

# Oracle® Fusion Middleware

Release Notes for Oracle Data Integrator

12c (12.1.2)

E48737-01

September 2013

---

This document describes known issues associated with Oracle Data Integrator and includes information regarding post-installation patches. It includes the following sections:

- [Section 1, "Oracle Data Integrator Console Issues and Workarounds"](#)
- [Section 2, "Configuration Issues and Workarounds"](#)
- [Section 3, "Design-Time Environment Issues and Workarounds"](#)
- [Section 4, "Technologies and Knowledge Module Issues and Workarounds"](#)
- [Section 5, "Post-install Patch Information for Oracle Data Integrator 12c"](#)

## 1 Oracle Data Integrator Console Issues and Workarounds

This section contains information on the following:

- [Section 1.1, "Oracle Data Integrator Console Page Task Flow Resets when Another Tab is Closed"](#)

### 1.1 Oracle Data Integrator Console Page Task Flow Resets when Another Tab is Closed

When a tab containing a page is closed in Oracle Data Integrator Console, all the tabs after this one reset their task flows (the navigation actions that were made). The pages in these tabs reset to the original object that was opened. [9486792]

## 2 Configuration Issues and Workarounds

This section contains information on the following issues:

- [Section 2.1, "Agent Startup Fails if Default Database is Not Assigned for Microsoft SQL Server"](#)
- [Section 2.2, "A Work Repository Cannot Be Attached to a Master Repository in the GUID Format if the Overwrite Option is Not Checked"](#)
- [Section 2.3, "Collocated ODI Agent is Not Displayed in Oracle Enterprise Manager FMW Control"](#)
- [Section 2.4, "WebLogic Managed Standalone Agent Target is Not Displayed"](#)
- [Section 2.5, "Keys Generated Using Java 7 Cannot Be Used in WebLogic Server 10.3.x"](#)
- [Section 2.6, "Load Plans with Many Parallel Steps Run Out of Available Database Connections"](#)
- [Section 2.7, "Test Connection Fails While Creating Standalone Agent with Third Party Databases"](#)

## 2.1 Agent Startup Fails if Default Database is Not Assigned for Microsoft SQL Server

A default database must be assigned to successfully complete the Standalone Agent startup with Microsoft SQL server. Execute the following MSSQL statement to make this assignment: [10398864]

```
ALTER LOGIN <SQLLogin> WITH DEFAULT_DATABASE = <AvailDBName>
```

## 2.2 A Work Repository Cannot Be Attached to a Master Repository in the GUID Format if the Overwrite Option is Not Checked

When attaching a Work Repository to the Master Repository in the GUID format, the following error appears if the **Overwrite** option is not checked:

```
ODI-3022:Attaching of Work Repository failed due to error: ODI-10228:Repository with id '2' or with name 'xxxx' has been already used in your master repository.
```

As a workaround, export the Work Repository to file, create an empty Work Repository, and reimport the previously exported Work Repository to the new Work Repository. [16730820]

## 2.3 Collocated ODI Agent is Not Displayed in Oracle Enterprise Manager FMW Control

Status and data are not displayed in the Agent Home Page for WebLogic Managed (Collocated) Standalone Agents in the ODI FMW Control UI. To resolve this issue, configure the domain to include the Standalone Agent and manually update the **MASTER\_REPO\_TIMESTAMP** attribute with the correct Master Repository ID (TimeStamp) in the following file, and then start Node Manager: [16846706]

```
<MW_HOME>/user_projects/domains/WLS_ODI/config/fmwconfig/components/ODI/<component_name>/instance.properties
```

## 2.4 WebLogic Managed Standalone Agent Target is Not Displayed

In Fusion Middleware Control, when the ODI Console Application, ODI Standalone Agent, and Master Repository configuration pages are edited and saved from the WebLogic Managed Standalone Agent Home page, the WebLogic Managed Standalone Agent target is no longer displayed in the UI. [17433189]

## 2.5 Keys Generated Using Java 7 Cannot Be Used in WebLogic Server 10.3.x

For starting a standalone or collocated agent or a WebLogic Server 12c agent in SSL mode, the organization and domain-specific keys must be added to the keystore. Any client that needs to trust this certificate must import the keytool into its keystore or truststore. If the client is WebLogic Server 10.3.x running on Java 6 and the keytool from Java 7 was used to generate the original keys, the WebLogic Server 10.3.x domain startup displays an error. [17246041]

As a workaround, you can:

- Use the keytool from Java 6 to generate the keypair, export it and import it into the Java 7 keystore
- With the Java 7 keytool use the syntax, `keytool -genkey -alias agent -keyalg RSA -keysize 1024 -sigalg SHA1withRSA`

## 2.6 Load Plans with Many Parallel Steps Run Out of Available Database Connections

Load plans with many parallel steps might run out of available database connections, as every parallel step consumes an extra connection. This can be controlled by limiting the 'maximum number of sessions' in the Agent configuration. [17321831]

## 2.7 Test Connection Fails While Creating Standalone Agent with Third Party Databases

When using ODI 12.1.2 Standalone Installation, while creating an ODI Standalone Agent using a repository created with third-party databases (for example, SqlServer or DB2) using the Configuration Wizard, the "Test Connection" function fails. [17484650]

As a workaround:

1. When the JDBC Test step fails, click **Next**. A Warning message is shown. Click **OK** to dismiss the message.
2. Proceed through the remaining steps to create the Standalone Agent using the Configuration Wizard.
3. Navigate to the directory <Standalone domain>/config/jdbc and update the <url> entry in the file jdbc\_odiMasterRepository-jdbc.xml as follows:

Before:

```
<url>jdbc:weblogic:sqlserver://<host>:<port></url>
```

After:

```
<url>jdbc:weblogic:sqlserver://<host>:<port>;DatabaseName=<dbname></url>
```

## 3 Design-Time Environment Issues and Workarounds

This section contains information on the following issues:

- [Section 3.1, "Unable to Modify a Non-compliant Wallet Password"](#)
- [Section 3.2, "Mapping Editor Display is Not Arranged Properly when Many Connectors Exist"](#)
- [Section 3.3, "Session Variable is Not Displayed in the Session Variables Node"](#)
- [Section 3.4, "11g Backward-compatible SDK in 12c Issue"](#)
- [Section 3.5, "Sequence Expression in Aggregate Component Causes Invalid SQL"](#)
- [Section 3.6, "Operator Tree Shows Sessions Using the Name of the Deployment Specification"](#)
- [Section 3.7, "Unable to Save a Mapping After Materializing a Datastore Shortcut Referenced in the Mapping"](#)
- [Section 3.8, "Groovy Script Editor is Unable to Find JDBC Drivers in the User Classpath"](#)
- [Section 3.9, "Unable to Invoke HTTPS-based Web Services Through the ODI Studio Internal Agent"](#)
- [Section 3.10, "11g Mapping Upgrade Issue"](#)
- [Section 3.11, "Task to Deploy ODI Data Services Fails when Executed on a Standalone Agent"](#)
- [Section 3.12, "Null Password-related Conflict"](#)
- [Section 3.13, "Print Mappings/Reusable Mappings Fails with Null Pointer Exception on Invalid File Path"](#)
- [Section 3.14, "Markers Tab is Missing in Model Folder Editor"](#)

### 3.1 Unable to Modify a Non-compliant Wallet Password

When creating a new ODI Studio UI login, if a non-compliant Wallet Password is entered in the New Wallet Password dialog box, it cannot be modified during the next attempt. Clicking **Cancel** in the New Wallet Password dialog box results in losing the other information added during the login process.

As a workaround, set the **LANG** and **LC\_ALL** environment variables to **en\_US** and start ODI Studio. [15981498]

### 3.2 Mapping Editor Display is Not Arranged Properly when Many Connectors Exist

When a mapping contains many datasets and within the datasets there are many joins, the connector lines and join boxes are not always aligned in an orderly fashion in the Logical view of the Mapping Editor.

As a workaround, perform a manual **Auto Arrange** to clean the display. [16091738]

### 3.3 Session Variable is Not Displayed in the Session Variables Node

Tracked variables are not displayed in the Variables node in the Session List in the Operator Navigator. However, the variables can be viewed in the Variable and Sequence Values section of the Session Step or Session Task Editor. [16876559]

### 3.4 11g Backward-compatible SDK in 12c Issue

When using the 11g backward-compatible SDK in 12c, a persisting mapping or model does not implicitly persist parent folders and projects as it did in 11g.

As a workaround, change the client code to explicitly call SDK methods to persist projects and parent folders. [17324878]

### 3.5 Sequence Expression in Aggregate Component Causes Invalid SQL

When using a sequence as a mapping expression in an aggregate component, the mapping fails to execute; for example, Oracle displays the following error:

```
ORA-02287: sequence number not allowed here
```

As a workaround, insert the sequence value in a separate component prior to the aggregate and map it into the aggregate. [17302457]

### 3.6 Operator Tree Shows Sessions Using the Name of the Deployment Specification

When different mappings that have deployment specifications with the same name are run, the Operator Tree cannot distinguish between the mappings and they are all grouped under the same deployment specification.

As a workaround, rename deployment specifications to have unique and recognizable names. [17332286]

### 3.7 Unable to Save a Mapping After Materializing a Datastore Shortcut Referenced in the Mapping

After materializing a shortcut for a datastore, open mappings using this datastore fail while saving and the following error is displayed:

```
ODI-26182: Object was modified by another user and cannot be saved.
```

As a workaround, close and reopen the mapping and repeat changes. [17337669]

### 3.8 Groovy Script Editor is Unable to Find JDBC Drivers in the User Classpath

A Groovy script, depending on external JDBC drivers, may fail with a `ClassNotFoundException` as the JDBC drivers in the user classpath are not found.

As a workaround, edit `odi.conf` and add the JDBC driver jar using `AddJavaLibFile`. For example, `AddJavaLibFile./mysql-connector-java-5.1.26-bin.jar`. [17361339]

### 3.9 Unable to Invoke HTTPS-based Web Services Through the ODI Studio Internal Agent

The `OdiInvokeWebService` tool is unable to call HTTPS-based web services if run through the ODI Studio internal agent.

As a workaround, configure an external agent to perform the execution. [17383460]

### 3.10 11g Mapping Upgrade Issue

A mapping upgraded from 11g fails in the following circumstances:

- When the mapping uses a multi-connect LKM and has joins or filters in the staging area
- When the mapping is upgraded with 11g compatibility switched on and is then converted to a 12c mapping in ODI Studio

As a workaround, select a different LKM after conversion. [17423481]

### 3.11 Task to Deploy ODI Data Services Fails when Executed on a Standalone Agent

When generating and deploying ODI data services using a Groovy task in a procedure, the code executes properly in ODI Studio and JEE Agent, but fails on the Standalone Agent.

As a workaround, use JEE Agent to deploy data services programmatically. [17433711]

### 3.12 Null Password-related Conflict

Null passwords are no longer accepted and an error is displayed if a user is created with a null password. However, the Password Policy dialog box in the Security Navigator allows the creation of a policy that enables the use of null passwords. [17432585]

### 3.13 Print Mappings/Reusable Mappings Fails with Null Pointer Exception on Invalid File Path

The **Print Mappings/Reusable Mappings** command in the Designer Navigator in ODI Studio throws a Null Pointer Exception if the file path of the report PDF file is not an absolute path to a valid location.

As a workaround, provide a valid file path. [17452349]

### 3.14 Markers Tab is Missing in Model Folder Editor

The Markers tab is missing in the Model Folder Editor. It is still possible to set markers through the context-menu of the model folder in the Designer Navigator tree. [17307493]

## 4 Technologies and Knowledge Module Issues and Workarounds

This section contains information on the following issues:

- [Section 4.1, "IKM SQL Incremental Update \(Row by Row\) Cannot Target Japanese Tables"](#)
- [Section 4.2, "Non-ASCII Data in an Exception Thrown by a Jython Script is Incorrectly Converted"](#)
- [Section 4.3, "Using IKM File to File \(Java\) with JAVA\\_HOME Specified in KM Options Fails in Execution"](#)
- [Section 4.4, "LKM SQL to SQL \(Built-in\) Creates Indexes in the Wrong Phase"](#)
- [Section 4.5, "Incremental Update Fails when Mapping CLOB Columns to a Microsoft SQL Server Target with IKM MSSQL"](#)
- [Section 4.6, "Upgrade of ODI AA For SAP"](#)

- [Section 4.7, "IKM SQL Incremental Update \(Row by Row\) Fails with Single Backslashes in File Path"](#)
- [Section 4.8, "LKM File to SQL Fails if File-based Datastore is Nested in Reusable Mapping"](#)
- [Section 4.9, "Change Data Capture for Oracle GoldenGate in Online Mode Fails in Mappings"](#)

#### 4.1 IKM SQL Incremental Update (Row by Row) Cannot Target Japanese Tables

"IKM SQL Incremental Update (Row by Row)" fails on task *Flag rows for update* if the target table name contains Japanese characters. In the generated code, the integration table name appears as `I$_??????` where `?` characters replace Japanese characters.

As a workaround, replace this IKM with another IKM suitable for the technology. For example, "IKM Oracle Incremental Update" for Oracle. [7602615]

#### 4.2 Non-ASCII Data in an Exception Thrown by a Jython Script is Incorrectly Converted

When an exception thrown by a Jython script contains Non-ASCII data, the Non-ASCII data might be replaced with `???`. However, this does not mean that business data is affected, and more information can be obtained in the exception stack. [15846609]

#### 4.3 Using IKM File to File (Java) with JAVA\_HOME Specified in KM Options Fails in Execution

When IKM File to File (Java) is used with `JAVA_HOME` specified in KM options, it fails in execution.

As a workaround, set `JAVA_HOME` on the system level instead of in KM options. [17410568]

#### 4.4 LKM SQL to SQL (Built-in) Creates Indexes in the Wrong Phase

"LKM SQL to SQL (Built-in)" creates temporary indexes in the wrong phase resulting in poor performance.

As a workaround, use other LKMs such as "LKM SQL to SQL." [17430884]

#### 4.5 Incremental Update Fails when Mapping CLOB Columns to a Microsoft SQL Server Target with IKM MSSQL

When mapping CLOB columns to a Microsoft SQL Server target with "IKM MSSQL", the Incremental Update fails with the following error message:

```
ODI-1228: Task IKM MSSQL Incremental Update (Flag useless rows) fails on the target MICROSOFT_ SQL_SERVER connection SVR2_MSSQL.
```

```
Caused By: java.sql.SQLException: [FMWGEN][SQLServer JDBC Driver][SQLServer]The data types text and text are incompatible in the equalto operator.
```

[17431274]

As a workaround, you can:

- Add a new data type `VARCHAR(MAX)` to Microsoft SQL Server:
  1. Navigate to **Topology > Physical Architecture > Technologies > Microsoft SQL Server**, right-click **Datatypes** and select **New Datatype**.
  2. In the **<NewObject>** dialog box, enter `varchar(max)` in the **Name** field, `VARCHAR(MAX)` in the **Code** and **Reserved Code** fields, create table syntax and writable datatype syntax, and enter `V` in the letter used in the icon field.
  3. Click **Save**.
- Map **Generic SQL.CLOB** to `Microsoft SQL Server.varchar(max)`.

1. Navigate to **Topology > Logical Architecture > Technologies > Generic SQL**, open the **CLOB** datatype, switch to the **Converted To** tab and change it to `varchar(max)` for **Microsoft SQL Server**.
2. Click **Save**.

## 4.6 Upgrade of ODI AA For SAP

In older ODI SAP Adapter versions the extraction programs were executed as RFCs in dialog mode, however, the default execution mode of the latest ODI SAP Adapter has changed to background processing (the default value of LKM option **BACKGROUND\_PROCESSING** is `true`). In background processing mode the extraction programs are executed as SAP reports and allow a better resource utilization of the SAP systems. Background processing is the recommended execution mode. The dialog mode still works, but has been deprecated.

Any existing scenarios continue to use dialog mode execution until regenerated.

After upgrading the SAP KMs, all ODI SAP mappings execute in background mode. To allow background execution, please review the required SAP authorizations in the following sections:

For information about the SAP privileges required for SAP ABAP BW, see "SAP ABAP BW Required Privileges" in *Getting Started with SAP ABAP BW Adapter for Oracle Data Integrator*.

For information about the SAP privileges required for SAP ABAP ERP, see "SAP ABAP ERP Required Privileges" in *Getting Started with SAP ABAP ERP Adapter for Oracle Data Integrator*.

Please note that the authorizations for dialog and background execution mode are different.

If execution has to continue in dialog mode, the LKM option **BACKGROUND\_PROCESSING** should either be set to `false` in each mapping, or the default value should be changed inside the KM.

If the ODI objects installed in the SAP systems have been installed by RKM SAP ERP v32 or later or RKM SAP BW v23 or later, reinstall the SAP ABAP BW adapter as described in "Update ODI SAP Components," and reinstall the SAP ABAP ERP adapter as described in "Update ODI SAP Components," in the *Application Adapters Guide for Oracle Data Integrator*. Note that the adapters from the SAP system need not be uninstalled first. If the ODI objects are installed using RKM SAP ERP or RKM SAP BW versions older than v32, perform the following steps:

1. Uninstall SAP ABAP BW adapter as described in "Uninstalling ODI SAP Components," and uninstall the SAP ABAP ERP adapter as described in "Uninstalling ODI SAP Components," in the *Application Adapters Guide for Oracle Data Integrator*.
2. For SAP package names and function group names (KM options **SAP\_FUNCTION\_GROUP\_ODI\_[DEV|PROD]** and **SAP\_PACKAGE\_NAME\_ODI\_[DEV|PROD]**), review "SAP Packages and SAP Function Groups" for SAP ABAP BW and "SAP Packages and SAP Function Groups" for SAP ABAP ERP in the *Application Adapters Guide for Oracle Data Integrator*.
3. Reinstall SAP ABAP BW adapter as described in "Update ODI SAP Components," and reinstall SAP ABAP ERP adapter as described in "Update ODI SAP Components," in the *Application Adapters Guide for Oracle Data Integrator*.

The latest ODI SAP adapters support the cancelling of long running jobs in SAP. To enable the "Stop-immediate" functionality in ODI Operator, the **OpenTool** class must be changed from `oracle.odi.sap.km._OdiSapAbapExecute` to `oracle.odi.sap.km._OdiSapAbapExecuteStoppable`. See "Adding the Open Tool" for SAP ABAP BW and "Adding the Open Tool" for SAP ABAP ERP in the *Application Adapters Guide for Oracle Data Integrator*. [16552272]

## 4.7 IKM SQL Incremental Update (Row by Row) Fails with Single Backslashes in File Path

"IKM SQL Incremental Update (Row by Row)" fails if the KM option **LOG\_FILE\_NAME** is set to a Windows path containing backslashes, for example `LOG_FILE_NAME=C:\user\joe\odi_load.log`. This worked in 11g releases.

As a workaround, use a double backslash in the path, for example C:\\user\\joe\\odi\_load.log. [13354200]

## 4.8 LKM File to SQL Fails if File-based Datastore is Nested in Reusable Mapping

A mapping using "LKM File to SQL" with a file-based datastore nested in a reusable mapping fails with the following exception:

ODI-1227: Task LKM File to SQL (Load data) fails on the source FILE connection XXXXX.

Caused By: java.sql.SQLException: ODI-40444: Column not found: YYYY

As a workaround, avoid using a file datastore component within a reusable mapping or move the output signature component from the source execution unit to the staging execution unit. [17466378]

## 4.9 Change Data Capture for Oracle GoldenGate in Online Mode Fails in Mappings

Oracle GoldenGate Change Data Capture (CDC) in online mode will fail if the initial load process is not selected in the model. Even though initial load is not applicable for Oracle GoldenGate in online mode, you will not be able to use the datastore from the model in a mapping. This will not impact the **Start Journal** function or any CDC action from within the model. However, when these datastores are used in a mapping with CDC, the mapping will fail. [17508179]

As a workaround, you can select initial load processes in the model. Even though initial load processes are selected in the Model editor, initial load will still be disabled as the option to enable it exists in the JKM option. Perform the following steps to enable CDC:

1. Open the Model for which the CDC is enabled.
2. Select the **Journalizing** tab.
3. Click the **Create** button for **Initial Load Capture Process** and specify placeholder values for **Process** and **Logical Process Name**. There should not be any process by the same name already defined in the Topology Navigator for the Oracle GoldenGate technology, but otherwise you can use any value.
4. Click **OK** to create the capture process instance.
5. Click the **Create** button for **Initial Load Delivery Process** and specify placeholder values for **Process Name** and **Logical Process Name**. The same restriction for the initial load capture process name applies.
6. Select the same **Target DB Logical schema** used for the actual capture process instance.
7. Click **OK** to create the delivery process instance.
8. Confirm that the JKM option **USE\_OGG\_FOR\_INIT** is set to `false`.

You can now use the datastore from the model in mappings with CDC.

## 5 Post-install Patch Information for Oracle Data Integrator 12c

It is strongly recommended that the following patches be applied after the installation of Oracle Data Integrator. These patches are available through My Oracle Support (<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info>), and are also distributed in the Oracle Data Integrator download file as `odi_1212_opatch.zip`.

**Table 1 Patch Information**

Patch Number	Bugs	Description
17469061	17350025, 17349908, 17073913, 17451669	TRACKING BUG FOR FMW UPGRADE CUMULATIVE BACKPORTS TO 12.1.2.0.0 (Patch)



**Table 1 (Cont.) Patch Information**

Patch Number	Bugs	Description
17170540	17170540	ODI T2P FAILS IN FMW WITH -OPSSDATAEXPORT=TRUE
16926420	16926420	NPE USING XDK WITH SUN SAAJ CLASSES; FDOMDOCUMENTBUILDER CONSTRUCTOR IS BROKEN  While applying this patch, see: <a href="#">Section 5.1, "Error When Applying Patch 16926420 Can Be Ignored."</a>

## 5.1 Error When Applying Patch 16926420 Can Be Ignored

While applying the ODI 12.1.2 recommended patch number 16926420 (odi\_1212\_opatch.zip) to the ODI 12.1.2 Enterprise Installation Oracle Home, you may see the following error message:

Error: There is an error with library regeneration, please refer to the log file for details. OPatch will continue applying the patch.

You can ignore this error. The patch is correctly applied.

## 6 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 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.

---

Oracle® Fusion Middleware Release Notes for Oracle Data Integrator, 12c (12.1.2)  
E48737-01

Copyright © 2010, 2013, Oracle and/or its affiliates. All rights reserved.

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 or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. 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 failsafe, 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 and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon 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, Opteron, the AMD logo, and the AMD Opteron 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 on 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. 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.

