  - **Contrast**
  - **Hue Rotate**
  - **Fade Duration**
4. Optionally, modify any of the following rendering options in the **Raster** tab:

**Figure 3-73 Raster Configuration for GeoRaster Map Layer**



- **Bands:** Spatial Studio, by default supports the following bands:
  - Red

- Blue
- Green
- Alpha

For GeoRaster images that have more than three layers, you can choose which three layers you want to visualize.

- **Resampling:** The following two types of resampling processes are supported:
  - **Image Reprojection:** This represents the interpolation method to be used when transforming an image from one SRS (Spatial Reference System) to another. This applies only if the SRS of the source image in the database table is different from Spatial Studio's base map projection.
  - **Map Image Tile Generation:** This represents the image interpolation value that determines how each image cell's value on a view port is interpolated using the original image pixels. During an image tile generation, resampling occurs (although the provided images are in the same SRS) as the spatial resolution of the two images may be different. The following interpolation algorithm options are supported:
    - \* **NEAREST NEIGHBOR:** This option has no interpolation by taking the nearest image pixel's value directly.
    - \* **BI-LINEAR:** This option will consider 4 neighboring pixels to determine the image cell's value.
    - \* **CUBIC:** This option uses cubic convolution function to estimate image cell's value. Since a 4x4 neighboring pixels participate in the interpolation, it results in a smoother image.
- **Image Processing:** represents the subprogram to be used to enhance the visual quality of the images.

The GeoRaster map layer is rendered with the updated settings.

### 3.10.4.3 Applying Data-Driven Style to a Map with H3 Aggregations

You can apply different resolutions to your H3 map layer to enhance your visualization.

In case of an H3 aggregation dataset, the hexagonal cells and the distribution of points in these hexagons automatically change at each resolution level, as you zoom in and out of the map. This implies that the color bins for one level might not be the same as for another level.

Spatial Studio provides an option to automatically calculate color bins as you alter your resolutions. You can also turn this option off if you want to test against a set of specific thresholds.

The following steps enable you to apply a data-driven styling option for your H3 map layer.

The instructions assume that you have a H3 map layer displayed on your Active Project page.

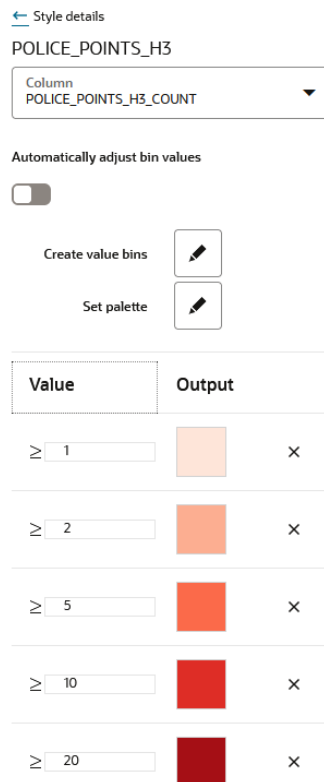
1. Click **☰** against the map layer in the **Layers** tab of the **Layers List** list.
2. Select **Settings** in the context menu.
3. Configure **Style**.
4. Select **Based on Data** for the **Color** value under **Fill**.

The **Style details** panel is displayed.

5. Select the **Column** to control styling.
6. Switch on or off the **Automatically adjust bin values** toggle button.
  - If turned on, the bin values will automatically update as you zoom in or out on the map.
  - If turned off, **Create value bins** option appears.
7. Assign colors to the bins based on data values.

The following figure shows the Style details panel options:

**Figure 3-74 Applying Data-Driven Color Styling for H3 Map Layer**



The color bins on the H3 map layer gets rendered appropriately for different resolutions as shown in the preceding figure.

### 3.10.4.4 Applying Predefined Colors to a Map Layer

Using a column with predefined color codes or values, you can create accurate and consistent choropleth map layers.

You can store a color-coded value in a column of your dataset and then use this column property to color code your map.

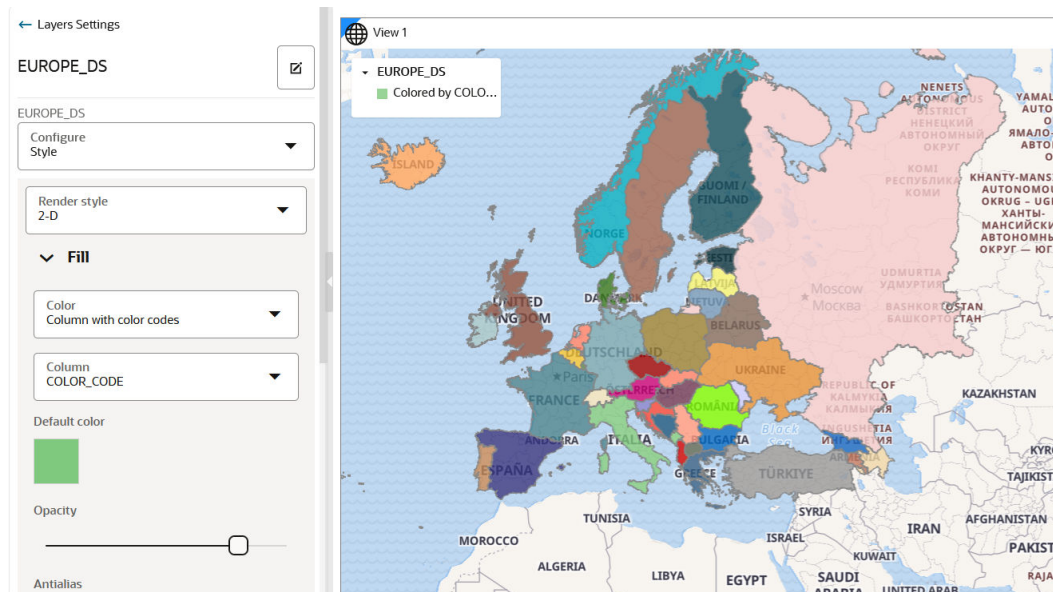
The following steps enable you to color code your map layer.

The instructions assume that the map layer displayed on your Active Project page uses a dataset having a column property that contains color-coded values.

1. Click **☰** against the map layer in the **Layers** tab of the **Layers List**.
2. Select **Settings** in the context menu.
3. Configure **Style** by selecting **Column with color codes** for the **Color** value under **Fill**.
4. Select the **Column** that contains the color value.

The following figure shows the styling of the map layer using the color variable in the dataset:

**Figure 3-75 Color Coding a Map Layer**



The color code gets applied to the map layer.

### 3.10.4.5 Applying Predefined Symbols to a Map Layer

Using a column with predefined symbol values, you can apply data-driven symbol styling to your map layer.

However, the symbol must belong to one of the supported symbol sets. Symbols in Spatial Studio are grouped into three sets and each set is identified by a *Symbol set id* as described in the following table:

**Table 3-3 Symbol Set**

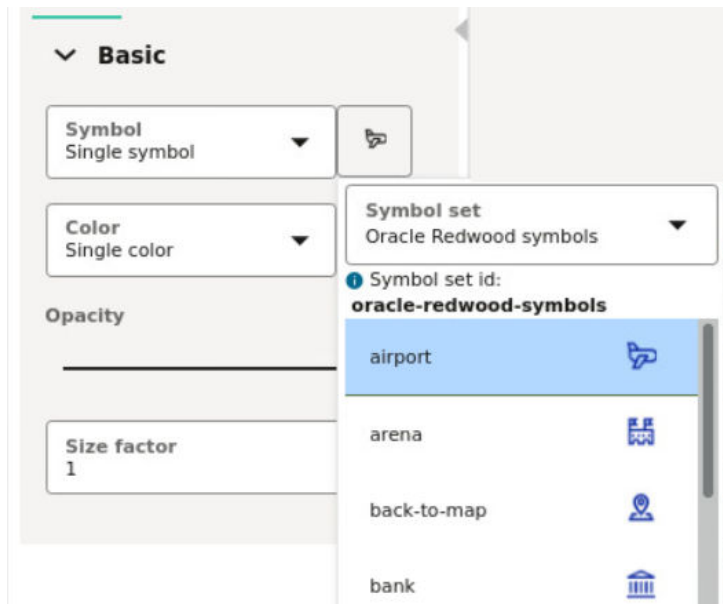
Symbol Set	Symbol set id
Spatial Studio default	studio
Oracle Redwood symbols	oracle-redwood-symbols
Airfields	airfields

You can store a symbol name and the symbol set to which it belongs in a column of your dataset and then use this column property to assign symbols to your map.

For example, assume you want to use the `airport` icon as shown in the following figure:



Figure 3-76 Symbols and Symbol Set



You must then use `oracle-redwood-symbols/airport` as the symbol name in your dataset column. In this case:

- `oracle-redwood-symbols`: is the symbol set id
- `airport`: is the name for the icon to be used on the map layer

The following steps enable you to apply data driven symbol styling for your map layer.

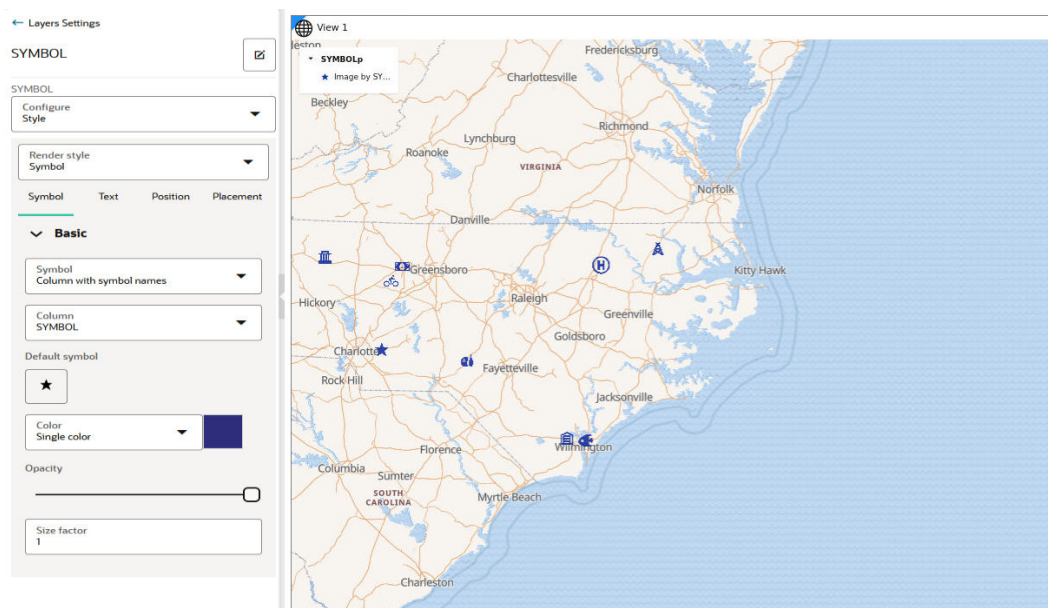
The instructions assume that the map layer displayed on your Active Project page uses a dataset having a column property that contains symbol names following the convention as explained earlier in this section.

1. Click **⋮** against the map layer in the **Layers** tab of the **Layers** list.
2. Select **Settings** in the context menu.
3. Configure **Style** and select **Symbol** as the **Render Style**.
4. Select **Column with symbol names** from the **Symbol** drop-down list in the **Basic** section of the **Symbol** tab.
5. Select the **Column** that contains the symbol name value.

The following figure shows the styling of the map layer using the symbol name variables in the dataset:

 **Note:**

If incorrect symbol names are present in the dataset column, then for those data points, the **Default symbol** is displayed on the map layer.

**Figure 3-77 Custom Symbol Styling in Map Visualization**

The symbols gets applied to the map layer.

### 3.10.4.6 Applying Predefined Colors to Symbols

You can color the symbols on a map layer by using an attribute column of the dataset that contains predefined color codes.

The following steps enable you to color code the symbols on a map layer.

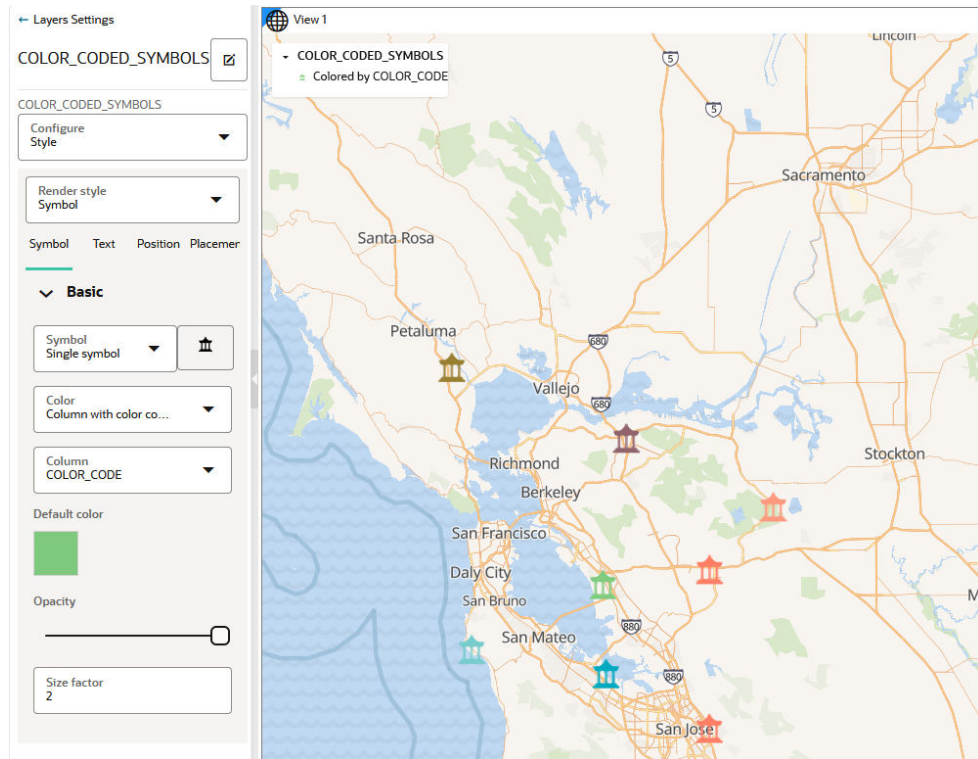
The instructions assume that the map layer displayed on your Active Project page uses a dataset having a column property that contains color-coded values.

1. Click **\*\*\*** against the map layer in the **Layers** tab of the **Layers List**.
2. Select **Settings** in the context menu.
3. Configure **Style** by selecting **Column with color codes** for the **Color** value in the **Basic** panel.
4. Select the **Column** that contains the color value.

Note that the color values in the column must be in #RGB notation with the # character included.

The color code gets applied to the symbols on the map layer. The following figure shows the color-coded symbols on the map layer using the color variable in the dataset:

Figure 3-78 Color-Coded Symbols



### 3.10.4.7 Applying Custom Map Symbols to a Map Layer

You can apply custom map symbols for styling your map layer.

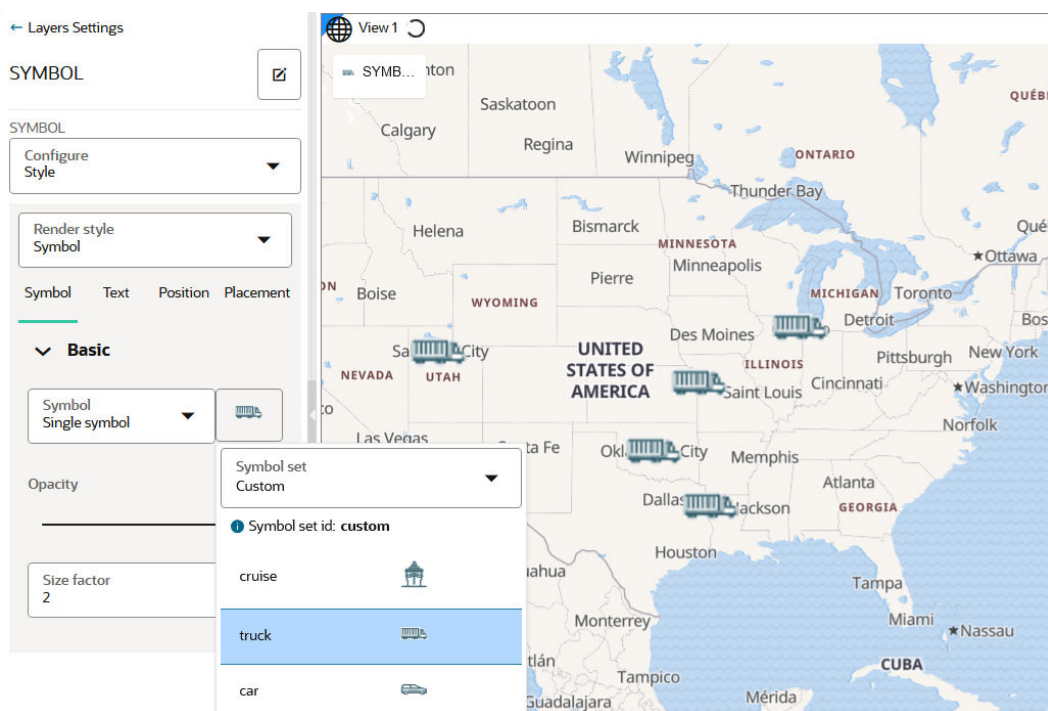
However, note that if a point dataset is being styled by custom symbols, then it can no longer use any of the built-in symbols. Essentially, you cannot mix both custom and built-in symbols on a map layer in the map visualization.

Perform the following steps to style your map layer using custom map symbols.

The instructions assume that a map layer is displayed on the Active Project page and the custom map symbols are already added in Spatial Studio by the administrator user. See [Uploading a Map Symbol](#) for more information.

1. Click **⋮** against the map layer in the **Layers** tab of the **Layers** list.
2. Select **Settings** in the context menu.
3. Configure **Style** and select **Symbol** as the **Render Style**.
4. Click the image button next to the **Symbol** drop-down list.  
The **Symbol set** drop-down appears.
5. Select *Custom* under **Custom symbols** in the **Symbol set** drop-down list.  
The uploaded custom symbols list appears.
6. Select the required custom symbol.

The symbol gets applied to the map layer as shown in the following figure:

**Figure 3-79 Using a Custom Map Symbol in Visualization**

### 3.10.4.8 Applying an Animated Map Symbol to a Map Layer

You can apply a circular animating (pulsing) symbol for styling point-type map layers.

Perform the following steps to apply an animating symbol to a map layer.

The instructions assume that a point map layer is already displayed on the map. The new animating symbol is found in the Symbol render style or symbol picker.

1. Click **⋮** against the map layer in the **Layers** tab of the **Layers** list.
2. Select **Settings** in the context menu.
3. Configure **Style** and select **Symbol** as the **Render Style**.
4. Click the image button next to the **Symbol** drop-down list.

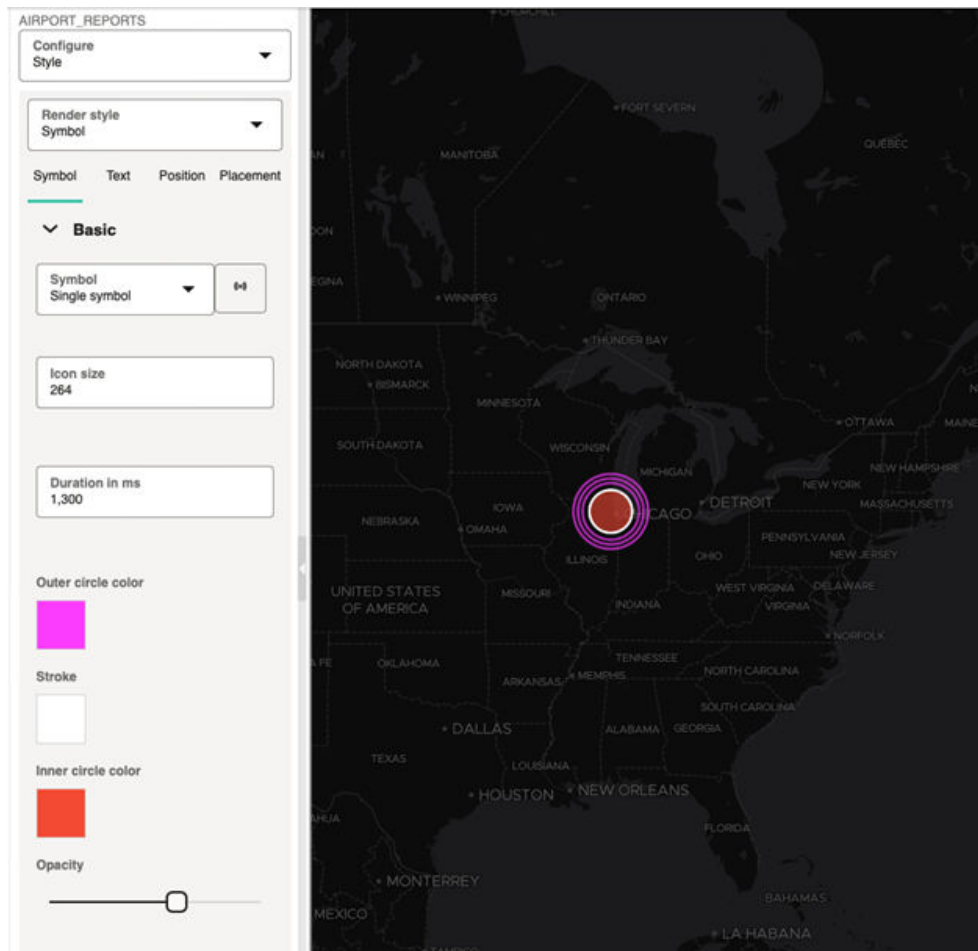
The **Symbol set** drop-down appears.

5. Select the *pulsing-dot* symbol under the **Animations** section in the **Symbol set** drop-down list.
6. Optionally, customize the animating symbol.

This includes the overall **Icon size**, **Inner circle color**, **Outer circle color**, **Stroke**, and **Opacity** of the inner circle. Also, you can customize the animation speed by configuring the **Duration in ms** field.

The following figure shows custom styling of an animated symbol on a map visualization.

Figure 3-80 Animated Map Symbol



### 3.10.4.9 Applying Style to a CZML Cesium Map Layer

When using a CZML dataset in a Cesium map visualization, you can filter on a specific entity value or control the visibility (show or hide) for the displayed entities. Also, you can add an info window to enhance your map interaction.

The instructions assume that you have added a CZML dataset to a Cesium map on your Active Project page.

1. Click **\*\*\*** against the CZML map layer in the **Layers** tab of the **Layers List** list.
2. Select **Settings** in the context menu.
3. Configure **Interaction** to set an **Info window**.
4. Configure **Filter Visibility** and set the filter value for the required column name.

**Figure 3-81 Applying Filters for CZML Map layer**

← Layers Settings

GPS\_satellites ✎

Configure Filter visibility ▼

Column Id ▼

Operator Contains (ignore case) ▼

Value 2

Clear Apply

5. Configure **Toggle Visibility** to show or hide the required entities on the map.

### 3.10.4.10 Applying Style to a Map Layer Using a GeoJSON URL Dataset

Spatial Studio supports data-driven styling for your GeoJSON URL dataset map layer. You can access the dataset columns that are sourced from the source URL and apply the desired styling for the map layer.

#### See Also:

[Creating a GeoJSON URL Dataset](#)

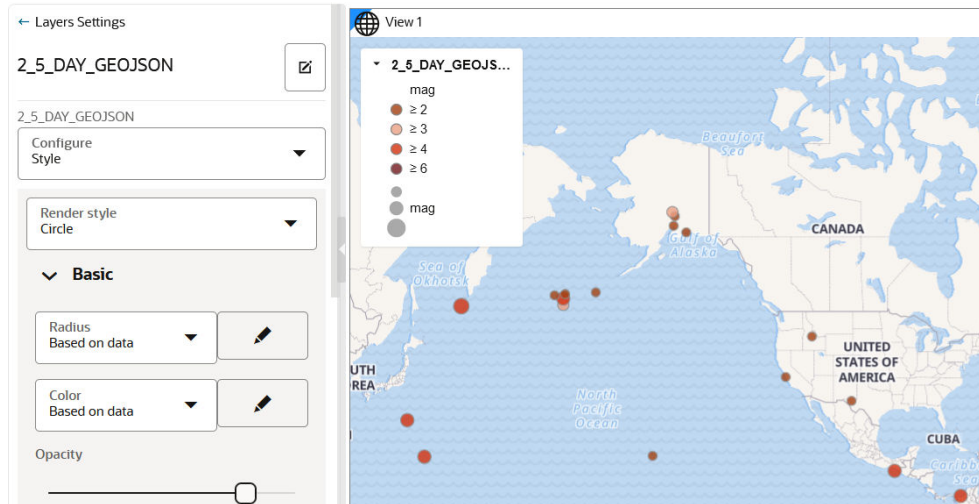
The instructions assume that you have added a GeoJSON URL dataset on your Active Project page.

1. Click **☰** against the map layer in the **Layers** tab of the **Layers List** list.
2. Select **Settings** in the context menu.
3. Configure **Style**.
4. Apply the radius or color styling based on data columns.
  - **Styling based on data**
    - a. Select **Based on Data** in the **Radius** or **Color** drop down list.
    - b. Click the **Edit bind** icon.
    - c. Select the **Column** to control styling.

- d. Optionally, adjust the bin and the output values.
- **Applying predefined colors**
  - a. Select **Column with color codes** in the **Color** drop down list.
  - b. Select the **Column**.

The following figure shows the radius and color styling applied to a GeoJSON URL dataset map layer:

**Figure 3-82 Data-Driven Styling for GeoJSON URL Map Layer**



### 3.10.4.11 Setting Selection Tolerance on a Map Layer

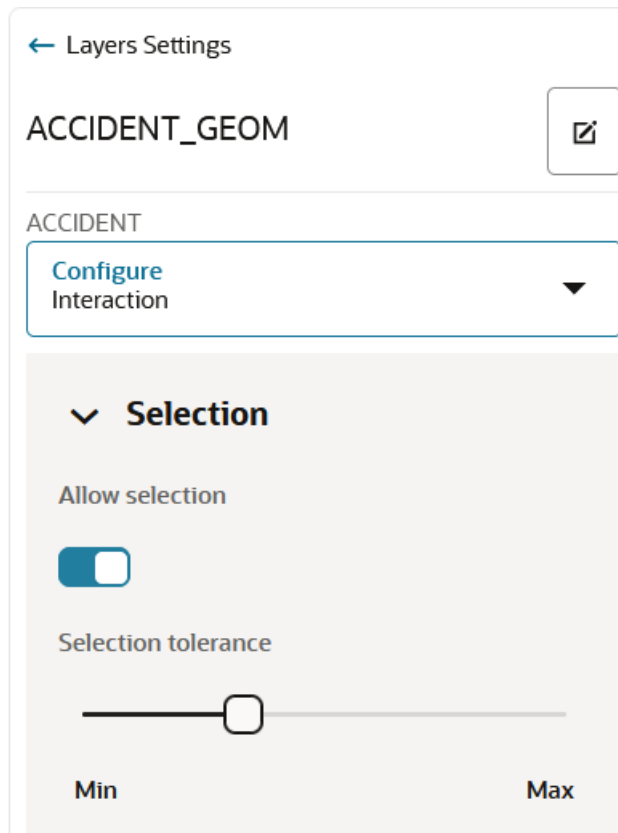
Spatial Studio allows you to increase or decrease the selection tolerance on a map layer, so that selecting small and linear geometry features is easier.

The following steps enable you to adjust and set the selection tolerance on a map.

The instructions assume that a project is open on the Active Project page.

1. Click **⋮** against the **dataset** in the **Data** tab of the **Layers** list.
2. Select **Settings** in the context menu and configure **Interaction**.
3. Switch on the **Allow selection** toggle button.
4. Adjust the **Selection tolerance** slider as required.

The following figure shows the **Selection** section for setting the tolerance:

**Figure 3-83** Setting the Selection Tolerance

The custom selection tolerance gets applied to the map layer.

### 3.10.4.12 Adding a Pin on a Map

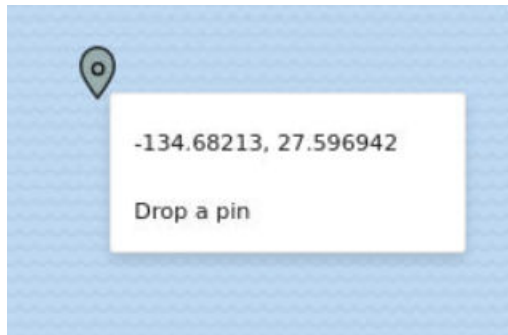
The following steps enable you to inspect the current mouse pointer's latitude and longitude coordinates and pin a location on the map layer.

The instructions assume that you have a project opened on your Active Project page and the map layer is displayed for visualization.

1. Right-click on any area on the map layer.

The coordinates for the location gets displayed as shown:



**Figure 3-84 Pin a Location on the Map**

2. Click **Drop a pin** to add a location marker.

The pin gets displayed on the map. Additionally, you can also copy the coordinates by clicking on the marker and then clicking the **Longitude, Latitude: click to copy** icon.

### 3.10.4.13 Applying Map Backgrounds

Spatial Studio provides ready-to-use map backgrounds to enhance your visualization.

You can select one of the following map backgrounds for your project visualization:

- MapTiler Vector Basemaps
- Oracle Raster Basemaps
- Blank Basemaps
- User-defined Basemaps

As an administrator, you can also register custom basemaps and use them in map visualizations. They may be raster or vector tiles that are typically hosted on third party servers, or they be created using a WMS OGC web service. See [Spatial Studio Administration Page](#) for more information on adding basemaps.

The default language for the MapTiler Vector Basemaps is English. However, you can change the language for these vector basemaps. See [Configuring a Map Visualization](#) for more information.

The following section describes how to apply a specific map background for your project:

- [Changing Map Backgrounds](#)

#### 3.10.4.13.1 Changing Map Backgrounds

The following steps enable you to apply different map backgrounds in your project visualization.

The instructions assume that you have a project opened on your Active Project page.

1. Click **⋮** in the **Background** tab of the **Layers** list.
2. Select **Settings** in the context menu.
3. Click the **Change the Background Map Style** drop-down and select your required background map as shown.

**Figure 3-85 Changing a Map Background**

All custom basemaps appear under **User-defined Basemaps** in the drop-down list. The selected map background gets applied to your project visualization.

### 3.10.4.14 Using the Redline Map Tool

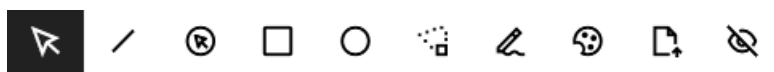
Spatial Studio provides the Redline map tool for drawing and annotating different geometry shapes on your map.

In addition, you can edit, delete, or share these redline drawing sets by exporting it to a GeoJSON file.

Perform the following steps to get started with the Redline map tool. The instructions assume that you have a project opened on your Active Project page and the map layer is displayed for visualization.

1. Click the **Actions** icon on the map tool bar.
2. Select **Redline** from the drop-down menu.

The Redline map tool bar appears as shown:

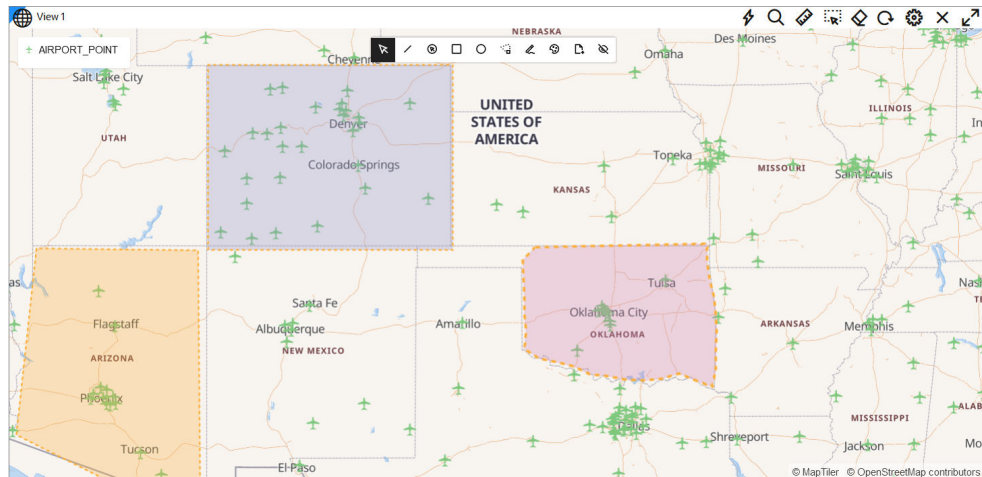
**Figure 3-86 Redline Map Tool**

The tool bar provides the following options for defining or managing Redline objects on the map:

- **Select Feature (default):** To select a Redline object for update or delete.
- **Draw Line:** To define a Redline line.

- **Draw Point:** To define a Redline point.
  - **Draw Rectangle:** To define a Redline rectangle.
  - **Draw Circle:** To define a Redline circle.
  - **Draw Polygon:** To define a Redline polygon.
  - **Draw Freehand:** To draw a Redline freehand.
  - **Click to choose a color:** To choose the default color for the Redline objects.
  - **Export Features:** To export the Redline objects to a GeoJSON file. You can later upload the file to create a **Dataset** which can be used in Map Visualizations. See [Creating a Dataset by Uploading a File](#) to upload a GeoJSON file.
  - **Toggle Visibility:** To hide or unhide the marked Redline objects.
3. Click the desired drawing option and draw the corresponding shape on the map.  
For example, the following figure shows three Redline objects added to a map layer:

**Figure 3-87 Redlining Areas in Map Visualization**



Repeat this step to add as many Redline objects as required.

**Tip:**

You can duplicate and move a Redline object on the map.

4. Optionally, perform any of the following actions on a defined Redline object.
- **Modify the Shape of the Redline Object**
    - a. Click **Select Feature** on the Redline map toolbar.
    - b. Click the required Redline object.  
The existing vertices of the object are shown highlighted in red.
    - c. Click along the object boundary to add new vertices (points) and adjust its shape as required.

- d. Optionally, move the entire object to the desired location on the map.
  - **Edit Feature Properties**
    - a. Click **Select Feature** on the Redline map toolbar.
    - b. Right-click and select **Edit Feature Properties** on the required Redline object.
    - c. Add a **Description** to annotate the object.  
This description will be displayed as a tooltip when you mouse over a Redline object.
    - d. Optionally, modify the **Fill** and **Outline** width.
  - **Duplicate Feature**
    - a. Click **Select Feature** on the Redline map toolbar.
    - b. Right-click and select **Duplicate Feature** on the required Redline object.
    - c. Move the duplicated object to the desired area on the map.
  - **Delete Feature**
    - a. Click **Select Feature** on the Redline map toolbar.
    - b. Right-click and select **Delete Feature** on the required Redline object to be deleted.
5. Optionally, export all the marked Redline objects to a GeoJSON file.
- a. Click **Export Features** on the Redline map toolbar.
  - b. Click **Download as GeoJson** and save the `.geojson` file to your system.

Also, note the following details regarding the exported GeoJSON file:

- Each Redline object is automatically assigned a unique ID (UUID), which will be a exported.
- Any description entered for a Redline object is exported.
- Any styling information, such as custom colors and outline width are NOT exported.

6. Click **Save** to save your project with the Redline drawings.

The drawings will be persisted as a part of the project. Note that when you reopen an existing project with Redline drawings, the shapes are initially not editable. You must select the Redline tool again to "rehydrate" the tool with the drawings.

### 3.10.5 Adding Interactions to a Map Visualization

You can enhance your map interaction by configuring tooltips and info windows for the map layers used in the map visualization.

Spatial Studio supports the following interactive features:

- **Tooltip:** A tooltip is shown when you hover over a location on your map and displays the specified attribute information.
- **Info Window** An info window (popup window) displays the configured information for one or more map layers at a given location or shape on your map.
- [Configuring and Viewing an Info Window](#)
- [Configuring and Viewing a Tooltip](#)

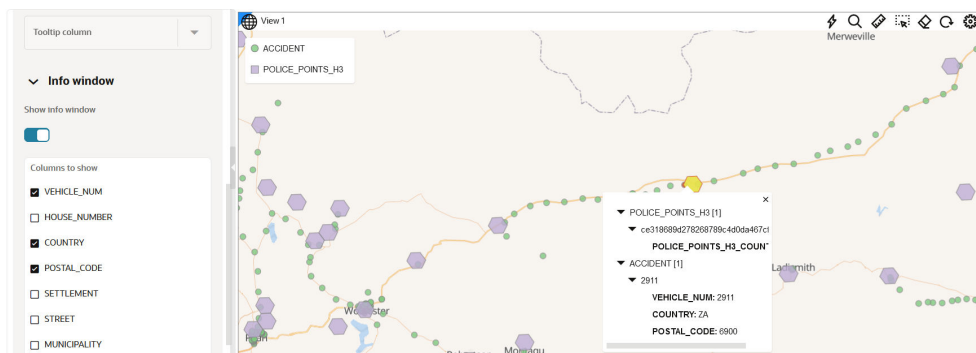
### 3.10.5.1 Configuring and Viewing an Info Window

You can configure an info window to display selected attributes of a map layer at a given location on your map visualization. Perform the following steps to configure an info window.

The instructions assume that you have a map layer displayed on your Active Project page.

1. Click **\*\*\*** against the map layer in the **Layers** tab of the **Layers List**.
2. Select **Settings** in the context menu.
3. Select the **Interaction** option from the **Configure** drop-down list.
4. Enable **Show info window** under **Show info window**.
5. Select one or more **Columns to show**.
6. Optionally, repeat the above steps for all the required map layers used in your map visualization.
7. Click on a specific location on your map to view the info window.

**Figure 3-88 Viewing Info Window on a Map Visualization**



The map visualization shown in the preceding figure contains two map layers. The info window displays data values for both the map layers as the data points for these map layers overlap at the specified location.

### 3.10.5.2 Configuring and Viewing a Tooltip

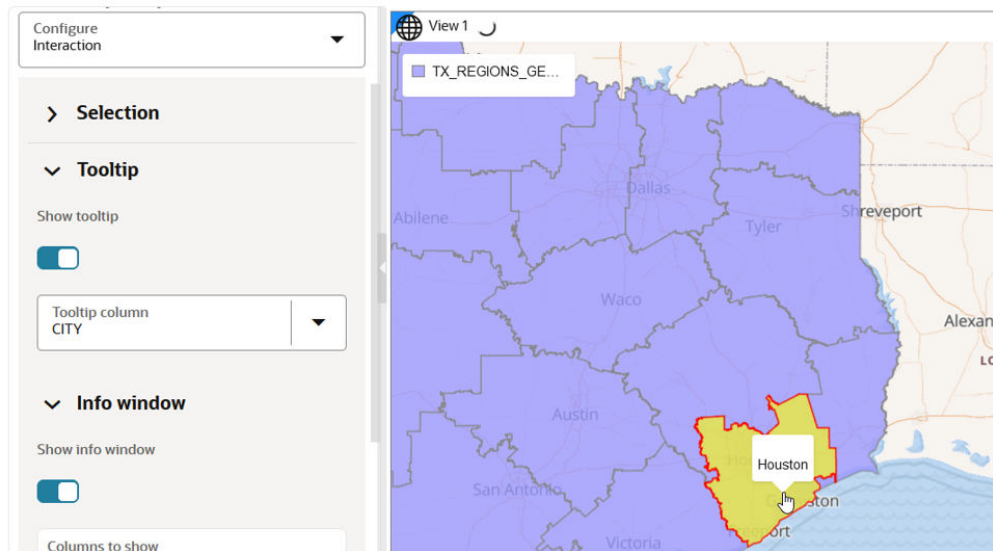
Perform the following steps to configure a tooltip.

The instructions assume that you have a map layer displayed on your Active Project page.

1. Click **\*\*\*** against the map layer in the **Layers** tab of the **Layers List**.
2. Select **Settings** in the context menu.
3. Select the **Interaction** option from the **Configure** drop-down list.
4. Enable **Show tooltip** under **Tooltip**.
5. Select a **Tooltip column**.

6. Hover over a specific data point or shape on your map to view the tooltip information.

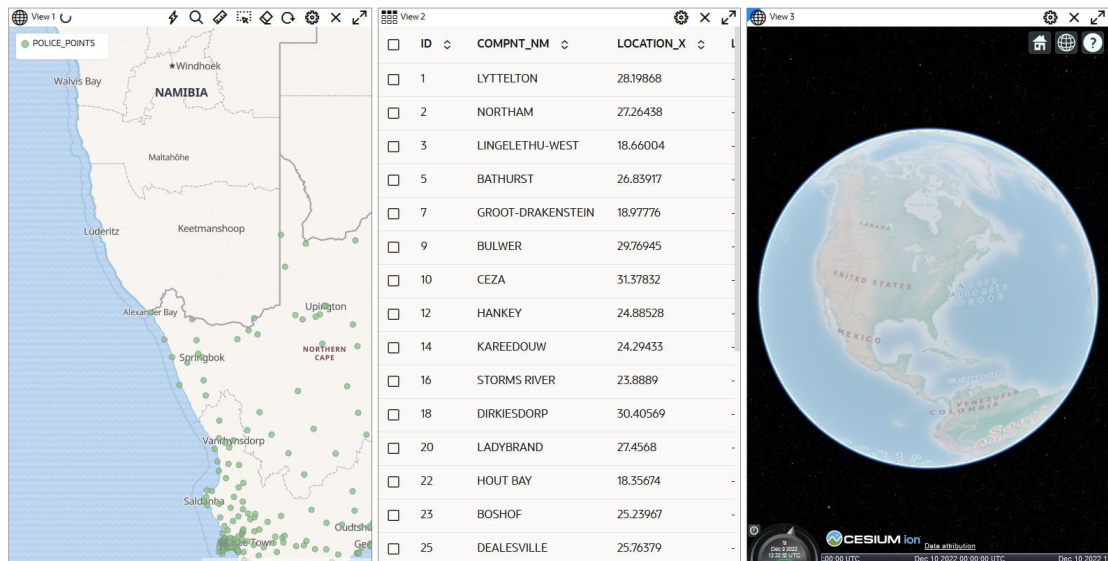
**Figure 3-89 Viewing a Tooltip on Map Visualization**



### 3.10.6 Multiple Visualizations on a Canvas

You can work on multiple visualizations in Spatial Studio.

**Figure 3-90 Multiple Map Visualizations**




When adding a new visualization to the canvas, if there is already an existing visualization, then you can choose on which adjacent edge of the existing visualization the new one must be placed. This applies even if there are multiple existing visualizations. You can always insert the new visualization to be next to any existing visualization of your choice.

When you drag a new visualization to the canvas with existing visualizations, the border of the existing visualization highlights to indicate where the new visualization will be placed when dropped. The canvas will automatically adjust the layout to make space for the new visualization in an intuitive way. You can also temporarily maximize any one of the existing visualizations.

### 3.10.7 Configuring a Map Visualization

Learn how to configure the settings for your map visualization.

You can configure the map visualization settings, by clicking  , the **Settings** icon in the map tool bar.

The Visualization Settings dialog opens with the default configuration values as shown as shown:

Figure 3-91 Visualization Settings

**Visualization Settings**

Viz label  
World Map

Wraparound east-west

Show legend

Legend Position  
Top left

Navigation Bar  
None

Show minimap

Show scale

Unit of map scale  
Imperial

Show tile boundaries

Show timeline

Basemap Language  
English International

OK Cancel

Spatial Studio supports the configuration of the following values:


- **Viz label:** You can define the label for your map visualization.
- **Wraparound east-west:** By default, the map is continuous, that is, the map displayed for visualization is east-west wrap around. You can choose to disable this option if you prefer to display the map in a non-repeating mode.



- **Show legend:** The legend displays the map layers that are used in the visualization.
- **Legend Position:** This determines where the legend gets displayed on the map.
- **Navigation Bar:** This displays zoom and compass controls on the map.
- **Show minimap:** You can enable this option if you want to view an overview of the main map as an inset within the main map.
- **Show scale:** You can enable this option if you want to configure a specific scale for the map.
- **Unit of map scale:** Supported scale types are:
  - Imperial
  - Metric
  - Nautical
- **Show tile boundaries:** You can switch **ON** this toggle to view the vector tile boundaries on the map. The current map zoom level and tile column and row number are displayed for each visible tile. This is mostly used as an information tool for debugging map rendering issues.
- **Show timeline:** By enabling this slider, you can display the Timeline on the map.
- **Basemap Language:** This option appears only if you are using one of the three built-in MapTiler vector basemaps as a map background. You can then set the language for your basemap.

### 3.10.8 Searching Locations and Features on a Map

Using the **Search** option, you can quickly find locations and features on a map.

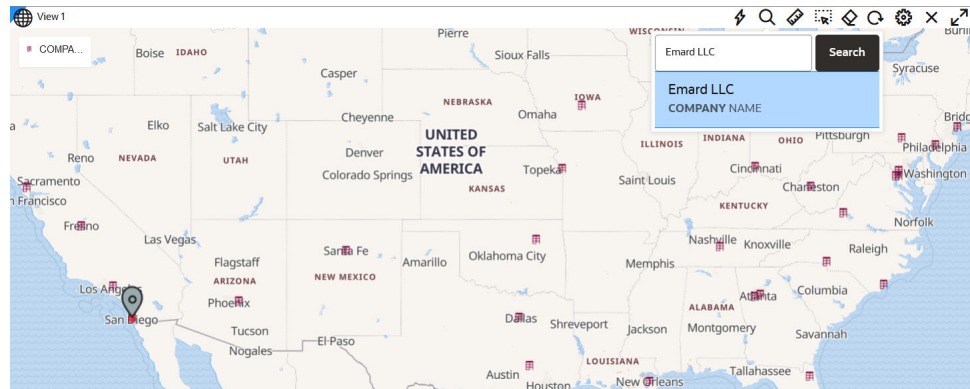
1. Click  in the map tool bar to search on the map.
2. Select one of the following option to perform the search.
  - **Search by Locations**
    - a. Click **Address or Longitude, Latitude** in the search drop-down list.
    - b. Enter **Address or Longitude, Latitude** to search.  
Note that as you enter the address or longitude, latitude, suggestions based on the keywords are displayed.
    - c. Select the required suggestion.  
Spatial Studio drops a pin and zooms to the location of the search result.
  - **Search by Feature ID**

A feature is a geometry object (point, line, or polygon type) on the map.

    - a. Click **Feature** in the search drop-down list.
    - b. Enter the complete ID of the feature in the search input box.  
Note the following:
      - The feature ID is identified by the key property column value of the specific feature in its dataset.
      - The search key is not case sensitive.

- You must enter the complete feature key to find the feature on the map.
- c. Click **Search**.  
If the feature is found, Spatial Studio displays the feature ID and the dataset name in the selection box.
- d. Select the feature in the selection box.  
Spatial Studio drops a pin and zooms to the feature location of the search result as shown:

**Figure 3-92 Searching Features on the Map**



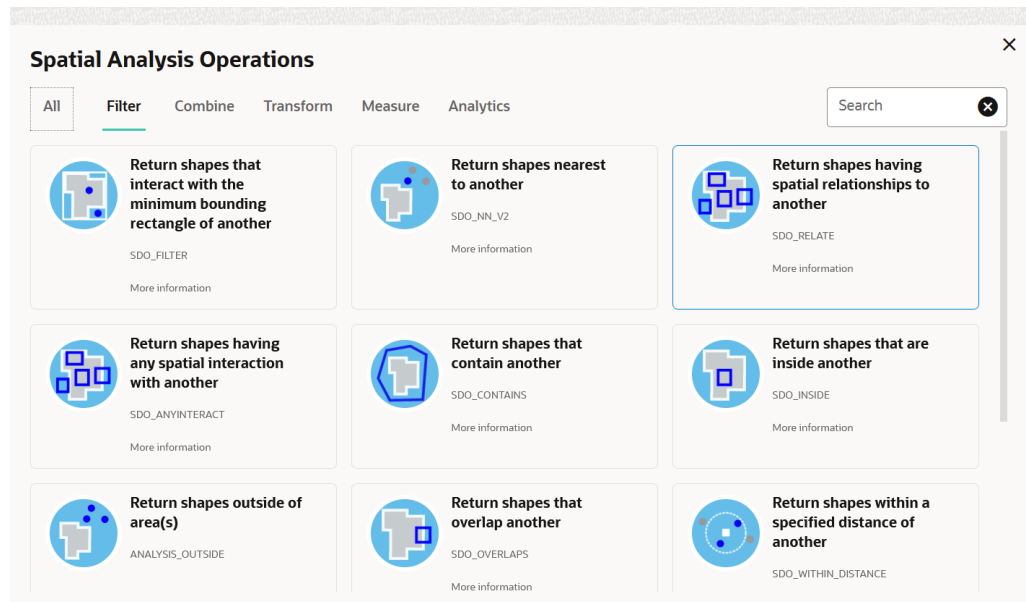
## 3.11 Performing Analyses in Spatial Studio

You can perform various spatial analyses (such as filtering by proximity, nearest neighbor analysis and so on) and visualize the results in Spatial Studio.

These spatial analyses are grouped under the following categories in Spatial Studio:

- Filter
- Combine
- Transform
- Measure
- Analytics

Figure 3-93 Spatial Analysis Operations



The following topics explore a few spatial analysis operations:

- [Determining the Geometries Within a Specified Distance](#)  
Using the `SDO_WITHIN_DISTANCE` filter, you can filter coordinates that are within a specific distance from a point on the map layer.
- [Determining the N-Nearest Geometries](#)  
Using the `SDO_NN_V2` filter, you can determine the N-nearest geometries to a geometry.
- [Determining the Geometries Filtered By Non-Spatial Attributes](#)  
You can perform non-spatial filter analysis using a compound query.
- [Summarize By Region Analysis](#)  
Spatial Studio supports descriptive analysis where you can obtain the summary of data points (such as count, average, sum, minimum, and maximum) on a region based dataset.
- [Creating Lines to Connect Latitude/Longitude Pairs](#)  
The **Create lat/lon line** transform operation creates a line connecting two pairs of latitude and longitude coordinates on a map layer.
- [Finding the Shortest and Quickest Route](#)  
Using the **Driving route** spatial analysis operation, you can find and store the shortest or fastest driving route between two points.
- [Editing a Spatial Analysis](#)  
You can edit an existing spatial analysis to modify certain essential parameters.

### 3.11.1 Determining the Geometries Within a Specified Distance

Using the `SDO_WITHIN_DISTANCE` filter, you can filter coordinates that are within a specific distance from a point on the map layer.

To filter points based on this proximity filter, you must perform the following steps.

The instructions assume that you have the layer to be filtered and the map layer to be used as a filter displayed on your Active Project page.

1. Click **☰** against the map layer whose coordinates needs to be filtered in the **Layers** tab.
2. Select **Spatial Analysis**.

The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).

3. Click on the **Filter** tab and select **Return shapes within a specific distance of another**. **Within distance** dialog box opens as shown:

**Figure 3-94 Spatial Analysis - Within Distance Configuration**

4. Enter **Analysis name**.
5. Select the **Layer to be filtered**.
6. Select the **Layer to be used as the filter**.
7. Enter **distance** and **unit**.
8. Click **Run**.

The Analysis result is listed under **Analyses** in the **Data** elements panel on the left pane of the Active Project page.

9. Drag and drop the analysis result on the map view.

This creates a new map layer highlighting the filtered coordinates within a specific distance from a point as shown:

**Figure 3-95 Spatial Analysis - Within Distance Visualization**



### 3.11.2 Determining the N-Nearest Geometries

Using the `SDO_NN_V2` filter, you can determine the N-nearest geometries to a geometry.

 **Note:**

The `SDO_NN_V2` filter, introduced in Spatial Studio release 22.2, is an improved form of the `SDO_NN` filter which was used in the prior releases of Oracle Spatial Studio. The old behavior will continue to be supported when you modify analyses that were created using the `SDO_NN` filter. However, when creating a new analysis, the current `SDO_NN_V2` filter will be used.

To find the N-nearest geometries, you must perform the following steps.

The instructions assume that you have the layer to be filtered and the map layer to be used as a filter displayed on your Active Project page.

1. Click **...** against the map layer, whose coordinates needs to be filtered, in the **Layers** tab.

2. Select **Spatial Analysis**.

The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).

3. Click on the **Filter** tab and select **Return shapes nearest to another**.

**Nearest neighbors** dialog box opens as shown:

**Figure 3-96 Nearest Neighbors Analysis**

4. Enter **Analysis name**.
5. Select the **Layer to be filtered**.

 **Note:**

Ensure that you have run spatial validations on the map layer to be filtered and the map layer to be used as the filter in order to obtain accurate analysis results.

6. Enter **Number of results**.
7. Click **Run**.

The Analysis result is listed under **Analyses** in the **Data** elements panel on the left pane of the Active Project page.

8. Drag and drop the analysis result on the map view.

This creates a new map layer highlighting the N-nearest neighbor geometries for a geometry.

### 3.11.3 Determining the Geometries Filtered By Non-Spatial Attributes

You can perform non-spatial filter analysis using a compound query.

To run a compound query with non-spatial attributes, you must perform the following steps.

The instructions assume that you have the layer to be filtered displayed on your Active Project page.

1. Click **\*\*\*** against the map layer, whose coordinates needs to be filtered, in the **Layers** tab.
2. Select **Spatial Analysis**.

The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).

3. Click the **Filter** tab and select **Return elements filtered by non-spatial rules**.  
The **Attribute Filter** dialog opens as shown:

**Figure 3-97 Non-Spatial Attributes Filter**

The screenshot shows the 'Attribute filter' dialog box with the following details:

- Analysis name:** AIRPORT\_POINT FILTERED
- Dataset to be filtered:** AIRPORT\_POINT
- Criteria (2):**
  - Criteria 1:** AREA\_ID Equals 1002377. Column: AREA\_ID, Operator: Equals, Value: 1002377.
  - Criteria 2:** AREA\_ID Equals 1003655. Column: AREA\_ID, Operator: Equals, Value: 1003655.
- Logic:** And / Or
- Buttons:** Collapse All, Group, Ungroup, Add criteria, Run, Run in background, Cancel.

4. Optionally, change the default **Analysis name**.

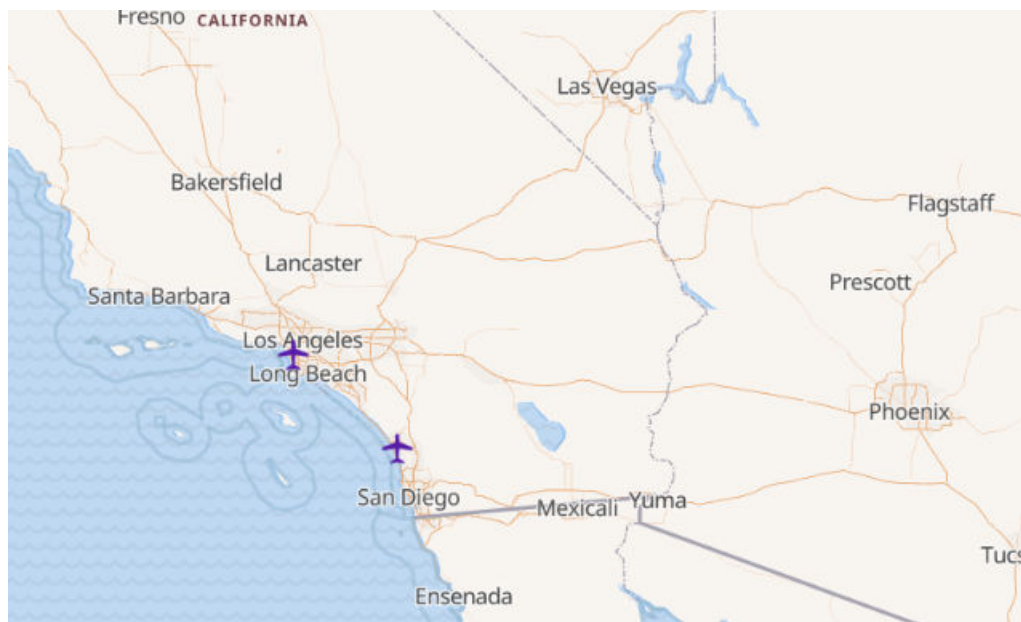
5. Optionally, change the **Dataset to be filtered** only if you want to apply the filter criteria against a different dataset. In such a case, Spatial Studio removes any existing criteria associated with the default dataset.
6. Select the **Column** name.
7. Select the **Operator to filter by** from the drop-down list.
8. Enter the **Value** to be filtered.
9. Optionally, click **Add Criteria** to repeat from step-6 to step-8 to add as many criteria as required. Also, click the **And** or **Or** operator to form the compound query.
10. Click **Run**.

The Analysis result is listed under **Analyses** in the **Data** elements panel on the left pane in the Active Project page.

11. Drag and drop the analysis result on the map view.

This creates a new map layer highlighting the geometry for the filtered attributes.

**Figure 3-98 Non-Spatial Filter Analysis**



### 3.11.4 Summarize By Region Analysis

Spatial Studio supports descriptive analysis where you can obtain the summary of data points (such as count, average, sum, minimum, and maximum) on a region based dataset.

To perform summarize by region analysis, you can perform the following steps.

The instructions assume that you have a point map layer displayed over a region map layer on your Active Project page.

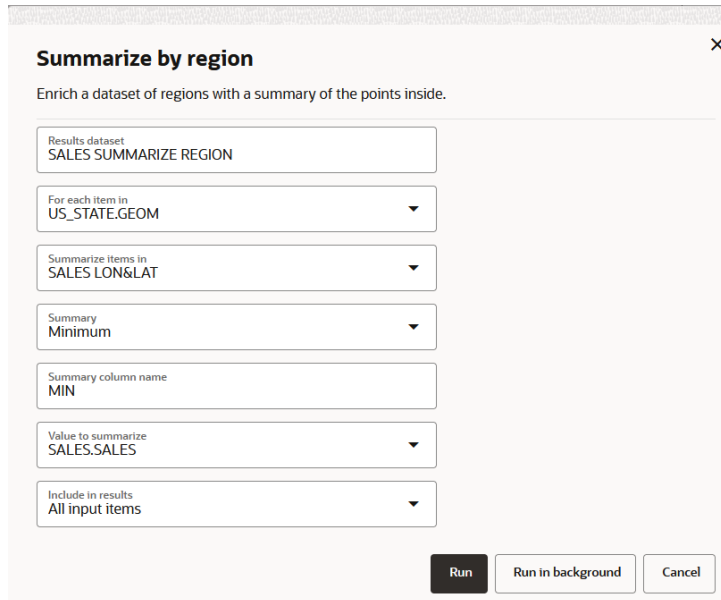
1. Click **\*\*\*** against the map layer, whose coordinates needs to be filtered, in the **Layers** tab.
2. Select **Spatial Analysis**.

The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).



- Click the **Analytics** tab and select **Summarize By Region**.  
The **Summarize by region** dialog opens as shown:

**Figure 3-99 Summarize By Region**



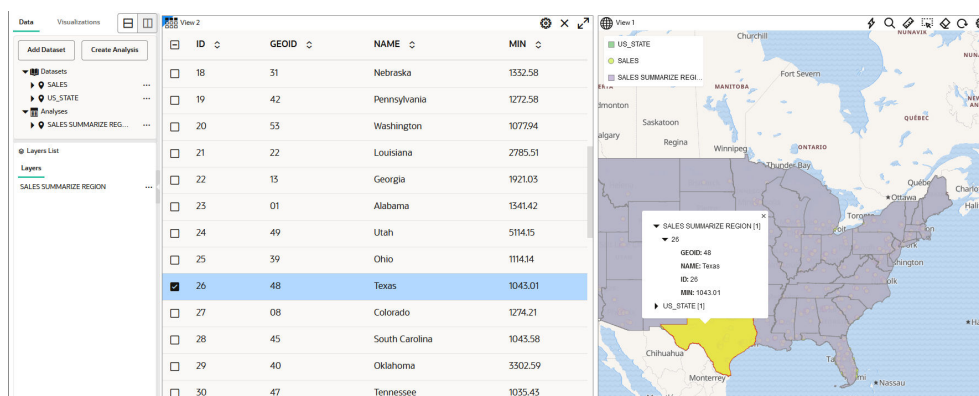
- Optionally, change the default name for the new analysis **Results dataset**.
- Select the region based map dataset from the **For each item in** drop-down list.
- Select the point map layer from the **Summarize items in** drop-down list.
- Select the **Summary** option.
- Optionally, change the **Summary column name**.
- Click **Run**.

The Analysis result is listed under **Analyses** in the **Data** elements panel on the left pane in the Active Project page.

- Drag and drop the analysis result on a table or map visualization.

You can view the summary results as shown:

**Figure 3-100 Summarize By Region Visualization**



### 3.11.5 Creating Lines to Connect Latitude/Longitude Pairs

The **Create lat/lon line** transform operation creates a line connecting two pairs of latitude and longitude coordinates on a map layer.

To perform this transformation analysis, ensure that a dataset comprising two pairs of latitude and longitude coordinates (one represents the starting points and the other, ending points) in each row is added in the Active Project page. The **Create lat/lon line** analysis takes the column names of these two pairs of latitude and longitude coordinates as input and generates the line geometry connecting the starting and ending points.

Perform the following steps to run the **Create lat/lon line** spatial analysis.

1. Click **⋮** against the map layer whose coordinates needs to be filtered in the **Layers** tab.
2. Select **Spatial Analysis**.

The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).

3. Click the **Transform** tab and select **Create lat/lon line**.

**Create lat/lon line** dialog box opens as shown:

**Figure 3-101** Configuring Lat/Lon Line Analysis

**Create lat/lon line** ×

Creates a line geometry from lat/lon pairs

Results dataset  
LATLON LINES

Start latitude column  
LON\_LAT\_2.START\_LAT

Start longitude column  
LON\_LAT\_2.START\_LON

End latitude column  
LON\_LAT\_2.DEST\_LAT

End longitude column  
LON\_LAT\_2.DEST\_LON

Use densify

Distance between densified points (in meters)  
50,000

Run Run in background Cancel

4. Optionally, modify the resulting datasets name in **Results dataset**.
5. Select the **Start latitude column**.
6. Select the **Start longitude column**.

7. Select the **End latitude column**.
8. Select the **End longitude column**.
9. Optionally, switch ON the **Use Density** toggle.

This factor takes into consideration that the earth is spherical and accordingly projects the connecting line between the two sets of coordinates on the map layer. It is very useful for large distances between two coordinates and it is recommended that you use this option.

10. Optionally, modify the **Distance between densified points (in meters)** (only if you have included the **Use Density** option in the preceding step).
11. Click **Run**.

The Analysis results are listed under **Analyses** in the **Data** elements panel on the left pane of the Active Project page.

12. Drag and drop the following layers on the map - starting points, ending points, and finally the **GEOMETRY** (that connects the starting and ending points) analysis on the map view.

The following figure shows an example of the **Create lat/lon line** spatial analysis:

**Figure 3-102 Visualizing Latitude/Longitude Line Analysis**



### 3.11.6 Finding the Shortest and Quickest Route

Using the **Driving route** spatial analysis operation, you can find and store the shortest or fastest driving route between two points.

The route analysis supports the following modes:

- **Pairwise Routing:** In this mode, each input dataset contains both the starting and ending point geometries for the route.
- **One-to-many Routing:** In this mode, the route is determined between the starting point geometries in the dataset to a single end point. This end point can be defined by one of the following methods:
  - **Map Pins:** You can previously pin a location on the map by directly adding a pin ([Adding a Pin on a Map](#)) or by using the search option ([Searching Locations and Features on a Map](#)).
  - **Input coordinates:** You can manually provide the longitude and latitude coordinates when configuring the route analysis.

Also, note the following:

- The route analysis can be performed only on datasets with point geometries.
- You can choose to include one or more of the following parameters in the resulting output:
  - Route Geometry
  - Distance
  - Time
- The results of the analysis (route geometry, distance and (or) time) are stored directly into the input dataset.
- The analysis can be used multiple times on the same dataset by specifying different column names for storing the results.

Perform the following steps to run the **Driving route** spatial analysis.

The instructions assume that you have a dataset with point geometries displayed on your Active Project page and the destination pin is already placed on the map.

1. Click **☰** against the map layer containing the starting point geometries for the route.
2. Select **Spatial Analysis**.  
The **Spatial Analysis Operations** window opens as shown in [Figure 3-93](#).
3. Click the **Analytics** tab and select **Driving route**.

**Calculate driving route** dialog box opens as shown:

Figure 3-103 Route Analysis Configuration

**Calculate driving route** ×

Returns the route, time and (or) distance between from a set of points to a specific destination.

For each item in  
MEXICO\_CITIES.LOCATION ▼

Calculate Route to  
View 1 pin 1: -103.37645393935804, 20.704473210 ▼

**Store results:**

Time column  
DRIVE\_TIME Unit: MINUTE ▼

Distance column  
DRIVE\_DISTANCE Unit: MILE ▼

Route column  
ROUTE\_GEOM

Route preference  
Shortest time ▼

**Run** **Cancel**

4. Select the input dataset in the **For each item in** drop-down.

Note that this drop-down will only list datasets with point geometries that are added to the project.

5. Select the destination end point in the **Calculate Route to** drop-down.

Note that this drop-down allows you to choose the end point against the following headers:

- **Point geometry columns:** Lists other point geometry columns in the input dataset. This is primarily used for pairwise routing (from the start to the end points of each feature in the same dataset).
- **Map Pins:** Lists the map pins that are already added on the map. See [Adding a Pin on a Map](#) and [Searching Locations and Features on a Map](#) for more information on dropping a location pin on the map.
- **Input coordinates:** Manually enter the longitude and latitude coordinates.

Using either map pins or input coordinates results in the routes being calculated from each starting point geometry in the input dataset to a single end point.

6. Select one or more of the following checkbox options and specify the corresponding column name to store the results of the analysis.
  - **Time column**
  - **Distance column**
  - **Route column**

Note that at least one of the preceding columns must be included in the results.

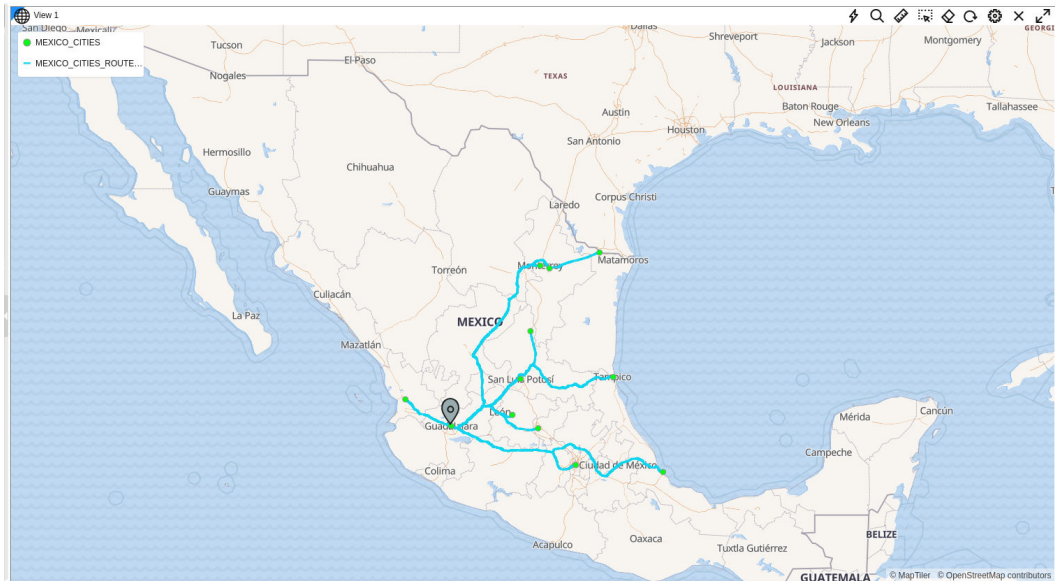
Optionally, select the **Unit** for Time and Distance columns.

7. Select the **Route preference**.
8. Click **Run** to run the analysis.

On completion, the input dataset gets updated with the extra columns chosen to store the results.

The following figure shows the results of the shortest route analysis (from each input point to the destination pin) on map visualization.

**Figure 3-104 Spatial Route Analysis Visualization**



### 3.11.7 Editing a Spatial Analysis

You can edit an existing spatial analysis to modify certain essential parameters.

However, only the following list of spatial analysis operations allow their parameters to be modified after creation:

#### Filter

- SDO\_FILTER
- SDO\_NN\_V2
- SDO\_RELATE
- SDO\_WITHIN\_DISTANCE

#### Combine

- Spatial Join

#### Transform

- SDO\_BUFFER
- SDO\_MBC

- SDO\_UTIL.AT\_BEARING
- SDO\_UTIL.SIMPLIFY
- SDO\_SAM.SIMPLIFY\_GEOMETRY

### Measure


- SDO\_GEOM.SDO\_AREA
- SDO\_GEOM.SDO\_DIAMETER
- SDO\_GEOM.SDO\_LENGTH
- SDO\_GEOM.WITHIN\_DISTANCE
- SDO\_GEOM.SDO\_MAXDISTANCE
- SDO\_GEOM.SDO\_MAX\_MBR\_ORDINATE
- SDO\_GEOM.SDO\_MBC\_RADIUS
- SDO\_GEOM.SDO\_MIN\_MBR\_ORDINATE

### Analytics

- Summarize within distance
- Summarize by region

To modify the parameters in a spatial analysis, you must perform the following steps.

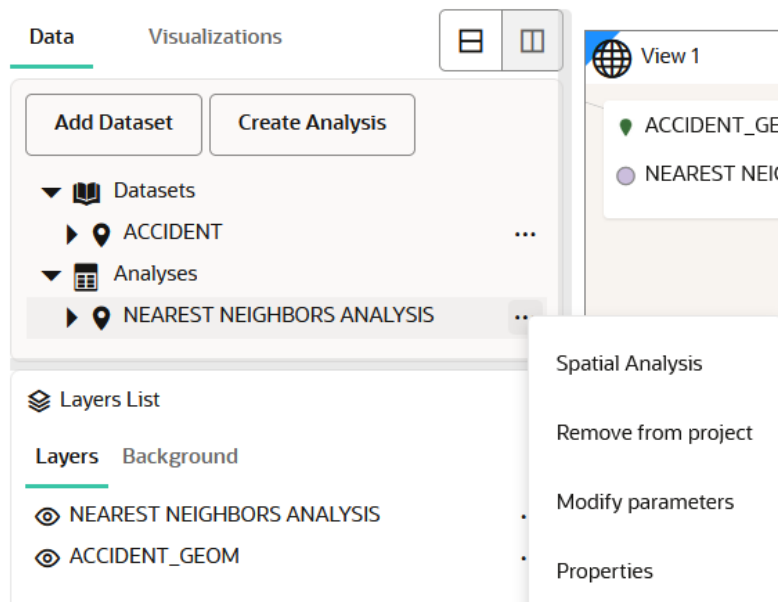
The instructions assume that the analysis to be edited is present in the Active Project page.

1. Click  against the analysis to be edited under **Analyses** tab in the **Data** elements pane of the Active Project page.
2. Select **Modify Parameters** as shown:

 **Note:**

**Modify Parameters** in the context menu will be disabled for spatial analysis operations that cannot be modified.

Figure 3-105 Modify Spatial Analysis Parameters



The dialog box displaying the original definition for the specific spatial analysis opens.

3. Modify the required parameters and click **Run**.

The analysis gets updated and the updates can be visualized in the map view.



# 4

## REST API in Oracle Spatial Studio

Oracle Spatial Studio provides a rich RESTful API that can be accessed not only from its web application user interface (UI), but also from the command line or programmatically from any other server or web applications.

### Introduction

When you login to the Spatial Studio web application, the application UI is constantly sending and receiving application data using the REST API endpoints. The URLs to access the endpoints typically start with `<studio-base-URL>/api/v1`. The base URL is the entry point to Spatial Studio, such as `https://localhost:4040/spatialstudio`. When you first login to the Spatial Studio web application, the browser sends several AJAX requests to load various metadata from the server. The REST API endpoints are always in use by the web application when you perform different actions such as listing of the existing projects to which you have access, setting your various preferences, listing running tasks, and so on.

For instance, to get the detailed information about the currently logged in user, the web application sends an HTTP GET request to the URL: `https://localhost:4040/spatialstudio/api/v1/user`. This is provided the base URL is `https://localhost:4040/spatialstudio`. Although the response to such requests is typically in JSON format, there are other requests that return other types of data such as compressed vector tiles (when displaying geometry datasets on a map), or images (when displaying GeoRaster datasets).

The OpenAPI 3.0 specification for all the REST endpoints is available in the form of a YAML specification in [Appendix A](#). Note, however, many of the requests require a (sometimes quite complex) JSON payload, which are currently not part of the automatically generated OpenAPI YAML specification. This will be documented in a future release of Spatial Studio. Detailed description on the JSON request payload for the most common use cases are provided in the subsections of this chapter.

### About Access Tokens

Apart from the Spatial Studio UI, almost all of the REST API endpoints can also be accessed from the command line using tools such as cURL, or from an external application programmatically. In both cases, you must first obtain an access token from Spatial Studio, as the token needs to be presented to the server. Also, when accessing the REST endpoints through an access token, the URLs will always start with the pattern `<studio-base-URL>/oauth/v1`. The only difference in the URL is that the path segment `api` is replaced with `oauth`. All other interaction behavior with the REST API endpoints from the Spatial Studio UI, external tools, or other applications remain the same.

An access token always includes the unique identity of the Spatial Studio user who generated the token. This user is considered the owner of the token. The owner identity is always verified when any REST endpoint is accessed through a token. See [Generating an Access Token](#) for the different types of access tokens that can be generated in Spatial Studio.

All the examples in the following subsections assume that you have obtained the proper type of access token. It is recommended you obtain the least privileged access token that will meet the requirements. For instance, a `READ ONLY` token is sufficient if you are not required to invoke a state-changing operation (such as deleting an analysis dataset). Similarly, if your

requirement is only to consume and display your datasets in another mapping application, then consider using a **Streaming-only** access token, which cannot be used to query any other information from the server.



**Note:**

[Generating Access Tokens Programmatically](#)

### About Access-Generator Tokens

Effective with Spatial Studio Release 23.2.1, you can create the access tokens programmatically without logging into the Spatial Studio UI. This allows better and safer management and distribution of access tokens, since these tokens are created only for short term usage, as and when needed by the application.

To programmatically create an access token, your application must first have an **Access-Generator Token**. It is a permanent token that is auto-created for each Spatial Studio user by the system. The purpose of this token is to create regular (but short-lived) access tokens which can be used to interact with Studio's extensive set of REST APIs. The access-generator token itself cannot be used to invoke any of the Studio's REST APIs (except the one that creates regular tokens).

See [Copying the Access-Generator Token](#) to obtain the access-generator token.

As the access-generator token is permanently associated with a valid Spatial Studio user, ensure the following:

- Keep the token always secure. For instance, the token must not be exposed in the JavaScript code of a web page.
- A typical workflow is to store and use the access-generator token in the backend of your application. Also, for each user session create a regular access token which can be used in your JavaScript code to interact with a Spatial Studio server as needed.

Also, the examples in the following sections assume that the Spatial Studio server is running and accessible at the URL `https://localhost:4040/spatialstudio`.

- [Using cURL with Spatial Studio REST APIs](#)  
cURL is a powerful command line tool available on many platforms for sending and receiving URL requests to a remote server.
- [Accessing Spatial Studio REST API Programmatically](#)  
You can programmatically interact with the Spatial Studio REST API endpoints from another application.

## 4.1 Using cURL with Spatial Studio REST APIs

cURL is a powerful command line tool available on many platforms for sending and receiving URL requests to a remote server.

When accessing or invoking a REST endpoint, the curl command follows a specific format.

For example, consider the following request to retrieve the Spatial Studio version:

## HTTP GET Request

```
curl -k https://localhost:4040/spatialstudio/oauth/v1/softwareVersion \
--header "Authorization: Bearer <MY_TOKEN>"
```

The options used in the preceding request are explained as follows:

- `-k`: To indicate that the `cURL` request must accept the self-signed SSL certificate used by a Quick Start Spatial Studio instance.
- `--header`: To set the Spatial Studio access token as a bearer token header in the request.  
Note that the keywords **Authorization:** (including the colon and whitespace) and **Bearer** must be entered as is, with the entire value for the `--header` option enclosed in double quotes. The variable `<MY_TOKEN>` represents the actual token string which must be provided in one unbroken line.

Note that the URL in the request uses `oauth/v1` as path segments. If you accidentally use `api/v1`, then the response returns the web application login page in HTML.

The following sections explain with a few examples on how to invoke a REST API endpoint using `cURL`:

- [Listing Available Datasets](#)
- [Example Workflow With the Spatial Studio REST Endpoints](#)

### 4.1.1 Listing Available Datasets

The following request lists all the datasets available to the user who is “embedded” inside the access token:

#### HTTP GET Request

```
curl -k https://localhost:4040/spatialstudio/oauth/v1/datasets \
--header "Authorization: Bearer <MY_TOKEN>"
```

The preceding request will return a JSON document containing all the datasets that are owned or created by the token owner, as well as any dataset that was marked as public (by its owner) which are accessible to any other application user. The JSON response includes a JSON object that describes every aspect of the dataset, such as `id`, `name`, `type`, `source table name` (if applicable), as well as its columns and a host of other metadata.

Note that the access token used in the preceding request must be a **general-purpose** one (either `read-only` or `read-write`, depending on your specific use case), as opposed to a **dataset streaming-only** token. This is because a stream-only access token cannot be used to query any metadata from the Spatial Studio server. As a result, if you pass in a stream-only token in the preceding request, you will not get the desired response.

Alternatively, you can also provide an additional query parameter, **fields**, to filter the data that is returned for each dataset. For instance, if you prefer only the unique `id` and `name` of all the available datasets in the response, then the request is as follows:

**Request with Query Parameter:**

```
curl -k https://localhost:4040/spatialstudio/oauth/v1/datasets?  
fields=id,name \  
--header "Authorization: Bearer <MY_TOKEN>"
```

**Response:**

```
{  
  "items": [  
    {  
      "id" : "3ee71ae5ba84cc5afd0728643e878f29",  
      "name" : "LANDSAT5_IMAGES"  
    },  
    {  
      "id" : "d06d0b711e10997c1c886b731b1c45b8",  
      "name" : "AIRPORT_POINT"  
    },  
    {  
      "id" : "fd6f55d0773dcda639e07b00e5ba431a",  
      "name" : "INTERSTATES"  
    },  
    {  
      "id" : "5b68bd621ee6f58af0bd0cb20f600a38",  
      "name" : "NY_INDIAN_TERRITORIES"  
    }  
  ]  
}
```

In the preceding response:

- Each dataset is represented as an element in the **items** array.
- Each item (dataset) contains both the `id` and the `name` of a dataset. The `id` returned in the response is the unique ID of the dataset. Note that Spatial Studio assigns a globally unique `id` to all the objects you create, such as datasets, projects, connections or data sources, and even columns inside a dataset. In most cases, the REST API uses only these unique `ids` when referencing a user created object such as a dataset or connection.

**Related Topics**

- [Generating an Access Token](#)

## 4.1.2 Example Workflow With the Spatial Studio REST Endpoints

You can perform different workflows with the Spatial Studio REST Endpoints. For example, consider a workflow consisting of the following steps:

1. Create a new Spatial Studio dataset from an existing table containing latitude/longitude coordinates.
2. Instruct Spatial Studio to perform a reverse geocoding task on the underlying database table of the dataset.  
This task will update the table with additional columns representing the nearest address information as a result of the reverse geocoding operation.

3. Verify that the table is updated with the address columns by checking the data in a table row.

You can potentially automate these steps by running the workflow steps in a script. Also, note that the workflows are certainly not limited to this particular scenario. You can also, for instance, automate the process of creating a spatial analysis, obtaining a CSV report of the analysis, and so on.

The following sections enable you to perform the preceding example workflow by interacting with the REST endpoints of Spatial Studio using the `cURL` tool.

- [Creating a New Dataset From an Existing Table](#)
- [Reading a Single Row of Data From a Dataset](#)
- [Performing Reverse Geocoding](#)
- [Checking the Reverse Geocoding Task Status](#)
- [Verifying the Result of Reverse Geocoding](#)

### 4.1.2.1 Creating a New Dataset From an Existing Table

The Spatial Studio datasets are created from existing tables, views or models in a database connection.

The following request creates a new Spatial Studio dataset from an existing table.

#### HTTP POST Request

```
curl -k -X POST https://localhost:4040/spatialstudio/oauth/v1/datasets \
  --header "Authorization: Bearer <MY_TOKEN>" \
  --header "Content-Type: application/json" \
  --data '{
    "objectType": "dataset",
    "name": "MY_LOCATIONS",
    "refId": "<MY_CONN_ID>",
    "data": {
      "dataSourceId": "$MY_CONN_ID",
      "nodePath": "database://{data}{schema}<MY_CONN_ID>/{marker}
{TableMarker}<MY_CONN_ID>-table}/{dataset}{DatabaseTable}{MY_LOCATIONS}",
      "description": "",
      "dataSourceType": "database",
      "lastModifiedTime": "'$DATE'"
    }
  }'
```

The preceding request creates a dataset from `MY_LOCATIONS` table. Also, note the following:

- The `-X POST` option make this a HTTP POST request. This is required when invoking a state-changing action (creating a new dataset on the server). You will also need an access token with the `READ` and `WRITE` permissions (changing the server's state is considered a `WRITE` operation).
- The `--data` option is used to send a JSON payload as part of the REST request. In this example an env variable `$DATE` (`export DATE=date`) is used for the required `lastModifiedTime` field.

- The string `<MY_CONN_ID>` represents the `id` of the data source or connection where the table exists.
- For formatting purposes, the request is shown split into multiple lines. The backslash `\` ensures that all the lines are concatenated and treated as a single unbroken command.

The response includes the new dataset `id`, which is used in subsequent requests.

### Response

```
{
  ...
  "id" : "5c3b3a6d98eab545a0f9bd66e3d07886",
  ...
}
```

Although you will receive the JSON response almost instantly, note that there will be additional server-side tasks (for example, statistics gathering) that still continue to run. These background tasks may take a few seconds or more depending on the size of the source table. There are REST endpoints to query and check the status of such tasks. But for the purpose of creating a new dataset, you can safely ignore them.

You can also send a host of other commands that prepare your newly created dataset, such as creating a latitude/longitude index, updating its statistics, setting a key column, and so on.

## 4.1.2.2 Reading a Single Row of Data From a Dataset

The following request reads a single row of data from a dataset.

### HTTP GET Request

```
curl -k "https://localhost:4040/spatialstudio/oauth/v1/datasets/rows/
5c3b3a6d98eab545a0f9bd66e3d07886?limit=1" \
--header "Authorization: Bearer <MY_TOKEN>"
```

The following response returns a single row of data for the specified dataset (with the given `id`).

### Response

```
{
  ...
  "items" : [
    {
      "LAT" : 35.53222623,
      "LON" : -101.5576172,
      "NAME" : "Amarillo Warehouse"
    }
  ],
  ...
}
```

### 4.1.2.3 Performing Reverse Geocoding

You can reverse geocode the dataset created in the earlier section using the following request.

#### HTTP PUT Request

```
curl -k -X PUT "https://localhost:4040/spatialstudio/oauth/v1/enrichment/
reversegeocode/5c3b3a6d98eab545a0f9bd66e3d07886?datasourceid=
<MY_CONN_ID>&roadsonly=true&lat=LAT&lon=LON" \
--header "Authorization: Bearer <MY_TOKEN>" \
--header "Content-Type: application/json" \
--data '{
  "street": "STREET",
  "houseNumber": "HOUSE_NUMBER",
  "settlement": "SETTLEMENT",
  "municipality": "MUNICIPALITY",
  "region": "REGION",
  "postalCode": "POSTAL_CODE",
  "country": "COUNTRY"
}'
```

The preceding request uses the coordinate columns (LAT and LON) and also the `--data {key:value, ...}` option that specifies which address-related columns must be created and populated. In this sample request, all the attributes are created. `value` determines the resulting column name.

The resulting `task_id` of the reverse-geocoding task running in the background is returned in the response.

#### Response

```
{
  "task_id" : "a2743564e066153f4a14ac29000727b1"
}
```

### 4.1.2.4 Checking the Reverse Geocoding Task Status

Using the `task_id` returned in the earlier section, you can obtain the status of the reverse geocoding task.

The following request returns the state or status of a specified task (such as ONGOING or DONE).

#### HTTP GET Request

```
curl -k https://localhost:4040/spatialstudio/oauth/v1/tasks/
a2743564e066153f4a14ac29000727b1 \
--header "Authorization: Bearer <MY_TOKEN>"
```

### Response

```
{
  ...
  "state" : "DONE",
  ...
}
```

Once the task returns the state `DONE`, then you can perform [Verifying the Result of Reverse Geocoding](#).

## 4.1.2.5 Verifying the Result of Reverse Geocoding

Once the reverse geocoding task completes with status `DONE`, then you can use the following request to view a row of data from the dataset table. This is to verify that the table contains additional address-related columns populated by the reverse geocoding operation performed by Spatial Studio in the backend.

### HTTP GET Request

```
curl -k "https://localhost:4040/spatialstudio/oauth/v1/datasets/rows/
5c3b3a6d98eab545a0f9bd66e3d07886?limit=1" \
--header "Authorization: Bearer <MY_TOKEN>"
```

The JSON response contains a single table row with the added columns.

### Response

```
{
  ...
  "items": [
    {
      "COUNTRY": "US",
      "HOUSE_NUMBER": "2403",
      "LAT": 35.53222623,
      "LON": -101.5576172,
      "MUNICIPALITY": "Carson",
      "NAME": "Amarillo Warehouse",
      "POSTAL_CODE": "79068",
      "REGION": "TX",
      "SETTLEMENT": "Panhandle",
      "STREET": "County Road D"
    }
  ],
  ...
}
```

## 4.2 Accessing Spatial Studio REST API Programmatically

You can programmatically interact with the Spatial Studio REST API endpoints from another application.



A typical use case is to consume a Spatial Studio dataset or analysis, and showing its contents (geometries and attributes) on a map that you are creating either from scratch or in an existing web mapping application (such as a map region inside your Oracle Apex application). To implement this, you must first understand the ways Spatial Studio can serve its datasets for mapping purposes.

Spatial Studio can serve its geometry datasets in two formats - **GeoJSON** and **Vector Tiles**, with each format using its own REST endpoint. The endpoint that applies for GeoRaster datasets, returns its contents as image tiles. [Table 4-1](#) summarizes all the relevant REST endpoints Spatial Studio uses to serve the data of the datasets.

**Table 4-1 Dataset Format Specific Endpoint**

Format	Endpoint
Vector Tiles (for table/view/analysis datasets containing geometry or lat/lon indexed columns)	<p><code>https://localhost:4040/spatialstudio/oauth/v1/vt/&lt;DATASET_ID&gt;/&lt;GEOM_COLUMN_NAME&gt;/{z}/{x}/{y}.mvt</code></p> <p>Ensure to substitute the string <code>&lt;DATASET_ID&gt;</code> with the id of the target dataset and <code>&lt;GEOM_COLUMN_NAME&gt;</code> with the name (not id) of the geometry column.</p>
GeoJSON (for geometry type datasets)	<p><code>https://localhost:4040/spatialstudio/oauth/v1/jsonstream/&lt;DATASET_ID&gt;?geo=&lt;GEOM_COLUMN_NAME&gt;</code></p> <ul style="list-style-type: none"> <li>• If the dataset has only one geometry column, then the <b>geo</b> query parameter can be omitted.</li> <li>• Also, ensure to substitute the string <code>&lt;DATASET_ID&gt;</code> with the id of the target dataset and <code>&lt;GEOM_COLUMN_NAME&gt;</code> with the name (not id) of the geometry column.</li> </ul>
Image Tiles (for GeoRaster datasets)	<p><code>https://localhost:4040/spatialstudio/oauth/v1/rt/&lt;COLUMN_ID&gt;/{z}/{x}/{y}.png</code></p> <p>Note that this requires <code>&lt;COLUMN_ID&gt;</code> and not <code>&lt;DATASET_ID&gt;</code>. Also, replace <code>&lt;COLUMN_ID&gt;</code> with the image column id of the GeoRaster dataset. See <a href="#">Displaying a Spatial Studio GeoRaster Dataset as Image Tiles</a> for more information on how to obtain the image column id of GeoRaster datasets.</p> <p>This is different from the REST endpoints for Vector Tiles or GeoJSON data, which require the <code>id</code> of the dataset and the <code>name</code> of the geometry column.</p>

- [Displaying a Spatial Studio Dataset in a Standalone MapLibre JavaScript Map as Vector Tiles](#)
- [Displaying a Spatial Studio Dataset as GeoJSON](#)
- [Displaying a Spatial Studio GeoRaster Dataset as Image Tiles](#)

## 4.2.1 Displaying a Spatial Studio Dataset in a Standalone MapLibre JavaScript Map as Vector Tiles

This section explains how to create a simple one-page HTML page that can display a vector tiles of a dataset in a standalone JavaScript web mapping application written using the open source MapLibre GL JS API library.

Any mapping APIs must meet the following criteria:

- Support displaying vector tiles or GeoJSON data from an external source.
- Support setting a custom HTTP header on its Vector Tile or GeoJSON requests. This is needed in order to pass an access token to Spatial Studio.

The following example displays the public *Submarine Cables* dataset that was loaded into an Oracle database table from which a Spatial Studio dataset was created. The access token was obtained from the same Studio server with the type *Dataset streaming only*. The sample code is as shown:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Display vector dataset from Spatial Studio</title>
  <meta name="viewport" content="initial-scale=1,maximum-
scale=1,user-scalable=no">
  <script src="https://unpkg.com/maplibre-gl@2.1.9/dist/maplibre-
gl.js"></script>
  <link href="https://unpkg.com/maplibre-gl@2.1.9/dist/maplibre-
gl.css" rel="stylesheet">
  <style>
    body { margin: 0; padding: 0; }
    #map { position: absolute; top: 0; bottom: 0; width: 100%; }
  </style>
</head>
<body>
<div id="map"></div>
<script>
  const spatialStudio = {
    // the base URL for accessing Spatial Studio dataset's vector
    tiles using an access token
    baseUrl : 'https://localhost:4040/spatialstudio/oauth/v1',
    // a stream-only access token issued by Spatial Studio
    accessToken: 'eyJ0eXAiOiJzZ3R...HV3koQsYF_MkKQ'
  };

  const map = new maplibregl.Map({
    container: 'map',
    // For demo purpose we will simply create a background map
    based on the OpenStreetMap from Map Tiler. Note that you must obtain
    your own API key from maptiler.com. Any Mapbox style basemap works
    here.
    style: 'https://api.maptiler.com/maps/openstreetmap/
style.json?key=YOUR_KEY',
    zoom: 1,
    center: [-122.5, 37.5],

    // This function is used to set the Spatial Studio access
    token when requesting the vector tiles of a dataset.
    transformRequest: (url, resourceType) => {
      if (resourceType === 'Tile' &&
url.startsWith(spatialStudio.baseUrl)) {
        return {
          url: url,
          headers: {'Authorization': 'Bearer ' +
spatialStudio.accessToken}
        }
      }
    }
  }
}
```

```
});

map.on('load', function () {
  // Adds the vector tiles for the Spatial Studio dataset with the id
  "c5e166cdf86a1605ff9fbaa9d04b7378" to
  // the MapLibre map as a source object.
  map.addSource('spatial-studio-vector-tiles', {
    'type': 'vector',
    'tiles': [
      spatialStudio.baseUrl + '/vt/
c5e166cdf86a1605ff9fbaa9d04b7378/GEOM/{z}/{x}/{y}.mvt'
    ],
    'minzoom': 0,
    'maxzoom': 10
  });

  // Adds the layer definition for the dataset. Note that vector tiles
  generated by Spatial Studio always includes only one dataset,
  // and the layer name is always 'LAYER'.
  map.addLayer(
    {
      'id': 'submarine-cables',
      'type': 'line',
      'source': 'spatial-studio-vector-tiles',
      'source-layer': 'LAYER',
      'layout': {
        'line-cap': 'round',
        'line-join': 'round'
      },
      'paint': {
        'line-opacity': 0.6,
        'line-color': 'rgb(53, 175, 109)',
        'line-width': 3
      }
    }
  );
});

map.addControl(new maplibregl.NavigationControl());

// Adds a simple popup on hover
var popup = new maplibregl.Popup({
  closeButton: false,
  closeOnClick: false
});

// Defines what happens when you mouse over a feature of the dataset.
map.on('mouseenter', 'submarine-cables', function (e) {
  // Changes the cursor style as a UI indicator.
  map.getCanvas().style.cursor = 'pointer';

  var coordinates = e.features[0].geometry.coordinates.slice();
  if (Array.isArray(coordinates[0])){
    // Uses the first vertex of the linestring feature under hover
    as the anchor point for the popup.
  }
});
```

```
        coordinates = coordinates[0];
    }

    // NAME is one of the columns of the dataset. You have access
to all the columns of a dataset here.
    var description = e.features[0].properties.NAME;

    // Ensures that if the map is zoomed out such that multiple
// copies of the feature are visible, the popup appears
// over the copy being pointed to.
    while (Math.abs(e.lngLat.lng - coordinates[0]) > 180) {
        coordinates[0] += e.lngLat.lng > coordinates[0] ? 360 :
-360;
    }

    // Populates the popup with custom HTML contents and sets its
coordinates
    // based on the feature found under the mouse pointer. Finally
the popup is added to the map.
    popup.setLngLat(coordinates).setHTML(description).addTo(map);
    });

    map.on('mouseleave', 'submarine-cables', function () {
        map.getCanvas().style.cursor = '';
        popup.remove();
    });
</script>

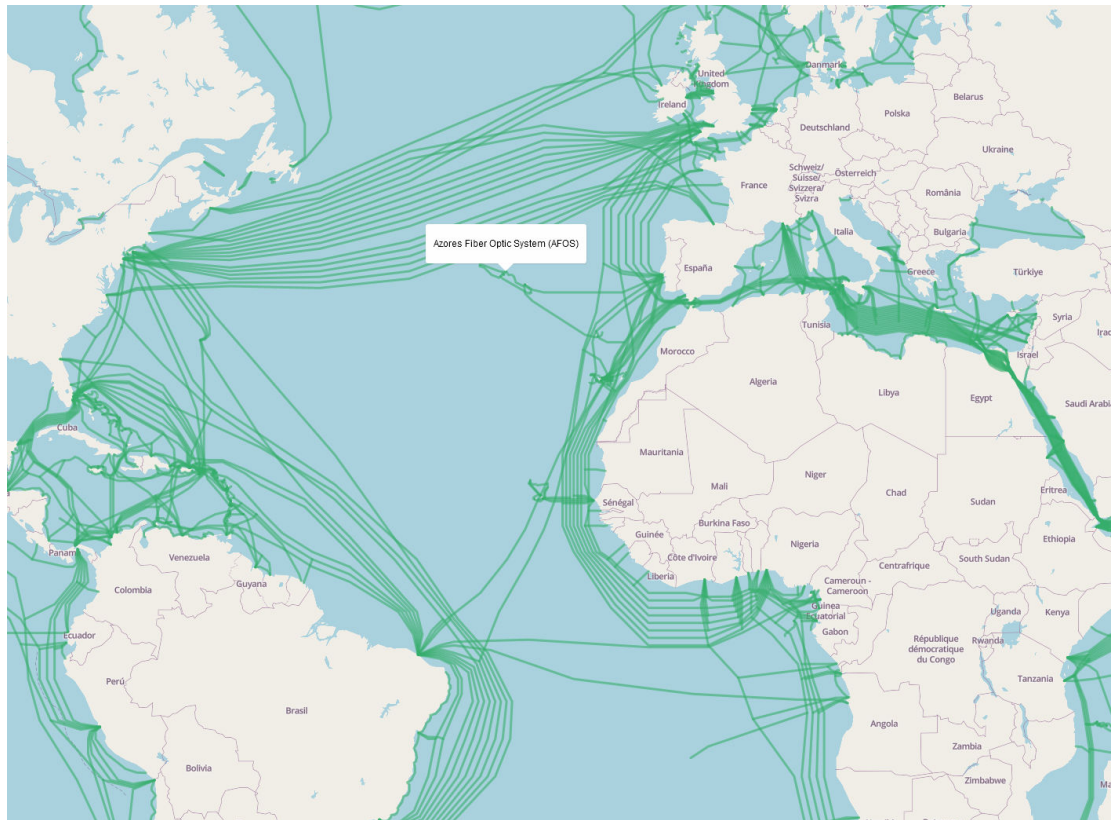
</body>
</html>
```

Note the following related to the preceding code:

- Replace the `baseUrl` and `accessToken` as it applies to your installation. Also, the access token should be of the type *Dataset stream only*.
- Similarly, replace the `dataset id` string to your own.
- The access token is set as a request header through MapLibre API's `transformRequest` option when constructing a MapLibre `Map` object. This option provides MapLibre API with a callback that will be invoked whenever it sends a vector tile request to the Spatial Studio server.
- A MapLibre `vector` type `Source` object is created and added to its `Map` object. From this source object a map layer is defined and added to the map as well.
- You have full access to all the columns of the dataset once its data are displayed on the map.
- You can always customize the popup behavior and the contents as they are standard MapLibre GL JS API classes.

When you save the code to a web server and open its URL in a browser window, a similar map as shown will be displayed. The green lines on the map are the features of the Spatial Studio dataset containing submarine cables.

**Figure 4-1** Displaying Vector Tiles of a Dataset in the MapLibre Application



## 4.2.2 Displaying a Spatial Studio Dataset as GeoJSON

To load the public *Submarine Cables* dataset as GeoJSON from Spatial Studio and display it in the MapLibre application, you must make the following changes to the HTML code shown in [Displaying a Spatial Studio Dataset in a Standalone MapLibre JavaScript Map as Vector Tiles](#):

- When adding the Spatial Studio token, the `transformRequest` function must look for requests of the type `Source` instead of `Tile`.
- The map source and layer definitions must change to use the `geojson` type.

The following show the corresponding changed blocks of code:

```

transformRequest: (url, resourceType) => {
  if (resourceType === 'Source' &&
url.startsWith(spatialStudio.baseUrl)) {
    return {
      url: url,
      headers: {'Authorization': 'Bearer ' +
spatialStudio.accessToken}
    }
  }
}

map.addSource('spatial-studio-geojson-data', {

```

```

        'type': 'geojson',
        'data': spatialStudio.baseUrl + '/jsonstream/
c5e166cdf86a1605ff9fbaa9d04b7378'
    });

    map.addLayer(
        {
            'id': 'submarine-cables',
            'type': 'line',
            'source': 'spatial-studio-geojson-data',
            'layout': {
                'line-cap': 'round',
                'line-join': 'round'
            },
            'paint': {
                'line-opacity': 0.6,
                'line-color': 'rgb(53, 175, 109)',
                'line-width': 3
            }
        }
    );

```

### 4.2.3 Displaying a Spatial Studio GeoRaster Dataset as Image Tiles

Similar to how the geometry dataset from Spatial Studio can be displayed in a standalone MapLibre map, GeoRaster datasets from Spatial Studio can also be easily added to your MapLibre map. As mentioned in the earlier sections, the REST endpoint for returning the image tiles of a GeoRaster dataset requires the image column's `id` as part of the REST endpoint URL. Unlike easily finding out the `id` of a dataset from its properties dialog, in this case, you must use a `cURL` command to obtain the image column `id`. For example:

```

curl -k "https://localhost:4040/spatialstudio/oauth/v1/datasets/
<DATASET_ID>/columns?
datasetFields=georasterColumns&columnFields=id,name" \
--header "Authorization: Bearer <MY_TOKEN>"

```

The preceding REST endpoint returns the metadata of all the columns in the specified dataset. The query parameters, `datasetFields` and `columnFields` are used to filter the response so that only the fields matching the given names are returned to the client. In this case, the requirement is to obtain the `georasterColumns` field, which indicates the name of the dataset's GeoRaster image columns (that store raster image data). For the individual columns in that dataset, only the `name` and `id` are required.

The request returns a similar response:

```

{
  "georasterColumns": [
    "IMAGE"
  ],
  "columnDetails": [
    {
      "id": "09b60f1da4c6808d753c57393c6f899f",

```

```
    "name": "IMAGE_ID"
  },
  {
    "id": "7223184218fc39ac149c91155a9f9242",
    "name": "MIN_X_RES$"
  },
  {
    "id": "e56426442075b028018175740b64449d",
    "name": "IMAGE"
  },
  {
    "id": "c254f40e6ea6f14f4899c8801b485b24",
    "name": "MAX_X_RES$"
  },
  {
    "id": "5c4d7c6963f7234adc97fafc52c0c04c",
    "name": "DESCRIPTION"
  }
]
}
```

In the preceding response, the `id` of the image column is `e56426442075b028018175740b64449d`, which is then used in the following example code to display a Spatial Studio GeoRaster dataset on a standalone MapLibre application.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Display GeoRaster imagery from Spatial Studio</title>
  <meta name="viewport" content="initial-scale=1,maximum-scale=1,user-
scalable=no">
  <script src="https://unpkg.com/maplibre-gl@2.1.9/dist/maplibre-gl.js"></
script>
  <link href="https://unpkg.com/maplibre-gl@2.1.9/dist/maplibre-gl.css"
rel="stylesheet">
  <style>
    body { margin: 0; padding: 0; }

    .container {
      position: absolute;
      width: 100%;
      height: 100%;
    }
    .control {
      background-color: #a9cce3 ;
      width: 100%;
      height: 100px;
      margin: 5px auto;
    }
    .map_container {
      position: absolute;
      top: 100px;
      bottom: 0;
    }
  </style>
</head>
<body>
  <div class="container">
    <div class="control">
      <div class="map_container">
        <img alt="GeoRaster imagery from Spatial Studio" data-bbox="220 473 881 909" />
      </div>
    </div>
  </div>
</body>
</html>
```

```
        width: 100%;
        margin: 5px auto;
    }
</style>
</head>
<body>

<div class="container">
  <div class="control">
    <form>
      <fieldset>
        <legend>GeoRaster display settings</legend>
        <p>
          <input type="checkbox" name="nodata_flag"
id="nodata_flag">
          <label for="nodata_flag">Show NODATA values as
transparent</label>
        </p>
      </fieldset>
    </form>
  </div>

  <div class="map_container" id="map"></div>
</div>

<script>
  // basic information about the remote Spatial Studio instance that
  is serving the GeoRaster images.
  const spatialStudio = {
    // the base URL for accessing Spatial Studio dataset's
    GeoRaster image tiles using an access token
    baseUrl : 'https://localhost:4040/spatialstudio/oauth/v1',
    rasterTileEndpoint: '/rt/
e56426442075b028018175740b64449d/{z}/{x}/{y}.png',
    // a stream-only access token issued by Spatial Studio
    accessToken: 'eyJ0eXAiOiJzZ3R...qOdHV3koQsYF_MkKQ'
  };

  const sourceId = 'spatial-studio-raster-tiles1';

  const map = new maplibregl.Map({
    container: 'map',
    // Gets the OpenStreetMap basemap from maptiler.com. You must
    change to use your own maptiler API key and agree to their terms of
    usage.
    style: 'https://api.maptiler.com/maps/openstreetmap/style.json?
key=YOUR_KEY,
    zoom: 6,
    center: [-90.241936, 33.911399],

    //This option sets a Spatial Studio access token when
    requesting the image tiles of a GeoRaster dataset.
    transformRequest: (url, resourceType) => {
      if (resourceType === 'Tile'&&
```



```
url.startsWith(spatialStudio.baseUrl)) {
    return {
        url: url,
        headers: {'Authorization': 'Bearer ' +
spatialStudio.accessToken}
    }
}
});

// Controls the visual appearances of the GeoRaster images generated by
Studio. This is appended to the Studio tile request URLs.
let geoRasterVisualProperties = {"reprojection":
{"mode":"NN","medianfilter":false},"transpnodeata":false,"virtualmosaic":
{"resolfilter":true,"nodata":true,"fillgap":true,"commonpointrule":"HIGH"},"b
ands":{"red":1,"green":2,"blue":3,"alpha":-1}};

map.on('load', function () {
    // Adds the image tiles for the Spatial Studio GeoRaster dataset
with the specified column id (not dataset id)
"e56426442075b028018175740b64449d" to
    // the map.
    //
    map.addSource(sourceId, {
        'type': 'raster',
        'tiles' : [
            spatialStudio.baseUrl + spatialStudio.rasterTileEndpoint
+ '?visualProperties=' + JSON.stringify(geoRasterVisualProperties)
        ],
        'minzoom': 5,
        'maxzoom': 20,
        'tileSize' : 256,
        // this tells MapLibre API that the dataset only has GeoRaster
images within this bounding box
        'bounds': [-90.4895407500805, 32.3190270753724,
-89.9586424931126, 35.2761555998833]
    });

    // Defines and adds a layer from the above Map source.
    map.addLayer(
        {
            'id': 'my_georaser_layer',
            'type': 'raster',
            'source': sourceId,
            'paint': {
                'raster-opacity': 0.72,
                'raster-hue-rotate': 0,
                'raster-brightness-min': 0,
                'raster-brightness-max': 1,
                'raster-saturation': 0,
                'raster-contrast': 0,
                'raster-fade-duration': 300
            }
        }
    );
});
```

```
    });

    map.addControl(new maplibregl.NavigationControl());

    // Toggles the display of GeoRaster NODATA values between
    transparent or not.
    // This is done by changing the visual properties object's
    "nodata" field,
    // then reloading the GeoRaster images from Spatial Studio using
    the new properties.
    function toggleNODATA(flag) {
        if (geoRasterVisualProperties.transpnodata === flag) {
            return; // do nothing since we are already using the input
value
        }

        geoRasterVisualProperties.transpnodata = flag;

        // update map source so that future tile requests will
        generate tiles with the new visual properties.
        const sourceObj = map.getSource(sourceId);
        const newTileUrl = spatialStudio.baseUrl +
        spatialStudio.rasterTileEndpoint + '?visualProperties=' +
        JSON.stringify(geoRasterVisualProperties);

        sourceObj.tiles = [newTileUrl];
        // Remove all the existing, cached tiles of the GeoRaster
source
        map.style.sourceCaches[sourceId].clearTiles();
        // Reloads the GeoRaster image tiles for the current viewport
        (map.transform -> viewport)
        map.style.sourceCaches[sourceId].update(map.transform);
        // Force a map repaint
        map.triggerRepaint();
    }

    // add callback to the nodata checkbox
    const nodataCheckbox = document.querySelector('#nodata_flag');

    nodataCheckbox.addEventListener('change', () => {
        if(nodataCheckbox.checked){
            toggleNODATA(true);
        } else {
            toggleNODATA(false);
        }
    });
});

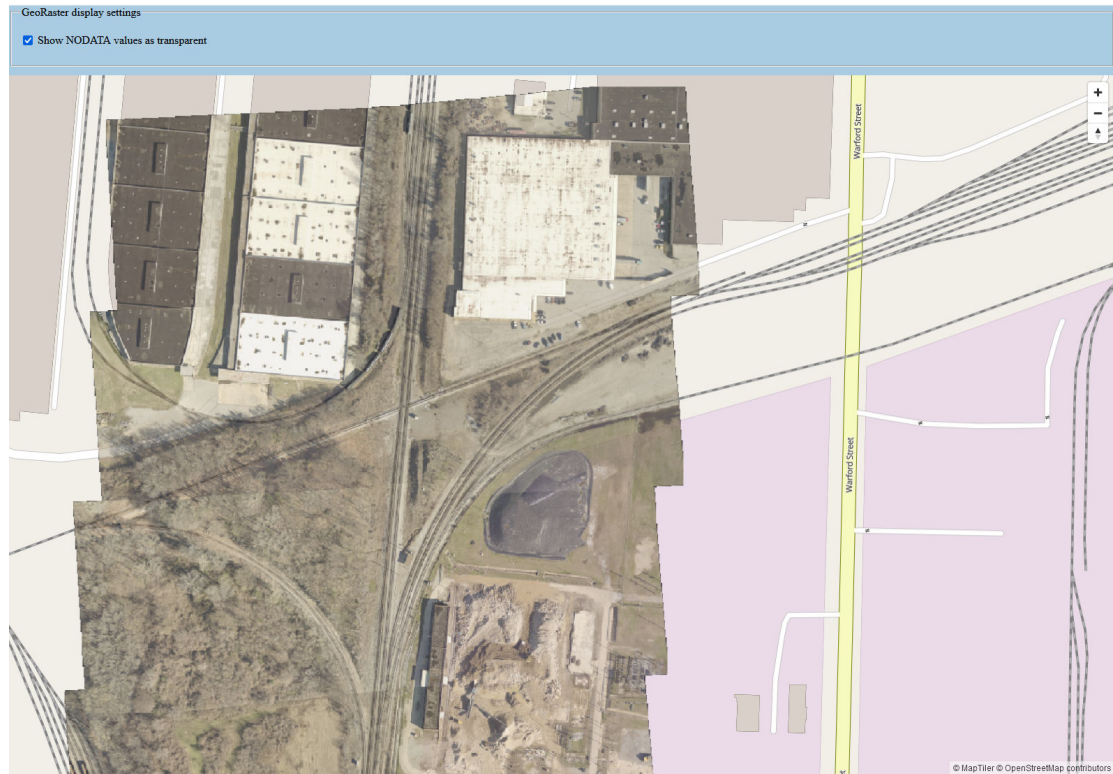
</script>

</body>
</html>
```

The following shows the output map with the GeoRaster (high resolution images) overlaid on top of the OpenStreetMap. When you toggle the **Show NODATA values**

as transparent, the GeoRaster images will display its *NODATA* area either as black or transparent pixels.

**Figure 4-2** Displaying a GeoRaster Dataset in the MapLibre Application



Note the following on the preceding GeoRaster image:

- The overall pattern remains similar to how geometry datasets are displayed. You only need to change the Spatial Studio REST endpoint and how the MapLibre Source and Layer objects are defined.
- You can fine-tune the generated image tiles by supplying a visual properties payload as part of the image tile request.
- Spatial Studio takes care of all the backend processes such as querying the GeoRaster table or virtual mosaic based on the browser's image tile requests, applying the specified visual properties, and sending the result images back to the browser.

# 5

## Spatial Studio Accessibility Information

This topic provides information on the accessibility features for Oracle Spatial Studio.

It includes the following.

- [About Oracle Spatial Studio Accessibility](#)
- [Oracle Spatial Studio Features that Support Accessibility](#)
- [Highly Visual Features of Oracle Spatial Studio](#)

### 5.1 About Oracle Spatial Studio Accessibility

It is our goal to make Oracle Products, Services, and supporting documentation accessible to the disabled community.

Oracle Spatial Studio is based on the Oracle JET components. For more information about accessibility of Oracle JET components, see the [Oracle JET Documentation](#).

For additional accessibility information for Oracle products, see the Oracle Accessibility Program page at:

<http://www.oracle.com/accessibility/>

### 5.2 Oracle Spatial Studio Features that Support Accessibility

Oracle Spatial Studio provides features that are designed to support accessibility.

- [Keyboard Access with Spatial Studio](#)
- [Screen Reader Readability with Spatial Studio](#)
- [Flexibility in Font and Color Choices with Spatial Studio](#)
- [No Audio-only Feedback with Spatial Studio](#)
- [No Dependency on Blinking Cursor and Animation with Spatial Studio](#)
- [Screen Magnifier Usability with Spatial Studio](#)

#### 5.2.1 Keyboard Access with Spatial Studio

Oracle Spatial Studio features support keyboard access to the product's functionality; a summary is provided in this section. The following menu and toolbar functionality is provided through keyboard access:

- Users can navigate to and invoke all menu items.
- All toolbar functions are accessible through menu items.
- All menus and menu items have unique and functioning mnemonic keys.
- All context menus within the navigators and source editor can be invoked.

- Frequently used menu items have unique accelerator keys.

## 5.2.2 Screen Reader Readability with Spatial Studio

Here is a summary of screen readability in Spatial Studio, when it is used with a screen reader.

When used with menus and toolbars:

- All menus and menu items are read.
- All toolbar items are read.
- The hint text on all toolbar items is read.

## 5.2.3 Flexibility in Font and Color Choices with Spatial Studio

The user interface in Spatial Studio improves usability for people who are visually impaired by offering flexibility in color and font choices. The following font and color features are included:

- Users can specify both the font and the size in which the font displays for code editors.
- All features of the product have black text on a white or gray background.
- Colored text, underlining, or images are never used as the only method of conveying information.

## 5.2.4 No Audio-only Feedback with Spatial Studio

In Spatial Studio, there is no situation in which the only feedback a user receives is audible feedback. All audible feedback is accompanied by a visual indicator. For example, a prompt accompanies the bell sound that occurs when an error or illegal action has taken place.

## 5.2.5 No Dependency on Blinking Cursor and Animation with Spatial Studio

Spatial Studio makes minimal use of a blinking cursor and animation:

- No features in Spatial Studio use blinking indicators, with the exception of the cursor in the source editor.
- No features rely on animated sequences.

## 5.2.6 Screen Magnifier Usability with Spatial Studio

The Spatial Studio user interface works well with screen magnifiers. All features of the product can be magnified by a screen magnifier.

## 5.3 Highly Visual Features of Oracle Spatial Studio

Spatial Studio includes features that are highly visual, and these features have equivalent functionality that is available to people who are blind or visually impaired,

except for the generated maps, which are only visual. However, results of an analysis can also be generated as JSON and tables, as an alternative format to the visual map.

All of the functionality is available through REST APIs.

In Spatial Studio, it is possible to create, edit, and generate an analysis result using only keystrokes.

# A

## Spatial Studio OpenAPI Specification for the REST API Endpoints

This appendix contains the OpenAPI 3.0 YAML documentation of the REST API endpoints for the Spatial Studio. You can invoke these endpoints to perform various Spatial Studio operations programmatically or through a command line tool such as curl using access tokens of the Spatial Studio.

### OpenAPI 3.0 YAML Document containing the REST API Endpoints

```
openapi: 3.0.0
info:
  title: Oracle Spatial Studio REST API
  description: This file lists all RESTful API end points of the Oracle
Spatial Studio
  application.
  version: "1.0"
paths:
  /v1/plugins/resource/{pluginId}/{segment}:
    get:
      operationId: getResource
      parameters:
        - name: pluginId
          in: path
          required: true
          schema:
            type: string
        - name: segment
          in: path
          required: true
          schema:
            type: array
            items:
              type: object
              properties:
                path:
                  type: string
                matrixParameters:
                  type: object
                  properties:
                    empty:
                      type: boolean
                additionalProperties:
                  type: array
                  items:
                    type: string
      responses:
        default:
```

```

        description: default response
        content:
          '*/*': {}
/v1/object/{type}/{name}/metadata:
  get:
    operationId: getMetadata
    parameters:
      - name: type
        in: path
        required: true
        schema:
          type: string
      - name: name
        in: path
        required: true
        schema:
          type: string
      - name: scope
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/safe_domains:
  get:
    operationId: getSafeDomains
    parameters:
      - name: reload
        in: query
        schema:
          type: boolean
          default: false
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: updateSafeDomains
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/object_body_field/{type}/{id}:
  put:
    operationId: updateBodyField

```



```

parameters:
- name: type
  in: path
  required: true
  schema:
    type: string
- name: id
  in: path
  required: true
  schema:
    type: string
- name: name
  in: query
  schema:
    type: string
- name: value
  in: query
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      '*/*': {}
/v1/logs:
  get:
    operationId: getSystemLogs
    parameters:
      - name: entries
        in: query
        schema:
          type: integer
          format: int32
          default: 30
      - name: entrylength
        in: query
        schema:
          type: integer
          format: int32
          default: 600
      - name: cropentries
        in: query
        schema:
          type: boolean
          default: true
      - name: filterlevel
        in: query
        schema:
          type: string
          default: INFO
    responses:
      default:
        description: default response
        content:
          application/json: {}

```

```

/v1/systemStatus:
  get:
    operationId: getSystemStatus
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/softwareVersion:
  get:
    operationId: getVersionAndBuild
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/ping:
  get:
    operationId: ping
    responses:
      default:
        description: default response
        content:
          '*/*': {}
/v1/connections/validate:
  post:
    operationId: isValidConnection
    requestBody:
      content:
        application/json:
          schema:
            type: object
            additionalProperties:
              type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/settings/{typeString}:
  get:
    operationId: getSGTechSettings
    parameters:
      - name: typeString
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/requirejsconfig.js:
  get:

```

```

    operationId: getRequireJSConfig
    responses:
      default:
        description: default response
        content:
          text/javascript:
            schema:
              type: string
/v1/settings/test/elocationurl:
  post:
    operationId: testElocationURL
    parameters:
      - name: url
        in: query
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/settings/update/{typeString}:
  put:
    operationId: updateSGTechSettings
    parameters:
      - name: typeString
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/header_fields/{id}:
  put:
    operationId: updateDomainObjectHeaderFields
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:

```

```

        content:
          '*/*':
            schema:
              type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/contextPath:
  get:
    operationId: getApplicationContextPath
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/repository/connect:
  post:
    operationId: connectToMetaDataSchema
    requestBody:
      content:
        application/json:
          schema:
            type: object
            additionalProperties:
              type: object
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/object_body_fields/{type}/{id}/{csf}:
  get:
    operationId: getDomainObjectFields
    parameters:
      - name: type
        in: path
        required: true
        schema:
          type: string
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: csf
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:

```

```

        application/json: {}
/v1/extensionpoints:
  get:
    operationId: getFronendExtensionPoints
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/repository/status:
  get:
    operationId: getMetaDataSchemaStatus
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/extensions:
  get:
    operationId: getFronendExtensions
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/acl/{id}:
  post:
    operationId: addOneAccess
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: user_id
        in: query
        schema:
          type: string
      - name: actions
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  delete:
    operationId: removeACL
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string

```

```

- name: user_id
  in: query
  schema:
    type: string
- name: actions
  in: query
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/world_readable/{id}:
get:
  operationId: isWorldReadable
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
put:
  operationId: setWorldReadable
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
delete:
  operationId: removeWorldReadable
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/adhocdatasets/{datasetId}/dbobject:
post:

```

```

operationId: createDBObject
parameters:
- name: datasetId
  in: path
  required: true
  schema:
    type: string
requestBody:
  content:
    application/x-www-form-urlencoded:
      schema:
        type: object
        properties:
          objectName:
            type: string
          objectType:
            type: string
          enum:
            - TABLE
            - VIEW
          createDataset:
            type: boolean
          datasetName:
            type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/adhocdatasets/{datasetId}:
  patch:
    operationId: editAdhocDataset
    parameters:
- name: datasetId
  in: path
  required: true
  schema:
    type: string
    requestBody:
      content:
        application/x-www-form-urlencoded:
          schema:
            type: object
            properties:
              query:
                type: string
              name:
                type: string
              description:
                type: string
              default: ""
              operator:
                type: string
              parameters:
                type: string

```

```

        datasetIds:
            type: string
        keyColumn:
            type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/adhocdatasets:
    post:
        operationId: createNewAdHocDataset
        requestBody:
            content:
                application/x-www-form-urlencoded:
                    schema:
                        type: object
                        properties:
                            query:
                                type: string
                            name:
                                type: string
                            description:
                                type: string
                                default: ""
                            operator:
                                type: string
                            parameters:
                                type: string
                            datasourceId:
                                type: string
                            datasetIds:
                                type: string
                            keyColumn:
                                type: string
            responses:
                default:
                    description: default response
                    content:
                        application/json: {}
/v1/admin/cache:
    delete:
        operationId: cacheRebuild
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/uploads/csvs/{uploadToken}/rows:
    get:
        operationId: getCSVRows
        parameters:
            - name: uploadToken
              in: path
              required: true

```



```

    schema:
      type: string
  - name: fromrow
    in: query
    schema:
      type: integer
      format: int32
  - name: torow
    in: query
    schema:
      type: integer
      format: int32
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/cacheStats/roundtrip:
  get:
    operationId: getCoherenceRoundTripStats
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/cacheStats/summary:
  get:
    operationId: getCoherenceStatsSummary
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/cacheStats/details:
  get:
    operationId: getCoherenceStatsDetails
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/cesium/3dtileset/{doid}/{segment}:
  get:
    operationId: do3DTileset
    parameters:
      - name: doid
        in: path
        required: true
        schema:
          type: string
      - name: segment
        in: path
        required: true
        schema:
          type: array

```

```

    items:
      type: object
      properties:
        path:
          type: string
        matrixParameters:
          type: object
          properties:
            empty:
              type: boolean
            additionalProperties:
              type: array
              items:
                type: string
  responses:
    default:
      description: default response
      content:
        application/octet-stream: {}
/v1/cesium/czml/{doid}:
  get:
    operationId: doCZMLRequest
    parameters:
      - name: doid
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/public/cesiummapstyles:
  get:
    operationId: getCesiumMapStyleList
    parameters:
      - name: fields
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/cesiummapstyles:
  post:
    operationId: createCesiumMapStyle
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:

```

```

        default:
          description: default response
          content:
            application/json: {}
/v1/cesiummapstyles/{id}:
get:
  operationId: getCesiumMapStyleObject
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
put:
  operationId: updateCesiumMapStyle
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  requestBody:
    content:
      '*/*':
        schema:
          type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
delete:
  operationId: deleteCesiumMapStyle
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/public/cesiummapstyles/{id}:
get:
  operationId: getCesiumMapStyle
  parameters:
    - name: id
      in: path

```

```

    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/public/cesium/czml/{doid}:
  get:
    operationId: doGetCZML
    parameters:
      - name: doid
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/public/cesium/3dtileset/{doid}/{segment}:
  get:
    operationId: doGetTileset
    parameters:
      - name: doid
        in: path
        required: true
        schema:
          type: string
      - name: segment
        in: path
        required: true
        schema:
          type: array
          items:
            type: object
            properties:
              path:
                type: string
              matrixParameters:
                type: object
                properties:
                  empty:
                    type: boolean
                  additionalProperties:
                    type: array
                    items:
                      type: string
    responses:
      default:
        description: default response
        content:
          application/octet-stream: {}

```

```

/v1/dataset_column_values/{datasetId}:
  get:
    operationId: getDatasetColumnValues
    parameters:
      - name: datasetId
        in: path
        required: true
        schema:
          type: string
      - name: columns
        in: query
        schema:
          type: string
      - name: filter
        in: query
        schema:
          type: string
      - name: maxRows
        in: query
        schema:
          type: integer
          format: int32
      - name: distinct
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/public/dataset_column_values/{datasetId}:
  get:
    operationId: getDatasetColumnValuesPublic
    parameters:
      - name: datasetId
        in: path
        required: true
        schema:
          type: string
      - name: columns
        in: query
        schema:
          type: string
      - name: filter
        in: query
        schema:
          type: string
      - name: maxRows
        in: query
        schema:
          type: integer
          format: int32
      - name: distinct
        in: query

```

```

    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/records/{id}:
  post:
    operationId: insertDatasetRow
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  delete:
    operationId: deleteDataSetTableRow
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  patch:
    operationId: patchDatasetRows
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':

```

```

        schema:
          type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/datasets/same_table_datasets/{id}:
  get:
    operationId: getSameTableDatasets
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/spatiotemporal/{id}:
  get:
    operationId: getSpatioTemporalDescriptor
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: activateSpatioTemporal
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  delete:
    operationId: deactivateSpatioTemporal

```

```

parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/export/{id}:
get:
  operationId: downloadExportedDataset
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: client_token
      in: query
      schema:
        type: string
    - name: format
      in: query
      schema:
        type: string
    - name: file_name
      in: query
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/zip: {}
post:
  operationId: exportDatasetAsGeoJson
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: format
      in: query
      schema:
        type: string
    - name: simplify_geoms
      in: query
      schema:
        type: string
    - name: coord_precision
      in: query

```



```

    schema:
      type: string
  - name: columns
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/columns/geom_col_metadata_status/{id}/{geomColumnId}:
get:
  operationId: checkGeomColOrLLIndexedMetadata
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: geomColumnId
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/refresh/{id}:
post:
  operationId: getDatasetLastModified
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: lastModified
    in: query
    schema:
      type: integer
      format: int64
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/columns/rectifygeometries/{id}:
put:
  operationId: runSingleGeoColumnRectifyGeometries
  parameters:
  - name: id
    in: path

```

```

    required: true
    schema:
      type: string
  - name: geoColumnId
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/columns/geovalidations/{id}:
get:
  operationId: getGeoColumnsValidationResults
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: geoColumnId
    in: query
    schema:
      type: string
  - name: jetResponse
    in: query
    schema:
      type: boolean
  responses:
    default:
      description: default response
      content:
        application/json: {}
put:
  operationId: runSingleGeoColumnValidations
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: geoColumnId
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
delete:
  operationId: clearSingleGeoColumnValidations
  parameters:
  - name: id

```

```

    in: path
    required: true
    schema:
      type: string
  - name: geoColumnId
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/unique_constraint/exists/{id}:
get:
  operationId: existsUniqueConstraint
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: columnNames
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/unique_constraint/{id}:
put:
  operationId: createUniqueConstraint
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: newColumnIds
    in: query
    schema:
      type: string
  - name: oldColumnIds
    in: query
    schema:
      type: string
  - name: setNotNullable
    in: query
    schema:
      type: boolean
responses:
  default:
    description: default response

```

```

        content:
          application/json: {}
/v1/datasets/body_fields/{id}:
  put:
    operationId: updateDatasetOrColumnBodyFields
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/columns_geotags/{id}:
  get:
    operationId: getColumnGeoTags
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  put:
    operationId: updateColumnGeoTags
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/statistics/{id}:
  get:

```

```
operationId: getDatasetStatistics
parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/function_based_index/{id}:
post:
  operationId: createFunctionBasedIndex
  parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
- name: lon
  in: query
  schema:
    type: string
- name: lat
  in: query
  schema:
    type: string
- name: reuse_bt_index
  in: query
  schema:
    type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
delete:
  operationId: deleteFunctionBasedIndex
  parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
- name: lon
  in: query
  schema:
    type: string
- name: lat
  in: query
  schema:
    type: string
  responses:
```

```

        default:
            description: default response
            content:
                application/json: {}
/v1/datasets/cachesettings/{id}:
get:
    operationId: getDatasetCacheSettings
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/datasets/valid_key_columns/{id}:
get:
    operationId: validateKeyColumnNames
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
        - name: columns
          in: query
          schema:
              type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/datasets/update_statistics/{id}:
post:
    operationId: updateDataSetStatistics
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/datasets/{id}/columns:
get:
    operationId: getColumns
    parameters:
        - name: id

```

```

    in: path
    required: true
    schema:
      type: string
  - name: datasetFields
    in: query
    schema:
      type: string
  - name: columnFields
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/geom_metadata/{id}:
post:
  operationId: createGeometryMetadata
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/row/{id}:
delete:
  operationId: deleteDataSetRow
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: row_key
    in: query
    schema:
      type: string
  responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/{id}:
get:
  operationId: getDataset
  parameters:
  - name: id
    in: path

```

```

        required: true
        schema:
          type: string
      - name: fields
        in: query
        schema:
          type: string
      - name: expand
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
delete:
  operationId: deleteDataSet
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: deleteDataTable
      in: query
      schema:
        type: boolean
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets:
  get:
    operationId: getDataSets
    parameters:
      - name: fields
        in: query
        schema:
          type: string
      - name: expand
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: createDataSet
    requestBody:
      content:
        application/json:

```



```

        schema:
          type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/datasets/batchdelete:
  delete:
    operationId: deleteDataSetBatch
    requestBody:
      content:
        '*/*':
          schema:
            type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/datasets/size/{id}:
  get:
    operationId: getDataSetSize
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: exactValue
        in: query
        schema:
          type: boolean
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/urlstatistics:
  get:
    operationId: getGeoJsonUrlStats
    parameters:
      - name: url
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/page/{id}:
  get:
    operationId: getDataSetRowPage
    parameters:

```

```

- name: id
  in: path
  required: true
  schema:
    type: string
- name: column
  in: query
  schema:
    type: string
- name: value
  in: query
  schema:
    type: string
- name: pageSize
  in: query
  schema:
    type: integer
    format: int32
- name: sortCriteria
  in: query
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/{datasetId}/synonym/allowed:
get:
  operationId: isSynonymAllowed
  parameters:
  - name: datasetId
    in: path
    required: true
    schema:
      type: string
  - name: synonymName
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/distinctvalues/{id}:
get:
  operationId: getDistinctValues
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: column

```

```
    in: query
    schema:
      type: string
  - name: offset
    in: query
    schema:
      type: integer
      format: int64
  - name: limit
    in: query
    schema:
      type: integer
      format: int64
  - name: totalResults
    in: query
    schema:
      type: boolean
  - name: jetResponse
    in: query
    schema:
      type: boolean
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/rows/{id}:
get:
  operationId: getDatasetRows
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: columns
    in: query
    schema:
      type: string
  - name: filter
    in: query
    schema:
      type: string
  - name: orderBy
    in: query
    schema:
      type: string
  - name: offset
    in: query
    schema:
      type: integer
      format: int64
  - name: limit
    in: query
    schema:
```

```

        type: integer
        format: int64
    - name: totalResults
      in: query
      schema:
        type: boolean
    - name: jetResponse
      in: query
      schema:
        type: boolean
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/create_key_column/{datasetId}:
  post:
    operationId: createKeyColumn
    parameters:
    - name: datasetId
      in: path
      required: true
      schema:
        type: string
    - name: columnName
      in: query
      schema:
        type: string
    - name: setAsKey
      in: query
      schema:
        type: boolean
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/datasets/columns/{id}:
  get:
    operationId: getDatasetColumnsContentInASingleRow
    parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: columns
      in: query
      schema:
        type: string
    - name: offset
      in: query
      schema:
        type: integer
        format: int64

```

```

- name: limit
  in: query
  schema:
    type: integer
    format: int64
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasources/{id}:
get:
  operationId: getDatasource
  parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
- name: fields
  in: query
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
put:
  operationId: updateDataSource
  parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
  requestBody:
    content:
      '*/*':
        schema:
          type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
delete:
  operationId: deleteDataSource
  parameters:
- name: id
  in: path
  required: true
  schema:
    type: string
responses:

```

```

        default:
            description: default response
            content:
                application/json: {}
/v1/datasources:
get:
    operationId: getDatasources
    parameters:
        - name: fields
          in: query
          schema:
              type: string
        - name: expand
          in: query
          schema:
              type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
post:
    operationId: createDataSource
    parameters:
        - name: uploadToken
          in: query
          schema:
              type: string
    requestBody:
        content:
            '*/*':
                schema:
                    type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/datasources/migrate/{id}:
put:
    operationId: migrateDataSource
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
        - name: uploadToken
          in: query
          schema:
              type: string
    requestBody:
        content:
            '*/*':
                schema:

```

```

        type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/datasources/validate/{id}:
    post:
        operationId: validateDatasource
        parameters:
            - name: id
              in: path
              required: true
              schema:
                  type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/datasources/wallet/{walletId}/services:
    get:
        operationId: getWalletServices
        parameters:
            - name: walletId
              in: path
              required: true
              schema:
                  type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/enrichment/geocodefailedrows/{id}:
    put:
        operationId: geocodeDataSetFailedRows
        parameters:
            - name: id
              in: path
              required: true
              schema:
                  type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/enrichment/geocode/fix_ambiguous/{id}:
    post:
        operationId: fixSngleAmbiguousMatch
        parameters:
            - name: id
              in: path
              required: true

```

```

    schema:
      type: string
  - name: row_key
    in: query
    schema:
      type: string
  - name: selected_match
    in: query
    schema:
      type: integer
      format: int32
requestBody:
  content:
    '*/*':
      schema:
        type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/enrichment/reversegeocode/{id}:
put:
  operationId: reverseGeocodeDataSet
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: datasourceid
    in: query
    schema:
      type: string
  - name: roadsonly
    in: query
    schema:
      type: boolean
  - name: geometrypoint
    in: query
    schema:
      type: string
  - name: latlonindex
    in: query
    schema:
      type: string
  - name: lat
    in: query
    schema:
      type: string
  - name: lon
    in: query
    schema:
      type: string
requestBody:

```



```

        content:
          '*/*':
            schema:
              type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
    delete:
      operationId: clearReverseGeocoding
      parameters:
        - name: id
          in: path
          required: true
          schema:
            type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/enrichment/{id}/tasks:
  get:
    operationId: getGeocodingTasksIds
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: taskStates
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/enrichment/geocode/temptable/{id}:
  delete:
    operationId: removeTempTable
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/enrichment/geocode/{id}:

```

```

put:
  operationId: geocodeDataSet
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  requestBody:
    content:
      '*/*':
        schema:
          type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
delete:
  operationId: clearGeocoding
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/enrichment/geocode/result/{id}:
get:
  operationId: getGeocodedResults
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: resultType
      in: query
      schema:
        type: string
    - name: orderby
      in: query
      schema:
        type: string
    - name: offset
      in: query
      schema:
        type: integer
        format: int32
    - name: limit
      in: query

```

```

    schema:
      type: integer
      format: int32
  - name: totalResults
    in: query
    schema:
      type: boolean
  - name: jetResponse
    in: query
    schema:
      type: boolean
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/enrichment/geocode/fix/{id}:
  post:
    operationId: geocodeSingleItem
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: row_key
        in: query
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/geojsons/{uploadToken}/rows:
  get:
    operationId: getGeoJsonRows
    parameters:
      - name: uploadToken
        in: path
        required: true
        schema:
          type: string
      - name: fromrow
        in: query
        schema:
          type: integer
          format: int32
      - name: torow
        in: query

```

```

    schema:
      type: integer
      format: int32
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/rt/{id}/{z}/{x}/{y}.png:
  get:
    operationId: streamRasterTile
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: z
        in: path
        required: true
        schema:
          type: integer
          format: int32
      - name: x
        in: path
        required: true
        schema:
          type: integer
          format: int32
      - name: "y"
        in: path
        required: true
        schema:
          type: integer
          format: int32
      - name: visualProperties
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          image/png: {}
/v1/it/{id}/{z}/{x}/{y}.png:
  get:
    operationId: streamDatasetAsImageTile
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: z
        in: path

```

```

    required: true
    schema:
      type: integer
      format: int32
  - name: x
    in: path
    required: true
    schema:
      type: integer
      format: int32
  - name: "y"
    in: path
    required: true
    schema:
      type: integer
      format: int32
responses:
  default:
    description: default response
    content:
      image/png: {}
/v1/public/jsonstream/{id}:
get:
  operationId: streamDatasetAsGeoJsonPublic
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: geo
    in: query
    schema:
      type: string
  - name: p
    in: query
    schema:
      type: string
  - name: filter
    in: query
    schema:
      type: string
  - name: vizType
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
post:
  operationId: streamDatasetAsGeoJsonPublic2
  parameters:
  - name: id

```

```

    in: path
    required: true
    schema:
      type: string
  - name: geo
    in: query
    schema:
      type: string
  - name: p
    in: query
    schema:
      type: string
  - name: vizType
    in: query
    schema:
      type: string
requestBody:
  content:
    application/json:
      schema:
        type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/jsonstream/{id}:
get:
  operationId: streamDatasetAsGeoJson
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: geo
    in: query
    schema:
      type: string
  - name: p
    in: query
    schema:
      type: string
  - name: filter
    in: query
    schema:
      type: string
  - name: vizType
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:

```

```

        application/json: {}
post:
  operationId: streamDatasetAsGeoJson2
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: geo
      in: query
      schema:
        type: string
    - name: p
      in: query
      schema:
        type: string
    - name: vizType
      in: query
      schema:
        type: string
  requestBody:
    content:
      application/json:
        schema:
          type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/public/vt/{id}/{geo}/{z}/{x}/{y}.mvt:
get:
  operationId: streamDatasetAsVectorTilePublic
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: geo
      in: path
      required: true
      schema:
        type: string
    - name: z
      in: path
      required: true
      schema:
        type: integer
        format: int32
    - name: x
      in: path
      required: true
      schema:

```

```

        type: integer
        format: int32
    - name: "y"
      in: path
      required: true
      schema:
        type: integer
        format: int32
  responses:
    default:
      description: default response
      content:
        application/vnd.mapbox-vector-tile: {}
/v1/vt/{id}/{geo}/{z}/{x}/{y}.mvt:
get:
  operationId: streamDatasetAsVectorTile
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
    - name: geo
      in: path
      required: true
      schema:
        type: string
    - name: z
      in: path
      required: true
      schema:
        type: integer
        format: int32
    - name: x
      in: path
      required: true
      schema:
        type: integer
        format: int32
    - name: "y"
      in: path
      required: true
      schema:
        type: integer
        format: int32
  responses:
    default:
      description: default response
      content:
        application/vnd.mapbox-vector-tile: {}
/v1/enrichment/geotag/datasets:
get:
  operationId: getGeonameTagDatasets
  parameters:
    - name: query

```



```
    in: query
    schema:
      type: string
      default: "{}"
  - name: simpleResponse
    in: query
    schema:
      type: boolean
      default: false
  - name: matchThreshold
    in: query
    schema:
      type: number
      format: float
      default: 10
responses:
  default:
    description: default response
    content:
      application/json:
        schema:
          type: string
post:
  operationId: postGeonameTagDatasets
  requestBody:
    content:
      application/x-www-form-urlencoded:
        schema:
          type: object
          properties:
            query:
              type: string
              default: "{}"
            simpleResponse:
              type: boolean
              default: false
            matchThreshold:
              type: number
              format: float
              default: 10
    responses:
      default:
        description: default response
        content:
          application/json:
            schema:
              type: string
/v1/enrichment/geotag/attributes:
get:
  operationId: getGenFormAttributes
  parameters:
  - name: type
    in: query
    schema:
      type: string
```

```

        default: ""
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/enrichment/geotag:
get:
    operationId: getGeonameTag
    parameters:
        - name: query
          in: query
          schema:
              type: string
              default: "{}"
        - name: simpleResponse
          in: query
          schema:
              type: boolean
              default: false
        - name: matchThreshold
          in: query
          schema:
              type: number
              format: float
              default: 10
    responses:
        default:
            description: default response
            content:
                application/json:
                    schema:
                        type: string
post:
    operationId: postGeonameTag
    requestBody:
        content:
            application/x-www-form-urlencoded:
                schema:
                    type: object
                    properties:
                        query:
                            type: string
                            default: "{}"
                        simpleResponse:
                            type: boolean
                            default: false
                        matchThreshold:
                            type: number
                            format: float
                            default: 10
    responses:
        default:
            description: default response
            content:

```

```

        application/json:
          schema:
            type: string
/v1/h3/{id}/{geo}/{name}:
  post:
    operationId: createHexAnalysis
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: geo
        in: path
        required: true
        schema:
          type: string
      - name: name
        in: path
        required: true
        schema:
          type: string
      - name: col
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/kmls/{uploadToken}/rows:
  get:
    operationId: getKMLRows
    parameters:
      - name: uploadToken
        in: path
        required: true
        schema:
          type: string
      - name: fromrow
        in: query
        schema:
          type: integer
          format: int32
      - name: torow
        in: query
        schema:
          type: integer
          format: int32
    responses:
      default:
        description: default response
        content:
          application/json: {}

```

```
/v1/mvsuggest:
  get:
    operationId: getRequest
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: postRequest
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/public/mapstyles/{id}:
  get:
    operationId: getMapStyle
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/mapstyles/{id}:
  get:
    operationId: getMapStyleObject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  put:
    operationId: updateMapStyle
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
```

```

        type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
    delete:
        operationId: deleteMapStyle
        parameters:
            - name: id
              in: path
              required: true
              schema:
                  type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/mapstyles:
    post:
        operationId: createMapStyle
        requestBody:
            content:
                '*/*':
                    schema:
                        type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/public/mapstyles:
    get:
        operationId: getMapStyleList
        parameters:
            - name: fields
              in: query
              schema:
                  type: string
        responses:
            default:
                description: default response
                content:
                    application/json: {}
/v1/oauth2/authorize:
    get:
        operationId: doAuthorize
        parameters:
            - name: response_type
              in: query
              schema:
                  type: string
            - name: client_id
              in: query

```

```

        schema:
          type: string
      - name: scope
        in: query
        schema:
          type: string
      - name: state
        in: query
        schema:
          type: string
      - name: redirect_uri
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/oauth2/token:
  post:
    operationId: doToken
    parameters:
      - name: Authorization
        in: header
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/ordsToken/{datasource}:
  get:
    operationId: getOrdsToken
    parameters:
      - name: datasource
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json:
            schema:
              type: string
/v1/datasets/polygon_operations:
  post:
    operationId: mergeSourcePolygonsAndInsertIntoTargetDataset
    parameters:
      - name: action
        in: query
        schema:

```

```

        type: string
requestBody:
  content:
    '*/*':
      schema:
        type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/datasets/polygon_operations/columns_nullable/{datasetId}:
get:
  operationId: getDatasetColumnNullableStatus
  parameters:
    - name: datasetId
      in: path
      required: true
      schema:
        type: string
    - name: tgtDsrcId
      in: query
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/datasets/polygon_operations/validate/{key}:
get:
  operationId: validateNewDatasetKey
  parameters:
    - name: key
      in: path
      required: true
      schema:
        type: string
    - name: tgtDsrcId
      in: query
      schema:
        type: string
    - name: tgtDsetId
      in: query
      schema:
        type: string
    - name: tgtKeyColId
      in: query
      schema:
        type: string
    - name: tgtGeomColId
      in: query
      schema:
        type: string
  responses:

```

```

        default:
            description: default response
            content:
                application/json: {}
/v1/datasets/polygon_operations/validateNewTable:
get:
    operationId: validateNewTable
    parameters:
        - name: targetConnId
          in: query
          schema:
              type: string
        - name: newTableName
          in: query
          schema:
              type: string
        - name: newKeyColName
          in: query
          schema:
              type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/cache/precache/{id}:
put:
    operationId: updateDatasetOrColumnBodyFields_1
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
    requestBody:
        content:
            '*/*':
                schema:
                    type: string
    responses:
        default:
            description: default response
            content:
                application/json: {}
/v1/cache/purge/{id}:
delete:
    operationId: purgeVectorTileCache
    parameters:
        - name: id
          in: path
          required: true
          schema:
              type: string
    responses:
        default:

```



```

        description: default response
        content:
          application/json: {}
/v1/cache/zoomLevels/{x1}/{y1}/{x2}/{y2}:
get:
  operationId: calculateZoomLevelsForBounds
  parameters:
    - name: x1
      in: path
      required: true
      schema:
        type: number
        format: double
    - name: y1
      in: path
      required: true
      schema:
        type: number
        format: double
    - name: x2
      in: path
      required: true
      schema:
        type: number
        format: double
    - name: y2
      in: path
      required: true
      schema:
        type: number
        format: double
    - name: maxTiles
      in: query
      schema:
        type: integer
        format: int32
        default: 25000
    - name: maxZoomLevel
      in: query
      schema:
        type: integer
        format: int32
        default: 15
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/projects/{id}:
get:
  operationId: getProject
  parameters:
    - name: id
      in: path
      required: true

```

```

        schema:
          type: string
      - name: fields
        in: query
        schema:
          type: string
      - name: expand
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  put:
    operationId: updateProject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  delete:
    operationId: deleteProject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/projects:
  get:
    operationId: getProjects
    parameters:
      - name: fields
        in: query
        schema:
          type: string
      - name: expand

```

```

    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
  post:
    operationId: createProject
    requestBody:
      content:
        '*/*':
          schema:
            type: string
      responses:
        default:
          description: default response
          content:
            application/json: {}
/v1/projects/export/{id}:
  get:
    operationId: downloadExportedProject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: client_token
        in: query
        schema:
          type: string
      - name: file_name
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/zip: {}
  post:
    operationId: createExportedProject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}

```

```

/v1/projects/analyze/{file_type}:
  get:
    operationId: analyzeUploadedProject
    parameters:
      - name: file_type
        in: path
        required: true
        schema:
          type: string
      - name: file_name
        in: query
        schema:
          type: string
      - name: upload_token
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/projects/import/{file_type}:
  post:
    operationId: importProject
    parameters:
      - name: file_type
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/public/datasets/rows/{id}:
  get:
    operationId: getDatasetRows_1
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: columns
        in: query
        schema:
          type: string
      - name: filter

```

```

    in: query
    schema:
      type: string
  - name: orderBy
    in: query
    schema:
      type: string
  - name: offset
    in: query
    schema:
      type: integer
      format: int64
  - name: limit
    in: query
    schema:
      type: integer
      format: int64
  - name: totalResults
    in: query
    schema:
      type: boolean
  - name: jetResponse
    in: query
    schema:
      type: boolean
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/publishedprojects/{id}:
get:
  operationId: getPublishedProject
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  - name: fields
    in: query
    schema:
      type: string
  - name: expand
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
put:
  operationId: refreshProject
  parameters:

```

```

- name: id
  in: path
  required: true
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/publishedprojects:
get:
  operationId: getPublishedProjects
  parameters:
  - name: fields
    in: query
    schema:
      type: string
  - name: expand
    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
post:
  operationId: createPublishedProject
  requestBody:
    content:
      '*/*':
        schema:
          type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/publishedprojects{id}:
delete:
  operationId: deleteProject_1
  parameters:
  - name: id
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/public/publishedprojects/{id}:
get:

```

```

    operationId: getPublicProject
    parameters:
      - name: id
        in: path
        required: true
        schema:
          type: string
      - name: fields
        in: query
        schema:
          type: string
      - name: expand
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/shapefiles/wktext/srids:
get:
    operationId: getWKTextMatchingSRIDs
    parameters:
      - name: wkText
        in: query
        schema:
          type: string
      - name: maxResults
        in: query
        schema:
          type: integer
          format: int32
          default: 10
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/shapefiles/wktext/search:
get:
    operationId: queryWKTextMatchingSRIDs
    parameters:
      - name: query
        in: query
        schema:
          type: string
      - name: maxResults
        in: query
        schema:
          type: integer
          format: int32
          default: 10
    responses:
      default:

```

```

        description: default response
        content:
          application/json: {}
/v1/uploads/shapefiles/{uploadToken}/srids:
get:
  operationId: getShapefileMatchingSRIDs
  parameters:
    - name: uploadToken
      in: path
      required: true
      schema:
        type: string
    - name: maxResults
      in: query
      schema:
        type: integer
        format: int32
        default: 10
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/uploads/shapefiles/{uploadToken}/charsets:
get:
  operationId: getShapefileEncodingCharsets
  parameters:
    - name: uploadToken
      in: path
      required: true
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/uploads/shapefiles/wktext/rebuild:
post:
  operationId: rebuildWKTextIndex
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/uploads/shapefiles/{uploadToken}/rows:
get:
  operationId: getShapefileRows
  parameters:
    - name: uploadToken
      in: path
      required: true
      schema:
        type: string
    - name: fromrow

```



```

    in: query
    schema:
      type: integer
      format: int32
  - name: torow
    in: query
    schema:
      type: integer
      format: int32
  - name: charset
    in: query
    schema:
      type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/uploads/spreadsheets/{uploadToken}/headersRow:
get:
  operationId: getSpreadsheetHeaders
  parameters:
  - name: uploadToken
    in: path
    required: true
    schema:
      type: string
  responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/uploads/spreadsheets/{uploadToken}/rows:
get:
  operationId: getSpreadsheetRows
  parameters:
  - name: uploadToken
    in: path
    required: true
    schema:
      type: string
  - name: fromrow
    in: query
    schema:
      type: integer
      format: int32
  - name: torow
    in: query
    schema:
      type: integer
      format: int32
  responses:
  default:
    description: default response
    content:

```

```

        application/json: {}
/v1/settings/system/unzipper/{settingName}:
  get:
    operationId: getZipUtilsSetting
    parameters:
      - name: settingName
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  put:
    operationId: setZipUtilsSetting
    parameters:
      - name: settingName
        in: path
        required: true
        schema:
          type: string
    requestBody:
      content:
        '*/*':
          schema:
            type: object
            additionalProperties:
              type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/tables/rows:
  get:
    operationId: getRows
    parameters:
      - name: datasource
        in: query
        schema:
          type: string
      - name: table
        in: query
        schema:
          type: string
      - name: columns
        in: query
        schema:
          type: string
      - name: filter
        in: query
        schema:
          type: string

```

```
- name: orderby
  in: query
  schema:
    type: string
- name: offset
  in: query
  schema:
    type: integer
    format: int64
- name: limit
  in: query
  schema:
    type: integer
    format: int64
- name: totalResults
  in: query
  schema:
    type: boolean
- name: jetResponse
  in: query
  schema:
    type: boolean
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/tables/{table}:
  get:
    operationId: getTableColumnNamesAndTypes
    parameters:
      - name: table
        in: path
        required: true
        schema:
          type: string
      - name: datasource
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/tables/exist:
  get:
    operationId: tableExists
    parameters:
      - name: datasource
        in: query
        schema:
          type: string
      - name: table
        in: query
```

```

    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/tables/delete:
  delete:
    operationId: deleteTable
    parameters:
      - name: datasourceId
        in: query
        schema:
          type: string
      - name: tableName
        in: query
        schema:
          type: string
      - name: tableType
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/tables:
  get:
    operationId: getTableNames
    parameters:
      - name: datasource
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/tasks:
  get:
    operationId: getTasks
    parameters:
      - name: status
        in: query
        schema:
          type: string
      - name: maxAge
        in: query
        schema:
          type: integer
          format: int32
      - name: maxTasks

```

```

    in: query
    schema:
      type: integer
      format: int32
  - name: includeSystem
    in: query
    schema:
      type: boolean
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/tasks/{taskId}:
  get:
    operationId: getTaskById
    parameters:
      - name: taskId
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  delete:
    operationId: abortTaskById
    parameters:
      - name: taskId
        in: path
        required: true
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/store:
  post:
    operationId: storeUploadedFileInDB
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/uploads/cesiumtileset/{uploadToken}/stats:
  get:

```

```

operationId: get3DTilesetStats
parameters:
- name: uploadToken
  in: path
  required: true
  schema:
    type: string
- name: filename
  in: query
  schema:
    type: string
- name: setTilesetJsonDir
  in: query
  schema:
    type: boolean
responses:
  default:
    description: default response
    content:
      application/json: {}
/v1/uploads/czml/{uploadToken}/stats:
get:
  operationId: getCZMLDataStats
  parameters:
  - name: uploadToken
    in: path
    required: true
    schema:
      type: string
  - name: filename
    in: query
    schema:
      type: string
  - name: setCZMLDir
    in: query
    schema:
      type: boolean
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/uploads/{uploadToken}/stats:
get:
  operationId: getStats
  parameters:
  - name: uploadToken
    in: path
    required: true
    schema:
      type: string
  responses:
    default:
      description: default response
      content:

```

```
        application/json: {}
/v1/user/preferences:
  get:
    operationId: getUserPreferences
    responses:
      default:
        description: default response
        content:
          application/json: {}
  put:
    operationId: updateUserPreferences
    requestBody:
      content:
        application/json:
          schema:
            type: object
            additionalProperties:
              type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/user/token:
  get:
    operationId: getUserTokens
    parameters:
      - name: fields
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: createAccessToken
    parameters:
      - name: name
        in: query
        schema:
          type: string
      - name: validTime
        in: query
        schema:
          type: integer
          format: int64
      - name: scope
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
```

```

        content:
          application/json: {}
/v1/user/token/{id}:
delete:
  operationId: deleteAccessToken
  parameters:
    - name: id
      in: path
      required: true
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/user:
get:
  operationId: getCurrentUser
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/user/invalidateSession:
get:
  operationId: invalidateSession
  parameters:
    - name: redirectURL
      in: query
      schema:
        type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/user/logout:
post:
  operationId: logout
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/views/{view}:
get:
  operationId: getViewColumnNamesAndTypes
  parameters:
    - name: view
      in: path
      required: true
      schema:
        type: string
    - name: datasource

```



```

    in: query
    schema:
      type: string
  responses:
    default:
      description: default response
      content:
        application/json: {}
/v1/views:
  get:
    operationId: getViewNames
    parameters:
      - name: datasource
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/oac/datasets:
  get:
    operationId: getOACDatasetsNames
    parameters:
      - name: dataSourceId
        in: query
        schema:
          type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
  post:
    operationId: storeUploadedFileInDB_1
    requestBody:
      content:
        '*/*':
          schema:
            type: string
    responses:
      default:
        description: default response
        content:
          application/json: {}
/v1/oac/datasets/{dataset}/stats:
  get:
    operationId: getOACDataset
    parameters:
      - name: dataset
        in: path
        required: true
        schema:
          type: string

```

---

```
- name: dataSourceId
  in: query
  schema:
    type: string
- name: offset
  in: query
  schema:
    type: integer
    format: int64
- name: limit
  in: query
  schema:
    type: integer
    format: int64
- name: importMode
  in: query
  schema:
    type: string
responses:
  default:
    description: default response
    content:
      application/json: {}
```

# B

## Third-Party License Information for Spatial Studio

Oracle Spatial Studio contains third-party code. Oracle is required to provide the following notices.

Note, however, that the Oracle program license that accompanied this product determines your right to use the Oracle program, including the third-party software, and the terms contained in the following notices do not change those rights.

### **logback-core**

**Vendor:** QOS.ch

**Version:** 1.3.11

Logback LICENSE  
-----

Logback: the reliable, generic, fast and flexible logging framework.  
Copyright (C) 1999-2015, QOS.ch. All rights reserved.

This program and the accompanying materials are dual-licensed under either the terms of the Eclipse Public License v1.0 as published by the Eclipse Foundation

or (per the licensee's choosing)

under the terms of the GNU Lesser General Public License version 2.1 as published by the Free Software Foundation.

==Eclipse Public License - v 1.0

All past Contributors disclaim all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose. In addition, such Contributors are not liable for any damages, including direct, indirect, special, incidental and consequential damages, such as lost profits.

Any provisions of the Oracle license agreement that differ from the Eclipse Public License are offered by Oracle alone and not by any other party.

Eclipse Public License - v 1.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

#### 1. DEFINITIONS

"Contribution" means:

a) in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and

- b) in the case of each subsequent Contributor:
- i) changes to the Program, and
- ii) additions to the Program;

where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include additions to the Program which: (i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and (ii) are not derivative works of the Program.

"Contributor" means any person or entity that distributes the Program.

"Licensed Patents" mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement, including all Contributors.

## 2. GRANT OF RIGHTS

a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, distribute and sublicense the Contribution of such Contributor, if any, and such derivative works, in source code and object code form.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in source code and object code form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

## 3. REQUIREMENTS

A Contributor may choose to distribute the Program in object code form under its own license agreement, provided that:

- a) it complies with the terms and conditions of this Agreement; and
- b) its license agreement:
  - i) effectively disclaims on behalf of all Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;
  - ii) effectively excludes on behalf of all Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;
  - iii) states that any provisions which differ from this Agreement are offered by that Contributor alone and not by any other party; and
  - iv) states that source code for the Program is available from such Contributor, and informs licensees how to obtain it in a reasonable manner on or through a medium customarily used for software exchange.

When the Program is made available in source code form:

- a) it must be made available under this Agreement; and
- b) a copy of this Agreement must be included with each copy of the Program.

Contributors may not remove or alter any copyright notices contained within the Program.

Each Contributor must identify itself as the originator of its Contribution, if any, in a manner that reasonably allows subsequent Recipients to identify the originator of the Contribution.

#### 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X,

those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

#### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be distributed subject to the version of the Agreement under which it was

received. In addition, after a new version of the Agreement is published, Contributor may elect to distribute the Program (including its Contributions) under the new version. Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved.

This Agreement is governed by the laws of the State of New York and the intellectual property laws of the United States of America. No party to this Agreement will bring a legal action under this Agreement more than one year after the cause of action arose. Each party waives its rights to a jury trial in any resulting litigation.

== GNU LESSER GENERAL PUBLIC LICENSE version 2.1  
GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA  
Everyone is permitted to copy and distribute verbatim copies  
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts  
as the successor of the GNU Library Public License, version 2, hence  
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party



saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not

apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this

License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

## lucene query parser

**Vendor:** The Apache Software Foundation

**Version:** 8.11.2

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.
5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of

this License, without any additional terms or conditions.  
Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at



<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from unicode conversion examples available at <http://www.unicode.org/Public/PROGRAMS/CVTUTF>. Here is the copyright from those sources:

```
/*
 * Copyright 2001-2004 Unicode, Inc.
 *
 * Disclaimer
 *
 * This source code is provided as is by Unicode, Inc. No claims are
 * made as to fitness for any particular purpose. No warranties of any
 * kind are expressed or implied. The recipient agrees to determine
 * applicability of information provided. If this file has been
 * purchased on magnetic or optical media from Unicode, Inc., the
 * sole remedy for any claim will be exchange of defective media
 * within 90 days of receipt.
 *
 * Limitations on Rights to Redistribute This Code
 *
 * Unicode, Inc. hereby grants the right to freely use the information
 * supplied in this file in the creation of products supporting the
 * Unicode Standard, and to make copies of this file in any form
 * for internal or external distribution as long as this notice
 * remains attached.
 */
```

Some code in `core/src/java/org/apache/lucene/util/ArrayUtil.java` was derived from Python 2.4.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/2.4.2/license/>

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from Python 3.1.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/3.1.2/license/>

Some code in `core/src/java/org/apache/lucene/util/automaton` was derived from Brics automaton sources available at [www.brics.dk/automaton/](http://www.brics.dk/automaton/). Here is the copyright from those sources:

```
/*
 * Copyright (c) 2001-2009 Anders Moeller
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
```

```

* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. The name of the author may not be used to endorse or promote products
*   derived from this software without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/

```

The levenshtein automata tables in `core/src/java/org/apache/lucene/util/automaton` were automatically generated with the `moman/finenight` FSA package. Here is the copyright for those sources:

```

# Copyright (c) 2010, Jean-Philippe Barrette-LaPierre, <jpb@rrette.com>
#
# Permission is hereby granted, free of charge, to any person
# obtaining a copy of this software and associated documentation
# files (the "Software"), to deal in the Software without
# restriction, including without limitation the rights to use,
# copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the
# Software is furnished to do so, subject to the following
# conditions:
#
# The above copyright notice and this permission notice shall be
# included in all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
# EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
# OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
# NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
# HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
# WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
# FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
# OTHER DEALINGS IN THE SOFTWARE.

```

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from ICU (<http://www.icu-project.org>)

The full license is available here:

<http://source.icu-project.org/repos/icu/icu/trunk/license.html>

```

/*
* Copyright (C) 1999-2010, International Business Machines
* Corporation and others. All Rights Reserved.
*
* Permission is hereby granted, free of charge, to any person obtaining a copy
* of this software and associated documentation files (the "Software"), to deal
* in the Software without restriction, including without limitation the rights

```

\* to use, copy, modify, merge, publish, distribute, and/or sell copies of the  
 \* Software, and to permit persons to whom the Software is furnished to do so,  
 \* provided that the above copyright notice(s) and this permission notice appear  
 \* in all copies of the Software and that both the above copyright notice(s) and  
 \* this permission notice appear in supporting documentation.  
 \*  
 \* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
 \* IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
 \* FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.  
 \* IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE  
 \* LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR  
 \* ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER  
 \* IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT  
 \* OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.  
 \*  
 \* Except as contained in this notice, the name of a copyright holder shall not  
 \* be used in advertising or otherwise to promote the sale, use or other  
 \* dealings in this Software without prior written authorization of the  
 \* copyright holder.  
 \*/

The following license applies to the Snowball stemmers:

Copyright (c) 2001, Dr Martin Porter  
 Copyright (c) 2002, Richard Boulton  
 All rights reserved.

Redistribution and use in source and binary forms, with or without  
 modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
 \* this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright  
 \* notice, this list of conditions and the following disclaimer in the  
 \* documentation and/or other materials provided with the distribution.
- \* Neither the name of the copyright holders nor the names of its contributors  
 \* may be used to endorse or promote products derived from this software  
 \* without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"  
 AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE  
 IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
 DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE  
 FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
 SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER  
 CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,  
 OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
 OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the KStemmer:

Copyright © 2003,  
 Center for Intelligent Information Retrieval,  
 University of Massachusetts, Amherst.  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
 are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this

list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The names "Center for Intelligent Information Retrieval" and "University of Massachusetts" must not be used to endorse or promote products derived from this software without prior written permission. To obtain permission, contact [info@ciir.cs.umass.edu](mailto:info@ciir.cs.umass.edu).

THIS SOFTWARE IS PROVIDED BY UNIVERSITY OF MASSACHUSETTS AND OTHER CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the Morfologik project:

Copyright (c) 2006 Dawid Weiss  
Copyright (c) 2007-2011 Dawid Weiss, Marcin Miłkowski  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

The dictionary comes from Morfologik project. Morfologik uses data from Polish [ispell/myspell](http://www.sjp.pl/slownik/en/) dictionary hosted at <http://www.sjp.pl/slownik/en/> and is licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike. The part-of-speech tags were added in Morfologik project and are not found in the data from [sjp.pl](http://www.sjp.pl). The tagset is similar to IPI PAN

tagset.

---

The following license applies to the Morfeusz project,  
used by org.apache.lucene.analysis.morfologik.

BSD-licensed dictionary of Polish (SGJP)  
<http://sgjp.pl/morfeusz/>

Copyright © 2011 Zygmunt Saloni, Włodzimierz Gruszczyński,  
Marcin Woliński, Robert Wołosz

All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are  
met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the  
distribution.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS  
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED  
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR CONTRIBUTORS BE  
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR  
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF  
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR  
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,  
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE  
OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN  
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java  
implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>)  
compression format for Lucene's DataInput/DataOutput abstractions.

LZ4 Library  
Copyright (c) 2011-2016, Yann Collet  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this  
list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this  
list of conditions and the following disclaimer in the documentation and/or  
other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND  
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Lucene Notice  
-----

Apache Lucene  
Copyright 2001-2021 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Includes software from other Apache Software Foundation projects,  
including, but not limited to:

- Apache Ant
- Apache Jakarta Regexp
- Apache Commons
- Apache Xerces

ICU4J, (under analysis/icu) is licensed under an MIT styles license  
and Copyright (c) 1995-2008 International Business Machines Corporation and  
others

Some data files (under analysis/icu/src/data) are derived from Unicode data such  
as the Unicode Character Database. See <http://unicode.org/copyright.html> for more  
details.

Brics Automaton (under core/src/java/org/apache/lucene/util/automaton) is  
BSD-licensed, created by Anders Møller. See <http://www.brics.dk/automaton/>

The levenshtein automata tables (under core/src/java/org/apache/lucene/util/  
automaton) were  
automatically generated with the moman/finenight FSA library, created by  
Jean-Philippe Barrette-LaPierre. This library is available under an MIT license,  
see <http://sites.google.com/site/rrettesite/moman> and  
<http://bitbucket.org/jpbarrette/moman/overview/>

The class org.apache.lucene.util.WeakIdentityMap was derived from  
the Apache CXF project and is Apache License 2.0.

The class org.apache.lucene.util.compress.LZ4 is a Java rewrite of the LZ4  
compression library (<https://github.com/lz4/lz4/tree/dev/lib>) that is licensed  
under the 2-clause BSD license.  
(<https://opensource.org/licenses/bsd-license.php>)

The Google Code Prettify is Apache License 2.0.  
See <http://code.google.com/p/google-code-prettify/>

JUnit (junit-4.10) is licensed under the Common Public License v. 1.0  
See <http://junit.sourceforge.net/cpl-v10.html>

This product includes code (JaspellTernarySearchTrie) from Java Spelling Checkin  
g Package (jaspell): <http://jaspell.sourceforge.net/>  
License: The BSD License (<http://www.opensource.org/licenses/bsd-license.php>)

The snowball stemmers in  
analysis/common/src/java/net/sf/snowball  
were developed by Martin Porter and Richard Boulton.  
The snowball stopword lists in  
analysis/common/src/resources/org/apache/lucene/analysis/snowball  
were developed by Martin Porter and Richard Boulton.  
The full snowball package is available from  
<http://snowball.tartarus.org/>

The KStem stemmer in  
analysis/common/src/org/apache/lucene/analysis/en  
was developed by Bob Krovetz and Sergio Guzman-Lara (CIIR-UMass Amherst)  
under the BSD-license.

The Arabic, Persian, Romanian, Bulgarian, Hindi and Bengali analyzers (common) come with  
a default  
stopword list that is BSD-licensed created by Jacques Savoy. These files reside in:  
analysis/common/src/resources/org/apache/lucene/analysis/ar/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

The German, Spanish, Finnish, French, Hungarian, Italian, Portuguese, Russian and Swedish  
light stemmers  
(common) are based on BSD-licensed reference implementations created by Jacques Savoy  
and  
Ljiljana Dolamic. These files reside in:  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

The Stempel analyzer (stempel) includes BSD-licensed software developed  
by the Egothor project <http://egothor.sf.net/>, created by Leo Galambos, Martin Kvapil,  
and Edmond Nolan.

The Polish analyzer (stempel) comes with a default  
stopword list that is BSD-licensed created by the Carrot2 project. The file resides  
in stempel/src/resources/org/apache/lucene/analysis/pl/stopwords.txt.  
See <http://project.carrot2.org/license.html>.

The SmartChineseAnalyzer source code (smartcn) was  
provided by Xiaoping Gao and copyright 2009 by [www.imdict.net](http://www.imdict.net).

WordBreakTestUnicode\_\*.java (under modules/analysis/common/src/test/)  
is derived from Unicode data such as the Unicode Character Database.  
See <http://unicode.org/copyright.html> for more details.

The Morfologik analyzer (morfologik) includes BSD-licensed software  
developed by Dawid Weiss and Marcin Miłkowski (<http://morfologik.blogspot.com/>).

Morfologik uses data from Polish ispell/myspell dictionary  
(<http://www.sjp.pl/slownik/en/>) licenced on the terms of (inter alia)  
LGPL and Creative Commons ShareAlike.

Morfologic includes data from BSD-licensed dictionary of Polish (SGJP)  
(<http://sgjp.pl/morfeusz/>)

=====  
Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration  
=====

This software includes a binary and/or source version of data from

mecab-ipadic-2.7.0-20070801

which can be obtained from

<http://atilika.com/releases/mecab-ipadic/mecab-ipadic-2.7.0-20070801.tar.gz>

or

[http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/  
mecab-ipadic-2.7.0-20070801.tar.gz](http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/mecab-ipadic-2.7.0-20070801.tar.gz)

=====  
mecab-ipadic-2.7.0-20070801 Notice  
=====

Nara Institute of Science and Technology (NAIST),  
the copyright holders, disclaims all warranties with regard to this  
software, including all implied warranties of merchantability and  
fitness, in no event shall NAIST be liable for  
any special, indirect or consequential damages or any damages  
whatsoever resulting from loss of use, data or profits, whether in an  
action of contract, negligence or other tortuous action, arising out  
of or in connection with the use or performance of this software.

A large portion of the dictionary entries  
originate from ICOT Free Software. The following conditions for ICOT  
Free Software applies to the current dictionary as well.

Each User may also freely distribute the Program, whether in its  
original form or modified, to any third party or parties, PROVIDED  
that the provisions of Section 3 ("NO WARRANTY") will ALWAYS appear  
on, or be attached to, the Program, which is distributed substantially  
in the same form as set out herein and that such intended  
distribution, if actually made, will neither violate or otherwise  
contravene any of the laws and regulations of the countries having  
jurisdiction over the User or the intended distribution itself.

NO WARRANTY

The program was produced on an experimental basis in the course of the  
research and development conducted during the project and is provided  
to users as so produced on an experimental basis. Accordingly, the  
program is provided without any warranty whatsoever, whether express,  
implied, statutory or otherwise. The term "warranty" used herein  
includes, but is not limited to, any warranty of the quality,  
performance, merchantability and fitness for a particular purpose of  
the program and the nonexistence of any infringement or violation of



any right of any third party.

Each user of the program will agree and understand, and be deemed to have agreed and understood, that there is no warranty whatsoever for the program and, accordingly, the entire risk arising from or otherwise connected with the program is assumed by the user.

Therefore, neither ICOT, the copyright holder, or any other organization that participated in or was otherwise related to the development of the program and their respective officials, directors, officers and other employees shall be held liable for any and all damages, including, without limitation, general, special, incidental and consequential damages, arising out of or otherwise in connection with the use or inability to use the program or any product, material or result produced or otherwise obtained by using the program, regardless of whether they have been advised of, or otherwise had knowledge of, the possibility of such damages at any time during the project or thereafter. Each user will be deemed to have agreed to the foregoing by his or her commencement of use of the program. The term "use" as used herein includes, but is not limited to, the use, modification, copying and distribution of the program and the production of secondary products from the program.

In the case where the program, whether in its original form or modified, was distributed or delivered to or received by a user from any person, organization or entity other than ICOT, unless it makes or grants independently of ICOT any specific warranty to the user in writing, such person, organization or entity, will also be exempted from and not be held liable to the user for any such damages as noted above as far as the program is concerned.

=====  
 Nori Korean Morphological Analyzer - Apache Lucene Integration  
 =====

This software includes a binary and/or source version of data from

mecab-ko-dic-2.0.3-20170922

which can be obtained from

<https://bitbucket.org/eunjeon/mecab-ko-dic/downloads/mecab-ko-dic-2.0.3-20170922.tar.gz>

-----  
 Spatial4j - Fourth party dependency for some classes in lucene-spatial-extras

License : Same Apache2 license as for Lucene

Notice :

This content is produced and maintained by the Eclipse Spatial4j project. LocationTech Spatial4j, and Spatial4j are trademarks of the Eclipse Foundation.

-----  
 Carrotsearch hppc - Fourth party dependency for some classes in lucene-facet and lucent-util

License : Same Apache2 license as for Lucene

Notice :

Copyright 2010-2013, Carrot Search s.c., Boznicza 11/56, Poznan, Poland

ACKNOWLEDGEMENT

=====

HPPC borrowed code, ideas or both from:

- \* Apache Lucene, <http://lucene.apache.org/>  
(Apache license)
- \* Fastutil, <http://fastutil.di.unimi.it/>  
(Apache license)
- \* Koloboke, <https://github.com/OpenHFT/Koloboke>  
(Apache license)

-----

Ant

Same Apache license as top level

Additional license:

W3C© SOFTWARE NOTICE AND LICENSE

<http://www.w3.org/Consortium/Legal/2002/copyright-software-20021231>

This work (and included software, documentation such as READMEs, or other related items) is being provided by the copyright holders under the following license. By obtaining, using and/or copying this work, you (the licensee) agree that you have read, understood, and will comply with the following terms and conditions.

Permission to copy, modify, and distribute this software and its documentation, with or without modification, for any purpose and without fee or royalty is hereby granted, provided that you include the following on ALL copies of the software and documentation or portions thereof, including modifications:

1. The full text of this NOTICE in a location viewable to users of the redistributed or derivative work.
2. Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, the W3C Software Short Notice should be included (hypertext is preferred, text is permitted) within the body of any redistributed or derivative code.
3. Notice of any changes or modifications to the files, including the date changes were made. (We recommend you provide URIs to the location from which the code is derived.)

THIS SOFTWARE AND DOCUMENTATION IS PROVIDED "AS IS," AND COPYRIGHT HOLDERS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE OR DOCUMENTATION WILL NOT INFRINGE ANY THIRD PARTY PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS.

COPYRIGHT HOLDERS WILL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY USE OF THE SOFTWARE OR DOCUMENTATION.

The name and trademarks of copyright holders may NOT be used in advertising or publicity pertaining to the software without specific, written prior permission. Title to copyright in this software and any associated documentation will at all times remain with copyright holders.

---

This formulation of W3C's notice and license became active on December 31 2002. This version removes the copyright ownership notice such that this license can be used with materials other than those owned by the W3C, reflects that ERCIM is now a host of the W3C, includes references to this specific dated version of the license, and removes the ambiguous grant of "use". Otherwise, this version is the same as the previous version and is written so as to preserve the Free Software Foundation's assessment of GPL compatibility and OSI's certification under the Open Source Definition. Please see our Copyright FAQ for common questions about using materials from our site, including specific terms and conditions for packages like libwww, Amaya, and Jigsaw. Other questions about this notice can be directed to [site-policy@w3.org](mailto:site-policy@w3.org).

Joseph Reagle <[site-policy@w3.org](mailto:site-policy@w3.org)>

This license came from: <http://www.megginson.com/SAX/copying.html>  
 However please note future versions of SAX may be covered  
 under <http://saxproject.org/?selected=pd>

SAX2 is Free!

I hereby abandon any property rights to SAX 2.0 (the Simple API for XML), and release all of the SAX 2.0 source code, compiled code, and documentation contained in this distribution into the Public Domain. SAX comes with NO WARRANTY or guarantee of fitness for any purpose.

David Megginson, [david@megginson.com](mailto:david@megginson.com)  
 2000-05-05

Notice.txt:

```
=====
== NOTICE file corresponding to the section 4 d of ==
== the Apache License, Version 2.0, ==
== in this case for the Apache Ant distribution. ==
=====
```

Apache Ant  
 Copyright 1999-2008 The Apache Software Foundation

This product includes software developed by  
 The Apache Software Foundation (<http://www.apache.org/>).

This product includes also software developed by :

- the W3C consortium (<http://www.w3c.org>) ,
- the SAX project (<http://www.saxproject.org>)

The <sync> task is based on code Copyright (c) 2002, Landmark Graphics Corp that has been kindly donated to the Apache Software Foundation.

Portions of this software were originally based on the following:

- software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.
- software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.
- voluntary contributions made by Paul Eng on behalf of the Apache Software Foundation that were originally developed at iClick, Inc., software copyright (c) 1999.

-----  
Antlr4 - Fourth party dependency for lucene-expressions

License and Notice :

[The "BSD license"]  
Copyright (c) 2015 Terence Parr, Sam Harwell  
All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions  
are met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products  
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR  
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES  
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.  
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,  
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT  
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,  
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY  
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF  
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Asm - Fourth party dependency for lucene-expressions

Copyright (c) 2012 France Télécom  
All rights reserved.

Same BSD license as above

-----  
Commons-codec - Fourth party dependency for lucene-analyzers-phonetic

Apache Commons Codec  
Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

-----  
src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java contains  
test data from <http://aspell.sourceforge.net/test/batch0.tab>.

Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org). Verbatim copying  
and distribution of this entire article is permitted in any medium,  
provided this notice is preserved.

---

Same Apache2 license as for top-level Lucene

-----

Commons-compress - Fourth party dependency for lucene-benchmark

Apache Commons Compress  
Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----

Apache Commons Logging

Apache Commons Logging  
Copyright 2003-2013 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----

Elegant-icon-font - Fourth party dependency for lucene-luke

The Elegant Icon Font web page: <https://www.elegantthemes.com/blog/resources/elegant-icon-font>

These icons are dual licensed under the GPL 2.0 and MIT, and are completely free to use.

The MIT License (MIT)

Copyright (c) <2013> <Elegant Themes, Inc.>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----

httpclient

== license

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but

excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided

that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls.  
See <http://www.jcip.net> and the Creative Commons Attribution License



(<http://creativecommons.org/licenses/by/2.5>)

== copyright

Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

httpcore - Fourth party dependency for lucene-replicator

==license

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the

editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of the Derivative Works; and

- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls.  
See <http://www.jcip.net> and the Creative Commons Attribution License  
(<http://creativecommons.org/licenses/by/2.5>)

==copyright  
Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

Icu4j - Fourth party dependency for lucene-analyzers-icu

ICU4J, (under lucene/analysis/icu) is licensed under an MIT style license  
(modules/analysis/icu/lib/icu4j-LICENSE-BSD\_LIKE.txt) and Copyright (c) 1995-2012  
International Business Machines Corporation and others

Copyright (c) 1995-2012 International Business Machines Corporation and others

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not

be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

-----

Slf4j, jcl-over-slf4j

```
=====
==  SLF4J Notice -- http://www.slf4j.org/license.html  ==
=====
```

Copyright (c) 2004-2008 QOS.ch  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----

Jetty

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0//EN">
<html><head>
```

```
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Eclipse.org Software User Agreement</title>
</head><body lang="EN-US" link="blue" vlink="purple">
<h2>Eclipse Foundation Software User Agreement</h2>
<p>March 17, 2005</p>
```

```
<h3>Usage Of Content</h3>
```

```
<p>THE ECLIPSE FOUNDATION MAKES AVAILABLE SOFTWARE, DOCUMENTATION, INFORMATION AND/OR
OTHER MATERIALS FOR OPEN SOURCE PROJECTS
(COLLECTIVELY "CONTENT"). USE OF THE CONTENT IS GOVERNED BY THE TERMS AND
CONDITIONS OF THIS AGREEMENT AND/OR THE TERMS AND
CONDITIONS OF LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW. BY
USING THE CONTENT, YOU AGREE THAT YOUR USE
OF THE CONTENT IS GOVERNED BY THIS AGREEMENT AND/OR THE TERMS AND CONDITIONS OF ANY
APPLICABLE LICENSE AGREEMENTS OR
NOTICES INDICATED OR REFERENCED BELOW. IF YOU DO NOT AGREE TO THE TERMS AND
```

CONDITIONS OF THIS AGREEMENT AND THE TERMS AND  
CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR NOTICES INDICATED OR  
REFERENCED BELOW, THEN YOU MAY NOT USE THE CONTENT.</p>

### 

<p>Unless otherwise indicated, all Content made available by the Eclipse Foundation is provided to you under the terms and conditions of the Eclipse Public License Version 1.0 ("EPL"). A copy of the EPL is provided with this Content and is also available at <a href="http://www.eclipse.org/legal/epl-v10.html">http://www.eclipse.org/legal/epl-v10.html</a>.</p>

For purposes of the EPL, "Program" will mean the Content.</p>

<p>Content includes, but is not limited to, source code, object code, documentation and other files maintained in the Eclipse.org CVS repository ("Repository") in CVS modules ("Modules") and made available as downloadable archives ("Downloads").</p>

#### 

<li>Content may be structured and packaged into modules to facilitate delivering, extending, and upgrading the Content. Typical modules may include plug-ins ("Plug-ins"), plug-in fragments ("Fragments"), and features ("Features").</li>

<li>Each Plug-in or Fragment may be packaged as a sub-directory or JAR (Java#8482; ARchive) in a directory named "plugins".</li>

<li>A

Feature is a bundle of one or more Plug-ins and/or Fragments and associated material. Each Feature may be packaged as a sub-directory in a directory named "features". Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of the Plug-ins and/or Fragments associated with that Feature.</li>

<li>Features

may also include other Features ("Included Features"). Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of Included Features.</li>

</ul>

<p>The terms and conditions governing Plug-ins and Fragments should be contained in files named "about.html" ("Abouts"). The terms and conditions governing Features and Included Features should be contained in files named "license.html" ("Feature Licenses"). Abouts and Feature Licenses may be located in any directory of a Download or Module including, but not limited to the following locations:</p>

#### 

<li>The top-level (root) directory</li>

<li>Plug-in and Fragment directories</li>

<li>Inside Plug-ins and Fragments packaged as JARs</li>

<li>Sub-directories of the directory named "src" of certain Plug-ins</li>

<li>Feature directories</li>

</ul>

<p>Note: if a Feature made available by the Eclipse Foundation is installed using the Eclipse Update Manager, you must agree to a license ("Feature Update License") during the installation process. If the Feature contains Included Features, the Feature Update License should either provide you with the terms and conditions governing the Included Features or inform you where you can locate them. Feature Update Licenses may be

found in the "license" property of files named "feature.properties" found within a Feature. Such Abouts, Feature Licenses, and Feature Update Licenses contain the terms and conditions (or references to such terms and conditions) that govern your use of the associated Content in that directory.</p>

<p>THE ABOUTS, FEATURE LICENSES, AND FEATURE UPDATE LICENSES MAY REFER TO THE EPL OR OTHER LICENSE AGREEMENTS, NOTICES OR TERMS AND CONDITIONS. SOME OF THESE OTHER LICENSE AGREEMENTS MAY INCLUDE (BUT ARE NOT LIMITED TO):</p>

- <li>Common Public License Version 1.0 (available at <a href="http://www.eclipse.org/legal/cpl-v10.html">http://www.eclipse.org/legal/cpl-v10.html</a></li>
- <li>Apache Software License 1.1 (available at <a href="http://www.apache.org/licenses/LICENSE">http://www.apache.org/licenses/LICENSE</a></li>
- <li>Apache Software License 2.0 (available at <a href="http://www.apache.org/licenses/LICENSE-2.0">http://www.apache.org/licenses/LICENSE-2.0</a></li>
- <li>IBM Public License 1.0 (available at <a href="http://oss.software.ibm.com/developerworks/opensource/license10.html">http://oss.software.ibm.com/developerworks/opensource/license10.html</a></li>
- <li>Metro Link Public License 1.00 (available at <a href="http://www.opengroup.org/openmotif/supporters/metrolink/license.html">http://www.opengroup.org/openmotif/supporters/metrolink/license.html</a></li>
- <li>Mozilla Public License Version 1.1 (available at <a href="http://www.mozilla.org/MPL/MPL-1.1.html">http://www.mozilla.org/MPL/MPL-1.1.html</a></li>

<p>IT IS YOUR OBLIGATION TO READ AND ACCEPT ALL SUCH TERMS AND CONDITIONS PRIOR TO USE OF THE CONTENT. If no About, Feature License, or Feature Update License is provided, please contact the Eclipse Foundation to determine what terms and conditions govern that particular Content.</p>

### <h3>Cryptography</h3>

<p>Content may contain encryption software. The country in which you are currently may have restrictions on the import, possession, and use, and/or re-export to another country, of encryption software. BEFORE using any encryption software, please check the country's laws, regulations and policies concerning the import, possession, or use, and re-export of encryption software, to see if this is permitted.</p>

<small>Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.</small></body></html>

Same Apache License as top level

-----  
JTS

# JTS Topology Suite Licensing

May 30th, 2017

## Project Licenses

The Eclipse Foundation makes available all content in this project ("Content"). Unless otherwise indicated below, the Content is provided to you under the terms and

conditions of either the [Eclipse Public License 1.0] (<https://www.eclipse.org/legal/epl-v10.html>) ("EPL") or the [Eclipse Distribution License 1.0] (<http://www.eclipse.org/org/documents/edl-v10.php>) (a BSD Style License). For purposes of the EPL, "Program" will mean the Content.

If you did not receive this Content directly from the Eclipse Foundation, the Content is being redistributed by another party ("Redistributor") and different terms and conditions may apply to your use of any object code in the Content. Check the Redistributor's license that was provided with the Content. If no such license exists, contact the Redistributor. Unless otherwise indicated below, the terms and conditions of the EPL still apply to any source code in the Content and such source code may be obtained at <http://www.eclipse.org>.

#### ## Third Party Content

The Content includes items that have been sourced from third parties as set out below. If you did not receive this Content directly from the Eclipse Foundation, the following is provided for informational purposes only, and you should look to the Redistributor's license for terms and conditions of use.

#### ### Jdom-contrib version 1.1.3

The JTS tests module contains source from JDOM Contrib 1.1.3 which is available under the Jdom License [1]. The two files are `LineNumberElement.java` and `LineNumberSAXHandler.java`.

Typical users of this library will not need to depend on this module.

[1] <https://github.com/hunterhacker/jdom/blob/master/LICENSE.txt>

#### ### GeoTools

JTS includes some code from the GeoTools project. This code has been licensed to the JTS project under the OSGeo BSD License [2] by the GeoTools PSC [3,4].

[2] <https://www.osgeo.org/sites/osgeo.org/files/Page/osgeo-bsd-license.txt>

[3] <https://github.com/geotools/geotools/wiki/JTS-ORA-Contribution>

[4] <https://github.com/geotools/geotools/wiki/JTS-Shapefile-Contribution>

Copyright (c) 2007, Eclipse Foundation, Inc. and its licensors.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE



DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Log4j - Fourth party dependency for lucene-luke

Apache Log4j  
Copyright 1999-2017 Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

ResolverUtil.java  
Copyright 2005-2006 Tim Fennell

Dumbster SMTP test server  
Copyright 2004 Jason Paul Kitchen

TypeUtil.java  
Copyright 2002-2012 Ramnivas Laddad, Juergen Hoeller, Chris Beams

picocli (<http://picocli.info>)  
Copyright 2017 Remko Popma

Uses same Apache 2 license as top level component

-----

Morfologik - Fourth party dependency for lucene-analyzers-morfologik

This product includes BSD-licensed software developed by Dawid Weiss and Marcin Miłkowski  
(<http://morfologik.blogspot.com/>).

Copyright (c) 2006 Dawid Weiss  
Copyright (c) 2007-2016 Dawid Weiss, Marcin Miłkowski  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE

DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Nekohtml - Fourth party dependency for lucene-benchmark

CyberNeko HTML Parser

(C) Copyright 2002-2009, Andy Clark, Marc Guillemot. All rights reserved.

NekoHTML is a simple HTML scanner and tag balancer that enables application programmers to parse HTML documents and access the information using standard XML interfaces. The parser can scan HTML files and "fix up" many common mistakes that human (and computer) authors make in writing HTML documents. NekoHTML adds missing parent elements; automatically closes elements with optional end tags; and can handle mismatched inline element tags.

NekoHTML is written using the Xerces Native Interface (XNI) that is the foundation of the Xerces2 implementation. This enables you to use the NekoHTML parser with existing XNI tools without modification or rewriting code.

Uses same Apache 2 license as top level component

-----

Opennlp - Fourth party dependency for lucene-analyzers-opennlp

Apache OpenNLP Tools

Copyright 2015 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Uses same Apache 2 license as top level component

-----

S2-geometry-library - Fourth party dependency for lucene-spatial-extras

Has no Notices/Copyright file

Uses same Apache 2 license as top level component

-----

Xercesimpl - Fourth party optional XML parser implementation to some lucene libraries, not required when platform provides its own implementation

```
=====
== NOTICE file corresponding to section 4(d) of the Apache License, ==
== Version 2.0, in this case for the Apache Xerces Java distribution. ==
=====
```

Apache Xerces Java

Copyright 1999-2007 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Portions of this software were originally based on the following:

- software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.
- software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.
- voluntary contributions made by Paul Eng on behalf of the Apache Software Foundation that were originally developed at iClick, Inc., software copyright (c) 1999.

Uses same Apache 2 license as top level component

-----

unicode  
==license  
UNICODE LICENSE V3

COPYRIGHT AND PERMISSION NOTICE

Copyright © 1991-2023 Unicode, Inc.

NOTICE TO USER: Carefully read the following legal agreement. BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING DATA FILES, AND/OR SOFTWARE, YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

Permission is hereby granted, free of charge, to any person obtaining a copy of data files and any associated documentation (the "Data Files") or software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that either (a) this copyright and permission notice appear with all copies of the Data Files or Software, or (b) this copyright and permission notice appear in associated Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.

IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

==copyright  
Copyright © 1991-2023 Unicode, Inc. All rights reserved.

## **OWASP Java Encoder Project**

**Vendor:** Open Web Application Security Project (OWASP)

**Version: 1.2.3**

\*\*\*\*\*  
 \*\*\*\*\* Copied from LT Public License & Copyright Notices \*\*\*\*\*

Copyright (c) 2015 Jeff Ichnowski  
 All rights reserved.

Redistribution and use in source and binary forms, with or without  
 modification, are permitted provided that the following conditions  
 are met:

- \* Redistributions of source code must retain the above  
 copyright notice, this list of conditions and the following  
 disclaimer.
- \* Redistributions in binary form must reproduce the above  
 copyright notice, this list of conditions and the following  
 disclaimer in the documentation and/or other materials  
 provided with the distribution.
- \* Neither the name of the OWASP nor the names of its  
 contributors may be used to endorse or promote products  
 derived from this software without specific prior written  
 permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS  
 "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT  
 LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS  
 FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE  
 COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,  
 INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES  
 (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
 SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)  
 HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,  
 STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)  
 ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED  
 OF THE POSSIBILITY OF SUCH DAMAGE.

**terra-draw****Vendor: James Milner****Version: 0.0.1-alpha.47**

----- Top-level license -----  
 Copyright 2022 James Milner

Permission is hereby granted, free of charge, to any person obtaining a copy of  
 this software and associated documentation files (the "Software"), to deal in  
 the Software without restriction, including without limitation the rights to  
 use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of  
 the Software, and to permit persons to whom the Software is furnished to do so,  
 subject to the following conditions:

The above copyright notice and this permission notice shall be included in all  
 copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
 IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS  
 FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR  
 COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER  
 IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN  
 CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- Copyright notices -----  
 Copyright 2022 James Milner

----- Fourth-party information -----

```

== NAME OF DEPENDENCY 1
ts-node
== License
The MIT License (MIT)

Copyright (c) 2014 Blake Embrey (hello@blakeembrey.com)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
== Copyright Notices
Copyright (c) 2014 Blake Embrey (hello@blakeembrey.com)
----- (separator) -----
== NAME OF DEPENDENCY 2
arg
== License
MIT License

Copyright (c) 2021 Zeit, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2021 Zeit, Inc.
----- (separator) -----
== NAME OF DEPENDENCY 3
jsdiff
== License
Copyright (c) 2009-2015, Kevin Decker

All rights reserved.

```

Redistribution and use of this software in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Kevin Decker nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.  
 == Copyright Notices  
 Copyright (c) 2009-2015, Kevin Decker

All rights reserved.

----- (separator) -----  
 == NAME OF DEPENDENCY 4  
 make-error  
 == License  
 Copyright 2014 Julien Fontanet

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.  
 == Copyright Notices  
 Copyright 2014 Julien Fontanet

----- (separator) -----  
 == NAME OF DEPENDENCY 5  
 yn  
 == License

Copyright (c) Sindre Sorhus (sindresorhus.com)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) Sindre Sorhus (sindresorhus.com)

----- (separator) -----

== NAME OF DEPENDENCY 6

Source map support

== License

The MIT License (MIT)

Copyright (c) 2014 Evan Wallace

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2014 Evan Wallace

----- (separator) -----

== NAME OF DEPENDENCY 7

@tsconfig/node12

== License

MIT License

Copyright (c) Microsoft Corporation.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE

== Copyright Notices

Copyright (c) Microsoft Corporation.

----- (separator) -----

== NAME OF DEPENDENCY 8

v8-compile-cache-lib

== License

The MIT License (MIT)

Copyright (c) 2019 Andres Suarez

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2019 Andres Suarez

----- (separator) -----

== NAME OF DEPENDENCY 9

acorn

== License

MIT License

Copyright (C) 2012-2022 by various contributors (see AUTHORS)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER



LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (C) 2012-2022 by various contributors (see AUTHORS)

----- (separator) -----

== NAME OF DEPENDENCY 10

trace-mapping

== License

Copyright 2022 Justin Ridgewell

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright 2022 Justin Ridgewell

----- (separator) -----

== NAME OF DEPENDENCY 11

resolve-uri

== License

Copyright 2022 Justin Ridgewell

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright 2022 Justin Ridgewell

----- (separator) -----

== NAME OF DEPENDENCY 12

sourcemap-codec

== License

The MIT License

Copyright (c) 2015 Rich Harris

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2015 Rich Harris

----- (separator) -----

== NAME OF DEPENDENCY 13

@tsconfig/node10

== License

MIT License

Copyright (c) Microsoft Corporation.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE

== Copyright Notices

Copyright (c) Microsoft Corporation.

----- (separator) -----

== NAME OF DEPENDENCY 14

Tsconfig/node14

== License

MIT License

Copyright (c) Microsoft Corporation.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE

== Copyright Notices

Copyright (c) Microsoft Corporation.

----- (separator) -----

== NAME OF DEPENDENCY 15

Tsconfig/node16

== License

MIT License

Copyright (c) Microsoft Corporation.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE

== Copyright Notices

Copyright (c) Microsoft Corporation.

----- (separator) -----

== NAME OF DEPENDENCY 16

Acorn-walk

== License

MIT License

Copyright (C) 2012-2020 by various contributors (see AUTHORS)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (C) 2012-2020 by various contributors (see AUTHORS)

----- (separator) -----

== NAME OF DEPENDENCY 17

create-require

== License

MIT License

Copyright (c) 2020

Maël Nison

Paul Soporan

Pooya Parsa

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2020

Maël Nison

Paul Soporan

Pooya Parsa

----- (separator) -----

## logback-classic

**Vendor:** QOS.ch

**Version:** 1.3.11

Logback-classic:

All past Contributors to the disclaim all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose. In addition, such Contributors are not liable for any damages, including direct, indirect, special, incidental and consequential damages, such as lost profits.

Any provisions of the Oracle license agreement that differ from the Eclipse Public License are offered by Oracle alone and not by any other party. These files are licensed in executable form under your Oracle license agreement.

Oracle is solely responsible for any representations and warranties contained therein."

-----  
 \* Logback: the reliable, generic, fast and flexible logging framework.  
 \* Copyright (C) 1999-2022, QOS.ch. All rights reserved.  
 \* This program and the accompanying materials are dual-licensed under  
 \* either the terms of the Eclipse Public License v1.0 as published by  
 \* the Eclipse Foundation  
 \* or (per the licensee's choosing)  
 \* under the terms of the GNU Lesser General Public License version 2.1  
 \* as published by the Free Software Foundation.  
 \*/EPL 1.0 License

Eclipse Public License - v 1.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

## 1. DEFINITIONS

"Contribution" means:

- a) in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and
- b) in the case of each subsequent Contributor:
  - i) changes to the Program, and
  - ii) additions to the Program;

where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include additions to the Program which: (i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and (ii) are not derivative works of the Program.

"Contributor" means any person or entity that distributes the Program.

"Licensed Patents" mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement, including all Contributors.

## 2. GRANT OF RIGHTS

- a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, distribute and sublicense the Contribution of such Contributor, if any, and such derivative works, in source code and object code form.
- b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in source code and object code form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.
- c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.
- d) Each Contributor represents that to its knowledge it has sufficient copyright

rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

### 3. REQUIREMENTS

A Contributor may choose to distribute the Program in object code form under its own license agreement, provided that:

- a) it complies with the terms and conditions of this Agreement; and
- b) its license agreement:
  - i) effectively disclaims on behalf of all Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;
  - ii) effectively excludes on behalf of all Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;
  - iii) states that any provisions which differ from this Agreement are offered by that Contributor alone and not by any other party; and
  - iv) states that source code for the Program is available from such Contributor, and informs licensees how to obtain it in a reasonable manner on or through a medium customarily used for software exchange.

When the Program is made available in source code form:

- a) it must be made available under this Agreement; and
  - b) a copy of this Agreement must be included with each copy of the Program.
- Contributors may not remove or alter any copyright notices contained within the Program.

Each Contributor must identify itself as the originator of its Contribution, if any, in a manner that reasonably allows subsequent Recipients to identify the originator of the Contribution.

### 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each

Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to distribute the Program (including its Contributions) under the new version. Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved.

This Agreement is governed by the laws of the State of New York and the intellectual property laws of the United States of America. No party to this Agreement will bring a legal action under this Agreement more than one year after the cause of action arose. Each party waives its rights to a jury trial in any resulting litigation.

#####

LGPL 2.1 License

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

## Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less



of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

#### GNU LESSER GENERAL PUBLIC LICENSE

##### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any

warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or

derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library

subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances. It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO

WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### END OF TERMS AND CONDITIONS

#### How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

#### Copyright (C)

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail. You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.
, 1 April 1990
```

```
Ty Coon, President of Vice
That's all there is to it!
```

```
##### 4th party dependencies
```

```
#####
```

```
logback-core
```

```
License - EPL 1.0 License
```

```
    LGPL 2.1 License
```

```
#####
```

```
#
```

```
slf4j-api (MIT) - http://www.opensource.org/licenses/mit-license.php
```

Copyright (c) 2004-2017 QOS.ch  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

## Lucene-queries

**Vendor:** The Apache Software Foundation

**Version:** 8.11.2

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a



cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or

agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from unicode conversion examples available at <http://www.unicode.org/Public/PROGRAMS/CVTUTF>. Here is the copyright from those sources:

```

/*
 * Copyright 2001-2004 Unicode, Inc.
 *
 * Disclaimer
 *
 * This source code is provided as is by Unicode, Inc. No claims are
 * made as to fitness for any particular purpose. No warranties of any
 * kind are expressed or implied. The recipient agrees to determine
 * applicability of information provided. If this file has been
 * purchased on magnetic or optical media from Unicode, Inc., the
 * sole remedy for any claim will be exchange of defective media
 * within 90 days of receipt.
 *
 * Limitations on Rights to Redistribute This Code
 *
 * Unicode, Inc. hereby grants the right to freely use the information
 * supplied in this file in the creation of products supporting the
 * Unicode Standard, and to make copies of this file in any form
 * for internal or external distribution as long as this notice
 * remains attached.
 */

```

Some code in `core/src/java/org/apache/lucene/util/ArrayUtil.java` was derived from Python 2.4.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/2.4.2/license/>

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from Python 3.1.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/3.1.2/license/>

Some code in `core/src/java/org/apache/lucene/util/automaton` was derived from Brics automaton sources available at [www.brics.dk/automaton/](http://www.brics.dk/automaton/). Here is the copyright from those sources:

```

/*
 * Copyright (c) 2001-2009 Anders Moeller
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
 * are met:
 * 1. Redistributions of source code must retain the above copyright
 *    notice, this list of conditions and the following disclaimer.
 * 2. Redistributions in binary form must reproduce the above copyright
 *    notice, this list of conditions and the following disclaimer in the
 *    documentation and/or other materials provided with the distribution.
 * 3. The name of the author may not be used to endorse or promote products
 *    derived from this software without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES

```

```

* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/

```

The levenshtein automata tables in core/src/java/org/apache/lucene/util/automaton

were automatically generated with the moman/finenight FSA package.  
Here is the copyright for those sources:

```

# Copyright (c) 2010, Jean-Philippe Barrette-LaPierre, <jpb@rrette.com>
#
# Permission is hereby granted, free of charge, to any person
# obtaining a copy of this software and associated documentation
# files (the "Software"), to deal in the Software without
# restriction, including without limitation the rights to use,
# copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the
# Software is furnished to do so, subject to the following
# conditions:
#
# The above copyright notice and this permission notice shall be
# included in all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
# EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
# OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
# NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
# HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
# WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
# FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
# OTHER DEALINGS IN THE SOFTWARE.

```

Some code in core/src/java/org/apache/lucene/util/UnicodeUtil.java was derived from ICU (<http://www.icu-project.org>)

The full license is available here:

<http://source.icu-project.org/repos/icu/icu/trunk/license.html>

```

/*
 * Copyright (C) 1999-2010, International Business Machines
 * Corporation and others. All Rights Reserved.
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, and/or sell copies of the
 * Software, and to permit persons to whom the Software is furnished to do so,
 * provided that the above copyright notice(s) and this permission notice appear
 * in all copies of the Software and that both the above copyright notice(s) and
 * this permission notice appear in supporting documentation.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.
 * IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE
 * LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR

```

\* ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER  
\* IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT  
\* OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.  
\*  
\* Except as contained in this notice, the name of a copyright holder shall not  
\* be used in advertising or otherwise to promote the sale, use or other  
\* dealings in this Software without prior written authorization of the  
\* copyright holder.  
\*/

The following license applies to the Snowball stemmers:

Copyright (c) 2001, Dr Martin Porter  
Copyright (c) 2002, Richard Boulton  
All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
\* this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright  
\* notice, this list of conditions and the following disclaimer in the  
\* documentation and/or other materials provided with the distribution.
- \* Neither the name of the copyright holders nor the names of its contributors  
\* may be used to endorse or promote products derived from this software  
\* without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"  
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE  
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE  
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER  
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,  
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the KStemmer:

Copyright © 2003,  
Center for Intelligent Information Retrieval,  
University of Massachusetts, Amherst.  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this  
list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,  
this list of conditions and the following disclaimer in the documentation  
and/or other materials provided with the distribution.
3. The names "Center for Intelligent Information Retrieval" and  
"University of Massachusetts" must not be used to endorse or promote products  
derived from this software without prior written permission. To obtain  
permission, contact [info@ciir.cs.umass.edu](mailto:info@ciir.cs.umass.edu).

THIS SOFTWARE IS PROVIDED BY UNIVERSITY OF MASSACHUSETTS AND OTHER CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the Morfologik project:

Copyright (c) 2006 Dawid Weiss  
Copyright (c) 2007-2011 Dawid Weiss, Marcin Miłkowski  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

The dictionary comes from Morfologik project. Morfologik uses data from Polish ispell/myspell dictionary hosted at <http://www.sjp.pl/slownik/en/> and is licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike. The part-of-speech tags were added in Morfologik project and are not found in the data from sjp.pl. The tagset is similar to IPI PAN tagset.

---

The following license applies to the Morfeusz project, used by `org.apache.lucene.analysis.morfologik`.

BSD-licensed dictionary of Polish (SGJP)  
<http://sgjp.pl/morfeusz/>

Copyright © 2011 Zygmunt Saloni, Włodzimierz Gruszczyński,

Marcin Woliński, Robert Wołosz

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>) compression format for Lucene's DataInput/DataOutput abstractions.

LZ4 Library  
Copyright (c) 2011-2016, Yann Collet  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Lucene Notice

-----  
Apache Lucene  
Copyright 2001-2021 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Includes software from other Apache Software Foundation projects,  
including, but not limited to:

- Apache Ant
- Apache Jakarta Regexp
- Apache Commons
- Apache Xerces

ICU4J, (under analysis/icu) is licensed under an MIT styles license  
and Copyright (c) 1995-2008 International Business Machines Corporation and  
others

Some data files (under analysis/icu/src/data) are derived from Unicode data such  
as the Unicode Character Database. See <http://unicode.org/copyright.html> for more  
details.

Brics Automaton (under core/src/java/org/apache/lucene/util/automaton) is  
BSD-licensed, created by Anders Møller. See <http://www.brics.dk/automaton/>

The levenshtein automata tables (under core/src/java/org/apache/lucene/util/  
automaton) were  
automatically generated with the moman/finenight FSA library, created by  
Jean-Philippe Barrette-LaPierre. This library is available under an MIT license,  
see <http://sites.google.com/site/rrettesite/moman> and  
<http://bitbucket.org/jpbarrette/moman/overview/>

The class org.apache.lucene.util.WeakIdentityMap was derived from  
the Apache CXF project and is Apache License 2.0.

The class org.apache.lucene.util.compress.LZ4 is a Java rewrite of the LZ4  
compression library (<https://github.com/lz4/lz4/tree/dev/lib>) that is licensed  
under the 2-clause BSD license.  
(<https://opensource.org/licenses/bsd-license.php>)

The Google Code Prettify is Apache License 2.0.  
See <http://code.google.com/p/google-code-prettify/>

JUnit (junit-4.10) is licensed under the Common Public License v. 1.0  
See <http://junit.sourceforge.net/cpl-v10.html>

This product includes code (JaspellTernarySearchTrie) from Java Spelling Checkin  
g Package (jaspell): <http://jaspell.sourceforge.net/>  
License: The BSD License (<http://www.opensource.org/licenses/bsd-license.php>)

The snowball stemmers in  
analysis/common/src/java/net/sf/snowball  
were developed by Martin Porter and Richard Boulton.  
The snowball stopword lists in  
analysis/common/src/resources/org/apache/lucene/analysis/snowball  
were developed by Martin Porter and Richard Boulton.  
The full snowball package is available from  
<http://snowball.tartarus.org/>

The KStem stemmer in



analysis/common/src/org/apache/lucene/analysis/en  
was developed by Bob Krovetz and Sergio Guzman-Lara (CIIR-UMass Amherst)  
under the BSD-license.

The Arabic, Persian, Romanian, Bulgarian, Hindi and Bengali analyzers (common) come with a default  
stopword list that is BSD-licensed created by Jacques Savoy. These files reside in:  
analysis/common/src/resources/org/apache/lucene/analysis/ar/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

The German, Spanish, Finnish, French, Hungarian, Italian, Portuguese, Russian and Swedish  
light stemmers  
(common) are based on BSD-licensed reference implementations created by Jacques Savoy  
and  
Ljiljana Dolamic. These files reside in:  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

The Stempel analyzer (stempel) includes BSD-licensed software developed  
by the Egothor project <http://egothor.sf.net/>, created by Leo Galambos, Martin Kvapil,  
and Edmond Nolan.

The Polish analyzer (stempel) comes with a default  
stopword list that is BSD-licensed created by the Carrot2 project. The file resides  
in stempel/src/resources/org/apache/lucene/analysis/pl/stopwords.txt.  
See <http://project.carrot2.org/license.html>.

The SmartChineseAnalyzer source code (smartcn) was  
provided by Xiaoping Gao and copyright 2009 by [www.imdict.net](http://www.imdict.net).

WordBreakTestUnicode\_\*.java (under modules/analysis/common/src/test/)  
is derived from Unicode data such as the Unicode Character Database.  
See <http://unicode.org/copyright.html> for more details.

The Morfologik analyzer (morfologik) includes BSD-licensed software  
developed by Dawid Weiss and Marcin Miłkowski (<http://morfologik.blogspot.com/>).

Morfologik uses data from Polish ispell/myspell dictionary  
(<http://www.sjp.pl/slownik/en/>) licenced on the terms of (inter alia)  
LGPL and Creative Commons ShareAlike.

Morfologic includes data from BSD-licensed dictionary of Polish (SGJP)  
(<http://sgjp.pl/morfeusz/>)

=====  
Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration  
=====

This software includes a binary and/or source version of data from

mecab-ipadic-2.7.0-20070801

which can be obtained from

<http://atilika.com/releases/mecab-ipadic/mecab-ipadic-2.7.0-20070801.tar.gz>

or

<http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/mecab-ipadic-2.7.0-20070801.tar.gz>

=====  
mecab-ipadic-2.7.0-20070801 Notice  
=====

Nara Institute of Science and Technology (NAIST), the copyright holders, disclaims all warranties with regard to this software, including all implied warranties of merchantability and fitness, in no event shall NAIST be liable for any special, indirect or consequential damages or any damages whatsoever resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortuous action, arising out of or in connection with the use or performance of this software.

A large portion of the dictionary entries originate from ICOT Free Software. The following conditions for ICOT Free Software applies to the current dictionary as well.

Each User may also freely distribute the Program, whether in its original form or modified, to any third party or parties, PROVIDED that the provisions of Section 3 ("NO WARRANTY") will ALWAYS appear on, or be attached to, the Program, which is distributed substantially in the same form as set out herein and that such intended distribution, if actually made, will neither violate or otherwise contravene any of the laws and regulations of the countries having jurisdiction over the User or the intended distribution itself.

#### NO WARRANTY

The program was produced on an experimental basis in the course of the research and development conducted during the project and is provided to users as so produced on an experimental basis. Accordingly, the program is provided without any warranty whatsoever, whether express, implied, statutory or otherwise. The term "warranty" used herein includes, but is not limited to, any warranty of the quality, performance, merchantability and fitness for a particular purpose of the program and the nonexistence of any infringement or violation of any right of any third party.

Each user of the program will agree and understand, and be deemed to have agreed and understood, that there is no warranty whatsoever for the program and, accordingly, the entire risk arising from or otherwise connected with the program is assumed by the user.

Therefore, neither ICOT, the copyright holder, or any other organization that participated in or was otherwise related to the development of the program and their respective officials, directors, officers and other employees shall be held liable for any and all

damages, including, without limitation, general, special, incidental and consequential damages, arising out of or otherwise in connection with the use or inability to use the program or any product, material or result produced or otherwise obtained by using the program, regardless of whether they have been advised of, or otherwise had knowledge of, the possibility of such damages at any time during the project or thereafter. Each user will be deemed to have agreed to the foregoing by his or her commencement of use of the program. The term "use" as used herein includes, but is not limited to, the use, modification, copying and distribution of the program and the production of secondary products from the program.

In the case where the program, whether in its original form or modified, was distributed or delivered to or received by a user from any person, organization or entity other than ICOT, unless it makes or grants independently of ICOT any specific warranty to the user in writing, such person, organization or entity, will also be exempted from and not be held liable to the user for any such damages as noted above as far as the program is concerned.

```
=====
Nori Korean Morphological Analyzer - Apache Lucene Integration
=====
```

This software includes a binary and/or source version of data from

mecab-ko-dic-2.0.3-20170922

which can be obtained from

<https://bitbucket.org/eunjeon/mecab-ko-dic/downloads/mecab-ko-dic-2.0.3-20170922.tar.gz>

-----

Spatial4j - Fourth party dependency for some classes in lucene-spatial-extras

License : Same Apache2 license as for Lucene

Notice :

This content is produced and maintained by the Eclipse Spatial4j project. LocationTech Spatial4j, and Spatial4j are trademarks of the Eclipse Foundation.

-----

Carrotsearch hppc - Fourth party dependency for some classes in lucene-facet and lucent-util

License : Same Apache2 license as for Lucene

Notice :

Copyright 2010-2013, Carrot Search s.c., Boznicza 11/56, Poznan, Poland

ACKNOWLEDGEMENT

=====

HPPC borrowed code, ideas or both from:

\* Apache Lucene, <http://lucene.apache.org/>

(Apache license)  
\* Fastutil, <http://fastutil.di.unimi.it/>  
(Apache license)  
\* Koloboke, <https://github.com/OpenHFT/Koloboke>  
(Apache license)

-----

Ant

Same Apache license as top level

Additional license:

W3C® SOFTWARE NOTICE AND LICENSE

<http://www.w3.org/Consortium/Legal/2002/copyright-software-20021231>

This work (and included software, documentation such as READMEs, or other related items) is being provided by the copyright holders under the following license. By obtaining, using and/or copying this work, you (the licensee) agree that you have read, understood, and will comply with the following terms and conditions.

Permission to copy, modify, and distribute this software and its documentation, with or without modification, for any purpose and without fee or royalty is hereby granted, provided that you include the following on ALL copies of the software and documentation or portions thereof, including modifications:

1. The full text of this NOTICE in a location viewable to users of the redistributed or derivative work.
2. Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, the W3C Software Short Notice should be included (hypertext is preferred, text is permitted) within the body of any redistributed or derivative code.
3. Notice of any changes or modifications to the files, including the date changes were made. (We recommend you provide URIs to the location from which the code is derived.)

THIS SOFTWARE AND DOCUMENTATION IS PROVIDED "AS IS," AND COPYRIGHT HOLDERS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE OR DOCUMENTATION WILL NOT INFRINGE ANY THIRD PARTY PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS.

COPYRIGHT HOLDERS WILL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY USE OF THE SOFTWARE OR DOCUMENTATION.

The name and trademarks of copyright holders may NOT be used in advertising or publicity pertaining to the software without specific, written prior permission. Title to copyright in this software and any associated documentation will at all times remain with copyright holders.

---

This formulation of W3C's notice and license became active on December 31 2002. This version removes the copyright ownership notice such that this license can be used with materials other than those owned by the W3C, reflects that ERCIM is now a host of the W3C, includes references to this specific dated version of the license, and removes the ambiguous grant of "use". Otherwise, this version is the same as the previous version and is written so as to preserve the Free Software Foundation's assessment of GPL compatibility and OSI's certification under the Open Source Definition. Please see our Copyright FAQ for common

questions about using materials from our site, including specific terms and conditions for packages like libwww, Amaya, and Jigsaw. Other questions about this notice can be directed to [site-policy@w3.org](mailto:site-policy@w3.org).

Joseph Reagle <[site-policy@w3.org](mailto:site-policy@w3.org)>

This license came from: <http://www.megginson.com/SAX/copying.html>  
 However please note future versions of SAX may be covered  
 under <http://saxproject.org/?selected=pd>

SAX2 is Free!

I hereby abandon any property rights to SAX 2.0 (the Simple API for XML), and release all of the SAX 2.0 source code, compiled code, and documentation contained in this distribution into the Public Domain. SAX comes with NO WARRANTY or guarantee of fitness for any purpose.

David Megginson, [david@megginson.com](mailto:david@megginson.com)  
 2000-05-05

Notice.txt:

```
=====
== NOTICE file corresponding to the section 4 d of           ==
== the Apache License, Version 2.0,                          ==
== in this case for the Apache Ant distribution.              ==
=====
```

Apache Ant  
 Copyright 1999-2008 The Apache Software Foundation

This product includes software developed by  
 The Apache Software Foundation (<http://www.apache.org/>).

This product includes also software developed by :  
 - the W3C consortium (<http://www.w3c.org>) ,  
 - the SAX project (<http://www.saxproject.org>)

The <sync> task is based on code Copyright (c) 2002, Landmark  
 Graphics Corp that has been kindly donated to the Apache Software  
 Foundation.

Portions of this software were originally based on the following:  
 - software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.  
 - software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.  
 - voluntary contributions made by Paul Eng on behalf of the  
 Apache Software Foundation that were originally developed at iClick, Inc.,  
 software copyright (c) 1999.

-----

Antlr4 - Fourth party dependency for lucene-expressions

License and Notice :

[The "BSD license"]  
 Copyright (c) 2015 Terence Parr, Sam Harwell  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
 Asm - Fourth party dependency for lucene-expressions

Copyright (c) 2012 France Télécom  
 All rights reserved.

Same BSD license as above

-----  
 Commons-codec - Fourth party dependency for lucene-analyzers-phonetic

Apache Commons Codec  
 Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by  
 The Apache Software Foundation (<http://www.apache.org/>).

-----  
 src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java contains  
 test data from <http://aspell.sourceforge.net/test/batch0.tab>.

Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org). Verbatim copying  
 and distribution of this entire article is permitted in any medium,  
 provided this notice is preserved.

-----  
 Same Apache2 license as for top-level Lucene

-----  
 Commons-compress - Fourth party dependency for lucene-benchmark

Apache Commons Compress  
 Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by

The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----  
 Apache Commons Logging

Apache Commons Logging  
 Copyright 2003-2013 The Apache Software Foundation

This product includes software developed at  
 The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----

Elegant-icon-font - Fourth party dependency for lucene-luke

The Elegant Icon Font web page: <https://www.elegantthemes.com/blog/resources/elegant-icon-font>

These icons are dual licensed under the GPL 2.0 and MIT, and are completely free to use.

The MIT License (MIT)

Copyright (c) <2013> <Elegant Themes, Inc.>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----

httpclient

== license

Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of,



publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,

any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls.  
See <http://www.jcip.net> and the Creative Commons Attribution License  
(<http://creativecommons.org/licenses/by/2.5>)

== copyright

Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS

---

Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

httpcore - Fourth party dependency for lucene-replicator

==license

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of

the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or,

within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

## END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls.  
See <http://www.jcip.net> and the Creative Commons Attribution License  
(<http://creativecommons.org/licenses/by/2.5>)

==copyright  
Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

Icu4j - Fourth party dependency for lucene-analyzers-icu

ICU4J, (under lucene/analysis/icu) is licensed under an MIT style license  
(modules/analysis/icu/lib/icu4j-LICENSE-BSD\_LIKE.txt) and Copyright (c) 1995-2012  
International Business Machines Corporation and others

Copyright (c) 1995-2012 International Business Machines Corporation and others

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy  
of this software and associated documentation files (the "Software"), to deal  
in the Software without restriction, including without limitation the rights  
to use, copy, modify, merge, publish, distribute, and/or sell copies of the  
Software, and to permit persons to whom the Software is furnished to do so,  
provided that the above copyright notice(s) and this permission notice appear  
in all copies of the Software and that both the above copyright notice(s) and  
this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.  
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE  
LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR  
ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER  
IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT  
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not  
be used in advertising or otherwise to promote the sale, use or other  
dealings in this Software without prior written authorization of the  
copyright holder.

All trademarks and registered trademarks mentioned herein are the property of  
their respective owners.

-----

Slf4j, jcl-over-slf4j

```
=====
== SLF4J Notice -- http://www.slf4j.org/license.html ==
=====
```

Copyright (c) 2004-2008 QOS.ch  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
Jetty

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0//EN">
<html><head>
```

```
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Eclipse.org Software User Agreement</title>
</head><body lang="EN-US" link="blue" vlink="purple">
<h2>Eclipse Foundation Software User Agreement</h2>
<p>March 17, 2005</p>
```

```
<h3>Usage Of Content</h3>
```

```
<p>THE ECLIPSE FOUNDATION MAKES AVAILABLE SOFTWARE, DOCUMENTATION, INFORMATION AND/OR
OTHER MATERIALS FOR OPEN SOURCE PROJECTS
(COLLECTIVELY "CONTENT"). USE OF THE CONTENT IS GOVERNED BY THE TERMS AND
CONDITIONS OF THIS AGREEMENT AND/OR THE TERMS AND
CONDITIONS OF LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW. BY
USING THE CONTENT, YOU AGREE THAT YOUR USE
OF THE CONTENT IS GOVERNED BY THIS AGREEMENT AND/OR THE TERMS AND CONDITIONS OF ANY
APPLICABLE LICENSE AGREEMENTS OR
NOTICES INDICATED OR REFERENCED BELOW. IF YOU DO NOT AGREE TO THE TERMS AND
CONDITIONS OF THIS AGREEMENT AND THE TERMS AND
CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED
BELOW, THEN YOU MAY NOT USE THE CONTENT.</p>
```

```
<h3>Applicable Licenses</h3>
```

```
<p>Unless otherwise indicated, all Content made available by the
Eclipse Foundation is provided to you under the terms and conditions of
the Eclipse Public License Version 1.0 ("EPL"). A copy of the EPL is
provided with this Content and is also available at <a href="http://www.eclipse.org/
legal/epl-v10.html">http://www.eclipse.org/legal/epl-v10.html</a>.
```

For purposes of the EPL, "Program" will mean the Content.</p>

<p>Content includes, but is not limited to, source code, object code, documentation and other files maintained in the Eclipse.org CVS repository ("Repository") in CVS modules ("Modules") and made available as downloadable archives ("Downloads").</p>

<ul>

<li>Content may be structured and packaged into modules to facilitate delivering, extending, and upgrading the Content. Typical modules may include plug-ins ("Plug-ins"), plug-in fragments ("Fragments"), and features ("Features").</li>

<li>Each Plug-in or Fragment may be packaged as a sub-directory or JAR (Java&#8482; ARchive) in a directory named "plugins".</li>

<li>A Feature is a bundle of one or more Plug-ins and/or Fragments and associated material. Each Feature may be packaged as a sub-directory in a directory named "features". Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of the Plug-ins and/or Fragments associated with that Feature.</li>

<li>Features may also include other Features ("Included Features"). Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of Included Features.</li>

</ul>

<p>The terms and conditions governing Plug-ins and Fragments should be contained in files named "about.html" ("Abouts"). The terms and conditions governing Features and Included Features should be contained in files named "license.html" ("Feature Licenses"). Abouts and Feature Licenses may be located in any directory of a Download or Module including, but not limited to the following locations:</p>

<ul>

<li>The top-level (root) directory</li>

<li>Plug-in and Fragment directories</li>

<li>Inside Plug-ins and Fragments packaged as JARs</li>

<li>Sub-directories of the directory named "src" of certain Plug-ins</li>

<li>Feature directories</li>

</ul>

<p>Note: if a Feature made available by the Eclipse Foundation is installed using the Eclipse Update Manager, you must agree to a license ("Feature Update License") during the installation process. If the Feature contains Included Features, the Feature Update License should either provide you with the terms and conditions governing the Included Features or inform you where you can locate them. Feature Update Licenses may be found in the "license" property of files named "feature.properties" found within a Feature.

Such Abouts, Feature Licenses, and Feature Update Licenses contain the terms and conditions (or references to such terms and conditions) that govern your use of the associated Content in that directory.</p>

<p>THE ABOUTS, FEATURE LICENSES, AND FEATURE UPDATE LICENSES MAY REFER TO THE EPL OR OTHER LICENSE AGREEMENTS, NOTICES OR TERMS AND CONDITIONS. SOME OF THESE OTHER LICENSE AGREEMENTS MAY INCLUDE (BUT ARE NOT LIMITED TO):</p>



```

<ul>
  <li>Common Public License Version 1.0 (available at <a href="http://
www.eclipse.org/legal/cpl-v10.html">http://www.eclipse.org/legal/cpl-v10.html</a></li>
  <li>Apache Software License 1.1 (available at <a href="http://www.apache.org/
licenses/LICENSE">http://www.apache.org/licenses/LICENSE</a></li>
  <li>Apache Software License 2.0 (available at <a href="http://www.apache.org/
licenses/LICENSE-2.0">http://www.apache.org/licenses/LICENSE-2.0</a></li>
  <li>IBM Public License 1.0 (available at <a href="http://oss.software.ibm.com/
developerworks/opensource/license10.html">http://oss.software.ibm.com/developerworks/
opensource/license10.html</a></li>
  <li>Metro Link Public License 1.00 (available at <a href="http://www.opengroup.org/
openmotif/supporters/metrolink/license.html">http://www.opengroup.org/openmotif/
supporters/metrolink/license.html</a></li>
  <li>Mozilla Public License Version 1.1 (available at <a href="http://
www.mozilla.org/MPL/MPL-1.1.html">http://www.mozilla.org/MPL/MPL-1.1.html</a></li>
</ul>

```

```

<p>IT IS YOUR OBLIGATION TO READ AND ACCEPT ALL SUCH TERMS AND
CONDITIONS PRIOR TO USE OF THE CONTENT. If no About, Feature License,
or Feature Update License is provided, please
contact the Eclipse Foundation to determine what terms and conditions
govern that particular Content.</p>

```

```

<h3>Cryptography</h3>

```

```

<p>Content may contain encryption software. The country in which you
are currently may have restrictions on the import, possession, and use,
and/or re-export to another country, of encryption software. BEFORE
using any encryption software, please check the country's laws,
regulations and policies concerning the import, possession, or use, and
re-export of encryption software, to see if this is permitted.</p>

```

```

<small>Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in
the United States, other countries, or both.</small>
</body></html>

```

```

Same Apache License as top level

```

```

-----
JTS

```

```

# JTS Topology Suite Licensing

```

```

May 30th, 2017

```

```

## Project Licenses

```

```

The Eclipse Foundation makes available all content in this project ("Content"). Unless
otherwise indicated below, the Content is provided to you under the terms and
conditions of either the [Eclipse Public License 1.0] (https://www.eclipse.org/legal/
epl-v10.html) ("EPL") or the [Eclipse Distribution License 1.0] (http://
www.eclipse.org/org/documents/edl-v10.php) (a BSD Style License). For purposes of the
EPL, "Program" will mean the Content.

```

```

If you did not receive this Content directly from the Eclipse Foundation, the Content
is being redistributed by another party ("Redistributor") and different terms and
conditions may apply to your use of any object code in the Content. Check the
Redistributor's license that was provided with the Content. If no such license exists,
contact the Redistributor. Unless otherwise indicated below, the terms and conditions
of the EPL still apply to any source code in the Content and such source code may be
obtained at http://www.eclipse.org.

```

---

## ## Third Party Content

The Content includes items that have been sourced from third parties as set out below. If you did not receive this Content directly from the Eclipse Foundation, the following is provided for informational purposes only, and you should look to the Redistributor's license for terms and conditions of use.

### ### Jdom-contrib version 1.1.3

The JTS tests module contains source from JDOM Contrib 1.1.3 which is available under the Jdom License [1]. The two files are LineNumberElement.java and LineNumberSAXHandler.java.

Typical users of this library will not need to depend on this module.

[1] <https://github.com/hunterhacker/jdom/blob/master/LICENSE.txt>

### ### GeoTools

JTS includes some code from the GeoTools project. This code has been licensed to the JTS project under the OSGeo BSD License [2] by the GeoTools PSC [3,4].

[2] <https://www.osgeo.org/sites/osgeo.org/files/Page/osgeo-bsd-license.txt>

[3] <https://github.com/geotools/geotools/wiki/JTS-ORA-Contribution>

[4] <https://github.com/geotools/geotools/wiki/JTS-Shapefile-Contribution>

Copyright (c) 2007, Eclipse Foundation, Inc. and its licensors.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Log4j - Fourth party dependency for lucene-luke

Apache Log4j  
Copyright 1999-2017 Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

ResolverUtil.java  
Copyright 2005-2006 Tim Fennell

Dumbster SMTP test server  
Copyright 2004 Jason Paul Kitchen

TypeUtil.java  
Copyright 2002-2012 Ramnivas Laddad, Juergen Hoeller, Chris Beams

picocli (<http://picocli.info>)  
Copyright 2017 Remko Popma

Uses same Apache 2 license as top level component

-----

Morfologik - Fourth party dependency for lucene-analyzers-morfologik

This product includes BSD-licensed software developed by Dawid Weiss and Marcin Miłkowski  
(<http://morfologik.blogspot.com/>).

Copyright (c) 2006 Dawid Weiss  
Copyright (c) 2007-2016 Dawid Weiss, Marcin Miłkowski  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice,  
this list of conditions and the following disclaimer in the documentation  
and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors  
may be used to endorse or promote products derived from this software  
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND  
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED  
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR  
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES  
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;  
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON  
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS  
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Nekohtml - Fourth party dependency for lucene-benchmark

CyberNeko HTML Parser

(C) Copyright 2002-2009, Andy Clark, Marc Guillemot. All rights reserved.

NekoHTML is a simple HTML scanner and tag balancer that enables application programmers to parse HTML documents and access the information using standard XML interfaces. The parser can scan HTML files and "fix up" many common mistakes that human (and computer) authors make in writing HTML documents. NekoHTML adds missing parent elements; automatically closes elements with optional end tags; and can handle mismatched inline element tags.

NekoHTML is written using the Xerces Native Interface (XNI) that is the foundation of the Xerces2 implementation. This enables you to use the NekoHTML parser with existing XNI tools without modification or rewriting code.

Uses same Apache 2 license as top level component

-----

Opennlp - Fourth party dependency for lucene-analyzers-opennlp

Apache OpenNLP Tools

Copyright 2015 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Uses same Apache 2 license as top level component

-----

S2-geometry-library - Fourth party dependency for lucene-spatial-extras

Has no Notices/Copyright file

Uses same Apache 2 license as top level component

-----

Xercesimpl - Fourth party optional XML parser implementation to some lucene libraries, not required when platform provides its own implementation

```
=====
== NOTICE file corresponding to section 4(d) of the Apache License, ==
== Version 2.0, in this case for the Apache Xerces Java distribution. ==
=====
```

Apache Xerces Java

Copyright 1999-2007 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Portions of this software were originally based on the following:

- software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.
- software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.
- voluntary contributions made by Paul Eng on behalf of the Apache Software Foundation that were originally developed at iClick, Inc., software copyright (c) 1999.

Uses same Apache 2 license as top level component

```
-----
unicode
==license
UNICODE LICENSE V3
```

#### COPYRIGHT AND PERMISSION NOTICE

Copyright © 1991-2023 Unicode, Inc.

NOTICE TO USER: Carefully read the following legal agreement. BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING DATA FILES, AND/OR SOFTWARE, YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

Permission is hereby granted, free of charge, to any person obtaining a copy of data files and any associated documentation (the "Data Files") or software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that either (a) this copyright and permission notice appear with all copies of the Data Files or Software, or (b) this copyright and permission notice appear in associated Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.

IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

```
==copyright
Copyright © 1991-2023 Unicode, Inc. All rights reserved.
```

### lucene-core

**Vendor:** The Apache Software Foundation

**Version:** 8.11.2

```
----- Top-level license -----
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/
TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION
1. Definitions.
"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.
"Licenser" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.
```

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct

or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly

negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from unicode conversion examples available at <http://www.unicode.org/Public/PROGRAMS/CVTUTF>. Here is the copyright from those sources:

```
/*
 * Copyright 2001-2004 Unicode, Inc.
 *
 * Disclaimer
 *
 * This source code is provided as is by Unicode, Inc. No claims are
 * made as to fitness for any particular purpose. No warranties of any
 * kind are expressed or implied. The recipient agrees to determine
 * applicability of information provided. If this file has been
 * purchased on magnetic or optical media from Unicode, Inc., the
 * sole remedy for any claim will be exchange of defective media
 * within 90 days of receipt.
 *
 * Limitations on Rights to Redistribute This Code
 *
 * Unicode, Inc. hereby grants the right to freely use the information
 * supplied in this file in the creation of products supporting the
 * Unicode Standard, and to make copies of this file in any form
 * for internal or external distribution as long as this notice
```



```

* remains attached.
*/
Some code in core/src/java/org/apache/lucene/util/ArrayUtil.java was
derived from Python 2.4.2 sources available at
http://www.python.org. Full license is here:
http://www.python.org/download/releases/2.4.2/license/
Some code in core/src/java/org/apache/lucene/util/UnicodeUtil.java was
derived from Python 3.1.2 sources available at
http://www.python.org. Full license is here:
http://www.python.org/download/releases/3.1.2/license/
Some code in core/src/java/org/apache/lucene/util/automaton was
derived from Brics automaton sources available at
www.brics.dk/automaton/. Here is the copyright from those sources:
/*
* Copyright (c) 2001-2009 Anders Moeller
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
* documentation and/or other materials provided with the distribution.
* 3. The name of the author may not be used to endorse or promote products
* derived from this software without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/
The levenshtein automata tables in core/src/java/org/apache/lucene/util/automaton
were automatically generated with the moman/finenight FSA package.
Here is the copyright for those sources:
# Copyright (c) 2010, Jean-Philippe Barrette-LaPierre, <jpb@rrette.com>
#
# Permission is hereby granted, free of charge, to any person
# obtaining a copy of this software and associated documentation
# files (the "Software"), to deal in the Software without
# restriction, including without limitation the rights to use,
# copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the
# Software is furnished to do so, subject to the following
# conditions:
#
# The above copyright notice and this permission notice shall be
# included in all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
# EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
# OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
# NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
# HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,

```

```
# WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
# FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
# OTHER DEALINGS IN THE SOFTWARE.
Some code in core/src/java/org/apache/lucene/util/UnicodeUtil.java was
derived from ICU (http://www.icu-project.org)
The full license is available here:
https://github.com/unicode-org/icu/blob/main/icu4c/LICENSE
/*
 * Copyright (C) 1999-2010, International Business Machines
 * Corporation and others. All Rights Reserved.
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, and/or sell copies of the
 * Software, and to permit persons to whom the Software is furnished to do so,
 * provided that the above copyright notice(s) and this permission notice appear
 * in all copies of the Software and that both the above copyright notice(s) and
 * this permission notice appear in supporting documentation.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.
 * IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE
 * LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR
 * ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER
 * IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
 * OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
 *
 * Except as contained in this notice, the name of a copyright holder shall not
 * be used in advertising or otherwise to promote the sale, use or other
 * dealings in this Software without prior written authorization of the
 * copyright holder.
 */
The following license applies to the Snowball stemmers:
Copyright (c) 2001, Dr Martin Porter
Copyright (c) 2002, Richard Boulton
All rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
 * Redistributions of source code must retain the above copyright notice,
 * this list of conditions and the following disclaimer.
 * Redistributions in binary form must reproduce the above copyright
 * notice, this list of conditions and the following disclaimer in the
 * documentation and/or other materials provided with the distribution.
 * Neither the name of the copyright holders nor the names of its contributors
 * may be used to endorse or promote products derived from this software
 * without specific prior written permission.
THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The following license applies to the KStemmer:
Copyright © 2003,
Center for Intelligent Information Retrieval,
```

University of Massachusetts, Amherst.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The names "Center for Intelligent Information Retrieval" and "University of Massachusetts" must not be used to endorse or promote products derived from this software without prior written permission. To obtain permission, contact [info@ciir.cs.umass.edu](mailto:info@ciir.cs.umass.edu).

THIS SOFTWARE IS PROVIDED BY UNIVERSITY OF MASSACHUSETTS AND OTHER CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the Morfologik project:

Copyright (c) 2006 Dawid Weiss

Copyright (c) 2007-2011 Dawid Weiss, Marcin Miłkowski

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

The dictionary comes from Morfologik project. Morfologik uses data from Polish [ispell/myspell](http://www.sjp.pl/slownik/en/) dictionary hosted at <http://www.sjp.pl/slownik/en/> and is licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike. The part-of-speech tags were added in Morfologik project and are not found in the data from [sjp.pl](http://www.sjp.pl). The tagset is similar to IPI PAN tagset.

---

The following license applies to the Morfeusz project,

used by [org.apache.lucene.analysis.morfologik](http://org.apache.lucene.analysis.morfologik).

BSD-licensed dictionary of Polish (SGJP)

<http://sgjp.pl/morfeusz/>

Copyright © 2011 Zygmunt Saloni, Włodzimierz Gruszczyński,

Marcin Woliński, Robert Wołosz

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>) compression format for Lucene's DataInput/DataOutput abstractions.

LZ4 Library

Copyright (c) 2011-2016, Yann Collet

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## lucene-analyzers-common

**Vendor:** The Apache Software Foundation

**Version:** 8.11.2

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,

and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the

Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work

by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from unicode conversion examples available at <http://www.unicode.org/Public/PROGRAMS/CVTUTF>. Here is the copyright from those sources:

```
/*
 * Copyright 2001-2004 Unicode, Inc.
 *
 * Disclaimer
 *
 * This source code is provided as is by Unicode, Inc. No claims are
 * made as to fitness for any particular purpose. No warranties of any
 * kind are expressed or implied. The recipient agrees to determine
 * applicability of information provided. If this file has been
 * purchased on magnetic or optical media from Unicode, Inc., the
 * sole remedy for any claim will be exchange of defective media
 * within 90 days of receipt.
 *
 * Limitations on Rights to Redistribute This Code
 *
 * Unicode, Inc. hereby grants the right to freely use the information
 * supplied in this file in the creation of products supporting the
 * Unicode Standard, and to make copies of this file in any form
 * for internal or external distribution as long as this notice
 * remains attached.
 */
```

Some code in `core/src/java/org/apache/lucene/util/ArrayUtil.java` was derived from Python 2.4.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/2.4.2/license/>

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from Python 3.1.2 sources available at <http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/3.1.2/license/>

Some code in `core/src/java/org/apache/lucene/util/automaton` was derived from Brics automaton sources available at [www.brics.dk/automaton/](http://www.brics.dk/automaton/). Here is the copyright from those sources:

```
/*
 * Copyright (c) 2001-2009 Anders Moeller
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
```



```

* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. The name of the author may not be used to endorse or promote products
*   derived from this software without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/

```

The levenshtein automata tables in `core/src/java/org/apache/lucene/util/automaton` were automatically generated with the `moman/finenight` FSA package. Here is the copyright for those sources:

```

# Copyright (c) 2010, Jean-Philippe Barrette-LaPierre, <jpb@rrette.com>
#
# Permission is hereby granted, free of charge, to any person
# obtaining a copy of this software and associated documentation
# files (the "Software"), to deal in the Software without
# restriction, including without limitation the rights to use,
# copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the
# Software is furnished to do so, subject to the following
# conditions:
#
# The above copyright notice and this permission notice shall be
# included in all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
# EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
# OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
# NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
# HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
# WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
# FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
# OTHER DEALINGS IN THE SOFTWARE.

```

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from ICU (<http://www.icu-project.org>)

The full license is available here:

<http://source.icu-project.org/repos/icu/icu/trunk/license.html>

```

/*
* Copyright (C) 1999-2010, International Business Machines
* Corporation and others. All Rights Reserved.
*
* Permission is hereby granted, free of charge, to any person obtaining a copy
* of this software and associated documentation files (the "Software"), to deal
* in the Software without restriction, including without limitation the rights

```

\* to use, copy, modify, merge, publish, distribute, and/or sell copies of the  
 \* Software, and to permit persons to whom the Software is furnished to do so,  
 \* provided that the above copyright notice(s) and this permission notice appear  
 \* in all copies of the Software and that both the above copyright notice(s) and  
 \* this permission notice appear in supporting documentation.  
 \*  
 \* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
 \* IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
 \* FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.  
 \* IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE  
 \* LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR  
 \* ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER  
 \* IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT  
 \* OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.  
 \*  
 \* Except as contained in this notice, the name of a copyright holder shall not  
 \* be used in advertising or otherwise to promote the sale, use or other  
 \* dealings in this Software without prior written authorization of the  
 \* copyright holder.  
 \*/

The following license applies to the Snowball stemmers:

Copyright (c) 2001, Dr Martin Porter  
 Copyright (c) 2002, Richard Boulton  
 All rights reserved.

Redistribution and use in source and binary forms, with or without  
 modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
 \* this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright  
 \* notice, this list of conditions and the following disclaimer in the  
 \* documentation and/or other materials provided with the distribution.
- \* Neither the name of the copyright holders nor the names of its contributors  
 \* may be used to endorse or promote products derived from this software  
 \* without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"  
 AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE  
 IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
 DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE  
 FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
 SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER  
 CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,  
 OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
 OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the KStemmer:

Copyright © 2003,  
 Center for Intelligent Information Retrieval,  
 University of Massachusetts, Amherst.  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
 are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this

list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The names "Center for Intelligent Information Retrieval" and "University of Massachusetts" must not be used to endorse or promote products derived from this software without prior written permission. To obtain permission, contact [info@ciir.cs.umass.edu](mailto:info@ciir.cs.umass.edu).

THIS SOFTWARE IS PROVIDED BY UNIVERSITY OF MASSACHUSETTS AND OTHER CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the Morfologik project:

Copyright (c) 2006 Dawid Weiss  
 Copyright (c) 2007-2011 Dawid Weiss, Marcin Miłkowski  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

The dictionary comes from Morfologik project. Morfologik uses data from Polish [ispell/myspell](http://www.sjp.pl/slownik/en/) dictionary hosted at <http://www.sjp.pl/slownik/en/> and is licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike. The part-of-speech tags were added in Morfologik project and are not found in the data from [sjp.pl](http://www.sjp.pl). The tagset is similar to IPI PAN

tagset.

---

The following license applies to the Morfeusz project,  
used by org.apache.lucene.analysis.morfologik.

BSD-licensed dictionary of Polish (SGJP)  
<http://sgjp.pl/morfeusz/>

Copyright © 2011 Zygmunt Saloni, Włodzimierz Gruszczynski,  
Marcin Woliński, Robert Wołosz

All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are  
met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the  
distribution.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS  
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED  
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR CONTRIBUTORS BE  
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR  
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF  
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR  
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,  
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE  
OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN  
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java  
implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>)  
compression format for Lucene's DataInput/DataOutput abstractions.

LZ4 Library  
Copyright (c) 2011-2016, Yann Collet  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this  
list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this  
list of conditions and the following disclaimer in the documentation and/or  
other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND  
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Lucene Notice  
-----

Apache Lucene  
Copyright 2001-2021 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Includes software from other Apache Software Foundation projects,  
including, but not limited to:

- Apache Ant
- Apache Jakarta Regexp
- Apache Commons
- Apache Xerces

ICU4J, (under analysis/icu) is licensed under an MIT styles license  
and Copyright (c) 1995-2008 International Business Machines Corporation and others

Some data files (under analysis/icu/src/data) are derived from Unicode data such  
as the Unicode Character Database. See <http://unicode.org/copyright.html> for more  
details.

Brics Automaton (under core/src/java/org/apache/lucene/util/automaton) is  
BSD-licensed, created by Anders Møller. See <http://www.brics.dk/automaton/>

The levenshtein automata tables (under core/src/java/org/apache/lucene/util/automaton)  
were  
automatically generated with the moman/finenight FSA library, created by  
Jean-Philippe Barrette-LaPierre. This library is available under an MIT license,  
see <http://sites.google.com/site/rrettesite/moman> and  
<http://bitbucket.org/jpbarrette/moman/overview/>

The class org.apache.lucene.util.WeakIdentityMap was derived from  
the Apache CXF project and is Apache License 2.0.

The class org.apache.lucene.util.compress.LZ4 is a Java rewrite of the LZ4  
compression library (<https://github.com/lz4/lz4/tree/dev/lib>) that is licensed  
under the 2-clause BSD license.  
(<https://opensource.org/licenses/bsd-license.php>)

The Google Code Prettify is Apache License 2.0.  
See <http://code.google.com/p/google-code-prettify/>

JUnit (junit-4.10) is licensed under the Common Public License v. 1.0  
See <http://junit.sourceforge.net/cpl-v10.html>

This product includes code (JaspellTernarySearchTrie) from Java Spelling Checkin  
g Package (jaspell): <http://jaspell.sourceforge.net/>  
License: The BSD License (<http://www.opensource.org/licenses/bsd-license.php>)

The snowball stemmers in  
analysis/common/src/java/net/sf/snowball  
were developed by Martin Porter and Richard Boulton.  
The snowball stopword lists in  
analysis/common/src/resources/org/apache/lucene/analysis/snowball  
were developed by Martin Porter and Richard Boulton.  
The full snowball package is available from  
<http://snowball.tartarus.org/>

The KStem stemmer in  
analysis/common/src/org/apache/lucene/analysis/en  
was developed by Bob Krovetz and Sergio Guzman-Lara (CIIR-UMass Amherst)  
under the BSD-license.

The Arabic, Persian, Romanian, Bulgarian, Hindi and Bengali analyzers (common) come with a default stopword list that is BSD-licensed created by Jacques Savoy. These files reside in:  
analysis/common/src/resources/org/apache/lucene/analysis/ar/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

The German, Spanish, Finnish, French, Hungarian, Italian, Portuguese, Russian and Swedish light stemmers (common) are based on BSD-licensed reference implementations created by Jacques Savoy and Ljiljana Dolamic. These files reside in:  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

The Stempel analyzer (stempel) includes BSD-licensed software developed by the Egothor project <http://egothor.sf.net/>, created by Leo Galambos, Martin Kvapil, and Edmond Nolan.

The Polish analyzer (stempel) comes with a default stopword list that is BSD-licensed created by the Carrot2 project. The file resides in stempel/src/resources/org/apache/lucene/analysis/pl/stopwords.txt.  
See <http://project.carrot2.org/license.html>.

The SmartChineseAnalyzer source code (smartcn) was provided by Xiaoping Gao and copyright 2009 by [www.imdict.net](http://www.imdict.net).

WordBreakTestUnicode\_\*.java (under modules/analysis/common/src/test/) is derived from Unicode data such as the Unicode Character Database. See <http://unicode.org/copyright.html> for more details.

The Morfologik analyzer (morfologik) includes BSD-licensed software developed by Dawid Weiss and Marcin Miłkowski (<http://morfologik.blogspot.com/>).

Morfologik uses data from Polish ispell/myspell dictionary (<http://www.sjp.pl/slownik/en/>) licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike.

Morfologic includes data from BSD-licensed dictionary of Polish (SGJP) (<http://sgjp.pl/morfeusz/>)

```
=====
Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration
=====
```

This software includes a binary and/or source version of data from

mecab-ipadic-2.7.0-20070801

which can be obtained from

<http://atilika.com/releases/mecab-ipadic/mecab-ipadic-2.7.0-20070801.tar.gz>

or

<http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/mecab-ipadic-2.7.0-20070801.tar.gz>

```
=====
mecab-ipadic-2.7.0-20070801 Notice
=====
```

Nara Institute of Science and Technology (NAIST), the copyright holders, disclaims all warranties with regard to this software, including all implied warranties of merchantability and fitness, in no event shall NAIST be liable for any special, indirect or consequential damages or any damages whatsoever resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortuous action, arising out of or in connection with the use or performance of this software.

A large portion of the dictionary entries originate from ICOT Free Software. The following conditions for ICOT Free Software applies to the current dictionary as well.

Each User may also freely distribute the Program, whether in its original form or modified, to any third party or parties, PROVIDED that the provisions of Section 3 ("NO WARRANTY") will ALWAYS appear on, or be attached to, the Program, which is distributed substantially in the same form as set out herein and that such intended distribution, if actually made, will neither violate or otherwise contravene any of the laws and regulations of the countries having jurisdiction over the User or the intended distribution itself.

NO WARRANTY

The program was produced on an experimental basis in the course of the research and development conducted during the project and is provided to users as so produced on an experimental basis. Accordingly, the program is provided without any warranty whatsoever, whether express, implied, statutory or otherwise. The term "warranty" used herein

includes, but is not limited to, any warranty of the quality, performance, merchantability and fitness for a particular purpose of the program and the nonexistence of any infringement or violation of any right of any third party.

Each user of the program will agree and understand, and be deemed to have agreed and understood, that there is no warranty whatsoever for the program and, accordingly, the entire risk arising from or otherwise connected with the program is assumed by the user.

Therefore, neither ICOT, the copyright holder, or any other organization that participated in or was otherwise related to the development of the program and their respective officials, directors, officers and other employees shall be held liable for any and all damages, including, without limitation, general, special, incidental and consequential damages, arising out of or otherwise in connection with the use or inability to use the program or any product, material or result produced or otherwise obtained by using the program, regardless of whether they have been advised of, or otherwise had knowledge of, the possibility of such damages at any time during the project or thereafter. Each user will be deemed to have agreed to the foregoing by his or her commencement of use of the program. The term "use" as used herein includes, but is not limited to, the use, modification, copying and distribution of the program and the production of secondary products from the program.

In the case where the program, whether in its original form or modified, was distributed or delivered to or received by a user from any person, organization or entity other than ICOT, unless it makes or grants independently of ICOT any specific warranty to the user in writing, such person, organization or entity, will also be exempted from and not be held liable to the user for any such damages as noted above as far as the program is concerned.

```
=====
Nori Korean Morphological Analyzer - Apache Lucene Integration
=====
```

This software includes a binary and/or source version of data from

mecab-ko-dic-2.0.3-20170922

which can be obtained from

<https://bitbucket.org/eunjeon/mecab-ko-dic/downloads/mecab-ko-dic-2.0.3-20170922.tar.gz>

```
-----
```

Spatial4j - Fourth party dependency for some classes in lucene-spatial-extras

License : Same Apache2 license as for Lucene

Notice :

This content is produced and maintained by the Eclipse Spatial4j project. LocationTech Spatial4j, and Spatial4j are trademarks of the Eclipse Foundation.

```
-----
```

Carrotsearch hppc - Fourth party dependency for some classes in lucene-facet and



lucent-util

License : Same Apache2 license as for Lucene

Notice :

Copyright 2010-2013, Carrot Search s.c., Boznicza 11/56, Poznan, Poland

ACKNOWLEDGEMENT

=====

HPPC borrowed code, ideas or both from:

- \* Apache Lucene, <http://lucene.apache.org/>  
(Apache license)
- \* Fastutil, <http://fastutil.di.unimi.it/>  
(Apache license)
- \* Kolobokey, <https://github.com/OpenHFT/Kolobokey>  
(Apache license)

-----

Ant

Same Apache license as top level

Additional license:

W3C® SOFTWARE NOTICE AND LICENSE

<http://www.w3.org/Consortium/Legal/2002/copyright-software-20021231>

This work (and included software, documentation such as READMEs, or other related items) is being provided by the copyright holders under the following license. By obtaining, using and/or copying this work, you (the licensee) agree that you have read, understood, and will comply with the following terms and conditions.

Permission to copy, modify, and distribute this software and its documentation, with or without modification, for any purpose and without fee or royalty is hereby granted, provided that you include the following on ALL copies of the software and documentation or portions thereof, including modifications:

1. The full text of this NOTICE in a location viewable to users of the redistributed or derivative work.
2. Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, the W3C Software Short Notice should be included (hypertext is preferred, text is permitted) within the body of any redistributed or derivative code.
3. Notice of any changes or modifications to the files, including the date changes were made. (We recommend you provide URIs to the location from which the code is derived.)

THIS SOFTWARE AND DOCUMENTATION IS PROVIDED "AS IS," AND COPYRIGHT HOLDERS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE OR DOCUMENTATION WILL NOT INFRINGE ANY THIRD PARTY PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS.

COPYRIGHT HOLDERS WILL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY USE OF THE SOFTWARE OR DOCUMENTATION.

The name and trademarks of copyright holders may NOT be used in advertising or

publicity pertaining to the software without specific, written prior permission. Title to copyright in this software and any associated documentation will at all times remain with copyright holders.

---

This formulation of W3C's notice and license became active on December 31 2002. This version removes the copyright ownership notice such that this license can be used with materials other than those owned by the W3C, reflects that ERCIM is now a host of the W3C, includes references to this specific dated version of the license, and removes the ambiguous grant of "use". Otherwise, this version is the same as the previous version and is written so as to preserve the Free Software Foundation's assessment of GPL compatibility and OSI's certification under the Open Source Definition. Please see our Copyright FAQ for common questions about using materials from our site, including specific terms and conditions for packages like libwww, Amaya, and Jigsaw. Other questions about this notice can be directed to [site-policy@w3.org](mailto:site-policy@w3.org).

Joseph Reagle <[site-policy@w3.org](mailto:site-policy@w3.org)>

This license came from: <http://www.megginson.com/SAX/copying.html>  
 However please note future versions of SAX may be covered  
 under <http://saxproject.org/?selected=pd>

SAX2 is Free!

I hereby abandon any property rights to SAX 2.0 (the Simple API for XML), and release all of the SAX 2.0 source code, compiled code, and documentation contained in this distribution into the Public Domain. SAX comes with NO WARRANTY or guarantee of fitness for any purpose.

David Megginson, [david@megginson.com](mailto:david@megginson.com)  
 2000-05-05

Notice.txt:

```
=====
== NOTICE file corresponding to the section 4 d of ==
== the Apache License, Version 2.0, ==
== in this case for the Apache Ant distribution. ==
=====
```

Apache Ant  
 Copyright 1999-2008 The Apache Software Foundation

This product includes software developed by  
 The Apache Software Foundation (<http://www.apache.org/>).

This product includes also software developed by :  
 - the W3C consortium (<http://www.w3c.org>) ,  
 - the SAX project (<http://www.saxproject.org>)

The <sync> task is based on code Copyright (c) 2002, Landmark Graphics Corp that has been kindly donated to the Apache Software Foundation.

Portions of this software were originally based on the following:  
 - software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.  
 - software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.  
 - voluntary contributions made by Paul Eng on behalf of the

---

Apache Software Foundation that were originally developed at iClick, Inc.,  
software copyright (c) 1999.

-----  
Antlr4 - Fourth party dependency for lucene-expressions

License and Notice :

[The "BSD license"]  
Copyright (c) 2015 Terence Parr, Sam Harwell  
All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions  
are met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products  
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR  
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES  
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.  
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,  
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT  
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,  
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY  
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF  
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Asm - Fourth party dependency for lucene-expressions

Copyright (c) 2012 France Télécom  
All rights reserved.

Same BSD license as above

-----  
Commons-codec - Fourth party dependency for lucene-analyzers-phonetic

Apache Commons Codec  
Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

-----  
src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java contains  
test data from <http://aspell.sourceforge.net/test/batch0.tab>.

Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org). Verbatim copying

and distribution of this entire article is permitted in any medium,  
provided this notice is preserved.

-----  
Same Apache2 license as for top-level Lucene

-----  
Commons-compress - Fourth party dependency for lucene-benchmark

Apache Commons Compress  
Copyright 2002-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----  
Apache Commons Logging

Apache Commons Logging  
Copyright 2003-2013 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Same Apache2 license as for top-level Lucene

-----  
Elegant-icon-font - Fourth party dependency for lucene-luke

The Elegant Icon Font web page: <https://www.elegantthemes.com/blog/resources/elegant-icon-font>

These icons are dual licensed under the GPL 2.0 and MIT, and are completely free  
to use.

The MIT License (MIT)

Copyright (c) <2013> <Elegant Themes, Inc.>

Permission is hereby granted, free of charge, to any person obtaining a copy  
of this software and associated documentation files (the "Software"), to deal  
in the Software without restriction, including without limitation the rights  
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell  
copies of the Software, and to permit persons to whom the Software is  
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in  
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE  
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER  
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,  
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN  
THE SOFTWARE.

-----  
httpclient

== license

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to

communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and

do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls.  
See <http://www.jcip.net> and the Creative Commons Attribution License  
(<http://creativecommons.org/licenses/by/2.5>)

== copyright

Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS  
Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

httpcore - Fourth party dependency for lucene-replicator

==license

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,  
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by  
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all  
other entities that control, are controlled by, or are under common  
control with that entity. For the purposes of this definition,  
"control" means (i) the power, direct or indirect, to cause the  
direction or management of such entity, whether by contract or  
otherwise, or (ii) ownership of fifty percent (50%) or more of the  
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity  
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,  
including but not limited to software source code, documentation  
source, and configuration files.

"Object" form shall mean any form resulting from mechanical  
transformation or translation of a Source form, including but  
not limited to compiled object code, generated documentation,  
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or  
Object form, made available under the License, as indicated by a  
copyright notice that is included in or attached to the work  
(an example is provided in the Appendix below).



"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and

- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill,

work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

#### END OF TERMS AND CONDITIONS

This project contains annotations derived from JCIP-ANNOTATIONS Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net> and the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.5>)

==copyright  
Apache HttpComponents Client  
Copyright 1999-2011 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

This project contains annotations derived from JCIP-ANNOTATIONS Copyright (c) 2005 Brian Goetz and Tim Peierls. See <http://www.jcip.net>

-----

Icu4j - Fourth party dependency for lucene-analyzers-icu

ICU4J, (under lucene/analysis/icu) is licensed under an MIT style license (modules/analysis/icu/lib/icu4j-LICENSE-BSD\_LIKE.txt) and Copyright (c) 1995-2012 International Business Machines Corporation and others

Copyright (c) 1995-2012 International Business Machines Corporation and others

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT

OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

-----

Slf4j, jcl-over-slf4j

```
=====
==  SLF4J Notice -- http://www.slf4j.org/license.html  ==
=====
```

Copyright (c) 2004-2008 QOS.ch  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----

Jetty

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0//EN">
<html><head>
```

```
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Eclipse.org Software User Agreement</title>
</head><body lang="EN-US" link="blue" vlink="purple">
<h2>Eclipse Foundation Software User Agreement</h2>
<p>March 17, 2005</p>
```

```
<h3>Usage Of Content</h3>
```

```
<p>THE ECLIPSE FOUNDATION MAKES AVAILABLE SOFTWARE, DOCUMENTATION, INFORMATION
AND/OR OTHER MATERIALS FOR OPEN SOURCE PROJECTS
(COLLECTIVELY "CONTENT"). USE OF THE CONTENT IS GOVERNED BY THE TERMS AND
CONDITIONS OF THIS AGREEMENT AND/OR THE TERMS AND
CONDITIONS OF LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW.
BY USING THE CONTENT, YOU AGREE THAT YOUR USE
```

OF THE CONTENT IS GOVERNED BY THIS AGREEMENT AND/OR THE TERMS AND CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR

NOTICES INDICATED OR REFERENCED BELOW. IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS AGREEMENT AND THE TERMS AND

CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW, THEN YOU MAY NOT USE THE CONTENT.</p>

### Applicable Licenses

Unless otherwise indicated, all Content made available by the Eclipse Foundation is provided to you under the terms and conditions of the Eclipse Public License Version 1.0 ("EPL"). A copy of the EPL is provided with this Content and is also available at <http://www.eclipse.org/legal/epl-v10.html>.

For purposes of the EPL, "Program" will mean the Content.</p>

Content includes, but is not limited to, source code, object code, documentation and other files maintained in the Eclipse.org CVS repository ("Repository") in CVS modules ("Modules") and made available as downloadable archives ("Downloads").</p>

#### Content Structure

- Content may be structured and packaged into modules to facilitate delivering, extending, and upgrading the Content. Typical modules may include plug-ins ("Plug-ins"), plug-in fragments ("Fragments"), and features ("Features").</li>

- Each Plug-in or Fragment may be packaged as a sub-directory or JAR (Java Archive) in a directory named "plugins".</li>

- A Feature is a bundle of one or more Plug-ins and/or Fragments and associated material. Each Feature may be packaged as a sub-directory in a directory named "features". Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of the Plug-ins and/or Fragments associated with that Feature.</li>

- Features may also include other Features ("Included Features"). Within a Feature, files named "feature.xml" may contain a list of the names and version numbers of Included Features.</li>

#### File Naming

The terms and conditions governing Plug-ins and Fragments should be contained in files named "about.html" ("Abouts"). The terms and conditions governing Features and Included Features should be contained in files named "license.html" ("Feature Licenses"). Abouts and Feature Licenses may be located in any directory of a Download or Module including, but not limited to the following locations:</p>

- The top-level (root) directory</li>
- Plug-in and Fragment directories</li>
- Inside Plug-ins and Fragments packaged as JARs</li>
- Sub-directories of the directory named "src" of certain Plug-ins</li>
- Feature directories</li>

Note: if a Feature made available by the Eclipse Foundation is installed using the Eclipse Update Manager, you must agree to a license ("Feature Update License") during the installation process. If the Feature contains Included Features, the Feature Update License should either provide you with the terms and

conditions governing the Included Features or inform you where you can locate them. Feature Update Licenses may be found in the "license" property of files named "feature.properties" found within a Feature. Such Abouts, Feature Licenses, and Feature Update Licenses contain the terms and conditions (or references to such terms and conditions) that govern your use of the associated Content in that directory.</p>

<p>THE ABOUTS, FEATURE LICENSES, AND FEATURE UPDATE LICENSES MAY REFER TO THE EPL OR OTHER LICENSE AGREEMENTS, NOTICES OR TERMS AND CONDITIONS. SOME OF THESE OTHER LICENSE AGREEMENTS MAY INCLUDE (BUT ARE NOT LIMITED TO):</p>

- <li>Common Public License Version 1.0 (available at <a href="http://www.eclipse.org/legal/cpl-v10.html">http://www.eclipse.org/legal/cpl-v10.html</a></li>
- <li>Apache Software License 1.1 (available at <a href="http://www.apache.org/licenses/LICENSE">http://www.apache.org/licenses/LICENSE</a></li>
- <li>Apache Software License 2.0 (available at <a href="http://www.apache.org/licenses/LICENSE-2.0">http://www.apache.org/licenses/LICENSE-2.0</a></li>
- <li>IBM Public License 1.0 (available at <a href="http://oss.software.ibm.com/developerworks/opensource/license10.html">http://oss.software.ibm.com/developerworks/opensource/license10.html</a></li>
- <li>Metro Link Public License 1.00 (available at <a href="http://www.opengroup.org/openmotif/supporters/metrolink/license.html">http://www.opengroup.org/openmotif/supporters/metrolink/license.html</a></li>
- <li>Mozilla Public License Version 1.1 (available at <a href="http://www.mozilla.org/MPL/MPL-1.1.html">http://www.mozilla.org/MPL/MPL-1.1.html</a></li>

<p>IT IS YOUR OBLIGATION TO READ AND ACCEPT ALL SUCH TERMS AND CONDITIONS PRIOR TO USE OF THE CONTENT. If no About, Feature License, or Feature Update License is provided, please contact the Eclipse Foundation to determine what terms and conditions govern that particular Content.</p>

### <h3>Cryptography</h3>

<p>Content may contain encryption software. The country in which you are currently may have restrictions on the import, possession, and use, and/or re-export to another country, of encryption software. BEFORE using any encryption software, please check the country's laws, regulations and policies concerning the import, possession, or use, and re-export of encryption software, to see if this is permitted.</p>

<small>Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.</small></body></html>

Same Apache License as top level

-----  
JTS

# JTS Topology Suite Licensing

May 30th, 2017

---

## ## Project Licenses

The Eclipse Foundation makes available all content in this project ("Content"). Unless otherwise indicated below, the Content is provided to you under the terms and conditions of either the [Eclipse Public License 1.0](<https://www.eclipse.org/legal/epl-v10.html>) ("EPL") or the [Eclipse Distribution License 1.0](<http://www.eclipse.org/org/documents/edl-v10.php>) (a BSD Style License). For purposes of the EPL, "Program" will mean the Content.

If you did not receive this Content directly from the Eclipse Foundation, the Content is being redistributed by another party ("Redistributor") and different terms and conditions may apply to your use of any object code in the Content. Check the Redistributor's license that was provided with the Content. If no such license exists, contact the Redistributor. Unless otherwise indicated below, the terms and conditions of the EPL still apply to any source code in the Content and such source code may be obtained at <http://www.eclipse.org>.

## ## Third Party Content

The Content includes items that have been sourced from third parties as set out below. If you did not receive this Content directly from the Eclipse Foundation, the following is provided for informational purposes only, and you should look to the Redistributor's license for terms and conditions of use.

### ### Jdom-contrib version 1.1.3

The JTS tests module contains source from JDOM Contrib 1.1.3 which is available under the Jdom License [1]. The two files are `LineNumberElement.java` and `LineNumberSAXHandler.java`.

Typical users of this library will not need to depend on this module.

[1] <https://github.com/hunterhacker/jdom/blob/master/LICENSE.txt>

### ### GeoTools

JTS includes some code from the GeoTools project. This code has been licensed to the JTS project under the OSGeo BSD License [2] by the GeoTools PSC [3,4].

[2] <https://www.osgeo.org/sites/osgeo.org/files/Page/osgeo-bsd-license.txt>

[3] <https://github.com/geotools/geotools/wiki/JTS-ORA-Contribution>

[4] <https://github.com/geotools/geotools/wiki/JTS-Shapefile-Contribution>

Copyright (c) 2007, Eclipse Foundation, Inc. and its licensors.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Log4j - Fourth party dependency for lucene-luke

Apache Log4j  
Copyright 1999-2017 Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

ResolverUtil.java  
Copyright 2005-2006 Tim Fennell

Dumbster SMTP test server  
Copyright 2004 Jason Paul Kitchen

TypeUtil.java  
Copyright 2002-2012 Ramnivas Laddad, Juergen Hoeller, Chris Beams

picocli (<http://picocli.info>)  
Copyright 2017 Remko Popma

Uses same Apache 2 license as top level component

-----

Morfologik - Fourth party dependency for lucene-analyzers-morfologik

This product includes BSD-licensed software developed by Dawid Weiss and Marcin Miłkowski  
(<http://morfologik.blogspot.com/>).

Copyright (c) 2006 Dawid Weiss  
Copyright (c) 2007-2016 Dawid Weiss, Marcin Miłkowski  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.



THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

Nekohtml - Fourth party dependency for lucene-benchmark

CyberNeko HTML Parser

(C) Copyright 2002-2009, Andy Clark, Marc Guillemot. All rights reserved.

NekoHTML is a simple HTML scanner and tag balancer that enables application programmers to parse HTML documents and access the information using standard XML interfaces. The parser can scan HTML files and "fix up" many common mistakes that human (and computer) authors make in writing HTML documents. NekoHTML adds missing parent elements; automatically closes elements with optional end tags; and can handle mismatched inline element tags.

NekoHTML is written using the Xerces Native Interface (XNI) that is the foundation of the Xerces2 implementation. This enables you to use the NekoHTML parser with existing XNI tools without modification or rewriting code.

Uses same Apache 2 license as top level component

-----

Opennlp - Fourth party dependency for lucene-analyzers-opennlp

Apache OpenNLP Tools

Copyright 2015 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Uses same Apache 2 license as top level component

-----

S2-geometry-library - Fourth party dependency for lucene-spatial-extras

Has no Notices/Copyright file

Uses same Apache 2 license as top level component

-----

Xercesimpl - Fourth party optional XML parser implementation to some lucene libraries, not required when platform provides its own implementation

=====  
 == NOTICE file corresponding to section 4(d) of the Apache License, ==  
 == Version 2.0, in this case for the Apache Xerces Java distribution. ==

```
=====
Apache Xerces Java
Copyright 1999-2007 The Apache Software Foundation
```

```
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).
```

```
Portions of this software were originally based on the following:
- software copyright (c) 1999, IBM Corporation., http://www.ibm.com.
- software copyright (c) 1999, Sun Microsystems., http://www.sun.com.
- voluntary contributions made by Paul Eng on behalf of the
  Apache Software Foundation that were originally developed at iClick, Inc.,
  software copyright (c) 1999.
```

```
Uses same Apache 2 license as top level component
```

```
-----
unicode
==license
UNICODE LICENSE V3
```

```
COPYRIGHT AND PERMISSION NOTICE
```

```
Copyright © 1991-2023 Unicode, Inc.
```

```
NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING DATA FILES, AND/OR
SOFTWARE, YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE
TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT
DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.
```

```
Permission is hereby granted, free of charge, to any person obtaining a
copy of data files and any associated documentation (the "Data Files") or
software and any associated documentation (the "Software") to deal in the
Data Files or Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, and/or sell
copies of the Data Files or Software, and to permit persons to whom the
Data Files or Software are furnished to do so, provided that either (a)
this copyright and permission notice appear with all copies of the Data
Files or Software, or (b) this copyright and permission notice appear in
associated Documentation.
```

```
THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY
KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF
THIRD PARTY RIGHTS.
```

```
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE
BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES,
OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS,
WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION,
ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA
FILES OR SOFTWARE.
```

```
Except as contained in this notice, the name of a copyright holder shall
not be used in advertising or otherwise to promote the sale, use or other
dealings in these Data Files or Software without prior written
authorization of the copyright holder.
```

```
==copyright
Copyright © 1991-2023 Unicode, Inc. All rights reserved.
```

## Commons Compress

**Vendor:** The Apache Software Foundation

**Version:** 1.24.0

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to

communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and

do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

---

Notice:

Apache Commons Compress  
Copyright 2002-2023 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<https://www.apache.org/>).

---

The files in the package `org.apache.commons.compress.archivers.sevenz` were derived from the LZMA SDK, version 9.20 (C/ and CPP/7zip/), which has been placed in the public domain:

"LZMA SDK is placed in the public domain." (<http://www.7-zip.org/sdk.html>)

---

The test file `lbzip2_32767.bz2` has been copied from `libbzip2`'s source repository:

This program, "bzip2", the associated library "libbzip2", and all documentation, are copyright (C) 1996-2019 Julian R Seward. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this

software in a product, an acknowledgment in the product documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
4. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@acm.org

## Lombok

### Vendor: Project Lombok

### Version: 1.18.28

=====  
 ===== COPYRIGHT NOTICE =====

Copyright (C) 2009-2021 The Project Lombok Authors.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

=====  
 Licenses for included components:

org.ow2.asm:asm  
 org.ow2.asm:asm-analysis  
 org.ow2.asm:asm-commons  
 org.ow2.asm:asm-tree  
 org.ow2.asm:asm-util  
 ASM: a very small and fast Java bytecode manipulation framework  
 Copyright (c) 2000-2011 INRIA, France Telecom

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holders nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
 rzwitserloot/com.zwitserloot.cmdreader

Copyright © 2010 Reinier Zwitserloot.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
 projectlombok/lombok.patcher

Copyright (C) 2009-2021 The Project Lombok Authors.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:



The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
 ===== COPYRIGHT NOTICE END =====

## HttpCore

**Vendor:** The Apache Software Foundation

**Version:** 4.4.16

Apache HttpComponents Core

Copyright 2005-2021 The Apache Software Foundation

This product includes software developed at

The Apache Software Foundation (<http://www.apache.org/>).

=====  
 LICENSE: Apache 2.0

Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation

source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the

appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

=====

## turfjs

**Vendor:** Morgan Herlocker

**Version:** 6.5.0

----- Top-level license -----

The MIT License (MIT)

Copyright (c) 2019 Morgan Herlocker

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- Copyright notices -----

Copyright (c) 2019 Morgan Herlocker

----- Fourth-party information -----

== NAME OF DEPENDENCY 1

@turf packages

```
== License
The MIT License (MIT)
```

```
Copyright (c) 2017 TurfJS
```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```
== Copyright Notices
```

```
Copyright (c) 2017 TurfJS
```

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 2
```

```
geojson-equality
```

```
== License
```

```
The MIT License (MIT)
```

```
Copyright (c) 2014 Gagan Bansal
```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```
== Copyright Notices
```

```
Copyright (c) 2014 Gagan Bansal
```

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 3
```

```
Deep-equal
```

```
== License
```

```
MIT License
```

```
Copyright (c) 2012, 2013, 2014 James Halliday <mail@substack.net>, 2009 Thomas
Robinson <280north.com>
```

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2012, 2013, 2014 James Halliday <mail@substack.net>, 2009 Thomas Robinson <280north.com>

----- (separator) -----

== NAME OF DEPENDENCY 4

Array-buffer-byte-length

== License

MIT License

Copyright (c) 2023 Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2023 Inspect JS

----- (separator) -----

== NAME OF DEPENDENCY 5

Call-bind

== License

MIT 2020 Jordan Harband

== Copyright Notices

Copyright (c) 2020 Jordan Harband

----- (separator) -----

== NAME OF DEPENDENCY 6

Function-bind

== License

Copyright (c) 2013 Raynos.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2013 Raynos.

----- (separator) -----

== NAME OF DEPENDENCY 7

Get-intrinsic

== License

MIT 2020 Jordan Harband

== Copyright Notices

Copyright (c) 2020 Jordan Harband

----- (separator) -----

== NAME OF DEPENDENCY 8

has

== License

Copyright (c) 2013 Thiago de Arruda

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2013 Thiago de Arruda

----- (separator) -----

== NAME OF DEPENDENCY 9

Has-proto

== License

MIT 2022 Inspect JS

== Copyright Notices

Copyright (c) 2022 Inspect JS

----- (separator) -----

== NAME OF DEPENDENCY 10

Has-symbols  
 == License  
 MIT License

Copyright (c) 2016 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016 Jordan Harband

----- (separator) -----

== NAME OF DEPENDENCY 11

Is-array-buffer

== License

MIT License

Copyright (c) 2015 Chen Gengyuan, Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2015 Chen Gengyuan, Inspect JS

----- (separator) -----

== NAME OF DEPENDENCY 12

Is-typed-array

== License

MIT 2015 Jordan Harband

== Copyright Notices

Copyright (c) 2015 Jordan Harband

----- (separator) -----

== NAME OF DEPENDENCY 13



```

Which-typed-array
== License
MIT 2015 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 14
Available-typed-arrays
== License
MIT License

Copyright (c) 2020 Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2020 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 15
For-each
== License
The MIT License (MIT)

Copyright (c) 2012 Raynos.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2012 Raynos.
----- (separator) -----
== NAME OF DEPENDENCY 16

```

```

Is-callable
== License
MIT 2025 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 17
gopd
== License
MIT License

Copyright (c) 2022 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2022 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 18
has-tostringtag
== License
MIT 2021 Inspect JS
== Copyright Notices
Copyright (c) 2021 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 19
Es-get-iterator
== License
MIT 2019 Jordan Harband
== Copyright Notices
Copyright (c) 2019 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 20
Is-arguments
== License
MIT 2014 Jordan Harband
== Copyright Notices
Copyright (c) 2014 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 21
Is-map
== License
MIT 2019 Inspect JS
== Copyright Notices
Copyright (c) 2019 Inspect JS
----- (separator) -----

```

```

== NAME OF DEPENDENCY 22
Is-set
== License
MIT 2019 Inspect JS
== Copyright Notices
Copyright (c) 2019 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 23
Is-string
== License
MIT 2015 Jordan Harban
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 24
isarray
== License
MIT License

Copyright (c) 2013 Julian Gruber <julian@juliangruber.com>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2013 Julian Gruber <julian@juliangruber.com>
----- (separator) -----
== NAME OF DEPENDENCY 25
Stop-iteration-iterator
== License
MIT 2023 Jordan Harband
== Copyright Notices
Copyright (c) 2023 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 26
Internal-slot
== License
MIT 2019 Jordan Harband
== Copyright Notices
Copyright (c) 2019 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 27
Side-channel
== License
MIT 2019 Jordan Harband
== Copyright Notices
Copyright (c) 2019 Jordan Harband

```

```

----- (separator) -----
== NAME OF DEPENDENCY 28
Object-inspect
== License
MIT License

Copyright (c) 2013 James Halliday

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2013 James Halliday
----- (separator) -----
== NAME OF DEPENDENCY 29
Is-date-object
== License
MIT 2015 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 30
Is-regex
== License
MIT 2014 Jordan Harband
== Copyright Notices
Copyright (c) 2014 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 31
Is-shared-array-buffer
== License
MIT 2021 Inspect JS
== Copyright Notices
Copyright (c) 2021 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 32
object-is
== License
MIT 2014 Jordan Harband
== Copyright Notices
Copyright (c) 2014 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 33
Define-properties
== License
MIT 2015 Jordan Harband
== Copyright Notices

```

```

Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 34
Define-data-property
== License
MIT 2023 Jordan Harband
== Copyright Notices
Copyright (c) 2023 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 35
Has-property-descriptors
== License
MIT 2022 Inspect JS
== Copyright Notices
Copyright (c) 2022 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 36
Object-keys
== License
The MIT License (MIT)

Copyright (C) 2013 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
== Copyright Notices
Copyright (C) 2013 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 37
Object.assign
== License
MIT 2014 Jordan Harband
== Copyright Notices

Copyright (c) 2014 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 38
Regexp.prototype.flags
== License
MIT 2014 Jordan Harband
== Copyright Notices

Copyright (c) 2014 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 39
Set-function-name

```

```
== License
MIT License
```

Copyright (c) Jordan Harband and contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```
== Copyright Notices
```

Copyright (c) Jordan Harband and contributors

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 40
```

Functions-have-names

```
== License
```

MIT 2014 Jordan Harband

```
== Copyright Notices
```

Copyright (c) 2014 Jordan Harband

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 41
```

Which-boxed-primitive

```
== License
```

MIT 2019 Jordan Harband

```
== Copyright Notices
```

Copyright (c) 2019 Jordan Harband

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 42
```

Is-bigint

```
== License
```

MIT License

Copyright (c) 2018 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

```

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
== Copyright Notices
Copyright (c) 2018 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 43
Has-bigints
== License
MIT 2019 Jordan Harband
== Copyright Notices
Copyright (c) 2019 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 44
Is-boolean-object
== License
MIT 2015 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 45
Is-number-object
== License
MIT 2015 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 46
Is-symbol
== License
MIT 2015 Jordan Harband
== Copyright Notices
Copyright (c) 2015 Jordan Harband
----- (separator) -----
== NAME OF DEPENDENCY 47
Which-collection
== License
MIT 2019 Inspect JS
== Copyright Notices
Copyright (c) 2019 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 48
Is-weakmap
== License
MIT 2019 Inspect JS
== Copyright Notices
Copyright (c) 2019 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 49
Is-weakset
== License
MIT 2019 Inspect JS
== Copyright Notices
Copyright (c) 2019 Inspect JS
----- (separator) -----
== NAME OF DEPENDENCY 50
geojson-polygon-self-intersections
== License
MIT License

Copyright (c) 2016 Manuel Claeys Bouuaert

```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016 Manuel Claeys Bouuaert

----- (separator) -----

== NAME OF DEPENDENCY 51

rbush

== License

MIT License

Copyright (c) 2016 Vladimir Agafonkin

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016 Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 52

Quickselect

== License

ISC License

Copyright (c) 2018, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND



FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2018, Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 53

D3-geo

== License

Copyright 2010-2022 Mike Bostock

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

This license applies to GeographicLib, versions 1.12 and later.

Copyright 2008-2012 Charles Karney

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright 2010-2022 Mike Bostock

----- (separator) -----

== NAME OF DEPENDENCY 54

d3-array

== License

Copyright 2010-2023 Mike Bostock

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS

OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright 2010-2023 Mike Bostock

----- (separator) -----

== NAME OF DEPENDENCY 55

internMap

== License

Copyright 2021 Mike Bostock

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright 2021 Mike Bostock

----- (separator) -----

== NAME OF DEPENDENCY 56

skmeans

== License

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

----- (separator) -----

== NAME OF DEPENDENCY 57

topojson-client

== License

MIT 2012-2019 Michael Bostock

== Copyright Notices

Copyright 2012-2019 Michael Bostock

----- (separator) -----

== NAME OF DEPENDENCY 58

commander

== License

(The MIT License)

Copyright (c) 2011 TJ Holowaychuk <tj@vision-media.ca>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the 'Software'), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED 'AS IS', WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2011 TJ Holowaychuk <tj@vision-media.ca>

----- (separator) -----

== NAME OF DEPENDENCY 59

Topojson-server

== License

MIT 2012-2019 Michael Bostock

== Copyright Notices

Copyright 2012-2019 Michael Bostock

----- (separator) -----

== NAME OF DEPENDENCY 60

Quickselect

== License

ISC License

Copyright (c) 2018, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2018, Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 61

Concaveman

== License

ISC License

Copyright (c) 2016, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose

with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2016, Mapbox

----- (separator) -----

== NAME OF DEPENDENCY 62

Point-in-polygon

== License

The MIT License (MIT)

Copyright (c) 2016 James Halliday

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016 James Halliday

----- (separator) -----

== NAME OF DEPENDENCY 63

Robust-predicates

== License

This is free and unencumbered software released into the public domain.

Anyone is free to copy, modify, publish, use, compile, sell, or distribute this software, either in source code form or as a compiled binary, for any purpose, commercial or non-commercial, and by any means.

In jurisdictions that recognize copyright laws, the author or authors of this software dedicate any and all copyright interest in the software to the public domain. We make this dedication for the benefit of the public at large and to the detriment of our heirs and successors. We intend this dedication to be an overt act of relinquishment in perpetuity of all present and future rights to this software under copyright law.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.  
 IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR  
 OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,  
 ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR  
 OTHER DEALINGS IN THE SOFTWARE.

For more information, please refer to <<http://unlicense.org>>

== Copyright Notices

----- (separator) -----

== NAME OF DEPENDENCY 64

tinyqueue

== License

ISC License

Copyright (c) 2017, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose  
 with or without fee is hereby granted, provided that the above copyright notice  
 and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH  
 REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND  
 FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,  
 INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS  
 OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER  
 TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF  
 THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2017, Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 65

Polygon-clipping

== License

MIT 2018 Mike Fogel

== Copyright Notices

Copyright (c) 2018 Mike Fogel <[mike@fogel.ca](mailto:mike@fogel.ca)> - covers everything not specially  
 attributed to others below.

Copyright (c) 2016 Alexander Milevski <[info@w8r.name](mailto:info@w8r.name)> - covers all portions originally  
 part of [github:w8r/martinez](https://github.com/w8r/martinez), from which this project was forked on February 2, 2018.

----- (separator) -----

== NAME OF DEPENDENCY 66

splaytree

== License

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy  
 of this software and associated documentation files (the "Software"), to deal  
 in the Software without restriction, including without limitation the rights  
 to use, copy, modify, merge, publish, distribute, sublicense, and/or sell  
 copies of the Software, and to permit persons to whom the Software is  
 furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in  
 all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
 IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
 FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE  
 AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER  
 LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

---

```
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
== Copyright Notices
Copyright (c) 2019 Alexander Milevski info@w8r.name
----- (separator) -----
== NAME OF DEPENDENCY 67
tslib
== License
MIT 2018 Mike Fogel
== Copyright Notices
Copyright (c) 2018 Mike Fogel <mike@fogel.ca> - covers everything not specially
attributed to others below.

Copyright (c) 2016 Alexander Milevski <info@w8r.name> - covers all portions
originally part of github:w8r/martinez, from which this project was forked on
February 2, 2018.
----- (separator) -----
== NAME OF DEPENDENCY 68
Geojson-rbush
== License
The MIT License (MIT)

Copyright (c) 2018 Denis Carriere

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices
Copyright (c) 2018 Denis Carriere
----- (separator) -----
== NAME OF DEPENDENCY 69
earcut
== License
ISC License

Copyright (c) 2016, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose
with or without fee is hereby granted, provided that the above copyright notice
and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS
OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
```

```

THIS SOFTWARE.
== Copyright Notices
Copyright (c) 2016, Mapbox
----- (separator) -----
== NAME OF DEPENDENCY 70
D3-voronoi
== License
Copyright 2010-2016 Mike Bostock
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

* Neither the name of the author nor the names of contributors may be used to
  endorse or promote products derived from this software without specific prior
  written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (C) 2010-2013 Raymond Hill
https://github.com/gorhill/Javascript-Voronoi

Licensed under The MIT License
http://en.wikipedia.org/wiki/MIT_License

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
== Copyright Notices
Copyright 2010-2016 Mike Bostock
All rights reserved.
----- (License Text) -----

```

== License (MIT 2015 Jordan Harband)  
The MIT License (MIT)

Copyright (c) 2015 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
== License (MIT 2019 Inspect JS)  
MIT License

Copyright (c) 2019 Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
== License (MIT 2019 Jordan Harband)

MIT License

Copyright (c) 2019 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.



THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
 == License (MIT 2021 Inspect JS)  
 MIT License

Copyright (c) 2021 Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
 == License (MIT 2014 Jordan Harband)

The MIT License (MIT)

Copyright (c) 2014 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
 == License (MIT 2020 Jordan Harband)

MIT License

Copyright (c) 2020 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
 == License (MIT 2023 Jordan Harband)  
 MIT License

Copyright (c) 2023 Jordan Harband

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
 == License (MIT 2022 Inspect JS)  
 MIT License

Copyright (c) 2022 Inspect JS

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```
----- (separator) -----
== License (MIT 2012-2019 Michael Bostock)
Copyright 2012-2019 Michael Bostock
```

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

```
----- (separator) -----
== License (MIT 2018 Mike Fogel)
```

The MIT License (MIT)

Copyright (c) 2018 Mike Fogel <mike@fogel.ca> - covers everything not specially attributed to others below.

Copyright (c) 2016 Alexander Milevski <info@w8r.name> - covers all portions originally part of github:w8r/martinez, from which this project was forked on February 2, 2018.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

## Commons Lang

**Vendor:** The Apache Software Foundation

**Version:** 3.13.0

NOTICE:  
Apache Commons Lang  
Copyright 2001-2023 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<https://www.apache.org/>).

LICENSE: Apache 2.0

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate

comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and limitations under the License.

## Commons IO

### Vendor: The Apache Software Foundation

#### Version: 2.13.0

Apache Commons IO  
Copyright 2002-2023 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<https://www.apache.org/>).

--

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but

not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:



- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory,

whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

## MapLibre GL

**Vendor:** MapLibre contributors

**Version:** 2.4.0

Copyright (c) 2020, MapLibre contributors

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of MapLibre GL JS nor the names of its contributors

may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Contains code from mapbox-gl-js v1.13 and earlier

Version v1.13 of mapbox-gl-js and earlier are licensed under a BSD-3-Clause license

Copyright (c) 2020, Mapbox

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Mapbox GL JS nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Contains code from glfx.js

Copyright (C) 2011 by Evan Wallace

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
 Contains a portion of d3-color <https://github.com/d3/d3-color>

Copyright 2010-2016 Mike Bostock  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of the author nor the names of contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

----- Fourth-party information -----

```
== NAME OF DEPENDENCY 1
.@mapbox/geojson-rewind
== License
Copyright (c) 2020, Mapbox
```

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

```

== DEPENDENCY 1 DEPENDENCIES
.get-stream
== License
MIT License

```

Copyright (c) Sindre Sorhus <sindresorhus@gmail.com> (<https://sindresorhus.com>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```

.minimist
== License
This software is released under the MIT license:

```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

```

== NAME OF DEPENDENCY 2
.@mapbox/jsonlint-lines-primitives
== License
MIT License
Copyright (C) 2012 Zachary Carter

```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

```
== NAME OF DEPENDENCY 3
.@mapbox/mapbox-gl-supported
== License
BSD 3-Clause License
```

Copyright (c) 2017, Mapbox  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

----- (separator) -----

```
== NAME OF DEPENDENCY 4
.@mapbox/point-geometry
== License
Copyright (c) 2015, Mapbox <>
```

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----

```
== NAME OF DEPENDENCY 5
.@mapbox/tiny-sdf
```

BSD-2-Clause  
 Copyright (c) 2016-2022 Mapbox, Inc.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

----- (separator) -----  
 == NAME OF DEPENDENCY 6  
 .@mapbox/unitbezier  
 BSD-2-Clause

Copyright (C) 2008 Apple Inc. All Rights Reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY APPLE INC. ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL APPLE INC. OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Ported from Webkit  
<http://svn.webkit.org/repository/webkit/trunk/Source/WebCore/platform/graphics/UnitBezier.h>

----- (separator) -----  
 == NAME OF DEPENDENCY 7  
 .@mapbox/vector-tile  
 == License  
 Copyright (c) 2014, Mapbox

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Mapbox nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== DEPENDENCY 7 DEPENDENCIES

.@mapbox/point-geometry

== License

Copyright (c) 2015, Mapbox <>

----- (separator) -----

== NAME OF DEPENDENCY 8

.@mapbox/whoots-js

== License

ISC License

Copyright (c) 2017, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 9

.@types/geojson

== License

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so,



subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 10

.@types/mapbox\_\_point-geometry

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 11

.@types/mapbox\_\_vector-tile

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE

== DEPENDENCY 11 DEPENDENCIES

.@types/geojson

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

.@types/mapbox\_point-geometry

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

.@types/pbf

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

----- (separator) -----

== NAME OF DEPENDENCY 12

.@types/pbf

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 13

.csscolorparser

(c) Dean McNamee <dean@gmail.com>, 2012.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 14

.earcut

ISC License

Copyright (c) 2016, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 15

.geojson-vt

ISC License

Copyright (c) 2015, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 16

.gl-matrix

Copyright (c) 2015-2021, Brandon Jones, Colin MacKenzie IV.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 17

.global-prefix

The MIT License (MIT)

Copyright (c) 2015-present, Jon Schlinkert.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== DEPENDENCY 17 DEPENDENCIES

.ini

The ISC License

Copyright (c) Isaac Z. Schlueter and Contributors

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

.kind-of

The MIT License (MIT)

Copyright (c) 2014-2017, Jon Schlinkert.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

.which

The ISC License

Copyright (c) Isaac Z. Schlueter and Contributors

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

.isexe

The ISC License

Copyright (c) 2016-2022 Isaac Z. Schlueter and Contributors

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 18

.murmurhash-js

Copyright (c) 2011 Gary Court

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 19

.pbf

Copyright (c) 2017, Mapbox

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

\* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

\* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

\* Neither the name of pbf nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== DEPENDENCY 19 DEPENDENCIES

.ieee754

Copyright 2008 Fair Oaks Labs, Inc.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

.resolve-protobuf-schema

The MIT License (MIT)

Copyright (c) 2014 Mathias Buus

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

.protocol-buffers-schema  
The MIT License (MIT)

Copyright (c) 2014 Mathias Buus

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----  
== NAME OF DEPENDENCY 20  
.potpack  
ISC License

Copyright (c) 2022, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----  
== NAME OF DEPENDENCY 21  
.quickselect  
The MIT License

Copyright (c) 2014-2018 Google, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- (separator) -----

== NAME OF DEPENDENCY 22

.supercluster

ISC License

Copyright (c) 2021, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF

== DEPENDENCY 22 DEPENDENCIES

.kdbush

ISC License

Copyright (c) 2018, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

THIS SOFTWARE.-----

(separator)-----

== NAME OF DEPENDENCY 23

.tinyqueue

ISC License

Copyright (c) 2017, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

----- (separator) -----



```

== NAME OF DEPENDENCY 24
.vt-pbf
The MIT License (MIT)

```

Copyright (c) 2015 Anand Thakker

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----

Contains geojson\_wrapper.js from <https://github.com/mapbox/mapbox-gl-js>

Copyright (c) 2014, Mapbox

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Mapbox GL JS nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

```

== DEPENDENCY 24 DEPENDENCIES

```

```

.@mapbox/point-geometry

```

Copyright (c) 2015, Mapbox <>

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

.@mapbox/vector-tile  
 Copyright (c) 2014, Mapbox  
 All rights reserved.  
 .pbf  
 Copyright (c) 2017, Mapbox  
 All rights reserved.  
 .ieee754  
 Copyright 2008 Fair Oaks Labs, Inc.  
 .resolve-protobuf-schema  
 The MIT License (MIT)

Copyright (c) 2014 Mathias Buus  
 .protocol-buffers-schema  
 The MIT License (MIT)

Copyright (c) 2014 Mathias Buus

## Protocol Buffers (aka Google protobuf)

**Vendor: Google**

**Version: 3.19.6**

From the LICENSE file in the download packages  
 URL for License and Copyright Notice -  
<https://github.com/protocolbuffers/protobuf/blob/master/LICENSE>

Copyright 2008 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Code generated by the Protocol Buffer compiler is owned by the owner of the input file used when generating it. This code is not standalone and requires a support library to be linked with it. This support library is itself covered by the above license.

## SnakeYAML

**Vendor:** SnakeYAML.org

**Version:** 2.0

SnakeYAML

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted"

means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and

wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. **Submission of Contributions.** Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. **Trademarks.** This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. **Disclaimer of Warranty.** Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. **Limitation of Liability.** In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. **Accepting Warranty or Additional Liability.** While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Copyright (c) 2008, SnakeYAML

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

## **slf4j-api**

**Vendor:** QOS.ch

**Version:** 2.0.7

Copyright (c) 2004-2023 QOS.ch  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be

included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

## Nimbus JOSE+JWT

**Vendor:** Connect2id

**Version:** 9.31

----- Copyright Info -----  
Nimbus JOSE + JWT

Copyright 2012 - 2022, Connect2id Ltd.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<https://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

-----

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the



Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any

risks associated with Your exercise of permissions under this License.

8. **Limitation of Liability.** In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. **Accepting Warranty or Additional Liability.** While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

-----

4th Party Dependencies:

1. com.github.stephenc.jcip » jcip-annotations (Apache 2.0)

```
/*
 * Copyright 2013 Stephen Connolly.
 *
 * Licensed under the Apache License, Version 2.0 (the "License");
 * you may not use this file except in compliance with the License.
 * You may obtain a copy of the License at
 *
 *     http://www.apache.org/licenses/LICENSE-2.0
 *
 * Unless required by applicable law or agreed to in writing, software
 * distributed under the License is distributed on an "AS IS" BASIS,
 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
 * See the License for the specific language governing permissions and
 * limitations under the License.
 */
```

-----

## **Nimbus OAuth 2.0 SDK with OpenID Connect extensions**

**Vendor:** Connect2id Ltd

**Version:** 10.13.2

Nimbus OAuth 2.0 SDK with OpenID Connect extensions

Copyright 2012-2023, Connect2id Ltd and contributors.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the

License at

<https://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

-----  
-----

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally

submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

```
----- Fourth-party information -----
== NAME OF DEPENDENCY 1
com.github.stephenc.jcip:jcip-annotations
== License Type
Apache 2.0
== Copyright Notices
* Copyright 2013 Stephen Connolly.
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
*
*   http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
----- (separator) -----
== NAME OF DEPENDENCY 2
com.nimbusds:content-type
== License Type
Apache 2.0
== Copyright Notices
Nimbus Content Type
```

Copyright 2020, Connect2id Ltd.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the

License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

```
----- (separator) -----
== NAME OF DEPENDENCY 3
net.minidev:accessors-smart
net.minidev:json-smart
== License Type
Apache 2.0
== Copyright Notices
*   Copyright 2011 JSON-SMART authors
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
*
* http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
----- (separator) -----
```

```
== NAME OF DEPENDENCY 4
com.nimbusds:lang-tag
== License Type
Apache 2.0
== Copyright Notices
Nimbus Language Tags
```

Copyright 2012-2023, Connect2id Ltd.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

```
----- (separator) -----
== NAME OF DEPENDENCY 5
com.nimbusds:nimbus-jose-jwt
== License Type
Apache 2.0
== Copyright Notices
Nimbus JOSE + JWT
```

Copyright 2012 - 2023, Connect2id Ltd.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<https://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

----- (separator) -----

```
== NAME OF DEPENDENCY 6
org.ow2.asm:asm
== License Type
BSD 3-clause
== Copyright Notices
ASM: a very small and fast Java bytecode manipulation framework
Copyright (c) 2000-2011 INRIA, France Telecom
All rights reserved.
```

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holders nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## Guava

**Vendor:** Google

**Version:** 32.1.2

Copyright (C) 2020 The Guava Authors

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.



---

Apache License Version 2.0

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.  
Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include

---

the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

=====

+--- 4th party: com.google.guava:failureaccess

Copyright (C) 2018 The Guava Authors

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

< Apache License Version 2.0>

=====

+--- 4th party: com.google.guava:listenablefuture

Copyright (C) 2018 The Guava Authors

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

< Apache License Version 2.0>

=====

+--- 4th party: com.google.code.findbugs:jsr305

Copyright: JSR305 expert group  
License: BSD 3-Clause

Copyright (c) 2007-2009, JSR305 expert group  
All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice,  
this list of conditions and the following disclaimer in the documentation  
and/or other materials provided with the distribution.
- \* Neither the name of the JSR305 expert group nor the names of its  
contributors may be used to endorse or promote products derived from  
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== jcip-annotations relicensed to Oracle under BSD 3-clause license

Copyright (c) 2005, Brian Goetz and Tim Peierls

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice,  
this list of conditions and the following disclaimer in the documentation  
and/or other materials provided with the distribution.
- \* Neither the name of the JSR305 expert group nor the names of its  
contributors may be used to endorse or promote products derived from  
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====  
+--- 4th party: com.google.errorprone:error\_prone\_annotations

Copyright 2023 The Error Prone Authors.

---

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software  
distributed under the License is distributed on an "AS IS" BASIS,  
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
See the License for the specific language governing permissions and  
limitations under the License.

< Apache License Version 2.0>

+--- 4th party: com.google.j2objc:j2objc-annotations

Google Inc.  
Daniel Connelly

Copyright 2012 Google Inc. All Rights Reserved.

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software  
distributed under the License is distributed on an "AS IS" BASIS,  
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
See the License for the specific language governing permissions and  
limitations under the License.

< Apache License Version 2.0>

=====

+--- 4th party: org.checkerframework:checker-qual

Copyright 2004-present by the Checker Framework developers

MIT License:

Permission is hereby granted, free of charge, to any person obtaining a copy  
of this software and associated documentation files (the "Software"), to deal  
in the Software without restriction, including without limitation the rights  
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell  
copies of the Software, and to permit persons to whom the Software is  
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in  
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE  
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER  
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,  
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN  
THE SOFTWARE.

```
=====
jackson-jaxrs-json-provider
```

```
Vendor: FasterXML, LLC
```

```
Version: 2.15.2
```

```
=====
Top Level Component
=====
```

```
com.fasterxml.jackson.jaxrs » jackson-jaxrs-json-provider
```

```
=====
Top Level Component License
=====
```

```
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/
```

```
TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION
```

```
1. Definitions.
```

```
"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.
```

```
"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.
```

```
"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.
```

```
"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.
```

```
"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.
```

```
"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.
```

```
"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).
```

```
"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
```

represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of



the Derivative Works; and

- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

```
=====
Top Level Component Copyright Notices
=====
```

```
# Jackson JSON processor
```

```
Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
been in development since 2007.
It is currently developed by a community of developers.
```

```
## Copyright
```

```
Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)
```

```
## Licensing
```

```
Jackson 2.x core and extension components are licensed under Apache License
2.0
```

```
To find the details that apply to this artifact see the accompanying LICENSE
file.
```

```
## Credits
```

A list of contributors may be found from CREDITS(-2.x) file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

```

-----
Separator-----
-----Third-
Party-----

1# com.fasterxml.jackson.jaxrs » jackson-jaxrs-base

1# Copyright Notices:

#Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
been in development since 2007.
It is currently developed by a community of developers, as well as supported
commercially by FasterXML.com.

## Licensing

Jackson core and extension components may be licensed under different licenses.
To find the details that apply to this artifact see the accompanying LICENSE file.
For more information, including possible other licensing options, contact
FasterXML.com (http://fasterxml.com).

## Credits

A list of contributors may be found from CREDITS file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

1# License: Apache License Version 2.0
-----
Separator-----

2# com.fasterxml.jackson.module » jackson-module-jaxb-annotations

2# Copyright Notices:

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
been in development since 2007.
It is currently developed by a community of developers, as well as supported
commercially by FasterXML.com.

## Licensing

Jackson core and extension components may licensed under different licenses.
To find the details that apply to this artifact see the accompanying LICENSE file.
For more information, including possible other licensing options, contact
FasterXML.com (http://fasterxml.com).

## Credits

```

A list of contributors may be found from CREDITS file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

2# License: Apache License Version 2.0

```
-----
Separator-----
-----Fourth-
Party-----
```

3# com.fasterxml.jackson.core » jackson-core

3# Copyright Notices:

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0  
To find the details that apply to this artifact see the accompanying LICENSE file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

## FastDoubleParser

jackson-core bundles a shaded copy of FastDoubleParser . That code is available under an MIT license under the following copyright.

Copyright © 2023 Werner Randelshofer, Switzerland. MIT License.

See FastDoubleParser-NOTICE for details of other source code included in FastDoubleParser and the licenses and copyrights that apply to that code.

3# License: Apache License Version 2.0

```
-----
Separator-----
```

4# ch.randelshofer » fastdoubleparser

4# Copyright Notices:

```

# FastDoubleParser

This is a Java port of Daniel Lemire's fast_float project.
This project provides parsers for double, float, BigDecimal and BigInteger
values.

## Copyright

Copyright © 2023 Werner Randelshofer, Switzerland.

## Licensing

This code is licensed under MIT License.
https://github.com/wrandelshofer/FastDoubleParser/blob/
522be16e145f43308c43b23094e31d5efcaa580e/LICENSE
(The file 'LICENSE' is included in the sources and classes Jar files that are
released by this project
- as is required by that license.)

Some portions of the code have been derived from other projects.
All these projects require that we include a copyright notice, and some
require that we also include some text of their
license file.

fast_double_parser, Copyright (c) 2022 Daniel Lemire. Apache 2.0 License.
https://github.com/fastfloat/fast_float
https://github.com/fastfloat/fast_float/blob/
dc88f6f882ac7eb8ec3765f633835cb76afa0ac2/LICENSE-APACHE

fast_float, Copyright (c) 2021 The fast_float authors. Apache 2.0 License.
https://github.com/fastfloat/fast_float
https://github.com/lemire/fast_double_parser/blob/
07d9189a8fb815fe800cb15ca022e7a07093236e/LICENSE

bigint, Copyright 2020 Tim Bukt. 2-clause BSD License.
https://github.com/tbukt/bigint/tree/floatfft
https://github.com/tbukt/bigint/blob/617c8cd8a7c5e4fb4d919c6a4d11e2586107f029/
LICENSE
https://github.com/wrandelshofer/FastDoubleParser/blob/
39e123b15b71f29a38a087d16a0bc620fc879aa6/bigint-LICENSE
(We only use those portions of the bigint project that can be licensed under 2-
clause BSD License.)
(The file 'bigint-LICENSE' is included in the sources and classes Jar files
that are released by this project
- as is required by that license.)

4# License:

MIT License

Copyright (c) 2021 Werner Randelshofer, Switzerland.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

```

copies or substantial portions of the Software.

OR THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS  
 IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
 FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL  
 THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER  
 LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING  
 FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS  
 IN THE SOFTWARE.

-----  
 Separator-----

5# com.fasterxml.jackson.core » jackson-databind

5# Copyright Notices:

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.  
 It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and  
 has

been in development since 2007.

It is currently developed by a community of developers, as well as  
 supported

commercially by FasterXML.com.

## Licensing

Jackson core and extension components may be licensed under different  
 licenses.

To find the details that apply to this artifact see the accompanying  
 LICENSE file.

For more information, including possible other licensing options, contact  
 FasterXML.com (<http://fasterxml.com>).

## Credits

A list of contributors may be found from CREDITS file, which is included  
 in some artifacts (usually source distributions); but is always available  
 from the source code management (SCM) system project uses.

5# License: APache License Version 2.0

-----  
 Separator-----

6# com.fasterxml.jackson.core » jackson-annotations

6# Copyright Notices:

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.  
 It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and  
 has

```
been in development since 2007.
It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0
To find the details that apply to this artifact see the accompanying LICENSE
file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

6#   License: APache License Version 2.0
-----
Separator-----
7#   jakarta.activation » jakarta.activation-api

7# Copyright Notices:

# Notices for Jakarta Activation

This content is produced and maintained by Jakarta Activation project.

* Project home: https://projects.eclipse.org/projects/ee4j.jaf

## Copyright

All content is the property of the respective authors or their employers. For
more information regarding authorship of content, please consult the listed
source code repository logs.

## Declared Project Licenses

This program and the accompanying materials are made available under the terms
of the Eclipse Distribution License v. 1.0,
which is available at http://www.eclipse.org/org/documents/edl-v10.php.

SPDX-License-Identifier: BSD-3-Clause

## Source Code

The project maintains the following source code repositories:

* https://github.com/eclipse-ee4j/jaf

## Third-party Content

This project leverages the following third party content.

JUnit (4.12)

* License: Eclipse Public License
```

## 7# License:

Copyright (c) 2018 Oracle and/or its affiliates. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Separator-----

8# jakarta.xml.bind » jakarta.xml.bind-api

## 8# Copyright Notices:

```

[//]: # " Copyright (c) 2018, 2019 Oracle and/or its affiliates. All
rights reserved. "
[//]: # " "
[//]: # " This program and the accompanying materials are made available
under the "
[//]: # " terms of the Eclipse Distribution License v. 1.0, which is
available at "
[//]: # " http://www.eclipse.org/org/documents/edl-v10.php. "
[//]: # " "
[//]: # " SPDX-License-Identifier: BSD-3-Clause "

```

# Notices for Jakarta XML Binding

This content is produced and maintained by the Jakarta XML Binding project.

\* Project home: <https://projects.eclipse.org/projects/ee4j.jaxb>

## Trademarks

Jakarta XML Binding is a trademark of the Eclipse Foundation.



```

## Copyright

All content is the property of the respective authors or their employers. For
more information regarding authorship of content, please consult the listed
source code repository logs.

## Declared Project Licenses

This program and the accompanying materials are made available under the terms
of the Eclipse Distribution License v. 1.0 which is available at
http://www.eclipse.org/org/documents/edl-v10.php.

SPDX-License-Identifier: BSD-3-Clause

## Source Code

The project maintains the following source code repositories:

* https://github.com/eclipse-ee4j/jaxb-api
* https://github.com/eclipse-ee4j/jaxb-tck

## Third-party Content

This project leverages the following third party content.

Apache River (3.0.0)

* License: Apache-2.0 AND BSD-3-Clause

ASM 7 (n/a)

* License: BSD-3-Clause
* Project: https://asm.ow2.io/
* Source:
  https://repository.ow2.org/nexus/#nexus-search;gav~org.ow2.asm~asm-
commons~~~~kw,versionexpand

JTHarness (5.0)

* License: (GPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0)
* Project: https://wiki.openjdk.java.net/display/CodeTools/JT+Harness
* Source: http://hg.openjdk.java.net/code-tools/jtharness/

normalize.css (3.0.2)

* License: MIT

SigTest (n/a)

* License: GPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0

## Cryptography

Content may contain encryption software. The country in which you are currently
may have restrictions on the import, possession, and use, and/or re-export to
another country, of encryption software. BEFORE using any encryption software,
please check the country's laws, regulations and policies concerning the
import,
possession, or use, and re-export of encryption software, to see if this is
permitted.

```

8# License:

Copyright (c) 2017, 2018 Oracle and/or its affiliates. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
Separator-----

## CesiumJS

**Vendor:** CesiumJS Contributors

**Version:** 106.1

Copyright 2011-2022 CesiumJS Contributors

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s)

---

with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and

- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2011-2020 CesiumJS Contributors

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

---

```
Patents US9153063B2 US9865085B1 US10592242

Patents pending US15/829,786 US16/850,266 US16/851,958

# Third-Party Code

CesiumJS includes the following third-party code.

### Sean O'Neil

http://soneil.net/

> Copyright (c) 2000-2005, Sean O'Neil (s_p_oneil@hotmail.com)
>
> All rights reserved.
>
> Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
>
> - Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
> - Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation and/or
other materials provided with the distribution.
> - Neither the name of the project nor the names of its contributors may be
used to endorse or promote products derived from this software without specific
prior written permission.
>
> THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

### zip.js

https://github.com/gildas-lormeau/zip.js

> Copyright (c) 2013 Gildas Lormeau. All rights reserved.
>
> Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
>
> 1. Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
>
> 2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation and/or
other materials provided with the distribution.
>
> 3. The names of the authors may not be used to endorse or promote products
derived from this software without specific prior written permission.
>
> THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL JCRAFT, INC.
```

---

OR ANY CONTRIBUTORS TO THIS SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

### Autolinker.js

<https://github.com/gregjacobs/Autolinker.js>

The MIT License (MIT)

> Copyright (c) 2015 Gregory Jacobs (<http://greg-jacobs.com>)

> Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

>

> The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

>

> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### tween.js

<https://github.com/sole/tween.js>

> Copyright (c) 2010-2012 Tween.js authors.

>

> Easing equations Copyright (c) 2001 Robert Penner <http://robertpenner.com/easing/>

>

> Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

>

> The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

>

> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### RequireJS

<https://github.com/jrburke/requirejs>

---

```
> Copyright (c) 2010-2015, The Dojo Foundation
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### Knockout

http://knockoutjs.com/

> (c) The Knockout.js team - http://knockoutjs.com/
> License: MIT (http://www.opensource.org/licenses/mit-license.php)
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### Knockout ES5 plugin

https://github.com/SteveSanderson/knockout-es5

> Copyright (c) Steve Sanderson
> MIT license
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
```



---

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### topojson-client

<https://github.com/topojson/topojson-client>

```
> Copyright 2012-2019 Michael Bostock
>
> Permission to use, copy, modify, and/or distribute this software for any purpose
> with or without fee is hereby granted, provided that the above copyright notice
> and this permission notice appear in all copies.
>
> THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
> REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
> FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
> INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS
> OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
> TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
> THIS SOFTWARE.
```

### mersenne-twister.js

<https://gist.github.com/banksean/300494>

```
> Copyright (C) 1997 - 2002, Makoto Matsumoto and Takuji Nishimura,
> All rights reserved.
>
> Redistribution and use in source and binary forms, with or without modification, are
permitted provided that the following conditions are met:
>
> 1. Redistributions of source code must retain the above copyright notice, this list
of conditions and the following disclaimer.
>
> 2. Redistributions in binary form must reproduce the above copyright notice, this
list of conditions and the following disclaimer in the documentation and/or other
materials provided with the distribution.
>
> 3. The names of its contributors may not be used to endorse or promote products
derived from this software without specific prior written permission.
>
> THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT
SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN
CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY
WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
```

### NoSleep.js

<https://github.com/richtr/NoSleep.js>

```
> NoSleep.js v0.5.0 - git.io/vfn01
> Rich Tibbett
```

```
> MIT license

### jsep

https://github.com/EricSmekens/jsep

> Copyright (c) 2013 Stephen Oney, https://ericsmekens.github.io/jsep/
>
> Permission is hereby granted, free of charge, to any person obtaining
> a copy of this software and associated documentation files (the
> "Software"), to deal in the Software without restriction, including
> without limitation the rights to use, copy, modify, merge, publish,
> distribute, sublicense, and/or sell copies of the Software, and to
> permit persons to whom the Software is furnished to do so, subject to
> the following conditions:
>
> The above copyright notice and this permission notice shall be
> included in all copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
> EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
> MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
> NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
> LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
> OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
> WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### earcut

https://github.com/mapbox/earcut

> Copyright (c) 2016, Mapbox
>
> Permission to use, copy, modify, and/or distribute this software for any
purpose
> with or without fee is hereby granted, provided that the above copyright notice
> and this permission notice appear in all copies.
>
> THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
> REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
> FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
> INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM
LOSS
> OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
> TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
> THIS SOFTWARE.

### kdbush

https://github.com/mourner/kdbush

> Copyright (c) 2016, Vladimir Agafonkin
>
> Permission to use, copy, modify, and/or distribute this software for any
purpose
> with or without fee is hereby granted, provided that the above copyright notice
> and this permission notice appear in all copies.
>
> THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
> REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
> FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
```

---

```
> INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS
> OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
> TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
> THIS SOFTWARE.
```

```
### rbush
```

```
https://github.com/mourner/rbush
```

```
> MIT License
```

```
> Copyright (c) 2016 Vladimir Agafonkin
```

```
> Permission is hereby granted, free of charge, to any person obtaining a copy
> of this software and associated documentation files (the "Software"), to deal
> in the Software without restriction, including without limitation the rights
> to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
> copies of the Software, and to permit persons to whom the Software is
> furnished to do so, subject to the following conditions:
```

```
>
```

```
> The above copyright notice and this permission notice shall be included in
> all copies or substantial portions of the Software.
```

```
>
```

```
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
> FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
> AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
> LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
> OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
> THE SOFTWARE.
```

```
### basis_universal
```

```
https://github.com/BinomialLLC/basis\_universal
```

```
> Licensed under the Apache License, Version 2.0 (the "License"); you may not
> use this file except in compliance with the License. You may obtain a copy of
> the License at
```

```
>
```

```
> <http://www.apache.org/licenses/LICENSE-2.0>
```

```
>
```

```
> Unless required by applicable law or agreed to in writing, software
> distributed under the License is distributed on an "AS IS" BASIS, WITHOUT
> WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the
> License for the specific language governing permissions and limitations under
> the License.
```

```
### KTX-Parse
```

```
https://github.com/donmccurdy/KTX-Parse/
```

```
> (The MIT License)
```

```
>
```

```
> Copyright (c) 2020 Don McCurdy
```

```
>
```

```
> Permission is hereby granted, free of charge, to any person obtaining a copy
> of this software and associated documentation files (the "Software"), to deal
> in the Software without restriction, including without limitation the rights
> to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
> copies of the Software, and to permit persons to whom the Software is
> furnished to do so, subject to the following conditions:
```

```
>
> The above copyright notice and this permission notice shall be included in
> all copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
> FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
> AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
> LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
> OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
> THE SOFTWARE.

### meshoptimizer

https://github.com/zeux/meshoptimizer/blob/master/LICENSE.md

> MIT License
>
> Copyright (c) 2016-2021 Arseny Kapoulkine
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
> of this software and associated documentation files (the "Software"), to deal
> in the Software without restriction, including without limitation the rights
> to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
> copies of the Software, and to permit persons to whom the Software is
> furnished to do so, subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in all
> copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
> FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
> AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
> LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
> OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
> SOFTWARE.

### pako

https://github.com/nodeca/pako

> (The MIT License)
>
> Copyright (C) 2014-2017 by Vitaly Puzrin and Andrei Tuputcyn
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
> of this software and associated documentation files (the "Software"), to deal
> in the Software without restriction, including without limitation the rights
> to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
> copies of the Software, and to permit persons to whom the Software is
> furnished to do so, subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in
> all copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
> FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
> AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
> LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
```

---

> OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN  
> THE SOFTWARE.

### protobuf

<https://github.com/dcodeIO/ProtoBuf.js>

> Copyright (c) 2016, Daniel Wirtz All rights reserved.  
>  
> Redistribution and use in source and binary forms, with or without  
> modification, are permitted provided that the following conditions are  
> met:  
>  
> - Redistributions of source code must retain the above copyright  
> notice, this list of conditions and the following disclaimer.  
> - Redistributions in binary form must reproduce the above copyright  
> notice, this list of conditions and the following disclaimer in the  
> documentation and/or other materials provided with the distribution.  
> - Neither the name of its author, nor the names of its contributors  
> may be used to endorse or promote products derived from this software  
> without specific prior written permission.  
>  
> THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS  
> "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT  
> LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR  
> A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT  
> OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,  
> SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT  
> LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,  
> DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY  
> THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
> (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
> OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

### Draco

<https://github.com/google/draco>

> Licensed under the Apache License, Version 2.0 (the "License"); you may not  
> use this file except in compliance with the License. You may obtain a copy of  
> the License at  
>  
> <<http://www.apache.org/licenses/LICENSE-2.0>>  
>  
> Unless required by applicable law or agreed to in writing, software  
> distributed under the License is distributed on an "AS IS" BASIS, WITHOUT  
> WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the  
> License for the specific language governing permissions and limitations under  
> the License.

### DOMPurify

<https://github.com/cure53/DOMPurify>

> DOMPurify  
> Copyright 2015 Mario Heiderich  
>  
> DOMPurify is free software; you can redistribute it and/or modify it under the  
> terms of either:  
>  
> a) the Apache License Version 2.0, or

```
> b) the Mozilla Public License Version 2.0
>
> Licensed under the Apache License, Version 2.0 (the "License");
> you may not use this file except in compliance with the License.
> You may obtain a copy of the License at
>
> http://www.apache.org/licenses/LICENSE-2.0
>
> Unless required by applicable law or agreed to in writing, software
> distributed under the License is distributed on an "AS IS" BASIS,
> WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
> See the License for the specific language governing permissions and
> limitations under the License.

### LERC

http://github.com/Esri/lerc/

> Copyright 2015 Esri
>
> Licensed under the Apache License, Version 2.0 (the "License");
> you may not use this file except in compliance with the License.
> You may obtain a copy of the License at
>
> http://www.apache.org/licenses/LICENSE-2.0
>
> Unless required by applicable law or agreed to in writing, software
> distributed under the License is distributed on an "AS IS" BASIS,
> WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
> See the License for the specific language governing permissions and
> limitations under the License.
>
> A copy of the license and additional notices are located with the
> source distribution at:
>
> http://github.com/Esri/lerc/

### GraphemeSplitter

https://github.com/orling/grapheme-splitter

> The MIT License (MIT)
>
> Copyright (c) 2015 Orlin Georgiev
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
```

```
### bitmap-sdf

https://github.com/dy/bitmap-sdf

> (c) 2017 Dima Yv. MIT License
>
> Development supported by plot.ly.

### URI.js

http://medialize.github.io/URI.js/

> The MIT License (MIT)
>
> Copyright (c) 2011 Rodney Rehm
>
> Permission is hereby granted, free of charge, to any person obtaining a copy
> of this software and associated documentation files (the "Software"), to deal
> in the Software without restriction, including without limitation the rights
> to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
> copies of the Software, and to permit persons to whom the Software is
> furnished to do so, subject to the following conditions:
>
> The above copyright notice and this permission notice shall be included in
> all copies or substantial portions of the Software.
>
> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
> FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
> AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
> LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
> OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
> THE SOFTWARE.

----- Fourth-party information -----

zip.js
== License
> Copyright (c) 2013 Gildas Lormeau. All rights reserved.
>
> Redistribution and use in source and binary forms, with or without modification, are
permitted provided that the following conditions are met:
>
> 1. Redistributions of source code must retain the above copyright notice, this list
of conditions and the following disclaimer.
>
> 2. Redistributions in binary form must reproduce the above copyright notice, this
list of conditions and the following disclaimer in the documentation and/or other
materials provided with the distribution.
>
> 3. The names of the authors may not be used to endorse or promote products derived
from this software without specific prior written permission.
>
> THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL JCRAFT, INC. OR ANY
CONTRIBUTORS TO THIS SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
```

OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2013 Gildas Lormeau. All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 2

autolinker

== License

The MIT License (MIT)

Copyright (c) 2015 Gregory Jacobs (<http://greg-jacobs.com>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2015 Gregory Jacobs (<http://greg-jacobs.com>)

----- (separator) -----

== NAME OF DEPENDENCY 3

basis\_universal

== License Type

Apache 2.0

== Copyright Notices

Copyright (C) 2019-2021 Binomial LLC. All Rights Reserved.

----- (separator) -----

== NAME OF DEPENDENCY 4

lodepng

== License Type

zlib

== Copyright Notices

Copyright (c) 2005-2019 Lode Vandevenne

----- (separator) -----

== NAME OF DEPENDENCY 5

apg\_bmp

== License Type

Apache 2.0

== Copyright Notices

Copyright 2019 Anton Gerdelan

----- (separator) -----

== NAME OF DEPENDENCY 6

tcuAstcUtil.cpp

== License Type

Apache 2.0

== Copyright Notices

Copyright 2016 The Android Open Source Project

----- (separator) -----



```

== NAME OF DEPENDENCY 7
bitmap_sdf
== License
Copyright 2017 Dima Yv, MIT License

```

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

```

== Copyright Notices
Copyright 2017 Dima Yv, MIT License

```

----- (separator) -----

```

== NAME OF DEPENDENCY 8
DOMPurify
== License
DOMPurify
Copyright 2023 Dr.-Ing. Mario Heiderich, Cure53

```

DOMPurify is free software; you can redistribute it and/or modify it under the terms of either:

- a) the Apache License Version 2.0, or
- b) the Mozilla Public License Version 2.0

Oracle elects to receive the code under the Apache license.

Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or

agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

== Copyright Notices  
Copyright 2023 Dr.-Ing. Mario Heiderich, Cure53

----- (separator) -----  
== NAME OF DEPENDENCY 9  
draco3d  
== License

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

-----  
Files: docs/assets/js/ASCIIMathML.js

Copyright (c) 2014 Peter Jipsen and other ASCIIMathML.js contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
Files: docs/assets/css/pygments/\*

This is free and unencumbered software released into the public domain.

Anyone is free to copy, modify, publish, use, compile, sell, or distribute this software, either in source code form or as a compiled binary, for any purpose, commercial or non-commercial, and by any means.

In jurisdictions that recognize copyright laws, the author or authors of this software dedicate any and all copyright interest in the software to the public domain. We make this dedication for the benefit of the public at large and to the detriment of our heirs and



successors. We intend this dedication to be an overt act of relinquishment in perpetuity of all present and future rights to this software under copyright law.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

For more information, please refer to <<http://unlicense.org>>

== Copyright Notices

# Copyright 2021 The Draco Authors

#

# Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

#

# <http://www.apache.org/licenses/LICENSE-2.0>

#

# Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

----- (separator) -----

== NAME OF DEPENDENCY 10

earcut

== License

ISC License

Copyright (c) 2016, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2016, Mapbox

----- (separator) -----

== NAME OF DEPENDENCY 11

grapheme-splitter

== License

The MIT License (MIT)

Copyright (c) 2015 Orlin Georgiev

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell

copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2015 Orlin Georgiev

----- (separator) -----

== NAME OF DEPENDENCY 12

jsep

== License

> Copyright (c) 2013 Stephen Oney, <https://ericmekens.github.io/jsep/>

>

> Permission is hereby granted, free of charge, to any person obtaining  
> a copy of this software and associated documentation files (the  
> "Software"), to deal in the Software without restriction, including  
> without limitation the rights to use, copy, modify, merge, publish,  
> distribute, sublicense, and/or sell copies of the Software, and to  
> permit persons to whom the Software is furnished to do so, subject to  
> the following conditions:

>

> The above copyright notice and this permission notice shall be  
> included in all copies or substantial portions of the Software.

>

> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,  
> EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF  
> MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND  
> NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE  
> LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION  
> OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION  
> WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2013 Stephen Oney, <https://ericmekens.github.io/jsep/>

----- (separator) -----

== NAME OF DEPENDENCY 13

knockout

== License Type

> License: MIT (<http://www.opensource.org/licenses/mit-license.php>)

>

> Permission is hereby granted, free of charge, to any person obtaining a copy  
> of this software and associated documentation files (the "Software"), to deal in  
> the Software without restriction, including without limitation the rights to  
> use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of  
> the Software, and to permit persons to whom the Software is furnished to do so,  
> subject to the following conditions:

>

> The above copyright notice and this permission notice shall be included in all  
> copies or substantial portions of the Software.

>

> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
> IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS

FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

(c) The Knockout.js team - <http://knockoutjs.com/>

----- (separator) -----

== NAME OF DEPENDENCY 14

knockout ES5 plugin

== License

The MIT License (MIT)

Copyright (c) Steve Sanderson

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) Steve Sanderson

----- (separator) -----

== NAME OF DEPENDENCY 15

ctx-parse

== License

The MIT License (MIT)

Copyright (c) 2020 Don McCurdy

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

---

Copyright (c) 2020 Don McCurdy  
----- (separator)-----  
== NAME OF DEPENDENCY 16  
lerc  
== License  
Apache License - 2.0

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication

that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

1. You must give any other recipients of the Work or Derivative Works a copy of this License; and

2. You must cause any modified files to carry prominent notices stating that You changed the files; and

3. You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

4. If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License.

You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License. You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use,

reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

== Copyright Notices

LERC  
Copyright 2015-2018 Esri

This software embodiment is an implementation of

United States Patent 9,002,126, Limited Error Raster Compression (LERC).  
Assignee: Esri.

Assignors/Inventors: Maurer, Thomas (Redlands, CA); Gao, Peng (Redlands, CA);  
Becker, Peter (Redlands, CA).

The right to practice this patent is hereby granted under the Apache V2.0  
License Agreement,

Clause 3 - Grant of Patent License for the following fields of use:  
GIS, terrestrial and extra-terrestrial mapping, and other related earth sciences applications.

The license is available at  
<http://github.com/Esri/lerc/>

For additional information, contact:

Environmental Systems Research Institute, Inc.  
Attn: Contracts and Legal Department  
380 New York Street  
Redlands, CA 92373  
E-mail: [contracts@esri.com](mailto:contracts@esri.com)

----- (separator) -----

== NAME OF DEPENDENCY 17

mersenne-twister

== License Type

Copyright (C) 1997 - 2002, Makoto Matsumoto and Takuji Nishimura,  
All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions  
are met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the distribution.
3. The names of its contributors may not be used to endorse or promote  
products derived from this software without specific prior written  
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS  
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT  
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR  
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR  
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,  
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,  
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR  
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF  
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING  
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS  
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (C) 1997 - 2002, Makoto Matsumoto and Takuji Nishimura,  
All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 18

meshoptimizer

== License Type

MIT License

Copyright (c) 2016-2021 Arseny Kapoulkine

Permission is hereby granted, free of charge, to any person obtaining a copy  
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016-2021 Arseny Kapoulkine

----- (separator) -----

== NAME OF DEPENDENCY 19

nosleep.js

== License Type

The MIT License (MIT)

Copyright (c) Rich Tibbett

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) Rich Tibbett

----- (separator) -----

== NAME OF DEPENDENCY 20

pako

== License Type

(The MIT License)

Copyright (C) 2014-2017 by Vitaly Puzrin and Andrei Tuputcyn

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in



all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

#### ZLib License

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
  2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
  3. This notice may not be removed or altered from any source distribution.
- == Copyright Notices  
Copyright (C) 2014-2017 by Vitaly Puzrin and Andrei Tuputcyn

----- (separator) -----

== NAME OF DEPENDENCY 21

protobufjs

== License

This license applies to all parts of protobuf.js except those files either explicitly including or referencing a different license or located in a directory containing a different LICENSE file.

---

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

Code generated by the command line utilities is owned by the owner of the input file used when generating it. This code is not standalone and requires a support library to be linked with it. This support library is itself covered by the above license.

Subcomponents which are subjects to the same license:

@protobufjs/aspromise  
@protobufjs/base64  
@protobufjs/codegen  
@protobufjs/eventemitter  
@protobufjs/fetch  
@protobufjs/float  
@protobufjs/inquire  
@protobufjs/path  
@protobufjs/pool  
@protobufjs/utf8  
@protobufjs/tsd-jsdoc

@protobufjs/deep-equal

This software is released under the MIT license:

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Fourth-party dependencies licenses

long.js - Apache 2

@types/node - MIT

This project is licensed under the MIT license.

Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so,

subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 22

rbush

== License

MIT License

Copyright (c) 2016 Vladimir Agafonkin

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2016 Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 23

topjson-client

== License

Copyright 2012-2019 Michael Bostock

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright 2012-2019 Michael Bostock

----- (separator) -----

---

== NAME OF DEPENDENCY 24

tween

== License

The MIT License

Copyright (c) 2010-2012 Tween.js authors.

Easing equations Copyright (c) 2001 Robert Penner <http://robertpenner.com/easing/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2010-2012 Tween.js authors.

----- (separator) -----

== NAME OF DEPENDENCY 25

kdbush

== License

ISC License

Copyright (c) 2016, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2016, Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 26

tslib

== License

Copyright (c) Microsoft Corporation.

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY

AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

```
/*! *****
Copyright (c) Microsoft Corporation.
```

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

```
***** */
----- (separator) -----
```

== NAME OF DEPENDENCY 27

Weakmap

== License

\* (The MIT License)

\*

\* Copyright (c) 2012 Brandon Benvie <<http://bbenvie.com>>

\*

\* Permission is hereby granted, free of charge, to any person obtaining a copy of this software and

\* associated documentation files (the 'Software'), to deal in the Software without restriction,

\* including without limitation the rights to use, copy, modify, merge, publish, distribute,

\* sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is

\* furnished to do so, subject to the following conditions:

\*

\* The above copyright notice and this permission notice shall be included with all copies or

\* substantial portions of the Software.

\*

\* THE SOFTWARE IS PROVIDED 'AS IS', WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING

\* BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND

\* NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,

\* DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

\* OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2012 Brandon Benvie <http://bbenvie.com>

```
----- (separator) -----
```

== NAME OF DEPENDENCY 28

quickselect

== License

ISC License

Copyright (c) 2018, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

== Copyright Notices

Copyright (c) 2018, Vladimir Agafonkin

----- (separator) -----

== NAME OF DEPENDENCY 29

commander

== License

(The MIT License)

Copyright (c) 2011 TJ Holowaychuk <tj@vision-media.ca>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the 'Software'), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED 'AS IS', WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2011 TJ Holowaychuk <tj@vision-media.ca>

----- (separator) -----

== NAME OF DEPENDENCY 30

@protobufjs/aspromise

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 31

@protobufjs/base64

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 32

@protobufjs/codegen

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

\* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 33

@protobufjs/eventmitter

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 34

@protobufjs/fetch

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.



- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 35

@protobufjs/float

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 36

@protobufjs/inquire

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 37

@protobufjs/path

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 38

@protobufjs/pool

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 39

@protobuffs/utf8

== License

Copyright (c) 2016, Daniel Wirtz All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of its author, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

== Copyright Notices

Copyright (c) 2016, Daniel Wirtz All rights reserved.

----- (separator) -----

== NAME OF DEPENDENCY 40

@types/node

== License

This project is licensed under the MIT license.  
Copyrights are respective of each contributor listed at the beginning of each definition file.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

```
/**
 * License for programmatically and manually incorporated
 * documentation aka. `JSDoc` from https://github.com/nodejs/node/tree/master/doc
 *
 * Copyright Node.js contributors. All rights reserved.
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to
 * deal in the Software without restriction, including without limitation the
 * rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
 * sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
 * FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS
 * IN THE SOFTWARE.
 */
```

----- (separator) -----

== NAME OF DEPENDENCY 41

@protobudjs/deep-equal

== License

This software is released under the MIT license:

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

----- (separator) -----

== NAME OF DEPENDENCY 42

long

== License

Apache 2.0

== Copyright Notices

/\*\*

\* @license

\* Copyright 2009 The Closure Library Authors

\* Copyright 2020 Daniel Wirtz / The long.js Authors.

\*

\* Licensed under the Apache License, Version 2.0 (the "License");

\* you may not use this file except in compliance with the License.

\* You may obtain a copy of the License at

\*

\* <http://www.apache.org/licenses/LICENSE-2.0>

\*

\* Unless required by applicable law or agreed to in writing, software

\* distributed under the License is distributed on an "AS IS" BASIS,

\* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

\* See the License for the specific language governing permissions and

\* limitations under the License.

\*

\* SPDX-License-Identifier: Apache-2.0

\*/

----- (separator) -----

== NAME OF DEPENDENCY 43

requirejs

== License

> Copyright (c) 2010-2015, The Dojo Foundation

>

> Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

>

> The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

>

> THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2010-2015, The Dojo Foundation

## POI-OOXML

**Vendor:** The Apache Software Foundation

**Version: 5.2.3**

----- Top-level license -----  
 Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

## TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

## 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition,

"control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.
5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

APACHE POI SUBCOMPONENTS:

Apache POI includes subcomponents with separate copyright notices and license terms. Your use of these subcomponents is subject to the terms and conditions of the following licenses:

Office Open XML schemas (poi-ooxml-full-\*.jar)

The Office Open XML schema definitions used by Apache POI are a part of the Office Open XML ECMA Specification (ECMA-376, [1]). As defined in section 9.4 of the ECMA bylaws [2], this specification is available to all interested parties without restriction:

9.4 All documents when approved shall be made available to all interested parties without restriction.



Furthermore, both Microsoft and Adobe have granted patent licenses to this work [3,4,5].

[1] <http://www.ecma-international.org/publications/standards/Ecma-376.htm>

[2] <http://www.ecma-international.org/memento/Ecmabylaws.htm>

[3] <http://www.microsoft.com/openspecifications/en/us/programs/osp/default.aspx>

[4] <http://www.ecma-international.org/publications/files/ECMA-ST/Ecma%20PATENT/Patent%20statements%20ok/>

ECMA-376%20Edition%202%20Microsoft%20Patent%20Declaration.pdf

[5] <http://www.ecma-international.org/publications/files/ECMA-ST/Ecma%20PATENT/Patent%20statements%20ok/ECMA-376%20Adobe%20Patent%20Declaration.pdf>

Bouncy Castle library (bcprov-\*.jar, bcpqg-\*.jar, bcpkix-\*.jar)

Copyright (c) 2000 - 2021 The Legion of the Bouncy Castle Inc.

(<https://www.bouncycastle.org>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

CurvesAPI / Curve API

BSD License

Copyright (c) 2000-2015 [www.hamcrest.org](http://www.hamcrest.org)

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. Neither the name of Hamcrest nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Log4j 2 library (log4j-api-\*.jar)

Apache License Version 2.0

inbot-utils (<https://github.com/Inbot/inbot-utils>)

The MIT License (MIT)

Copyright (c) 2015 Inbot

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- Copyright notices -----

Apache POI

Copyright 2003-2022 The Apache Software Foundation

This product includes software developed at

The Apache Software Foundation (<https://www.apache.org/>).

This product contains parts that were originally based on software from BEA.

Copyright (c) 2000-2003, BEA Systems, <http://www.bea.com/> (dead link),

which was acquired by Oracle Corporation in 2008.

<http://www.oracle.com/us/corporate/Acquisitions/bea/index.html>

[https://en.wikipedia.org/wiki/BEA\\_Systems](https://en.wikipedia.org/wiki/BEA_Systems)

Note: The ASF Secretary has on hand a Software Grant Agreement (SGA) from

BEA Systems, Inc. dated 9 Sep 2003 for XMLBeans signed by their EVP/CFO.

This product contains W3C XML Schema documents. Copyright 2001-2003 (c)

World Wide Web Consortium (Massachusetts Institute of Technology, European

Research Consortium for Informatics and Mathematics, Keio University)

This product contains the chunks\_parse\_cmds.tbl file from the vsdump program.

Copyright (C) 2006-2007 Valek Filippov (frob@df.ru)

This product contains parts of the eID Applet project

<http://eid-applet.googlecode.com> and <https://github.com/e-Contract/eid-applet>.

applet>.

Copyright (c) 2009-2018

FedICT (federal ICT department of Belgium), e-Contract.be BVBA (<https://www.e-contract.be>),

Bart Hanssens from FedICT

Bart Hanssens from FedICT

----- Fourth-party information -----

== NAME OF DEPENDENCY 1

poi

== License Type

See POI license below

== Copyright Notices

Apache POI

Copyright 2003-2022 The Apache Software Foundation

This product includes software developed at

The Apache Software Foundation (<https://www.apache.org/>).

This product contains parts that were originally based on software from BEA.

Copyright (c) 2000-2003, BEA Systems, <http://www.bea.com/> (dead link),

which was acquired by Oracle Corporation in 2008.

<http://www.oracle.com/us/corporate/Acquisitions/bea/index.html>

[https://en.wikipedia.org/wiki/BEA\\_Systems](https://en.wikipedia.org/wiki/BEA_Systems)

Note: The ASF Secretary has on hand a Software Grant Agreement (SGA) from

BEA Systems, Inc. dated 9 Sep 2003 for XMLBeans signed by their EVP/CFO.

This product contains W3C XML Schema documents. Copyright 2001-2003 (c)

World Wide Web Consortium (Massachusetts Institute of Technology, European

Research Consortium for Informatics and Mathematics, Keio University)

This product contains the chunks\_parse\_cmds.tbl file from the vsdump program.

Copyright (C) 2006-2007 Valek Filippov (frob@df.ru)

This product contains parts of the eID Applet project

<http://eid-applet.googlecode.com> and <https://github.com/e-Contract/eid-applet>.

```

applet>.
Copyright (c) 2009-2018
FedICT (federal ICT department of Belgium), e-Contract.be BVBA (https://www.e-
contract.be),
Bart Hanssens from FedICT
----- (separator) -----
== NAME OF DEPENDENCY 2
poi-ooxml-lite
== License Type
See POI license below
== Copyright Notices
Apache POI
Copyright 2003-2022 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (https://www.apache.org/).
This product contains parts that were originally based on software from BEA.
Copyright (c) 2000-2003, BEA Systems, <http://www.bea.com/> (dead link),
which was acquired by Oracle Corporation in 2008.
<http://www.oracle.com/us/corporate/Acquisitions/bea/index.html>
<https://en.wikipedia.org/wiki/BEA_Systems>
Note: The ASF Secretary has on hand a Software Grant Agreement (SGA) from
BEA Systems, Inc. dated 9 Sep 2003 for XMLBeans signed by their EVP/CFO.
This product contains W3C XML Schema documents. Copyright 2001-2003 (c)
World Wide Web Consortium (Massachusetts Institute of Technology, European
Research Consortium for Informatics and Mathematics, Keio University)
This product contains the chunks_parse_cmds.tbl file from the vsdump program.
Copyright (C) 2006-2007 Valek Filippov (frob@df.ru)
This product contains parts of the eID Applet project
<http://eid-applet.googlecode.com> and <https://github.com/e-Contract/eid-applet>.
Copyright (c) 2009-2018
FedICT (federal ICT department of Belgium), e-Contract.be BVBA (https://www.e-
contract.be),
Bart Hanssens from FedICT
----- (separator) -----
== NAME OF DEPENDENCY 3
xmlbeans
== License Type
Apache 2.0
== Copyright Notices
=====
== NOTICE file corresponding to section 4(d) of the Apache License, ==
== Version 2.0, in this case for the Apache XmlBeans distribution. ==
=====
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).
Portions of this software were originally based on the following:
- software copyright (c) 2000-2003, BEA Systems, <http://www.bea.com/>.
Note: The ASF Secretary has on hand a Software Grant Agreement (SGA) from
BEA Systems, Inc. dated 9 Sep 2003 for XMLBeans signed by their EVP/CFO.
Aside from contributions to the Apache XMLBeans project, this
software also includes:
- one or more source files from the Apache Xerces-J and Apache Axis
  products, Copyright (c) 1999-2003 Apache Software Foundation
- W3C XML Schema documents Copyright 2001-2003 (c) World Wide Web
  Consortium (Massachusetts Institute of Technology, European Research
  Consortium for Informatics and Mathematics, Keio University)
- resolver.jar from Apache Xml Commons project,
  Copyright (c) 2001-2003 Apache Software Foundation
----- (separator) -----
== NAME OF DEPENDENCY 4
commons-codec

```

```

== License Type
Apache 2.0
== Copyright Notices
Apache Commons Codec
Copyright 2002-2020 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (https://www.apache.org/).
src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java
contains test data from http://aspell.net/test/orig/batch0.tab.
Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org)
=====
The content of package org.apache.commons.codec.language.bm has been translated
from the original php source code available at http://stevemorse.org/phoneticinfo.htm
with permission from the original authors.
Original source copyright:
Copyright (c) 2008 Alexander Beider & Stephen P. Morse.
----- (separator) -----
== NAME OF DEPENDENCY 5
commons-collections4
== License Type
Apache 2.0
== Copyright Notices
Apache Commons Collections
Copyright 2001-2019 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).
----- (separator) -----
== NAME OF DEPENDENCY 6
commons-math
== License Type
Apache 2.0 - commons-math
== Copyright Notices
Apache Commons Math
Copyright 2001-2016 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).
This product includes software developed for Orekit by
CS Systèmes d'Information (http://www.c-s.fr/)
Copyright 2010-2012 CS Systèmes d'Information
----- (separator) -----
== NAME OF DEPENDENCY 7
SparseBitSet
== License Type
Apache 2.0 - SparseBitSet
== Copyright Notices
== none found
----- (separator) -----
== NAME OF DEPENDENCY 8
log4j-api
== License Type
Apache 2.0 - log4j
== Copyright Notices
Apache Log4j
Copyright 1999-2021 Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).
ResolverUtil.java
Copyright 2005-2006 Tim Fennell
Dumbster SMTP test server
Copyright 2004 Jason Paul Kitchen

```

```

TypeUtil.java
Copyright 2002-2012 Ramnivas Laddad, Juergen Hoeller, Chris Beams
picocli (http://picocli.info)
Copyright 2017 Remko Popma
TimeoutBlockingWaitStrategy.java and parts of Util.java
Copyright 2011 LMAX Ltd.
----- (separator) -----
== NAME OF DEPENDENCY 9
commons-io
== License Type
Apache 2.0
== Copyright Notices
Apache Commons IO
Copyright 2002-2023 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (https://www.apache.org/).
----- (separator) -----
== NAME OF DEPENDENCY 10
curvesapi
== License Type
3-Clause BSD - curvesapi
== Copyright Notices
Copyright (c) 2005, Graph Builder
All rights reserved.
----- (separator) -----
== NAME OF DEPENDENCY 11
commons-compress
== License Type
Apache 2.0
== Copyright Notices
Apache Commons Compress
Copyright 2002-2023 The Apache Software Foundation
This product includes software developed at
The Apache Software Foundation (https://www.apache.org/).
---
The files in the package org.apache.commons.compress.archivers.sevenz
were derived from the LZMA SDK, version 9.20 (C/ and CPP/7zip/),
which has been placed in the public domain:
"LZMA SDK is placed in the public domain." (http://www.7-zip.org/sdk.html)
---
The test file lbzip2_32767.bz2 has been copied from libbzip2's source
repository:
This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2019 Julian R Seward. All
rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. The origin of this software must not be misrepresented; you must
not claim that you wrote the original software. If you use this
software in a product, an acknowledgment in the product
documentation would be appreciated but is not required.
3. Altered source versions must be plainly marked as such, and must
not be misrepresented as being the original software.
4. The name of the author may not be used to endorse or promote
products derived from this software without specific prior written
permission.
THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED

```

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@acm.org

----- (separator) -----

== LICENSES

== Text of license (Apache 2.0 - POI license)

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution." "Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.
5. Submission of Contributions. Unless You explicitly state otherwise,

any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");

you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software

distributed under the License is distributed on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and

limitations under the License.

APACHE POI SUBCOMPONENTS:



Apache POI includes subcomponents with separate copyright notices and license terms. Your use of these subcomponents is subject to the terms and conditions of the following licenses:

Office Open XML schemas (poi-ooxml-full-\*.jar)

The Office Open XML schema definitions used by Apache POI are a part of the Office Open XML ECMA Specification (ECMA-376, [1]). As defined in section 9.4 of the ECMA bylaws [2], this specification is available to all interested parties without restriction:

9.4 All documents when approved shall be made available to all interested parties without restriction.

Furthermore, both Microsoft and Adobe have granted patent licenses to this work [3,4,5].

[1] <http://www.ecma-international.org/publications/standards/Ecma-376.htm>

[2] <http://www.ecma-international.org/memento/Ecmabylaws.htm>

[3] <http://www.microsoft.com/openspecifications/en/us/programs/osp/default.aspx>

[4] <http://www.ecma-international.org/publications/files/ECMA-ST/Ecma%20PATENT/Patent%20statements%20ok/>

ECMA-376%20Edition%202%20Microsoft%20Patent%20Declaration.pdf

[5] <http://www.ecma-international.org/publications/files/ECMA-ST/Ecma%20PATENT/Patent%20statements%20ok/ECMA-376%20Adobe%20Patent%20Declaration.pdf>

Bouncy Castle library (bcprov-\*.jar, bcpkg-\*.jar, bcpkix-\*.jar)

Copyright (c) 2000 - 2021 The Legion of the Bouncy Castle Inc.

(<https://www.bouncycastle.org>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

CurvesAPI / Curve API

BSD License

Copyright (c) 2000-2015 [www.hamcrest.org](http://www.hamcrest.org)

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. Neither the name of Hamcrest nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING

NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Log4j 2 library (log4j-api-\*.jar)  
 Apache License Version 2.0

inbot-utils (<https://github.com/Inbot/inbot-utils>)  
 The MIT License (MIT)  
 Copyright (c) 2015 Inbot

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:  
 The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Text of license (Apache 2.0)

Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including

the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution." "Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]  
Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at  
    <http://www.apache.org/licenses/LICENSE-2.0>  
Unless required by applicable law or agreed to in writing, software  
distributed under the License is distributed on an "AS IS" BASIS,  
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
See the License for the specific language governing permissions and  
limitations under the License.

== Text of license (Apache 2.0 - commons-math)  
    Apache License  
        Version 2.0, January 2004  
        <http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,  
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by  
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all  
other entities that control, are controlled by, or are under common  
control with that entity. For the purposes of this definition,  
"control" means (i) the power, direct or indirect, to cause the  
direction or management of such entity, whether by contract or  
otherwise, or (ii) ownership of fifty percent (50%) or more of the  
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity  
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,  
including but not limited to software source code, documentation  
source, and configuration files.

"Object" form shall mean any form resulting from mechanical  
transformation or translation of a Source form, including but  
not limited to compiled object code, generated documentation,  
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or  
Object form, made available under the License, as indicated by a  
copyright notice that is included in or attached to the work  
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object  
form, that is based on (or derived from) the Work and for which the  
editorial revisions, annotations, elaborations, or other modifications  
represent, as a whole, an original work of authorship. For the purposes  
of this License, Derivative Works shall not include works that remain  
separable from, or merely link (or bind by name) to the interfaces of,  
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including  
the original version of the Work and any modifications or additions  
to that Work or Derivative Works thereof, that is intentionally  
submitted to Licensor for inclusion in the Work by the copyright owner  
or by an individual or Legal Entity authorized to submit on behalf of  
the copyright owner. For the purposes of this definition, "submitted"  
means any form of electronic, verbal, or written communication sent  
to the Licensor or its representatives, including but not limited to  
communication on electronic mailing lists, source code control systems,  
and issue tracking systems that are managed by, or on behalf of, the  
Licensor for the purpose of discussing and improving the Work, but  
excluding communication that is conspicuously marked or otherwise  
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity

- on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.
2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
  3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
  4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
    - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
    - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
    - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
    - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.
  5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of

this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and limitations under the License.

Apache Commons Math includes the following code provided to the ASF under the Apache License 2.0:

- The inverse error function implementation in the Erf class is based on CUDA

code developed by Mike Giles, Oxford-Man Institute of Quantitative Finance, and published in GPU Computing Gems, volume 2, 2010 (grant received on March 23th 2013)

- The LinearConstraint, LinearObjectiveFunction, LinearOptimizer, Relationship, SimplexSolver and SimplexTableau classes in package org.apache.commons.math3.optimization.linear include software developed by Benjamin McCann (<http://www.benmccann.com>) and distributed with the following copyright: Copyright 2009 Google Inc. (grant received on March 16th 2009)
- The class "org.apache.commons.math3.exception.util.LocalizedFormatsTest" which is an adapted version of "OrekitMessagesTest" test class for the Orekit library
- The "org.apache.commons.math3.analysis.interpolation.HermiteInterpolator" has been imported from the Orekit space flight dynamics library.

=====

APACHE COMMONS MATH DERIVATIVE WORKS:

The Apache commons-math library includes a number of subcomponents whose implementation is derived from original sources written in C or Fortran. License terms of the original sources are reproduced below.

=====

For the lmdcr, lmpar and qrsolv Fortran routine from minpack and translated in the LevenbergMarquardtOptimizer class in package org.apache.commons.math3.optimization.general

Original source copyright and license statement:

Minpack Copyright Notice (1999) University of Chicago. All rights reserved  
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The end-user documentation included with the redistribution, if any, must include the following acknowledgment:

"This product includes software developed by the  
University of Chicago, as Operator of Argonne National  
Laboratory.

Alternately, this acknowledgment may appear in the software itself, if and wherever such third-party acknowledgments normally appear.

4. WARRANTY DISCLAIMER. THE SOFTWARE IS SUPPLIED "AS IS" WITHOUT WARRANTY OF ANY KIND. THE COPYRIGHT HOLDER, THE UNITED STATES, THE UNITED STATES DEPARTMENT OF ENERGY, AND THEIR EMPLOYEES: (1) DISCLAIM ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE OR NON-INFRINGEMENT, (2) DO NOT ASSUME ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THE SOFTWARE, (3) DO NOT REPRESENT THAT USE OF THE SOFTWARE WOULD NOT INFRINGE PRIVATELY OWNED RIGHTS, (4) DO NOT WARRANT THAT THE SOFTWARE WILL FUNCTION UNINTERRUPTED, THAT IT IS ERROR-FREE OR THAT ANY ERRORS WILL BE CORRECTED.

5. LIMITATION OF LIABILITY. IN NO EVENT WILL THE COPYRIGHT HOLDER, THE UNITED STATES, THE UNITED STATES DEPARTMENT OF



ENERGY, OR THEIR EMPLOYEES: BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND OR NATURE, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS OR LOSS OF DATA, FOR ANY REASON WHATSOEVER, WHETHER SUCH LIABILITY IS ASSERTED ON THE BASIS OF CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE, EVEN IF ANY OF SAID PARTIES HAS BEEN WARNED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGES.

=====  
 Copyright and license statement for the odex Fortran routine developed by E. Hairer and G. Wanner and translated in GraggBulirschStoerIntegrator class in package org.apache.commons.math3.ode.nonstiff:

Copyright (c) 2004, Ernst Hairer

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
  - Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====  
 Copyright and license statement for the original Mersenne twister C routines translated in MersenneTwister class in package org.apache.commons.math3.random:

Copyright (C) 1997 - 2002, Makoto Matsumoto and Takuji Nishimura, All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The names of its contributors may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====

The initial code for shuffling an array (originally in class "org.apache.commons.math3.random.RandomDataGenerator", now replaced by a method in class "org.apache.commons.math3.util.MathArrays") was inspired from the algorithm description provided in "Algorithms", by Ian Craw and John Pulham (University of Aberdeen 1999). The textbook (containing a proof that the shuffle is uniformly random) is available here:

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.173.1898&rep=rep1&type=pdf>

=====

License statement for the direction numbers in the resource files for Sobol sequences.

-----

Licence pertaining to sobol.cc and the accompanying sets of direction numbers

-----

Copyright (c) 2008, Frances Y. Kuo and Stephen Joe  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the names of the copyright holders nor the names of the University of New South Wales and the University of Waikato and its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====

The initial commit of package "org.apache.commons.math3.ml.neuralnet" is an adapted version of code developed in the context of the Data Processing and Analysis Consortium (DPAC) of the "Gaia" project of the European Space Agency (ESA).

=====

The initial commit of the class "org.apache.commons.math3.special.BesselJ" is an adapted version of code translated from the netlib Fortran program, rjbesl <http://www.netlib.org/specfun/rjbesl> by R.J. Cody at Argonne National Laboratory (USA). There is no license or copyright statement included with the original Fortran sources.

=====

The BracketFinder (package org.apache.commons.math3.optimization.univariate) and PowellOptimizer (package org.apache.commons.math3.optimization.general) classes are based on the Python code in module "optimize.py" (version 0.5) developed by Travis E. Oliphant for the SciPy library (<http://www.scipy.org/>)  
Copyright © 2003-2009 SciPy Developers.

SciPy license

Copyright © 2001, 2002 Enthought, Inc.

All rights reserved.

Copyright © 2003-2013 SciPy Developers.

All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Enthought nor the names of the SciPy Developers may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====  
 == Text of license (Apache 2.0 - SparseBitSet license)

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity.

For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and

issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

#### 2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

#### 3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

#### 4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and

You must cause any modified files to carry prominent notices stating that You changed the files; and

You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

#### 5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of

any separate license agreement you may have executed with Licensor regarding such Contributions.

#### 6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

#### 7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

#### 8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

#### 9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

== Text of License (Apache 2.0 - log4j)

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition,

"control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of

the Derivative Works; and

- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify,

defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 1999-2005 The Apache Software Foundation

Licensed under the Apache License, Version 2.0 (the "License");

you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

== License text 3-Clause BSD - curvesapi

Copyright (c) 2005, Graph Builder

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of Graph Builder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## JavaScript Extension Toolkit (JET)

**Vendor:** Oracle

**Version:** 13.1.4

# Oracle JET 13.1.4

You may not use the identified files except in compliance with the Universal Permissive License (UPL), Version 1.0 (the "License.")

You may obtain a copy of the License at <https://opensource.org/licenses/UPL>. A copy of the license is also reproduced below.



Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and limitations under the License.

Copyright (c) 2014, 2022 Oracle and/or its affiliates  
The Universal Permissive License (UPL), Version 1.0

Subject to the condition set forth below, permission is hereby granted to any person obtaining a copy of this software, associated documentation and/or data (collectively the "Software"), free of charge and under any and all copyright rights in the Software, and any and all patent rights owned or freely licensable by each licensor hereunder covering either (i) the unmodified Software as contributed to or provided by such licensor, or (ii) the Larger Works (as defined below), to deal in both

(a) the Software, and (b) any piece of software and/or hardware listed in the lrgrwrks.txt file if one is included with the Software (each a Larger Work to which the Software is contributed by such licensors), without restriction, including without limitation the rights to copy, create derivative works of, display, perform, and distribute the Software and make, use, sell, offer for sale, import, export, have made, and have sold the Software and the Larger Work(s), and to sublicense the foregoing rights on either these or other terms.

This license is subject to the following condition:

The above copyright notice and either this complete permission notice or at a minimum a reference to the UPL must be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
-----

DO NOT TRANSLATE OR LOCALIZE.

\*\*\*\*\*  
Oracle elects to use only the GNU Lesser General Public License version 2.1 (LGPL) for any software where a choice of LGPL/GPL license versions are made available with the language indicating that LGPLv2.1/GPLv2 or any later version may be used, or where a choice of which version of the LGPL/GPL is applied is unspecified.

\*\*\*\*\*

THIRD-PARTY COMPONENT FILE (path in the installation)	LICENSE (see license text reproduced below)
-----	
js/libs/chai/chai	
MIT	
js/libs/hammer/hammer	MIT
js/libs/js-signals/signals.	MIT
js/libs/jquery/jquery	MIT
js/libs/jquery/jquery-ui.custom.	MIT
js/libs/jquery/jqueryui-amd/core	MIT
js/libs/jquery/jqueryui-amd/draggable	MIT
js/libs/jquery/jqueryui-amd/mouse	MIT
js/libs/jquery/jqueryui-amd/position	MIT
js/libs/jquery/jqueryui-amd/sortable	MIT
js/libs/jquery/jqueryui-amd/widget	MIT
js/libs/knockout/knockout	MIT
js/libs/knockout/knockout-mapping-latest.js	MIT
js/libs/oj/v13.1.4/min/ojcspexpressionevaluator (cspexpressionevaluator.js)	MIT
js/libs/oj/v13.1.4/min/ojexparser	MIT
js/libs/oj/v13.1.4/min/ojknockout	MIT
js/libs/oj/v13.1.4/min/ojselectcombobox.	Apache 2.0
js/libs/oj/v13.1.4/ojtree	MIT
js/libs/oj/v13.1.4/ojL10n	MIT
js/libs/proj4js/dist/proj4	Proj4js
js/libs/require/require	MIT
js/libs/require/text	MIT
js/libs/require-css/css.min	MIT
scss/oj/v13.1.4/3rdparty/normalize/normalize.scss	MIT
js/libs/touchr/touchr.js	MIT
js/libs/preact/dist/preact.umd.js	MIT

Chai  
<https://github.com/chaijs/chai>  
 Copyright (c) 2017 Chai.js Assertion Library

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

expression-eval  
<https://github.com/donmccurdy/expression-eval>  
 Copyright (c) 2017 Don McCurdy

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

jsep -  
<https://github.com/sony/jsep>  
Copyright (c) 2013 Stephen Oney, <https://ericsmekens.github.io/jsep/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Knockout Fast Foreach

By: Brian M Hunt (C) 2015 | License: MIT

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

proj4js  
<http://proj4js.org/>  
Copyright (C) 2014 Mike Adair, Richard Greenwood, Didier Richard, Stephen Irons, Olivier Terral and Calvin Metcalf;  
Licensed under the Proj4js license

require-css  
<https://github.com/guybedford/require-css>  
Copyright (C) 2013 Guy Bedford

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Hammer.JS  
<http://hammerjs.github.io/>  
Copyright (C) 2011-2017 by Jorik Tangelder (Eight Media)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Foundation Responsive Library

<http://foundation.zurb.com>

Copyright 2014, ZURB

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Normalize.scss

Copyright © Nicolas Gallagher and Jonathan Neal

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

RequireJS i18n

<http://github.com/requirejs/i18n> for details

Copyright (c) 2010-2011, The Dojo Foundation

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

jsTree <http://jstree.com/>  
Copyright (c) 2012 Ivan Bozhanov (<http://vakata.com>)  
Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

select2.js  
<https://github.com/select2/select2>  
Copyright 2012 Igor Vaynberg  
This software is licensed under the Apache License, Version 2.0 (the "Apache License") or the GNU General Public License version 2 (the "GPL License"). You may choose either license to govern your use of this software only upon the condition that you accept all of the terms of either the Apache License or the GPL License.

You may obtain a copy of the Apache License and the GPL License at:

<http://www.apache.org/licenses/LICENSE-2.0>  
<http://www.gnu.org/licenses/gpl-2.0.html>

Unless required by applicable law or agreed to in writing, software distributed under the Apache License or the GPL License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the Apache License and the GPL License for the specific language governing permissions and limitations under the Apache License and the GPL License.

jQuery UI -  
<http://jqueryui.com>  
Includes: core.js, widget.js, mouse.js, position.js, draggable.js, sortable.js

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

jQuery JavaScript Library  
<http://jquery.com/>  
Copyright OpenJS Foundation and other contributors, <https://openjsf.org/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

JS Signals <<http://millermedeiros.github.com/js-signals/>>  
Author: Miller Medeiros

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

RequireJS text

<http://github.com/requirejs/text>

Copyright jQuery Foundation and other contributors, <https://jquery.org/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

RequireJS

<http://github.com/jrburke/requirejs>

Copyright jQuery Foundation and other contributors, <https://jquery.org/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Knockout JavaScript library

Copyright (c) 2010 Steven Sanderson, the Knockout.js team, and other contributors

<http://knockoutjs.com/>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.



THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Preact

The MIT License (MIT)  
Copyright (c) 2015-present Jason Miller

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

=====  
===== Apache-2.0 =====

The following applies to all products licensed under the Apache 2.0 License:

You may not use the identified files except in compliance with the Apache License, Version 2.0 (the "License.")

You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>. A copy of the license is also reproduced below.

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and limitations under the License.

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,

and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the

Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work

by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

=====  
===== MIT =====

The MIT License

Copyright (c) \_\_YEARS\_\_, \_\_NAMES\_\_

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

=====  
===== Proj4js =====

Mike Adair madairATdmsolutions.ca  
Richard Greenwood richATgreenwoodmap.com  
Didier Richard didier.richardATign.fr  
Stephen Irons stephen.ironsonclear.net.nz  
Olivier Terral oterralATgmail.com  
Calvin Metcalf cmetcalfATappgeo.com

Copyright (c) 2014, Mike Adair, Richard Greenwood, Didier Richard, Stephen Irons, Olivier Terral and Calvin Metcalf

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF

CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### Apache Commons Math 3.6.1

Apache Commons Math  
Copyright 2001-2012 The Apache Software Foundation

This product includes software developed by  
The Apache Software Foundation (<http://www.apache.org/>).

Licensed to the Apache Software Foundation (ASF) under one or more contributor license agreements. See the NOTICE file distributed with this work for additional information regarding copyright ownership. The ASF licenses this file to You under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be



liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Apache Commons Math includes the following code provided to the ASF under the Apache License 2.0:

- The inverse error function implementation in the Erf class is based on CUDA code developed by Mike Giles, Oxford-Man Institute of Quantitative Finance, and published in GPU Computing Gems, volume 2, 2010 (grant received on March 23th 2013)
- The LinearConstraint, LinearObjectiveFunction, LinearOptimizer, Relationship, SimplexSolver and SimplexTableau classes in package org.apache.commons.math3.optimization.linear include software developed by Benjamin McCann (<http://www.benmccann.com>) and distributed with the following copyright: Copyright 2009 Google Inc. (grant received on March 16th 2009)
- The class "org.apache.commons.math3.exception.util.LocalizedFormatsTest" which

is an adapted version of "OrekitMessagesTest" test class for the Orekit library

- The "org.apache.commons.math3.analysis.interpolation.HermiteInterpolator" has been imported from the Orekit space flight dynamics library.

=====

APACHE COMMONS MATH DERIVATIVE WORKS:

The Apache commons-math library includes a number of subcomponents whose implementation is derived from original sources written in C or Fortran. License terms of the original sources are reproduced below.

=====

For the `lmder`, `lmpar` and `qrsolv` Fortran routine from `minpack` and translated in the `LevenbergMarquardtOptimizer` class in package `org.apache.commons.math3.optimization.general`

Original source copyright and license statement:

Minpack Copyright Notice (1999) University of Chicago. All rights reserved

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The end-user documentation included with the redistribution, if any, must include the following acknowledgment:

"This product includes software developed by the University of Chicago, as Operator of Argonne National Laboratory.

Alternately, this acknowledgment may appear in the software itself, if and wherever such third-party acknowledgments normally appear.

4. WARRANTY DISCLAIMER. THE SOFTWARE IS SUPPLIED "AS IS" WITHOUT WARRANTY OF ANY KIND. THE COPYRIGHT HOLDER, THE UNITED STATES, THE UNITED STATES DEPARTMENT OF ENERGY, AND THEIR EMPLOYEES: (1) DISCLAIM ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE OR NON-INFRINGEMENT, (2) DO NOT ASSUME ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THE SOFTWARE, (3) DO NOT REPRESENT THAT USE OF THE SOFTWARE WOULD NOT INFRINGE PRIVATELY OWNED RIGHTS, (4) DO NOT WARRANT THAT THE SOFTWARE WILL FUNCTION UNINTERRUPTED, THAT IT IS ERROR-FREE OR THAT ANY ERRORS WILL

BE CORRECTED.

5. LIMITATION OF LIABILITY. IN NO EVENT WILL THE COPYRIGHT HOLDER, THE UNITED STATES, THE UNITED STATES DEPARTMENT OF ENERGY, OR THEIR EMPLOYEES: BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND OR NATURE, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS OR LOSS OF DATA, FOR ANY REASON WHATSOEVER, WHETHER SUCH LIABILITY IS ASSERTED ON THE BASIS OF CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE, EVEN IF ANY OF SAID PARTIES HAS BEEN WARNED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGES.

=====  
 Copyright and license statement for the odex Fortran routine developed by E. Hairer and G. Wanner and translated in GraggBulirschStoerIntegrator class in package org.apache.commons.math3.ode.nonstiff:

Copyright (c) 2004, Ernst Hairer

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====  
 Copyright and license statement for the original Mersenne twister C routines translated in MersenneTwister class in package org.apache.commons.math3.random:

Copyright (C) 1997 - 2002, Makoto Matsumoto and Takuji Nishimura, All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the

documentation and/or other materials provided with the distribution.

3. The names of its contributors may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====  
 The initial code for shuffling an array (originally in class "org.apache.commons.math3.random.RandomDataGenerator", now replaced by a method in class "org.apache.commons.math3.util.MathArrays") was inspired from the algorithm description provided in "Algorithms", by Ian Craw and John Pulham (University of Aberdeen 1999). The textbook (containing a proof that the shuffle is uniformly random) is available here:

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.173.1898&rep=rep1&type=pdf>

=====  
 License statement for the direction numbers in the resource files for Sobol sequences.

-----  
 Licence pertaining to sobol.cc and the accompanying sets of direction numbers

-----  
 Copyright (c) 2008, Frances Y. Kuo and Stephen Joe  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the names of the copyright holders nor the names of the University of New South Wales and the University of Waikato and its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES

(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====

The initial commit of package "org.apache.commons.math3.ml.neuralnet" is an adapted version of code developed in the context of the Data Processing and Analysis Consortium (DPAC) of the "Gaia" project of the European Space Agency (ESA).

=====

The initial commit of the class "org.apache.commons.math3.special.BesselJ" is an adapted version of code translated from the netlib Fortran program, rjbesl <http://www.netlib.org/specfun/rjbesl> by R.J. Cody at Argonne National Laboratory (USA). There is no license or copyright statement included with the original Fortran sources.

=====

The BracketFinder (package org.apache.commons.math3.optimization.univariate) and PowellOptimizer (package org.apache.commons.math3.optimization.general) classes are based on the Python code in module "optimize.py" (version 0.5) developed by Travis E. Oliphant for the SciPy library (<http://www.scipy.org/>) Copyright © 2003-2009 SciPy Developers.

SciPy license  
Copyright © 2001, 2002 Enthought, Inc.  
All rights reserved.

Copyright © 2003-2013 SciPy Developers.  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Enthought nor the names of the SciPy Developers may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

=====

## Commons Codec 1.15

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

#### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but

excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided

that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following



boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

## HttpComponents HttpClient

**Vendor:** The Apache Software Foundation

**Version:** 4.5.14

Notice file:  
Apache HttpComponents Client  
Copyright 1999-2021 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

<http://www.apache.org/licenses/LICENSE-2.0>

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and

You must cause any modified files to carry prominent notices stating that You changed the files; and

You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor,

and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

=====

This project includes Public Suffix List copied from

licensed under the terms of the Mozilla Public License, v. 2.0

Full license text:

Mozilla Public License Version 2.0

=====

## 1. Definitions

-----

### 1.1. "Contributor"

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

### 1.2. "Contributor Version"

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution.

### 1.3. "Contribution"

means Covered Software of a particular Contributor.

### 1.4. "Covered Software"

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

### 1.5. "Incompatible With Secondary Licenses"

means

(a) that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

(b) that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

### 1.6. "Executable Form"

means any form of the work other than Source Code Form.

### 1.7. "Larger Work"

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

### 1.8. "License"

means this document.

### 1.9. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

---

#### 1.10. "Modifications"

means any of the following:

- (a) any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or
- (b) any new file in Source Code Form that contains any Covered Software.

#### 1.11. "Patent Claims" of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

#### 1.12. "Secondary License"

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

#### 1.13. "Source Code Form"

means the form of the work preferred for making modifications.

#### 1.14. "You" (or "Your")

means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

### 2. License Grants and Conditions

-----

#### 2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

- (a) under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and
- (b) under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

#### 2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

### 2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License.

Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

- (a) for any code that a Contributor has removed from Covered Software;  
or
- (b) for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or
- (c) under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

### 2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

### 2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

### 2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

### 2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

## 3. Responsibilities

-----

### 3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

### 3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

- (a) such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and
- (b) You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

### 3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

### 3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

### 3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

## 4. Inability to Comply Due to Statute or Regulation

-----

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

## 5. Termination

-----

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

```
*****
*
* 6. Disclaimer of Warranty
* -----
*
* Covered Software is provided under this License on an "as is"
* basis, without warranty of any kind, either expressed, implied, or
* statutory, including, without limitation, warranties that the
* Covered Software is free of defects, merchantable, fit for a
* particular purpose or non-infringing. The entire risk as to the
* quality and performance of the Covered Software is with You.
* Should any Covered Software prove defective in any respect, You
* (not any Contributor) assume the cost of any necessary servicing,
* repair, or correction. This disclaimer of warranty constitutes an
* essential part of this License. No use of any Covered Software is
* authorized under this License except under this disclaimer.
*
*****
```

```
*****
*
* 7. Limitation of Liability
* -----
*
* Under no circumstances and under no legal theory, whether tort
* (including negligence), contract, or otherwise, shall any
* Contributor, or anyone who distributes Covered Software as
* permitted above, be liable to You for any direct, indirect,
* special, incidental, or consequential damages of any character
* including, without limitation, damages for lost profits, loss of
* goodwill, work stoppage, computer failure or malfunction, or any
*
*****
```



\* and all other commercial damages or losses, even if such party \*  
 \* shall have been informed of the possibility of such damages. This \*  
 \* limitation of liability shall not apply to liability for death or \*  
 \* personal injury resulting from such party's negligence to the \*  
 \* extent applicable law prohibits such limitation. Some \*  
 \* jurisdictions do not allow the exclusion or limitation of \*  
 \* incidental or consequential damages, so this exclusion and \*  
 \* limitation may not apply to You. \*  
 \* \*  
 \*\*\*\*\*

## 8. Litigation

-----

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

## 9. Miscellaneous

-----

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

## 10. Versions of the License

-----

### 10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

### 10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

### 10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

### 10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses

If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the

notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

-----

This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain one at <http://mozilla.org/MPL/2.0/>.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

-----

This Source Code Form is "Incompatible With Secondary Licenses", as defined by the Mozilla Public License, v. 2.0.

-----4th party dependencies-----

Apache HttpComponents Core

From the Notice File:

Apache HttpComponents Core  
Copyright 2005-2020 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

License File:

Apache License Version 2.0

Apache Commons Logging

From the Notice File:

Apache Commons Logging  
Copyright 2003-2014 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

License File:

Apache License Version 2.0

Apache Commons Codec

From the Notice File:

Apache Commons Codec  
Copyright 2002-2017 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

src/test/org/apache/commons/codec/language/DoubleMetaphoneTest.java  
contains test data from <http://aspell.net/test/orig/batch0.tab>.  
Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org)

=====

---

The content of package org.apache.commons.codec.language.bm has been translated from the original php source code available at <http://stevemorse.org/phoneticinfo.htm> with permission from the original authors.  
Original source copyright:  
Copyright (c) 2008 Alexander Beider & Stephen P. Morse.  
License File:  
Apache License Version 2.0

## GeoNames

This distribution includes and/or the service uses a modified version of the GeoNames geographical database {For distributions: which may be found in the following file: INSERT FILE NAME}. The original GeoNames database is available at [www.geonames.org](http://www.geonames.org) under the license set forth below.

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS LICENSE DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE INFORMATION PROVIDED, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM ITS USE.

### License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

### 1. Definitions

"Adaptation" means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptations or any other form in which the Work may be recast, transformed, or adapted including in any form recognizably derived from the original, except that a work that constitutes a Collection will not be considered an Adaptation for the purpose of this License. For the avoidance of doubt, where the Work is a musical work, performance or phonogram, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered an Adaptation for the purpose of this License.

"Collection" means a collection of literary or artistic works, such as encyclopedias and anthologies, or performances, phonograms or broadcasts, or other works or subject matter other than works listed in Section 1(f) below, which, by reason of the selection and arrangement of their contents, constitute intellectual creations, in which the Work is included in its entirety in unmodified form along with one or more other contributions, each constituting separate and independent works in themselves, which together are assembled into a collective whole. A work that constitutes a Collection will not be considered an Adaptation (as defined above) for the purposes of this License.

"Distribute" means to make available to the public the original and copies of the Work or Adaptation, as appropriate, through sale or other transfer of ownership.

"Licensor" means the individual, individuals, entity or entities that offer(s) the

Work under the terms of this License.

"Original Author" means, in the case of a literary or artistic work, the individual, individuals, entity or entities who created the Work or if no individual or entity can be identified, the publisher; and in addition (i) in the case of a performance the actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, interpret or otherwise perform literary or artistic works or expressions of folklore; (ii) in the case of a phonogram the producer being the person or legal entity who first fixes the sounds of a performance or other sounds; and, (iii) in the case of broadcasts, the organization that transmits the broadcast.

"Work" means the literary and/or artistic work offered under the terms of this License including without limitation any production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression including digital form, such as a book, pamphlet and other writing; a lecture, address, sermon or other work of the same nature; a dramatic or dramatico-musical work; a choreographic work or entertainment in dumb show; a musical composition with or without words; a cinematographic work to which are assimilated works expressed by a process analogous to cinematography; a work of drawing, painting, architecture, sculpture, engraving or lithography; a photographic work to which are assimilated works expressed by a process analogous to photography; a work of applied art; an illustration, map, plan, sketch or three-dimensional work relative to geography, topography, architecture or science; a performance; a broadcast; a phonogram; a compilation of data to the extent it is protected as a copyrightable work; or a work performed by a variety or circus performer to the extent it is not otherwise considered a literary or artistic work.

"You" means an individual or entity exercising rights under this License who has not previously violated the terms of this License with respect to the Work, or who has received express permission from the Licensor to exercise rights under this License despite a previous violation.

"Publicly Perform" means to perform public recitations of the Work and to communicate to the public those public recitations, by any means or process, including by wire or wireless means or public digital performances; to make available to the public Works in such a way that members of the public may access these Works from a place and at a place individually chosen by them; to perform the Work to the public by any means or process and the communication to the public of the performances of the Work, including by public digital performance; to broadcast and rebroadcast the Work by any means including signs, sounds or images.

"Reproduce" means to make copies of the Work by any means including without limitation by sound or visual recordings and the right of fixation and reproducing fixations of the Work, including storage of a protected performance or phonogram in digital form or other electronic medium.

2. Fair Dealing Rights. Nothing in this License is intended to reduce, limit, or restrict any uses free from copyright or rights arising from limitations or exceptions that are provided for in connection with the copyright protection under copyright law or other applicable laws.

3. License Grant. Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:

to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections;

to create and Reproduce Adaptations provided that any such Adaptation, including any translation in any medium, takes reasonable steps to clearly label, demarcate or otherwise identify that changes were made to the original Work. For example, a translation could be marked "The original work was translated from English to Spanish," or a modification could indicate "The original work has been modified.";

to Distribute and Publicly Perform the Work including as incorporated in Collections;  
and,

to Distribute and Publicly Perform Adaptations.

For the avoidance of doubt:

**Non-waivable Compulsory License Schemes.** In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme cannot be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License;

**Waivable Compulsory License Schemes.** In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme can be waived, the Licensor waives the exclusive right to collect such royalties for any exercise by You of the rights granted under this License; and,

**Voluntary License Schemes.** The Licensor waives the right to collect royalties, whether individually or, in the event that the Licensor is a member of a collecting society that administers voluntary licensing schemes, via that society, from any exercise by You of the rights granted under this License.

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. Subject to Section 8(f), all rights not expressly granted by Licensor are hereby reserved.

4. Restrictions. The license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

You may Distribute or Publicly Perform the Work only under the terms of this License. You must include a copy of, or the Uniform Resource Identifier (URI) for, this License with every copy of the Work You Distribute or Publicly Perform. You may not offer or impose any terms on the Work that restrict the terms of this License or the ability of the recipient of the Work to exercise the rights granted to that recipient under the terms of the License. You may not sublicense the Work. You must keep intact all notices that refer to this License and to the disclaimer of warranties with every copy of the Work You Distribute or Publicly Perform. When You Distribute or Publicly Perform the Work, You may not impose any effective technological measures on the Work that restrict the ability of a recipient of the Work from You to exercise the rights granted to that recipient under the terms of the License. This Section 4(a) applies to the Work as incorporated in a Collection, but this does not require the Collection apart from the Work itself to be made subject to the terms of this License. If You create a Collection, upon notice from any Licensor You must, to the extent practicable, remove from the Collection any credit as required by Section 4(b), as requested. If You create an Adaptation, upon notice from any Licensor You must, to the extent practicable, remove from the Adaptation any credit as required by Section 4(b), as requested.

If You Distribute, or Publicly Perform the Work or any Adaptations or Collections, You must, unless a request has been made pursuant to Section 4(a), keep intact all copyright notices for the Work and provide, reasonable to the medium or means You are utilizing: (i) the name of the Original Author (or pseudonym, if applicable) if supplied, and/or if the Original Author and/or Licensor designate another party or

parties (e.g., a sponsor institute, publishing entity, journal) for attribution ("Attribution Parties") in Licensor's copyright notice, terms of service or by other reasonable means, the name of such party or parties; (ii) the title of the Work if supplied; (iii) to the extent reasonably practicable, the URI, if any, that Licensor specifies to be associated with the Work, unless such URI does not refer to the copyright notice or licensing information for the Work; and (iv) , consistent with Section 3(b), in the case of an Adaptation, a credit identifying the use of the Work in the Adaptation (e.g., "French translation of the Work by Original Author," or "Screenplay based on original Work by Original Author"). The credit required by this Section 4 (b) may be implemented in any reasonable manner; provided, however, that in the case of a Adaptation or Collection, at a minimum such credit will appear, if a credit for all contributing authors of the Adaptation or Collection appears, then as part of these credits and in a manner at least as prominent as the credits for the other contributing authors. For the avoidance of doubt, You may only use the credit required by this Section for the purpose of attribution in the manner set out above and, by exercising Your rights under this License, You may not implicitly or explicitly assert or imply any connection with, sponsorship or endorsement by the Original Author, Licensor and/or Attribution Parties, as appropriate, of You or Your use of the Work, without the separate, express prior written permission of the Original Author, Licensor and/or Attribution Parties.

Except as otherwise agreed in writing by the Licensor or as may be otherwise permitted by applicable law, if You Reproduce, Distribute or Publicly Perform the Work either by itself or as part of any Adaptations or Collections, You must not distort, mutilate, modify or take other derogatory action in relation to the Work which would be prejudicial to the Original Author's honor or reputation. Licensor agrees that in those jurisdictions (e.g. Japan), in which any exercise of the right granted in Section 3(b) of this License (the right to make Adaptations) would be deemed to be a distortion, mutilation, modification or other derogatory action prejudicial to the Original Author's honor and reputation, the Licensor will waive or not assert, as appropriate, this Section, to the fullest extent permitted by the applicable national law, to enable You to reasonably exercise Your right under Section 3(b) of this License (right to make Adaptations) but not otherwise.

#### 5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability. EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. Termination

This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Adaptations or Collections from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License.

Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work). Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and this License will continue in full force and effect unless terminated as stated above.

#### 8. Miscellaneous

Each time You Distribute or Publicly Perform the Work or a Collection, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License.

Each time You Distribute or Publicly Perform an Adaptation, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License.

If any provision of this License is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

No term or provision of this License shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent.

This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings, agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License may not be modified without the mutual written agreement of the Licensor and You.

The rights granted under, and the subject matter referenced, in this License were drafted utilizing the terminology of the Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), the Rome Convention of 1961, the WIPO Copyright Treaty of 1996, the WIPO Performances and Phonograms Treaty of 1996 and the Universal Copyright Convention (as revised on July 24, 1971). These rights and subject matter take effect in the relevant jurisdiction in which the License terms are sought to be enforced according to the corresponding provisions of the implementation of those treaty provisions in the applicable national law. If the standard suite of rights granted under applicable copyright law includes additional rights not granted under this License, such additional rights are deemed to be included in the License; this License is not intended to restrict the license of any rights under applicable law.

#### Creative Commons Notice

Creative Commons is not a party to this License, and makes no warranty whatsoever in connection with the Work. Creative Commons will not be liable to You or any party on any legal theory for any damages whatsoever, including without limitation any general, special, incidental or consequential damages arising in connection to this license. Notwithstanding the foregoing two (2) sentences, if Creative Commons has expressly identified itself as the Licensor hereunder, it shall have all rights and obligations of Licensor.

Except for the limited purpose of indicating to the public that the Work is licensed under the CCPL, Creative Commons does not authorize the use by either party of the trademark "Creative Commons" or any related trademark or logo of Creative Commons

without the prior written consent of Creative Commons. Any permitted use will be in compliance with Creative Commons' then-current trademark usage guidelines, as may be published on its website or otherwise made available upon request from time to time. For the avoidance of doubt, this trademark restriction does not form part of this License.

Creative Commons may be contacted at <http://creativecommons.org/>.

## Commons FileUpload

**Vendor:** The Apache Software Foundation

**Version:** 1.5

Top Level Component : commons-fileupload  
Top Level Component License : Apache 2.0  
Top Level Component Copyright : Copyright

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.



"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and

You must cause any modified files to carry prominent notices stating that You changed the files; and

You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Top Level Component Copyright : Copyright

Apache Commons FileUpload  
Copyright 2002-2023 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

## **Quartz Job Scheduler**

**Vendor:** Terracota

**Version: 2.4.0-rc2**

\*\*\*\*\*

Quartz Copyright Notice

/\*

\* All content copyright Terracotta, Inc., unless otherwise indicated. All rights reserved.

\*

\* Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

\*

\* <http://www.apache.org/licenses/LICENSE-2.0>

\*

\* Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

\*

\*/

\*\*\*\*\*

\*\*\*\*\*

Quartz License

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

## 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

\*\*\*\*\*

\*\*\*\*\*

c3p0

/\*

\* This library is free software; you can redistribute it and/or modify  
\* it under the terms of EITHER:

\*

\* 1) The GNU Lesser General Public License (LGPL), version 2.1, as  
\* published by the Free Software Foundation

\*

\* OR

\*

\* 2) The Eclipse Public License (EPL), version 1.0

\*

```

* You may choose which license to accept if you wish to redistribute
* or modify this work. You may offer derivatives of this work
* under the license you have chosen, or you may provide the same
* choice of license which you have been offered here.
*
* This software is distributed in the hope that it will be useful,
* but WITHOUT ANY WARRANTY; without even the implied warranty of
* MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
*
* You should have received copies of both LGPL v2.1 and EPL v1.0
* along with this software; see the files LICENSE-EPL and LICENSE-LGPL.
* If not, the text of these licenses are currently available at
*
* LGPL v2.1: http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html
* EPL v1.0: http://www.eclipse.org/org/documents/epl-v10.php
*/

```

Eclipse Public License - v 1.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

## 1. DEFINITIONS

"Contribution" means:

- a) in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and
- b) in the case of each subsequent Contributor:
  - i) changes to the Program, and
  - ii) additions to the Program;

where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include additions to the Program which: (i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and (ii) are not derivative works of the Program.

"Contributor" means any person or entity that distributes the Program.

"Licensed Patents " mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement, including all Contributors.

## 2. GRANT OF RIGHTS

- a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, distribute and sublicense the Contribution of such Contributor, if any, and such

derivative works, in source code and object code form.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in source code and object code form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

### 3. REQUIREMENTS

A Contributor may choose to distribute the Program in object code form under its own license agreement, provided that:

- a) it complies with the terms and conditions of this Agreement; and
- b) its license agreement:
  - i) effectively disclaims on behalf of all Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;
  - ii) effectively excludes on behalf of all Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;
  - iii) states that any provisions which differ from this Agreement are offered by that Contributor alone and not by any other party; and
  - iv) states that source code for the Program is available from such Contributor, and informs licensees how to obtain it in a reasonable manner on or through a medium customarily used for software exchange.

When the Program is made available in source code form:

- a) it must be made available under this Agreement; and
- b) a copy of this Agreement must be included with each copy of the Program.

Contributors may not remove or alter any copyright notices contained within



the Program.

Each Contributor must identify itself as the originator of its Contribution, if any, in a manner that reasonably allows subsequent Recipients to identify the originator of the Contribution.

#### 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

#### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

## 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to distribute the Program (including its Contributions) under the new version. Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved.

This Agreement is governed by the laws of the State of New York and the intellectual property laws of the United States of America. No party to this Agreement will bring a legal action under this Agreement more than one year after the cause of action arose. Each party waives its rights to a jury trial in any resulting litigation.

GNU LESSER GENERAL PUBLIC LICENSE  
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a

combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE  
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the

Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this



License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY

KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

#### How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>
```

```
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.
```

```
This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.
```

```
You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA
```

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.
```

```
<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice
```

```
That's all there is to it!
*****
*****
mchange-commons-java

* Copyright (C) 2015 Machinery For Change, Inc.
* Author: Steve Waldman <swaldman@mchange.com>

/*
* This library is free software; you can redistribute it and/or modify
* it under the terms of EITHER:
*
*   1) The GNU Lesser General Public License (LGPL), version 2.1, as
*      published by the Free Software Foundation
*
* OR
*
*   2) The Eclipse Public License (EPL), version 1.0
*
* You may choose which license to accept if you wish to redistribute
* or modify this work. You may offer derivatives of this work
* under the license you have chosen, or you may provide the same
* choice of license which you have been offered here.
*
* This software is distributed in the hope that it will be useful,
* but WITHOUT ANY WARRANTY; without even the implied warranty of
* MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
*
* You should have received copies of both LGPL v2.1 and EPL v1.0
* along with this software; see the files LICENSE-EPL and LICENSE-LGPL.
* If not, the text of these licenses are currently available at
*
* LGPL v2.1: http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html
* EPL v1.0: http://www.eclipse.org/org/documents/epl-v10.php
*/

*****
*****
hikaricp

/*
* Copyright (C) 2013, 2014 Brett Wooldridge
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
*
* http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/
```

\*\*\*\*\*

\*\*\*\*\*

slf4j-api

Copyright (c) 2004-2022 QOS.ch Sarl (Switzerland)  
All rights reserved.

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

\*\*\*\*\*

\*\*\*\*\*

slf4j-log4j12

Copyright (c) 2004-2022 QOS.ch Sarl (Switzerland)  
All rights reserved.

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

\*\*\*\*\*

\*\*\*\*\*

jakarta.xml.bind-api

Notice -

Notices for Jakarta XML Binding

This content is produced and maintained by the Jakarta XML Binding project.

Project home: <https://projects.eclipse.org/projects/ee4j.jaxb>  
Trademarks  
Jakarta XML Binding is a trademark of the Eclipse Foundation.

#### Copyright

All content is the property of the respective authors or their employers. For more information regarding authorship of content, please consult the listed source code repository logs.

#### Declared Project Licenses

This program and the accompanying materials are made available under the terms of the Eclipse Distribution License v. 1.0 which is available at <http://www.eclipse.org/org/documents/edl-v10.php>.

SPDX-License-Identifier: BSD-3-Clause

#### Source Code

The project maintains the following source code repositories:

<https://github.com/eclipse-ee4j/jaxb-api>  
<https://github.com/eclipse-ee4j/jaxb-tck>

#### Third-party Content

This project leverages the following third party content.

#### Apache River (3.0.0)

License: Apache-2.0 AND BSD-3-Clause

#### ASM 7 (n/a)

License: BSD-3-Clause

Project: <https://asm.ow2.io/>

Source: <https://repository.ow2.org/nexus/#nexus-search;gav~org.ow2.asm~asm-commons~kw,versionexpand>

#### JTHarness (5.0)

License: (GPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0)

Project: <https://wiki.openjdk.java.net/display/CodeTools/JT+Harness>

Source: <http://hg.openjdk.java.net/code-tools/jtharness/>

#### normalize.css (3.0.2)

License: MIT

SigTest (n/a)

License: GPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0

#### Cryptography

Content may contain encryption software. The country in which you are currently may have restrictions on the import, possession, and use, and/or re-export to another country, of encryption software. BEFORE using any encryption software, please check the country's laws, regulations and policies concerning the import, possession, or use, and re-export of encryption software, to see if this is permitted.

License - BSD 3-Clause "New" or "Revised" License

Copyright (c) 2017, 2018 Oracle and/or its affiliates. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

- Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

\*\*\*\*\*

\*\*\*\*\*

jakarta.transaction-api

#### Notice:

Notices for Jakarta Transactions

This content is produced and maintained by the Jakarta Transactions project.

Project home: <https://projects.eclipse.org/projects/ee4j.jta>

Trademarks

Jakarta Transactions is a trademark of the Eclipse Foundation.

#### Copyright

All content is the property of the respective authors or their employers. For more information regarding authorship of content, please consult the listed source code repository logs.

#### Declared Project Licenses

This program and the accompanying materials are made available under the terms of the Eclipse Public License v. 2.0 which is available at <http://www.eclipse.org/legal/epl-2.0>. This Source Code may also be made available under the following Secondary Licenses when the conditions for such availability set forth in the Eclipse Public License v. 2.0 are satisfied: GNU General Public License, version 2 with the GNU Classpath Exception which is available at <https://www.gnu.org/software/classpath/license.html>.

SPDX-License-Identifier: EPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0

#### Source Code

The project maintains the following source code repositories:

<https://github.com/eclipse-ee4j/jta-api>

Third-party Content

This project leverages the following third party content.

None

#### Cryptography

Content may contain encryption software. The country in which you are currently may have restrictions on the import, possession, and use, and/or re-export to another country, of encryption software. BEFORE using any encryption software, please check the country's laws, regulations and policies concerning the import, possession, or use, and re-export of encryption software, to see if this is

permitted.

License(s):

Eclipse Public License - v 2.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

## 1. DEFINITIONS

"Contribution" means:

a) in the case of the initial Contributor, the initial content Distributed under this Agreement, and

b) in the case of each subsequent Contributor:

i) changes to the Program, and

ii) additions to the Program;

where such changes and/or additions to the Program originate from and are Distributed by that particular Contributor. A Contribution "originates" from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include changes or additions to the Program that are not Modified Works.

"Contributor" means any person or entity that Distributes the Program.

"Licensed Patents" mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions Distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement or any Secondary License (as applicable), including Contributors.

"Derivative Works" shall mean any work, whether in Source Code or other form, that is based on (or derived from) the Program and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship.

"Modified Works" shall mean any work in Source Code or other form that results from an addition to, deletion from, or modification of the contents of the Program, including, for purposes of clarity any new file in Source Code form that contains any contents of the Program. Modified Works shall not include works that contain only declarations, interfaces, types, classes, structures, or files of the Program solely in each case in order to link to, bind by name, or subclass the Program or Modified Works thereof.

"Distribute" means the acts of a) distributing or b) making available in any manner that enables the transfer of a copy.

"Source Code" means the form of a Program preferred for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Secondary License" means either the GNU General Public License, Version 2.0, or any later versions of that license, including any

exceptions or additional permissions as identified by the initial Contributor.

## 2. GRANT OF RIGHTS

a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, Distribute and sublicense the Contribution of such Contributor, if any, and such Derivative Works.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in Source Code or other form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to Distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

e) Notwithstanding the terms of any Secondary License, no Contributor makes additional grants to any Recipient (other than those set forth in this Agreement) as a result of such Recipient's receipt of the Program under the terms of a Secondary License (if permitted under the terms of Section 3).

## 3. REQUIREMENTS

3.1 If a Contributor Distributes the Program in any form, then:

a) the Program must also be made available as Source Code, in accordance with section 3.2, and the Contributor must accompany the Program with a statement that the Source Code for the Program is available under this Agreement, and informs Recipients how to obtain it in a reasonable manner on or through a medium customarily used for software exchange; and

b) the Contributor may Distribute the Program under a license different than this Agreement, provided that such license:

i) effectively disclaims on behalf of all other Contributors all



warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;

ii) effectively excludes on behalf of all other Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;

iii) does not attempt to limit or alter the recipients' rights in the Source Code under section 3.2; and

iv) requires any subsequent distribution of the Program by any party to be under a license that satisfies the requirements of this section 3.

### 3.2 When the Program is Distributed as Source Code:

a) it must be made available under this Agreement, or if the Program (i) is combined with other material in a separate file or files made available under a Secondary License, and (ii) the initial Contributor attached to the Source Code the notice described in Exhibit A of this Agreement, then the Program may be made available under the terms of such Secondary Licenses, and

b) a copy of this Agreement must be included with each copy of the Program.

3.3 Contributors may not remove or alter any copyright, patent, trademark, attribution notices, disclaimers of warranty, or limitations of liability ("notices") contained within the Program from any copy of the Program which they Distribute, provided that Contributors may add their own appropriate notices.

## 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance

claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

#### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward

reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be Distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to Distribute the Program (including its Contributions) under the new version.

Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved. Nothing in this Agreement is intended to be enforceable by any entity that is not a Contributor or Recipient. No third-party beneficiary rights are created under this Agreement.

#### Exhibit A - Form of Secondary Licenses Notice

"This Source Code may also be made available under the following Secondary Licenses when the conditions for such availability set forth in the Eclipse Public License, v. 2.0 are satisfied: {name license(s), version(s), and exceptions or additional permissions here}."

Simply including a copy of this Agreement, including this Exhibit A is not sufficient to license the Source Code under Secondary Licenses.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.  
The GNU General Public License (GPL) Version 2, June 1991  
Copyright (C) 1989, 1991 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor  
Boston, MA 02110-1335  
USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

#### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new

free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed

only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other

circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM

(INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

One line to give the program's name and a brief idea of what it does.  
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1335 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

signature of Ty Coon, 1 April 1989  
Ty Coon, President of Vice



This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

#### CLASSPATH EXCEPTION

Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License version 2 cover the whole combination.

As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.

\*\*\*\*\*

\*\*\*\*\*

jakarta.activation-api

#### Notice -

Notices for Jakarta Activation

This content is produced and maintained by Jakarta Activation project.

Project home: <https://projects.eclipse.org/projects/ee4j.jaf>

#### Copyright

All content is the property of the respective authors or their employers. For more information regarding authorship of content, please consult the listed source code repository logs.

#### Declared Project Licenses

This program and the accompanying materials are made available under the terms of the Eclipse Distribution License v. 1.0, which is available at <http://www.eclipse.org/org/documents/edl-v10.php>.

SPDX-License-Identifier: BSD-3-Clause

#### Source Code

The project maintains the following source code repositories:

<https://github.com/eclipse-ee4j/jaf>

License - BSD 3-Clause "New" or "Revised" License

Copyright (c) 2018 Oracle and/or its affiliates. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the

documentation and/or other materials provided with the distribution.

- Neither the name of the Eclipse Foundation, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

```
*****  
*****  
jakarta.servlet-api
```

Notice -

Notices for Eclipse Project for Servlet

This content is produced and maintained by the Eclipse Project for Servlet project.

Project home: <https://projects.eclipse.org/projects/ee4j.servlet>

Trademarks

Eclipse Project for Servlet is a trademark of the Eclipse Foundation.

Copyright

All content is the property of the respective authors or their employers. For more information regarding authorship of content, please consult the listed source code repository logs.

Declared Project Licenses

This program and the accompanying materials are made available under the terms of the Eclipse Public License v. 2.0 which is available at <http://www.eclipse.org/legal/epl-2.0>. This Source Code may also be made available under the following Secondary Licenses when the conditions for such availability set forth in the Eclipse Public License v. 2.0 are satisfied: GNU General Public License, version 2 with the GNU Classpath Exception which is available at <https://www.gnu.org/software/classpath/license.html>. Portions of this program and the accompanying materials are made available under the terms of the Apache License, version 2.0 which is available at <https://www.apache.org/licenses/LICENSE-2.0>.

SPDX-License-Identifier: (EPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0) AND Apache-2.0

Source Code

The project maintains the following source code repositories:

<https://github.com/eclipse-ee4j/servlet-api>

Third-party Content

Cryptography

Content may contain encryption software. The country in which you are currently may have restrictions on the import, possession, and use, and/or re-export to another country, of encryption software. BEFORE using any encryption software, please check the country's laws, regulations and policies concerning the import,

possession, or use, and re-export of encryption software, to see if this is permitted.

License(s) -

Eclipse Public License - v 2.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

## 1. DEFINITIONS

"Contribution" means:

a) in the case of the initial Contributor, the initial content Distributed under this Agreement, and

b) in the case of each subsequent Contributor:

i) changes to the Program, and

ii) additions to the Program;

where such changes and/or additions to the Program originate from and are Distributed by that particular Contributor. A Contribution "originates" from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include changes or additions to the Program that are not Modified Works.

"Contributor" means any person or entity that Distributes the Program.

"Licensed Patents" mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions Distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement or any Secondary License (as applicable), including Contributors.

"Derivative Works" shall mean any work, whether in Source Code or other form, that is based on (or derived from) the Program and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship.

"Modified Works" shall mean any work in Source Code or other form that results from an addition to, deletion from, or modification of the contents of the Program, including, for purposes of clarity any new file in Source Code form that contains any contents of the Program. Modified Works shall not include works that contain only declarations, interfaces, types, classes, structures, or files of the Program solely in each case in order to link to, bind by name, or subclass the Program or Modified Works thereof.

"Distribute" means the acts of a) distributing or b) making available in any manner that enables the transfer of a copy.

"Source Code" means the form of a Program preferred for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Secondary License" means either the GNU General Public License, Version 2.0, or any later versions of that license, including any exceptions or additional permissions as identified by the initial

Contributor.

## 2. GRANT OF RIGHTS

a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, Distribute and sublicense the Contribution of such Contributor, if any, and such Derivative Works.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in Source Code or other form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to Distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

e) Notwithstanding the terms of any Secondary License, no Contributor makes additional grants to any Recipient (other than those set forth in this Agreement) as a result of such Recipient's receipt of the Program under the terms of a Secondary License (if permitted under the terms of Section 3).

## 3. REQUIREMENTS

3.1 If a Contributor Distributes the Program in any form, then:

a) the Program must also be made available as Source Code, in accordance with section 3.2, and the Contributor must accompany the Program with a statement that the Source Code for the Program is available under this Agreement, and informs Recipients how to obtain it in a reasonable manner on or through a medium customarily used for software exchange; and

b) the Contributor may Distribute the Program under a license different than this Agreement, provided that such license:

i) effectively disclaims on behalf of all other Contributors all warranties and conditions, express and implied, including

warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;

ii) effectively excludes on behalf of all other Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;

iii) does not attempt to limit or alter the recipients' rights in the Source Code under section 3.2; and

iv) requires any subsequent distribution of the Program by any party to be under a license that satisfies the requirements of this section 3.

### 3.2 When the Program is Distributed as Source Code:

a) it must be made available under this Agreement, or if the Program (i) is combined with other material in a separate file or files made available under a Secondary License, and (ii) the initial Contributor attached to the Source Code the notice described in Exhibit A of this Agreement, then the Program may be made available under the terms of such Secondary Licenses, and

b) a copy of this Agreement must be included with each copy of the Program.

3.3 Contributors may not remove or alter any copyright, patent, trademark, attribution notices, disclaimers of warranty, or limitations of liability ("notices") contained within the Program from any copy of the Program which they Distribute, provided that Contributors may add their own appropriate notices.

## 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance

claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

#### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of

this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be Distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to Distribute the Program (including its Contributions) under the new version.

Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved. Nothing in this Agreement is intended to be enforceable by any entity that is not a Contributor or Recipient. No third-party beneficiary rights are created under this Agreement.

#### Exhibit A - Form of Secondary Licenses Notice

"This Source Code may also be made available under the following Secondary Licenses when the conditions for such availability set forth in the Eclipse Public License, v. 2.0 are satisfied: {name license(s), version(s), and exceptions or additional permissions here}."

Simply including a copy of this Agreement, including this Exhibit A is not sufficient to license the Source Code under Secondary Licenses.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.  
The GNU General Public License (GPL) Version 2, June 1991  
Copyright (C) 1989, 1991 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor  
Boston, MA 02110-1335  
USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

#### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of



it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the

program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED

INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

One line to give the program's name and a brief idea of what it does.  
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1335 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

signature of Ty Coon, 1 April 1989  
Ty Coon, President of Vice

This General Public License does not permit incorporating your program

into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

#### CLASSPATH EXCEPTION

Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License version 2 cover the whole combination.

As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.

```
*****
*****
geronimo-commonj_1.1_spec
```

The Apache Software License, Version 2.0

```
*****
*****
xercesImpl
```

Notice -

```
=====
== NOTICE file corresponding to section 4(d) of the Apache License, ==
== Version 2.0, in this case for the Apache Xerces Java distribution. ==
=====
```

Apache Xerces Java  
Copyright 1999-2018 The Apache Software Foundation

This product includes software developed at  
The Apache Software Foundation (<http://www.apache.org/>).

Portions of this software were originally based on the following:

- software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.
- software copyright (c) 1999, Sun Microsystems., <http://www.sun.com>.
- voluntary contributions made by Paul Eng on behalf of the Apache Software Foundation that were originally developed at iClick, Inc., software copyright (c) 1999.

The Apache Software License, Version 2.0

```
*****
*****
xml-apis
Notice -
```

```
=====
== NOTICE file corresponding to section 4(d) of the Apache License, ==
== Version 2.0, in this case for the Apache xml-commons xml-apis ==
== distribution. ==
```

```

=====
Apache XML Commons XML APIs
Copyright 1999-2014 The Apache Software Foundation.
This product includes software developed at
The Apache Software Foundation (http://www.apache.org/).

```

```

Portions of this software were originally based on the following:
- software copyright (c) 1999, IBM Corporation., http://www.ibm.com.
- software copyright (c) 1999, Sun Microsystems., http://www.sun.com.
- software copyright (c) 2000 World Wide Web Consortium, http://www.w3.org

```

```

The Apache Software License, Version 2.0
*****
*****
jboss-common

```

GNU LESSER GENERAL PUBLIC LICENSE  
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.  
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA  
Everyone is permitted to copy and distribute verbatim copies  
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts  
as the successor of the GNU Library Public License, version 2, hence  
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your  
freedom to share and change it. By contrast, the GNU General Public  
Licenses are intended to guarantee your freedom to share and change  
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some  
specially designated software packages--typically libraries--of the  
Free Software Foundation and other authors who decide to use it. You  
can use it too, but we suggest you first think carefully about whether  
this license or the ordinary General Public License is the better  
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,  
not price. Our General Public Licenses are designed to make sure that  
you have the freedom to distribute copies of free software (and charge  
for this service if you wish); that you receive source code or can get  
it if you want it; that you can change the software and use pieces of  
it in new free programs; and that you are informed that you can do  
these things.

To protect your rights, we need to make restrictions that forbid  
distributors to deny you these rights or to ask you to surrender these  
rights. These restrictions translate to certain responsibilities for  
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis  
or for a fee, you must give the recipients all the rights that we gave  
you. You must make sure that they, too, receive or can get the source  
code. If you link other code with the library, you must provide  
complete object files to the recipients, so that they can relink them  
with the library after making changes to the library and recompiling

it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run

that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE  
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.



b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form

---

under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked

with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any

attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### END OF TERMS AND CONDITIONS

#### How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>  
 Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or  
 modify it under the terms of the GNU Lesser General Public  
 License as published by the Free Software Foundation; either  
 version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,  
 but WITHOUT ANY WARRANTY; without even the implied warranty of  
 MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU  
 Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public  
 License along with this library; if not, write to the Free Software  
 Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your  
 school, if any, to sign a "copyright disclaimer" for the library, if  
 necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the  
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
 Ty Coon, President of Vice

That's all there is to it!

\*\*\*\*\*  
 \*\*\*\*\*  
 jboss-minimal

GNU LESSER GENERAL PUBLIC LICENSE  
 Same as above

\*\*\*\*\*  
 \*\*\*\*\*  
 jboss-system

GNU LESSER GENERAL PUBLIC LICENSE  
 Same as above

\*\*\*\*\*  
 \*\*\*\*\*  
 jboss-jmx

GNU LESSER GENERAL PUBLIC LICENSE  
 Same as above

\*\*\*\*\*  
 \*\*\*\*\*  
 org.apache.openejb:javaee-api

Apache License, Version 2.0  
 License text above

\*\*\*\*\*  
\*\*\*\*\*  
org.glassfish.corba:rmic:4.2.4

Eclipse Public License - v 2.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

## 1. DEFINITIONS

"Contribution" means:

- a) in the case of the initial Contributor, the initial content Distributed under this Agreement, and
- b) in the case of each subsequent Contributor:
  - i) changes to the Program, and
  - ii) additions to the Program;where such changes and/or additions to the Program originate from and are Distributed by that particular Contributor. A Contribution "originates" from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include changes or additions to the Program that are not Modified Works.

"Contributor" means any person or entity that Distributes the Program.

"Licensed Patents" mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions Distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement or any Secondary License (as applicable), including Contributors.

"Derivative Works" shall mean any work, whether in Source Code or other form, that is based on (or derived from) the Program and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship.

"Modified Works" shall mean any work in Source Code or other form that results from an addition to, deletion from, or modification of the contents of the Program, including, for purposes of clarity any new file in Source Code form that contains any contents of the Program. Modified Works shall not include works that contain only declarations, interfaces, types, classes, structures, or files of the Program solely in each case in order to link to, bind by name, or subclass the Program or Modified Works thereof.

"Distribute" means the acts of a) distributing or b) making available in any manner that enables the transfer of a copy.

"Source Code" means the form of a Program preferred for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Secondary License" means either the GNU General Public License, Version 2.0, or any later versions of that license, including any exceptions or additional permissions as identified by the initial Contributor.

## 2. GRANT OF RIGHTS

a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, Distribute and sublicense the Contribution of such Contributor, if any, and such Derivative Works.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in Source Code or other form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to Distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

e) Notwithstanding the terms of any Secondary License, no Contributor makes additional grants to any Recipient (other than those set forth in this Agreement) as a result of such Recipient's receipt of the Program under the terms of a Secondary License (if permitted under the terms of Section 3).

## 3. REQUIREMENTS

3.1 If a Contributor Distributes the Program in any form, then:

a) the Program must also be made available as Source Code, in accordance with section 3.2, and the Contributor must accompany the Program with a statement that the Source Code for the Program is available under this Agreement, and informs Recipients how to obtain it in a reasonable manner on or through a medium customarily used for software exchange; and

b) the Contributor may Distribute the Program under a license



different than this Agreement, provided that such license:

- i) effectively disclaims on behalf of all other Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;
- ii) effectively excludes on behalf of all other Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;
- iii) does not attempt to limit or alter the recipients' rights in the Source Code under section 3.2; and
- iv) requires any subsequent distribution of the Program by any party to be under a license that satisfies the requirements of this section 3.

### 3.2 When the Program is Distributed as Source Code:

- a) it must be made available under this Agreement, or if the Program (i) is combined with other material in a separate file or files made available under a Secondary License, and (ii) the initial Contributor attached to the Source Code the notice described in Exhibit A of this Agreement, then the Program may be made available under the terms of such Secondary Licenses, and
- b) a copy of this Agreement must be included with each copy of the Program.

3.3 Contributors may not remove or alter any copyright, patent, trademark, attribution notices, disclaimers of warranty, or limitations of liability ("notices") contained within the Program from any copy of the Program which they Distribute, provided that Contributors may add their own appropriate notices.

## 4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial

product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

#### 5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

#### 6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement,

but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be Distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to Distribute the Program (including its Contributions) under the new version.

Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved. Nothing in this Agreement is intended to be enforceable by any entity that is not a Contributor or Recipient. No third-party beneficiary rights are created under this Agreement.

#### Exhibit A - Form of Secondary Licenses Notice

"This Source Code may also be made available under the following Secondary Licenses when the conditions for such availability set forth in the Eclipse Public License, v. 2.0 are satisfied: {name license(s), version(s), and exceptions or additional permissions here}."

Simply including a copy of this Agreement, including this Exhibit A is not sufficient to license the Source Code under Secondary Licenses.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

### Supercluster 3.0.2

<https://github.com/mapbox/supercluster/blob/master/LICENSE>

ISC License

Copyright (c) 2016, Mapbox

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Fourth party:

<https://github.com/mourner/kdbush/blob/master/LICENSE>  
ISC License

Copyright (c) 2017, Vladimir Agafonkin

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

### **ajv 6.5.3**

<https://github.com/epoberezkin/ajv/blob/0020556493f3d443002596697768f3f047782198/LICENSE>

The MIT License (MIT)

Copyright (c) 2015-2017 Evgeny Poberezkin

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### **colorbrewer 2.0**

<http://colorbrewer2.org/export/LICENSE.txt>

Apache-Style Software License for ColorBrewer software and ColorBrewer Color Schemes

Copyright (c) 2002 Cynthia Brewer, Mark Harrower, and The Pennsylvania State University.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions as source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. The end-user documentation included with the redistribution, if any, must include the following acknowledgment: "This product includes color specifications and designs developed by Cynthia Brewer (<http://colorbrewer.org/>)." Alternately, this acknowledgment may appear in the software itself, if and wherever such third-party acknowledgments normally appear.
4. The name "ColorBrewer" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact Cynthia Brewer at [cbrewer@psu.edu](mailto:cbrewer@psu.edu).
5. Products derived from this software may not be called "ColorBrewer", nor may "ColorBrewer" appear in their name, without prior written permission of Cynthia Brewer.

## ASM

**Vendor:** INRIA, France Telecom

**Version:** 9.4

<https://gitlab.ow2.org/asm/asm/blob/master/LICENSE.txt>

ASM: a very small and fast Java bytecode manipulation framework  
Copyright (c) 2000-2011 INRIA, France Telecom  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holders nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## content-type

**Vendor:** NimbusDS

**Version: 2.2**

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

## TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

## 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed

as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. **Submission of Contributions.** Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. **Trademarks.** This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. **Disclaimer of Warranty.** Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. **Limitation of Liability.** In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. **Accepting Warranty or Additional Liability.** While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]"



replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Nimbus Content Type

Copyright 2020, Connect2id Ltd.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

## lucene-backward-codecs

**Vendor:** The Apache Software Foundation

**Version:** 8.11.2

----- Top-level license -----

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,

including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices

stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer,

and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from unicode conversion examples available at

<http://www.unicode.org/Public/PROGRAMS/CVTUTF>. Here is the copyright from those sources:

```
/*
 * Copyright 2001-2004 Unicode, Inc.
 *
 * Disclaimer
 *
 * This source code is provided as is by Unicode, Inc. No claims are
 * made as to fitness for any particular purpose. No warranties of any
 * kind are expressed or implied. The recipient agrees to determine
 * applicability of information provided. If this file has been
 * purchased on magnetic or optical media from Unicode, Inc., the
 * sole remedy for any claim will be exchange of defective media
 * within 90 days of receipt.
 *
 * Limitations on Rights to Redistribute This Code
 *
 * Unicode, Inc. hereby grants the right to freely use the information
 * supplied in this file in the creation of products supporting the
 * Unicode Standard, and to make copies of this file in any form
 * for internal or external distribution as long as this notice
 * remains attached.
 */
```

Some code in `core/src/java/org/apache/lucene/util/ArrayUtil.java` was derived from Python 2.4.2 sources available at

<http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/2.4.2/license/>

Some code in `core/src/java/org/apache/lucene/util/UnicodeUtil.java` was derived from Python 3.1.2 sources available at

<http://www.python.org>. Full license is here:

<http://www.python.org/download/releases/3.1.2/license/>

Some code in core/src/java/org/apache/lucene/util/automaton was derived from Brics automaton sources available at [www.brics.dk/automaton/](http://www.brics.dk/automaton/). Here is the copyright from those sources:

```
/*
 * Copyright (c) 2001-2009 Anders Moeller
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
 * are met:
 * 1. Redistributions of source code must retain the above copyright
 * notice, this list of conditions and the following disclaimer.
 * 2. Redistributions in binary form must reproduce the above copyright
 * notice, this list of conditions and the following disclaimer in the
 * documentation and/or other materials provided with the distribution.
 * 3. The name of the author may not be used to endorse or promote products
 * derived from this software without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
 * OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 * IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
 * INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
 * NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
 * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
 */
```

The levenshtein automata tables in core/src/java/org/apache/lucene/util/automaton were automatically generated with the moman/finenight FSA package. Here is the copyright for those sources:

```
# Copyright (c) 2010, Jean-Philippe Barrette-LaPierre, <jpb@rrette.com>
#
# Permission is hereby granted, free of charge, to any person
# obtaining a copy of this software and associated documentation
# files (the "Software"), to deal in the Software without
# restriction, including without limitation the rights to use,
# copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the
# Software is furnished to do so, subject to the following
# conditions:
#
# The above copyright notice and this permission notice shall be
# included in all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
# EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
# OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
# NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
# HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
# WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
# FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
# OTHER DEALINGS IN THE SOFTWARE.
```

Some code in core/src/java/org/apache/lucene/util/UnicodeUtil.java was derived from ICU (<http://www.icu-project.org>)

The full license is available here:

<https://github.com/unicode-org/icu/blob/main/icu4c/LICENSE>

```
/*
 * Copyright (C) 1999-2010, International Business Machines
 * Corporation and others. All Rights Reserved.
```

\*  
\* Permission is hereby granted, free of charge, to any person obtaining a copy  
\* of this software and associated documentation files (the "Software"), to deal  
\* in the Software without restriction, including without limitation the rights  
\* to use, copy, modify, merge, publish, distribute, and/or sell copies of the  
\* Software, and to permit persons to whom the Software is furnished to do so,  
\* provided that the above copyright notice(s) and this permission notice appear  
\* in all copies of the Software and that both the above copyright notice(s) and  
\* this permission notice appear in supporting documentation.

\*  
\* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
\* IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
\* FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.  
\* IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE  
\* LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR  
\* ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER  
\* IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT  
\* OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

\*  
\* Except as contained in this notice, the name of a copyright holder shall not  
\* be used in advertising or otherwise to promote the sale, use or other  
\* dealings in this Software without prior written authorization of the  
\* copyright holder.

\*/

The following license applies to the Snowball stemmers:

Copyright (c) 2001, Dr Martin Porter

Copyright (c) 2002, Richard Boulton

All rights reserved.

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice,  
\* this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright  
\* notice, this list of conditions and the following disclaimer in the  
\* documentation and/or other materials provided with the distribution.
- \* Neither the name of the copyright holders nor the names of its contributors  
\* may be used to endorse or promote products derived from this software  
\* without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"  
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE  
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE  
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER  
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,  
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the KStemmer:

Copyright © 2003,

Center for Intelligent Information Retrieval,

University of Massachusetts, Amherst.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification,  
are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this  
list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,  
this list of conditions and the following disclaimer in the documentation  
and/or other materials provided with the distribution.
3. The names "Center for Intelligent Information Retrieval" and

"University of Massachusetts" must not be used to endorse or promote products derived from this software without prior written permission. To obtain permission, contact [info@ciir.cs.umass.edu](mailto:info@ciir.cs.umass.edu).

THIS SOFTWARE IS PROVIDED BY UNIVERSITY OF MASSACHUSETTS AND OTHER CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license applies to the Morfologik project:

Copyright (c) 2006 Dawid Weiss

Copyright (c) 2007-2011 Dawid Weiss, Marcin Miłkowski

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

\* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

\* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

\* Neither the name of Morfologik nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

The dictionary comes from Morfologik project. Morfologik uses data from Polish [ispell/myspell](http://www.sjp.pl/slownik/en/) dictionary hosted at <http://www.sjp.pl/slownik/en/> and is licenced on the terms of (inter alia) LGPL and Creative Commons ShareAlike. The part-of-speech tags were added in Morfologik project and are not found in the data from [sjp.pl](http://www.sjp.pl). The tagset is similar to IPI PAN tagset.

---

The following license applies to the Morfeusz project, used by [org.apache.lucene.analysis.morfologik](http://org.apache.lucene.analysis.morfologik).

BSD-licensed dictionary of Polish (SGJP)

<http://sgjp.pl/morfeusz/>

Copyright © 2011 Zygmunt Saloni, Włodzimierz Gruszczyński,

Marcin Woliński, Robert Wołosz

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the

distribution.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>) compression format for Lucene's DataInput/DataOutput abstractions.

LZ4 Library

Copyright (c) 2011-2016, Yann Collet

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

\* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

\* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## graphql-java

**Vendor:** Andreas Marek and Contributors

**Version:** 19.8

----- Top-level license -----

The MIT License (MIT)

Copyright (c) 2015 Andreas Marek and Contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

----- Copyright notices -----

Copyright (c) 2015 Andreas Marek and Contributors



----- Fourth-party information -----

== NAME OF DEPENDENCY 1

java-dataloader

== License

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

#### TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

##### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

```
Copyright {yyyy} {name of copyright owner}
```

```
Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at
```

```
http://www.apache.org/licenses/LICENSE-2.0
```

```
Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
```

```
== Copyright Notices
```

```
Copyright © 2016 Arnold Schrijver, 2017 Brad Baker and others contributors
```

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 2
```

```
reactive-streams
```

```
== License
```

```
MIT No Attribution
```

```
Copyright 2014 Reactive Streams
```

```
Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so.
```

```
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
```

```
== Copyright Notices
```

```
Copyright 2014 Reactive Streams
```

```
----- (separator) -----
```

```
== NAME OF DEPENDENCY 3
```

```
Slf4j-api
```

```
== License
```

```
Copyright (c) 2004-2023 QOS.ch
```

```
All rights reserved.
```

```
Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:
```

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

== Copyright Notices

Copyright (c) 2004-2023 QOS.ch

All rights reserved.

## liquibase-core

**Vendor:** Nathan Voxland

**Version:** 4.19.1

----- Top-level license -----  
 Apache License  
 Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object

form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and

attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor

has been advised of the possibility of such damages.

9. **Accepting Warranty or Additional Liability.** While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2022 Liquibase Inc.

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

----- Copyright notices -----

Copyright 2022 Liquibase Inc.

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

----- Fourth-party information -----

== NAME OF DEPENDENCY 1  
.opencsv  
== License



.Apache License 2.0  
 == Copyright Notice  
 Copyright 2017 Andrew Rucker Jones.

Licensed under the Apache License, Version 2.0 (the "License");  
 you may not use this file except in compliance with the License.  
 You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software  
 distributed under the License is distributed on an "AS IS" BASIS,  
 WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
 See the License for the specific language governing permissions and  
 limitations under the License.

----- (separator) -----

== NAME OF DEPENDENCY 2  
 .commons-beanutils  
 == License  
 .Apache License 2.0  
 == Copyright Notice  
 .Apache Commons BeanUtils  
 Copyright 2000-2019 The Apache Software Foundation

This product includes software developed at  
 The Apache Software Foundation (<http://www.apache.org/>).

----- (separator) -----

== NAME OF DEPENDENCY 3  
 .common-collections  
 == License  
 .Apache License 2.0  
 == Copyright Notice  
 Apache Commons Collections  
 Copyright 2001-2008 The Apache Software Foundation

This product includes software developed by  
 The Apache Software Foundation (<http://www.apache.org/>).

----- (separator) -----

== NAME OF DEPENDENCY 4  
 .commons-logging  
 == License  
 .Apache 2.0  
 == Copyright Notice

.

----- (separator) -----

== NAME OF DEPENDENCY 5  
 .commons-lang3  
 == License  
 .Apache 2.0  
 == Copyright Notice

.

Apache Commons Logging  
 Copyright 2003-2014 The Apache Software Foundation

This product includes software developed at  
 The Apache Software Foundation (<http://www.apache.org/>).

```
----- (separator)-----
== NAME OF DEPENDENCY 6
.commons-text
== License
.Apache 2.0
== Copyright Notice
.Apache Commons Text
Copyright 2014-2022 The Apache Software Foundation
```

This product includes software developed at  
The Apache Software Foundation (<https://www.apache.org/>).

```
----- (separator)-----
== NAME OF DEPENDENCY 7
.commons-collections4
== License
.Apache 2.0
== Copyright Notice
.Apache Commons Text
Copyright 2014-2022 The Apache Software Foundation
```

This product includes software developed at  
The Apache Software Foundation (<https://www.apache.org/>).

```
----- (separator)-----
== NAME OF DEPENDENCY 8
.jaxb-api
== License
.
BSD 3-Clause
Copyright (c) 2017, 2018 Oracle and/or its affiliates. All rights reserved.
```

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions  
are met:

- Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the distribution.
- Neither the name of the Eclipse Foundation, Inc. nor the names of its  
contributors may be used to endorse or promote products derived  
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS  
IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,  
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR  
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR  
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,  
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,  
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR  
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF  
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING  
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS  
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

```
== Copyright Notice
```

. Copyright (c) 2018, 2022 Oracle and/or its affiliates. All rights reserved.  
 This program and the accompanying materials are made available under the  
 terms of the Eclipse Distribution License v. 1.0, which is available at  
<http://www.eclipse.org/org/documents/edl-v10.php>.  
 SPDX-License-Identifier: BSD-3-Clause

----- (separator)-----

== NAME OF DEPENDENCY 9

.javax.activation-api

== License

.

COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL) Version 1.1

## 1. Definitions.

1.1. "Contributor" means each individual or entity that creates or contributes to the creation of Modifications.

1.2. "Contributor Version" means the combination of the Original Software, prior Modifications used by a Contributor (if any), and the Modifications made by that particular Contributor.

1.3. "Covered Software" means (a) the Original Software, or (b) Modifications, or (c) the combination of files containing Original Software with files containing Modifications, in each case including portions thereof.

1.4. "Executable" means the Covered Software in any form other than Source Code.

1.5. "Initial Developer" means the individual or entity that first makes Original Software available under this License.

1.6. "Larger Work" means a work which combines Covered Software or portions thereof with code not governed by the terms of this License.

1.7. "License" means this document.

1.8. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.

1.9. "Modifications" means the Source Code and Executable form of any of the following:

A. Any file that results from an addition to, deletion from or modification of the contents of a file containing Original Software or previous Modifications;

B. Any new file that contains any part of the Original Software or previous Modification; or

C. Any new file that is contributed or otherwise made available under the terms of this License.

1.10. "Original Software" means the Source Code and Executable form of computer software code that is originally released under this License.

1.11. "Patent Claims" means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process,

and apparatus claims, in any patent Licensable by grantor.

1.12. "Source Code" means (a) the common form of computer software code in which modifications are made and (b) associated documentation included in or with such code.

1.13. "You" (or "Your") means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

## 2. License Grants.

### 2.1. The Initial Developer Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, the Initial Developer hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Initial Developer, to use, reproduce, modify, display, perform, sublicense and distribute the Original Software (or portions thereof), with or without Modifications, and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using or selling of Original Software, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the Original Software (or portions thereof).

(c) The licenses granted in Sections 2.1(a) and (b) are effective on the date Initial Developer first distributes or otherwise makes the Original Software available to a third party under the terms of this License.

(d) Notwithstanding Section 2.1(b) above, no patent license is granted: (1) for code that You delete from the Original Software, or (2) for infringements caused by: (i) the modification of the Original Software, or (ii) the combination of the Original Software with other software or devices.

### 2.2. Contributor Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Contributor to use, reproduce, modify, display, perform, sublicense and distribute the Modifications created by such Contributor (or portions thereof), either on an unmodified basis, with other Modifications, as Covered Software and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using, or selling of Modifications made by that Contributor either alone and/or in

combination with its Contributor Version (or portions of such combination), to make, use, sell, offer for sale, have made, and/or otherwise dispose of: (1) Modifications made by that Contributor (or portions thereof); and (2) the combination of Modifications made by that Contributor with its Contributor Version (or portions of such combination).

(c) The licenses granted in Sections 2.2(a) and 2.2(b) are effective on the date Contributor first distributes or otherwise makes the Modifications available to a third party.

(d) Notwithstanding Section 2.2(b) above, no patent license is granted: (1) for any code that Contributor has deleted from the Contributor Version; (2) for infringements caused by: (i) third party modifications of Contributor Version, or (ii) the combination of Modifications made by that Contributor with other software (except as part of the Contributor Version) or other devices; or (3) under Patent Claims infringed by Covered Software in the absence of Modifications made by that Contributor.

### 3. Distribution Obligations.

#### 3.1. Availability of Source Code.

Any Covered Software that You distribute or otherwise make available in Executable form must also be made available in Source Code form and that Source Code form must be distributed only under the terms of this License. You must include a copy of this License with every copy of the Source Code form of the Covered Software You distribute or otherwise make available. You must inform recipients of any such Covered Software in Executable form as to how they can obtain such Covered Software in Source Code form in a reasonable manner on or through a medium customarily used for software exchange.

#### 3.2. Modifications.

The Modifications that You create or to which You contribute are governed by the terms of this License. You represent that You believe Your Modifications are Your original creation(s) and/or You have sufficient rights to grant the rights conveyed by this License.

#### 3.3. Required Notices.

You must include a notice in each of Your Modifications that identifies You as the Contributor of the Modification. You may not remove or alter any copyright, patent or trademark notices contained within the Covered Software, or any notices of licensing or any descriptive text giving attribution to any Contributor or the Initial Developer.

#### 3.4. Application of Additional Terms.

You may not offer or impose any terms on any Covered Software in Source Code form that alters or restricts the applicable version of this License or the recipients' rights hereunder. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, you may do so only on Your own behalf, and not on behalf of the Initial Developer or any Contributor. You must make it absolutely clear that any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree

---

to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of warranty, support, indemnity or liability terms You offer.

### 3.5. Distribution of Executable Versions.

You may distribute the Executable form of the Covered Software under the terms of this License or under the terms of a license of Your choice, which may contain terms different from this License, provided that You are in compliance with the terms of this License and that the license for the Executable form does not attempt to limit or alter the recipient's rights in the Source Code form from the rights set forth in this License. If You distribute the Covered Software in Executable form under a different license, You must make it absolutely clear that any terms which differ from this License are offered by You alone, not by the Initial Developer or Contributor. You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of any such terms You offer.

### 3.6. Larger Works.

You may create a Larger Work by combining Covered Software with other code not governed by the terms of this License and distribute the Larger Work as a single product. In such a case, You must make sure the requirements of this License are fulfilled for the Covered Software.

## 4. Versions of the License.

### 4.1. New Versions.

Oracle is the initial license steward and may publish revised and/or new versions of this License from time to time. Each version will be given a distinguishing version number. Except as provided in Section 4.3, no one other than the license steward has the right to modify this License.

### 4.2. Effect of New Versions.

You may always continue to use, distribute or otherwise make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. If the Initial Developer includes a notice in the Original Software prohibiting it from being distributed or otherwise made available under any subsequent version of the License, You must distribute and make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. Otherwise, You may also choose to use, distribute or otherwise make the Covered Software available under the terms of any subsequent version of the License published by the license steward.

### 4.3. Modified Versions.

When You are an Initial Developer and You want to create a new license for Your Original Software, You may create and use a modified version of this License if You: (a) rename the license and remove any references to the name of the license steward (except to note that the license differs from this License); and (b) otherwise make it clear that the license contains terms which differ from this License.

---

## 5. DISCLAIMER OF WARRANTY.

COVERED SOFTWARE IS PROVIDED UNDER THIS LICENSE ON AN "AS IS" BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES THAT THE COVERED SOFTWARE IS FREE OF DEFECTS, MERCHANTABILITY, FIT FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE COVERED SOFTWARE IS WITH YOU. SHOULD ANY COVERED SOFTWARE PROVE DEFECTIVE IN ANY RESPECT, YOU (NOT THE INITIAL DEVELOPER OR ANY OTHER CONTRIBUTOR) ASSUME THE COST OF ANY NECESSARY SERVICING, REPAIR OR CORRECTION. THIS DISCLAIMER OF WARRANTY CONSTITUTES AN ESSENTIAL PART OF THIS LICENSE. NO USE OF ANY COVERED SOFTWARE IS AUTHORIZED HEREUNDER EXCEPT UNDER THIS DISCLAIMER.

## 6. TERMINATION.

6.1. This License and the rights granted hereunder will terminate automatically if You fail to comply with terms herein and fail to cure such breach within 30 days of becoming aware of the breach. Provisions which, by their nature, must remain in effect beyond the termination of this License shall survive.

6.2. If You assert a patent infringement claim (excluding declaratory judgment actions) against Initial Developer or a Contributor (the Initial Developer or Contributor against whom You assert such claim is referred to as "Participant") alleging that the Participant Software (meaning the Contributor Version where the Participant is a Contributor or the Original Software where the Participant is the Initial Developer) directly or indirectly infringes any patent, then any and all rights granted directly or indirectly to You by such Participant, the Initial Developer (if the Initial Developer is not the Participant) and all Contributors under Sections 2.1 and/or 2.2 of this License shall, upon 60 days notice from Participant terminate prospectively and automatically at the expiration of such 60 day notice period, unless if within such 60 day period You withdraw Your claim with respect to the Participant Software against such Participant either unilaterally or pursuant to a written agreement with Participant.

6.3. If You assert a patent infringement claim against Participant alleging that the Participant Software directly or indirectly infringes any patent where such claim is resolved (such as by license or settlement) prior to the initiation of patent infringement litigation, then the reasonable value of the licenses granted by such Participant under Sections 2.1 or 2.2 shall be taken into account in determining the amount or value of any payment or license.

6.4. In the event of termination under Sections 6.1 or 6.2 above, all end user licenses that have been validly granted by You or any distributor hereunder prior to termination (excluding licenses granted to You by any distributor) shall survive termination.

## 7. LIMITATION OF LIABILITY.

UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, WHETHER TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL YOU, THE INITIAL DEVELOPER, ANY OTHER CONTRIBUTOR, OR ANY DISTRIBUTOR OF COVERED SOFTWARE, OR ANY SUPPLIER OF ANY OF SUCH PARTIES, BE LIABLE TO ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR

CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF SUCH PARTY SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY RESULTING FROM SUCH PARTY'S NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS EXCLUSION AND LIMITATION MAY NOT APPLY TO YOU.

8. U.S. GOVERNMENT END USERS.

The Covered Software is a "commercial item," as that term is defined in 48 C.F.R. 2.101 (Oct. 1995), consisting of "commercial computer software" (as that term is defined at 48 C.F.R. § 252.227-7014(a)(1)) and "commercial computer software documentation" as such terms are used in 48 C.F.R. 12.212 (Sept. 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire Covered Software with only those rights set forth herein. This U.S. Government Rights clause is in lieu of, and supersedes, any other FAR, DFAR, or other clause or provision that addresses Government rights in computer software under this License.

9. MISCELLANEOUS.

This License represents the complete agreement concerning subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by the law of the jurisdiction specified in a notice contained within the Original Software (except to the extent applicable law, if any, provides otherwise), excluding such jurisdiction's conflict-of-law provisions. Any litigation relating to this License shall be subject to the jurisdiction of the courts located in the jurisdiction and venue specified in a notice contained within the Original Software, with the losing party responsible for costs, including, without limitation, court costs and reasonable attorneys' fees and expenses. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not apply to this License. You agree that You alone are responsible for compliance with the United States export administration regulations (and the export control laws and regulation of any other countries) when You use, distribute or otherwise make available any Covered Software.

10. RESPONSIBILITY FOR CLAIMS.

As between Initial Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and You agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.

-----  
NOTICE PURSUANT TO SECTION 9 OF THE COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL)



The code released under the CDDL shall be governed by the laws of the State of California (excluding conflict-of-law provisions). Any litigation relating to this License shall be subject to the jurisdiction of the Federal Courts of the Northern District of California and the state courts of the State of California, with venue lying in Santa Clara County, California.

The GNU General Public License (GPL) Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor  
Boston, MA 02110-1335  
USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will

individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties

who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new

versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### END OF TERMS AND CONDITIONS

#### How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
One line to give the program's name and a brief idea of what it does.  
Copyright (C) <year> <name of author>
```

```
This program is free software; you can redistribute it and/or modify  
it under the terms of the GNU General Public License as published by  
the Free Software Foundation; either version 2 of the License, or  
(at your option) any later version.
```

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1335 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type
`show w'. This is free software, and you are welcome to redistribute
it under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (which makes passes at compilers) written by
James Hacker.
```

```
signature of Ty Coon, 1 April 1989
Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

#

Certain source files distributed by Oracle America, Inc. and/or its affiliates are subject to the following clarification and special exception to the GPLv2, based on the GNU Project exception for its Classpath libraries, known as the GNU Classpath Exception, but only where Oracle has expressly included in the particular source file's header the words "Oracle designates this particular file as subject to the "Classpath" exception as provided by Oracle in the LICENSE file that accompanied this code."

You should also note that Oracle includes multiple, independent programs in this software package. Some of those programs are provided under licenses deemed incompatible with the GPLv2 by the Free Software Foundation and others. For example, the package includes programs licensed under the Apache License, Version 2.0. Such programs are licensed to you under their original licenses.

Oracle facilitates your further distribution of this package by adding

the Classpath Exception to the necessary parts of its GPLv2 code, which permits you to use that code in combination with other independent modules not licensed under the GPLv2. However, note that this would not permit you to commingle code under an incompatible license with Oracle's GPLv2 licensed code by, for example, cutting and pasting such code into a file also containing Oracle's GPLv2 licensed code and then distributing the result. Additionally, if you were to remove the Classpath Exception from any of the files to which it applies and distribute the result, you would likely be required to license some or all of the other code in that distribution under the GPLv2 as well, and since the GPLv2 is incompatible with the license terms of some items included in the distribution by Oracle, removing the Classpath Exception could therefore effectively compromise your ability to further distribute the package.

Proceed with caution and we recommend that you obtain the advice of a lawyer skilled in open source matters before removing the Classpath Exception or making modifications to this package which may subsequently be redistributed and/or involve the use of third party software.

#### CLASSPATH EXCEPTION

Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License version 2 cover the whole combination.

As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.

== Copyright Notice

DO NOT ALTER OR REMOVE COPYRIGHT NOTICES OR THIS HEADER.

Copyright (c) 1997-2017 Oracle and/or its affiliates. All rights reserved.

The contents of this file are subject to the terms of either the GNU General Public License Version 2 only ("GPL") or the Common Development and Distribution License ("CDDL") (collectively, the "License"). You may not use this file except in compliance with the License. You can obtain a copy of the License at <https://oss.oracle.com/licenses/CDDL+GPL-1.1> or LICENSE.txt. See the License for the specific language governing permissions and limitations under the License.

When distributing the software, include this License Header Notice in each file and include the License file at LICENSE.txt.

GPL Classpath Exception:

Oracle designates this particular file as subject to the "Classpath" exception as provided by Oracle in the GPL Version 2 section of the License file that accompanied this code.

Modifications:

If applicable, add the following below the License Header, with the fields enclosed by brackets [] replaced by your own identifying information:  
 "Portions Copyright [year] [name of copyright owner]"

Contributor(s):

If you wish your version of this file to be governed by only the CDDL or only the GPL Version 2, indicate your decision by adding "[Contributor] elects to include this software in this distribution under the [CDDL or GPL Version 2] license." If you don't indicate a single choice of license, a recipient has the option to distribute your version of this file under either the CDDL, the GPL Version 2 or to extend the choice of license to its licensees as provided above. However, if you add GPL Version 2 code and therefore, elected the GPL Version 2 license, then the option applies only if the new code is made subject to such option by the copyright holder.

----- (separator) -----

```
== NAME OF DEPENDENCY 10
.snakeyaml
== License
.Apache 2.0
== Copyright Notice
.Copyright (c) 2008, SnakeYAML
```

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

## **gretty**

**Vendor:** Timur Shakurov, Andrey Hihlovskiy and contributors

**Version:** 3.1.1

Copyright (c) 2013-2016 Timur Shakurov, Andrey Hihlovskiy and contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,



OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

### **mapbox-gl-rtl-text**

**Vendor:** Mapbox

**Version:** 0.2.3

mapbox-gl-rtl-text copyright (c) 2017 Mapbox.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This source code is derived from the International Components for Unicode (ICU) library, available from <http://site.icu-project.org/>. ICU C++ code original license as follows:

COPYRIGHT AND PERMISSION NOTICE (ICU 58 and later)

Copyright © 1991-2016 Unicode, Inc. All rights reserved. Distributed under the Terms of Use in <http://www.unicode.org/copyright.html>

Permission is hereby granted, free of charge, to any person obtaining a copy of the Unicode data files and any associated documentation (the "Data Files") or Unicode software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that either (a) this copyright and permission notice appear with all copies of the Data Files or Software, or (b) this copyright and permission notice appear in associated Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

**NT Technology: HERE Data****Vendor:** Navigation Technologies**Version:** All

ORACLE MAPS end users terms (<https://maps.oracle.com/elocation/terms.html>) AND NOTICES (<http://maps.oracle.com/elocation/supplierterms.html>) must be used and provided to end users. This can be fulfilled by linking the terms to the map in your application or by adding the links to the terms and condition to the product user guides. IN ADDITION, THE ORACLE MAPS CLOUD SERVICE ENTERPRISE HOSTING AND DELIVERY POLICIES (<https://www.oracle.com/assets/maps-cloud-hd-policies-2767907.pdf>) must be referenced by all applications using the service. This can be fulfilled by linking TO THE DOCUMENT OR PROVIDING A COPY OF THEM TO USERS WITH OTHER LICENSING MATERIALS. Please contact Legal and/or the Spatial LOB with any questions. Please verify the links before inclusion.

**jackson-annotations****Vendor:** FasterXML, LLC**Version:** 2.15.3

```

=====
    Top level component : jackson-annotations 2.15.3
=====
Copyright
-----
    Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

Notices
-----
    # Jackson JSON processor

    Jackson is a high-performance, Free/Open Source JSON processing library.
    It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
    been in development since 2007.
    It is currently developed by a community of developers.

    ## Copyright

    Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

    ## Licensing

    Jackson 2.x core and extension components are licensed under Apache License
    2.0
    To find the details that apply to this artifact see the accompanying LICENSE
    file.

    ## Credits

    A list of contributors may be found from CREDITS(-2.x) file, which is
    included
    in some artifacts (usually source distributions); but is always available

```

from the source code management (SCM) system project uses.

=====  
 =====

Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to

communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and

do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

=====

## **jackson-core**

**Vendor:** FasterXML, LLC

**Version:** 2.15.3

=====

Top level component : jackson-core 2.15.3

=====

License

-----

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate

as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.
6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions



of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

=====  
NOTICE  
=====

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.  
 It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has  
 been in development since 2007.  
 It is currently developed by a community of developers.

## ## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## ## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0  
 To find the details that apply to this artifact see the accompanying LICENSE  
 file.

## ## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included  
 in some artifacts (usually source distributions); but is always available  
 from the source code management (SCM) system project uses.

## ## FastDoubleParser

jackson-core bundles a shaded copy of FastDoubleParser .  
 That code is available under an MIT license  
 under the following copyright.

Copyright © 2023 Werner Randelshofer, Switzerland. MIT License.

See FastDoubleParser-NOTICE for details of other source code included in  
 FastDoubleParser  
 and the licenses and copyrights that apply to that code.

```
=====
Fourth-party dependency : ch.randelshofer.fastdoubleparser
=====
```

MIT License

Copyright (c) 2021 Werner Randelshofer, Switzerland.

Permission is hereby granted, free of charge, to any person obtaining a copy  
 of this software and associated documentation files (the "Software"), to deal  
 in the Software without restriction, including without limitation the rights  
 to use, copy, modify, merge, publish, distribute, sublicense, and/or sell  
 copies of the Software, and to permit persons to whom the Software is  
 furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in  
 all  
 copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
 IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
 FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE  
 AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER  
 LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,  
 OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE  
 SOFTWARE.

```
=====
# FastDoubleParser
```

This is a Java port of Daniel Lemire's fast\_float project.  
This project provides parsers for double, float, BigDecimal and BigInteger values.

## Copyright

Copyright © 2023 Werner Randelshofer, Switzerland.

## Licensing

This code is licensed under MIT License.  
<https://github.com/wrandelshofer/FastDoubleParser/blob/522be16e145f43308c43b23094e31d5efcaa580e/LICENSE>  
(The file 'LICENSE' is included in the sources and classes Jar files that are released by this project  
- as is required by that license.)

Some portions of the code have been derived from other projects.  
All these projects require that we include a copyright notice, and some require that we also include some text of their license file.

fast\_double\_parser, Copyright (c) 2022 Daniel Lemire. Apache 2.0 License.  
[https://github.com/fastfloat/fast\\_float](https://github.com/fastfloat/fast_float)  
[https://github.com/fastfloat/fast\\_float/blob/dc88f6f882ac7eb8ec3765f633835cb76afa0ac2/LICENSE-APACHE](https://github.com/fastfloat/fast_float/blob/dc88f6f882ac7eb8ec3765f633835cb76afa0ac2/LICENSE-APACHE)

fast\_float, Copyright (c) 2021 The fast\_float authors. Apache 2.0 License.  
[https://github.com/fastfloat/fast\\_float](https://github.com/fastfloat/fast_float)  
[https://github.com/lemire/fast\\_double\\_parser/blob/07d9189a8fb815fe800cb15ca022e7a07093236e/LICENSE](https://github.com/lemire/fast_double_parser/blob/07d9189a8fb815fe800cb15ca022e7a07093236e/LICENSE)

bigint, Copyright 2020 Tim Bukt. 2-clause BSD License.  
<https://github.com/tbukt/bigint/tree/floatfft>  
<https://github.com/tbukt/bigint/blob/617c8cd8a7c5e4fb4d919c6a4d11e2586107f029/LICENSE>  
<https://github.com/wrandelshofer/FastDoubleParser/blob/39e123b15b71f29a38a087d16a0bc620fc879aa6/bigint-LICENSE>  
(We only use those portions of the bigint project that can be licensed under 2-clause BSD License.)  
(The file 'bigint-LICENSE' is included in the sources and classes Jar files that are released by this project)

## **jackson-databind**

**Vendor:** FasterXML, LLC

**Version:** 2.15.3

com.fasterxml.jackson.core:jackson-databind

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

-----

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,

and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the

Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.
4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work

by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[ ]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

== NOTICE

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0 To find the details that apply to this artifact see the accompanying LICENSE file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

=====  
=====End of Apache License 2.0 of top level  
component=====

FOURTH-PARTY DEPENDENCY

-----jackson-core -----

COPYRIGHT: Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

LICENSE: Apache 2.0

START NOTICE:

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0 To find the details that apply to this artifact see the accompanying LICENSE file.

```
## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

## FastDoubleParser

jackson-core bundles a shaded copy of FastDoubleParser .
That code is available under an MIT license
under the following copyright.

Copyright © 2023 Werner Randelshofer, Switzerland. MIT License.

See FastDoubleParser-NOTICE for details of other source code included in
FastDoubleParser
and the licenses and copyrights that apply to that code.

----- END NOTICE -----

START FastDoubleParser-NOTICE:

# FastDoubleParser

This is a Java port of Daniel Lemire's fast_float project.
This project provides parsers for double, float, BigDecimal and BigInteger
values.

## Copyright

Copyright © 2023 Werner Randelshofer, Switzerland.

## Licensing

This code is licensed under MIT License.
https://github.com/wrandelshofer/FastDoubleParser/blob/
522be16e145f43308c43b23094e31d5efcaa580e/LICENSE
(The file 'LICENSE' is included in the sources and classes Jar files that are
released by this project
- as is required by that license.)

Some portions of the code have been derived from other projects.
All these projects require that we include a copyright notice, and some require
that we also include some text of their
license file.

fast_double_parser, Copyright (c) 2022 Daniel Lemire. Apache 2.0 License.
https://github.com/fastfloat/fast_float
https://github.com/fastfloat/fast_float/blob/
dc88f6f882ac7eb8ec3765f633835cb76afa0ac2/LICENSE-APACHE

fast_float, Copyright (c) 2021 The fast_float authors. Apache 2.0 License.
https://github.com/fastfloat/fast_float
https://github.com/lemire/fast_double_parser/blob/
07d9189a8fb815fe800cb15ca022e7a07093236e/LICENSE

bigint, Copyright 2020 Tim Bukt. 2-clause BSD License.
https://github.com/tbukt/bigint/tree/floatfft
https://github.com/tbukt/bigint/blob/617c8cd8a7c5e4fb4d919c6a4d11e2586107f029/
LICENSE
https://github.com/wrandelshofer/FastDoubleParser/blob/
```



39e123b15b71f29a38a087d16a0bc620fc879aa6/bigint-LICENSE  
 (We only use those portions of the bigint project that can be licensed under 2-clause  
 BSD License.)  
 (The file 'bigint-LICENSE' is included in the sources and classes Jar files that are  
 released by this project  
 - as is required by that license.)

----- END FastDoubleParser-NOTICE -----

bigint-LICENSE:

Copyright 2022 Tim Buktu

Redistribution and use in source and binary forms, with or without  
 modification, are permitted provided that the following conditions  
 are met:

1. Redistributions of source code must retain the above copyright notice, this  
 list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,  
 this list of conditions and the following disclaimer in the documentation  
 and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND  
 ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED  
 WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE  
 DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE  
 FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR  
 SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER  
 CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,  
 OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
 OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

----- END bigint-LICENSE -----

-----jackson-annotations-----  
 COPYRIGHT: Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)  
 LICENSE: Apache 2.0  
 NOTICE: same as jackson-databind

## **jackson-datatype-jdk8**

**Vendor:** FasterXML, LLC

**Version:** 2.15.3

==License  
 Apache License

Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

### 1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,  
 and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by  
 the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.
3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:
  - (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
  - (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
  - (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
  - (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed

with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.  
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

---

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

----- Copyright notices -----

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers.

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0 To find the details that apply to this artifact see the accompanying LICENSE file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

----- Fourth-party information -----

== jackson-core

== License:

Apache 2.0

== Copyright Notices:

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007. It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0 To find the details that apply to this artifact see the accompanying LICENSE file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included in some artifacts (usually source distributions); but is always available from the source code management (SCM) system project uses.

## FastDoubleParser

jackson-core bundles a shaded copy of FastDoubleParser . That code is available under an MIT license under the following copyright.

Copyright © 2023 Werner Randelshofer, Switzerland. MIT License.

---

```
See FastDoubleParser-NOTICE for details of other source code included in
FastDoubleParser
and the licenses and copyrights that apply to that code.
----- (separator) -----
----- Fourth-party information -----
== jackson-databind
== License:
Apache 2.0
== Copyright Notices:
Copyright (c) 2007- Tatu Saloranta, tatu.saloranta@iki.fi
# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
been in development since 2007.
It is currently developed by a community of developers.

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0
To find the details that apply to this artifact see the accompanying LICENSE
file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

----- (separator) -----
== jackson-annotations
== License:
Apache 2.0
== Copyright Notices:
Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
been in development since 2007.
It is currently developed by a community of developers.

## Copyright

Copyright 2007-, Tatu Saloranta (tatu.saloranta@iki.fi)

## Licensing

Jackson 2.x core and extension components are licensed under Apache License 2.0
To find the details that apply to this artifact see the accompanying LICENSE
file.

## Credits

A list of contributors may be found from CREDITS(-2.x) file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

----- (separator) -----
```

---

```

== ch.randelshofer » fastdoubleparser
== License:

```

```
MIT License
```

```
Copyright (c) 2021 Werner Randelshofer, Switzerland.
```

```
Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:
```

```
The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
```

```
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
```

```
== Copyright Notices:
```

```
# FastDoubleParser
```

```
This is a Java port of Daniel Lemire's fast_float project.
This project provides parsers for double, float, BigDecimal and BigInteger
```

```
values.
```

```
## Copyright
```

```
Copyright © 2023 Werner Randelshofer, Switzerland.
```

```
## Licensing
```

```
This code is licensed under MIT License.
```

```
https://github.com/wrandelshofer/FastDoubleParser/blob/522be16e145f43308c43b23094e31d5efcaa580e/LICENSE
```

```
(The file 'LICENSE' is included in the sources and classes Jar files that are
released by this project
- as is required by that license.)
```

```
Some portions of the code have been derived from other projects.
```

```
All these projects require that we include a copyright notice, and some
require that we also include some text of their
license file.
```

```
fast_double_parser, Copyright (c) 2022 Daniel Lemire. Apache 2.0 License.
```

```
https://github.com/fastfloat/fast\_float
https://github.com/fastfloat/fast\_float/blob/dc88f6f882ac7eb8ec3765f633835cb76afa0ac2/LICENSE-APACHE
```

```
fast_float, Copyright (c) 2021 The fast_float authors. Apache 2.0 License.
```

```
https://github.com/fastfloat/fast\_float
https://github.com/lemire/fast\_double\_parser/blob/07d9189a8fb815fe800cb15ca022e7a07093236e/LICENSE
```

```
bigint, Copyright 2020 Tim Bukt. 2-clause BSD License.
```

```
https://github.com/tbukt/bigint/tree/floatfft
```

```
https://github.com/tbuktu/bigint/blob/  
617c8cd8a7c5e4fb4d919c6a4d11e2586107f029/LICENSE  
https://github.com/wrandelshofer/FastDoubleParser/blob/  
39e123b15b71f29a38a087d16a0bc620fc879aa6/bigint-LICENSE  
(We only use those portions of the bigint project that can be licensed  
under 2-clause BSD License.)  
(The file 'bigint-LICENSE' is included in the sources and classes Jar  
files that are released by this project  
- as is required by that license.)
```



# Index

## C

---

creating access tokens endpoint, [3-8](#)