Oracle® Fusion Middleware
Release Notes for Oracle Coherence

14c (14.1.1.0.0)

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Oracle Fusion Middleware Release Notes for Oracle Coherence, 14c (14.1.1.0.0)

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Preface

Release Notes for Oracle Coherence summarizes the release information related to new and updated features, known issues and their workarounds, deprecated and removed functionality, and more.

This preface includes the following topics:

- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Audience

This document is intended for users of Oracle Coherence.

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 Documents

For more information, see the following documents in the Oracle Coherence documentation set:

- *Administering Oracle Coherence*
- *Administering HTTP Session Management with Oracle Coherence*Web*
- *Developing Applications with Oracle Coherence*
- *Developing Remote Clients for Oracle Coherence*
- *Installing Oracle Coherence*
- *Integrating Oracle Coherence*

- *Managing Oracle Coherence*
- *Securing Oracle Coherence*
- *Java API Reference for Oracle Coherence*
- *.NET API Reference for Oracle Coherence*
- *C++ API Reference for Oracle Coherence*
- *REST API for Managing Oracle Coherence*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	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.

1
Introduction

You can use the Oracle Coherence Release Notes to learn about important production information such as Coherence certifications, support, and licensing.
This chapter contains the following sections:

- Latest Release Information
- Purpose of this Document
- System Requirements and Specifications
- Certification Information
- Product Documentation
- Oracle Support
- Licensing Information
- Downloading and Applying Required Patches

Latest Release Information

This document is accurate at the time of publication. Oracle will update the release notes periodically after the software release. You can access the latest information and additions to these release notes at Oracle Help Center.

Purpose of this Document

This document contains the release information for Oracle Coherence.

Oracle recommends you review its contents before installing, or working with the product.

System Requirements and Specifications

Oracle Coherence follows the Fusion Middleware system requirements and certifications for production environments. For more information, see http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html.

For system requirements for installations of development environments, visit:

- Coherence for Java — *Installing Oracle Coherence for Java*.
- C++ Client — *Installing the C++ Client Distribution*.
- .Net Client — *Installing the .NET Client Distribution*.

Certification Information

To see versions of platforms and related software for which Oracle Coherence is certified and supported, go to http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html.

Product Documentation

For complete documentation on Oracle Coherence, go to Oracle Help Center.

Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support .

Licensing Information

Detailed information regarding license compliance for Oracle Fusion Middleware is available at Licensing Information.

Downloading and Applying Required Patches

Go to `My Oracle Support` to download the latest software patches.

See the `README` file in the patch distribution for up-to-date information on the software fixes provided by the patch.

To download and install the latest software patch:

1. Login to My Oracle Support.

2. Click the **Patches & Updates** tab.

3. Under the Patch Search tab, select **Product or Family (Advanced Search)**, and select the **Include all patches in a product family** check box.

4. Enter **Oracle Coherence** as the product, select the platform and release, and click **Search**.

The list of currently available patches for Oracle Coherence is returned.

2
What's New in this Release

Learn the features, enhancements, and changes made to Oracle Coherence. Oracle updates the release notes periodically after the software release. This document is accurate at the time of publication.
This chapter includes the following sections:

- New Features
- Deprecated Features

New Features

This section contains new features for Oracle Coherence that are organized by release.

New and Improved for 14.1.1.0

- **Topics** - Topics introduces a publish and subscribe messaging functionality in Oracle Coherence. See Using Topics in *Developing Applications with Oracle Coherence*.

- **OpenTracing** - The OpenTracing tool helps you diagnose unexpected latencies involved in request processing. See Distributed Tracing in *Developing Applications with Oracle Coherence*.

- **Asynchronous Persistence Mode** - Asynchronous persistence mode allows the storage servers to persist data asynchronously. See Using Asynchronous Persistence in *Developing Applications with Oracle Coherence*.

- **Oracle GraalVM Enterprise Edition Certification** - Oracle Coherence 14.1.1.0 is certified to run on Oracle GraalVM Enterprise Edition, a high performance runtime platform built on Oracle's enterprise-class Java SE. See Running Oracle WebLogic Server and Coherence on GraalVM Enterprise Edition.

- **Polyglot Coherence Applications** - These applications allow writing server side objects such as `EntryProcessor`, `Filter`, `Aggregator`, and so on in JavaScript, and running Coherence using Oracle GraalVM Enterprise Edition. See Developing Polyglot Coherence Applications in *Developing Applications with Oracle Coherence*.

Deprecated Features

Learn about the deprecated and desupported features of Oracle Coherence.

This section includes the following topics:

- Deprecated Features for 14.1.1.0
- Deprecated Features for 12.2.1.x

Deprecated Features for 14.1.1.0

A brief description of the deprecated features for 14.1.1.0.

This section includes the following topics:

- WebLogic Server Multitenant Functionality
- Reduced HTTP Server Support
- Classes in <com.oracle.common.base>

WebLogic Server Multitenant Functionality

Coherence support for WebLogic Server Multitenancy feature is deprecated because this feature is now not supported in WebLogic Server. See Removed Functionality and Components in *What's New in Oracle WebLogic Server*.

Reduced HTTP Server Support

For production environments, Coherence REST supports implementations only for the Netty HTTP server. Support for the following servers is deprecated:

- Simple HTTP Server
- Jetty HTTP Server
- Grizzly HTTP Server

For more information about Netty HTTP Server, see Using Netty HTTP Server in *Developing Remote Clients for Oracle Coherence*.

Classes in <com.oracle.common.base>

The classes in `<com.oracle.common.base>` have been deprecated. These classes are now relocated to an area within the coherence namespace (`<com.oracle.coherence>`).

Deprecated Features for 12.2.1.x

A brief description of the deprecated features for 12.2.1.x.

This section includes the following topics:

- Name Service Addresses
- Network Filters
- Replicated Scheme
- BACKUP CACHE and RESTORE CACHE
- Coherence*Web Container Support
- ActiveCache (active-cache.jar)
- Thread Count
- Specifying Ports in the WKA List

- Specifying tangosol in System Properties
- TopLink Implementations
- Object::toStream Deprecated
- ParallelAwareAggregator
- C++ libraries for Solaris

Name Service Addresses

The `<name-service-addresses>` element, within the `<participant>` element, that is used to configure federation cluster participants in an operational configuration file is deprecated. Use the `<remote-addresses>` element instead.

Network Filters

Network filters, which were deprecated in Coherence 3.7, are no longer supported.

Replicated Scheme

The `<replicated-scheme>` element is deprecated in favor of the `<view-scheme>` element and will be removed in a subsequent release.

BACKUP CACHE and RESTORE CACHE

The `BACKUP CACHE` and `RESTORE CACHE` commands in CohQL are deprecated. A new set of snapshot commands has been provided for use with the new persistence feature. See Persisting Cache Data to Disk in *Developing Applications with Oracle Coherence*.

Coherence*Web Container Support

Coherence*Web no longer supports the following web containers: Apache Tomcat 5.5.*n*, Apache Tomcat 6.0.*n*, Caucho Resin 3.1.*n*, IBM WebSphere 5.*n*, IBM WebSphere 6.*n*, IBM WebSphere 7.*n*, Sun GlassFish 2.*n*, Sun Application Server 8.*n*, Oracle OC4J 10.1.3.*n*, Oracle OC4J 10.1.2.*n*, Oracle GlassFish 3.*n*, Oracle GlassFish 4.*n*, Jetty 6.1.*n*, Jetty 5.1.*n*, JBoss Application Server. Applications that require Coherence HTTP session management must be migrated to use a supported web container version. See Supported Web Containers in *Administering HTTP Session Management with Oracle Coherence*Web*.

ActiveCache (active-cache.jar)

ActiveCache (`active-cache.jar`) has been deprecated. ActiveCache can still be used with applications that have been developed to run on older versions of WebLogic Server.

ActiveCache functionality has been replaced by Managed Coherence Servers. For more information on Managed Coherence Servers, see *Oracle Fusion Middleware Developing Oracle Coherence Applications for Oracle WebLogic Server*.

Thread Count

The `<thread-count>` element is deprecated. Use the `<thread-count-min>` and `<thread-count-max>` elements instead.

Specifying Ports in the WKA List

The functionality to specify ports in the WKA list is deprecated as of the of the 12.2.1 release. Support for this feature will be removed in a future release.

Specifying `tangosol` in System Properties

Coherence system property names no longer require the `tangosol` prefix. For example, the system property `tangosol.coherence.distributed.localstorage` can now be written as `coherence.distributed.localstorage`. System properties that only contained the `tangosol` prefix now use the `coherence` prefix. For example, the system property `tangosol.pof.enabled` can now be written as `coherence.pof.enabled`. The changes are also applicable to Unix-based environments. For example `Tangosol.Coherence.CacheConfig` can be written as `Coherence.CacheConfig`.

System properties that include the `tangosol` prefix are still supported; however, support may be removed in a future release.

TopLink Implementations

The `TopLinkGrid` as well as the `TopLinkCacheLoader` and `TopLinkCacheStore` implementations are deprecated as of the of the 12.2.1 release.

Object::toStream Deprecated

The `Object::toStream` method has been deprecated. Applications should use the `Object::toString` method instead.

ParallelAwareAggregator

The `ParallelAwareAggregator` interface has been deprecated and should no longer be used. Applications should use the `StreamingAggregator` interface to implement custom aggregators. See Performing Data Grid Aggregation Using Streams in *Developing Applications with Oracle Coherence*.

C++ libraries for Solaris

Starting 12.2.1.3, the C++ libraries for Solaris SPARC32 and Solaris Intel x86 are no longer supported with Coherence. In 12.2.1.3, only the libraries for SPARC64 and Solaris x64 are supported.

If you need Solaris SPARC32 or Solaris Intel x86 (32 bit) libraries, then use the fully compatible Coherence for C++ 12.2.1.2 libraries.

3
Known Issues and Workarounds

Learn about the known issues at the time of release.
This chapter includes the following sections:

Changing the Partition Count When Using Active Persistence

Issue

The partition count cannot be changed when using active persistence. If you change a services partition count, then on restart of the services all active data is moved to the persistence trash and must be recovered after the original partition count is restored. Data that is persisted can only be recovered to services running with the same partition count.

Ensure that the partition count is not modified if active persistence is being used. If the partition count is changed, then a message similar to the following is displayed when the services are started:

```
<Warning> (thread=DistributedCache:DistributedCachePersistence, member=1):
Failed to recover partition 0 from SafeBerkeleyDBStore(...); partition-count
mismatch 501(persisted) != 277(service); reinstate persistent store from
trash once validation errors have been resolved
```

The message indicates that the change in the partition-count is not supported and the current active data has been copied to the trash directory.

Workaround

To recover the data:

1. Shutdown the entire cluster.
2. Remove the current active directory contents for the cluster and service affected on each cluster member.
3. Copy (recursively) the contents of the trash directory for each service to the active directory.
4. Restore the partition count to the original value.
5. Restart the cluster.

Disable Inlining in Java Versions Greater than 8

When using Java versions greater than Java 8 (for examle, Java 11), one of the directives below should be provided as a JVM Option (on the command line). This step

is to avoid a segmentation fault (SIGSEGV) that has been observed due to a compiler bug that is being worked on by the Java team.

- `-XX:CompileCommand=exclude,com/tangosol/coherence/component/util/daemon/queueProcessor/service/Grid.onInterval`

- `-XX:-Inline`

The first option will exclude the problematic method from being inlined by the compiler while the latter will disable inlining altogether.

4

Bugs Fixed and Enhancements in this Release

Learn about the bugs fixed and enhancements in this release.
This chapter includes the following sections:

- Oracle Coherence for Java
- Oracle Coherence for .NET
- Oracle Coherence for C++

Oracle Coherence for Java

New features, improvements, and bug fixes added to Oracle Coherence for Java components.

Enhancements and Fixes for 14.1.1.0

- Fixed an issue where links returned by Management over REST may have incorrectly URL encoded path separators.
- Fixed an issue where a `NullPointerException` may be thrown when resubmitting asynchronous cache requests internally.
- Added restricted reflection access to a small subset of core JDK classes.
- Fixed an issue where indexes are not recovered from persistence after a cluster restart.
- Reverted changes to `report-cache-effectiveness.xml` due a performance regression.
- Fixed an issue where service statistics from management over REST do not aggregate across all services. Queries such as `coherence/management/services;field=StatusHA` now return the correct result.
- Updated Coherence REST examples to use Oracle JET instead of Bootstrap/ AngularJS and jQuery.
- Fixed an issue that would prevent Coherence Metrics from initializing due to a ClassCastException.
- Fixed an issue where federation members may get stuck in the **YIELDING** state due to changes to cache entries, which expired before the changes were federated to destination participants.
- Fixed an issue where a `ConfigurableCacheFactory` is initialized in a WebLogic server even if Coherence is not enabled.
- Fixed an issue where a ClusterService is initialized when `coherence-metrics.jar` is added to the classpath.
- Fixed an issue where the `getOrDefault` method of `InvocableMap` (and consequently `NamedCache`) and `AsyncNamedCache` did not conform to the

`java.util.Map` contract. The default value should only be returned when the key is not present in the cache. However, the default value was also being returned when the key was present and mapped to null.

- Fixed an issue where the `AsynNamedCache.getAll()` method did not conform to the `com.tangosol.net.cache.CacheMap` contract in that the returned Map contained entries for all of the requested keys instead of containing entries for only the requested keys that were present in the cache.

- Fixed a typographical error in the management over REST API for `/management/coherence/cluster/members/{memberId}/platform/g1SurvivorSpace`.

- Fixed an issue with the Persistence examples to ensure MBean registration is complete before starting the example.

- Fixed an issue where a `NullPointerException` may be thrown in `reportLastOwnership` during simultaneous shutdown.

- Fixed an issue where federation destination members may use heap memory inefficiently for storing cache entries, resulting in larger heap sizes than origin members for the same amount of cache data.

- Fixed an issue where an `OutOfMemoryError` could be thrown for a `ReadWriteBackingMap` with registered `MapListeners`.

- Fixed an issue where keys are deserialized if returned as keys in the Map that is returned by an `EntryProcessor.processAll` invocation.

- Fixed an issue where Coherence fails to start when `coherence-metrics.jar` is added to the classpath and the `extendedmbeanname` property is set to true.

- Fixed an issue where `getAll()` on a `NearCache` may return incorrect results for an *Extend client.

- Fixed an issue in `LimitFilter` when used in deserialization via the WebLogic T3 protocol that could allow for arbitrary code execution.

- Fixed an issue where `getAll()` on a `NearCache` may return incorrect results for an *Extend client.

- Fixed an issue where an exception may not be thrown if a `ContinuousQueryCache` is in a disconnected state and fails to re-synchronize.

- Updated the SFTP Snapshot Archiver example to use Apache Mina SSHD.

- Fixed an issue where some of the default `InvocableMap` methods do not cause read-through from a `CacheStore` when they should.

- Fixed an issue where there may be repeated logging of a message related to an unexpected `EvictionApprover` during partition transfer.

- Allow persistent writes to be performed asynchronously.

- Fixed an issue where a listener on a 12.2.1.0.x, 12.2.1.1.x, 12.2.1.2.x or 12.2.1.3.x Extend client `NearCache` may miss some events.

- Fixed an issue where a `NullPointerException` may be thrown by Coherence*Web due to access to a session which is no longer valid when there is a high rate of sessions being invalidated.

- Lowered the severity of the log message, which states that event interceptors are already registered when restarting a service.

- Fixed an issue where a service may terminate due to `IllegalArgumentException:
  unknown extent identifier` being thrown during a rolling restart of an active
  persistence enabled cluster.

- Fixed an issue where Berkeley DB configuration specified as `init-params` on the
  `bdb-store-manager` configuration element was being ignored.

- Fixed an issue where connection migration may occur in a loop, without resolution.

- Fixed an issue where the Maven enforcer `dependencyConvergence` rule would
  generate warnings concerning Jackson modules.

- Fixed an issue where federation may end up in a high CPU usage busy-loop
  during a `ReplicateAll` operation.

- Fixed an issue where persistence data loss may occur on cluster restart if a client
  service had ensured a cache before any storage member was started and there
  was no cache update operation while the cluster was running, prior to the restart.

- Fixed an issue with management over REST API return values for MBean
  attributes, ensuring that the `ObjectName` key property with same name as attribute
  does not override its value.

- Fixed an issue where the cluster service could be terminated due to an unhandled
  `IllegalAccessException` being thrown by the `SlabBufferManager`.

- Fixed an issue where Coherence*Web threads may be stuck at
  `com.tangosol.util.SegmentedConcurrentMap.lock`.

- Fixed a rare issue where destroying and recreating a partitioned cache may
  incorrectly throw an exception.

- Fixed an issue where the service thread may be blocked in the journal congestion
  state during a rolling restart.

- Added `AverageReapQueueWaitDuration` to the `SessionReaper` statistics which
  indicates the average time a reap task spends in queue, prior to being invoked.

- Enhanced the Coherence*Web session reaper to operate on the back map when a
  `NearCache` is used to store HTTP sessions.

- Enhanced federation to allow synthetic updates in a federation interceptor.
  The synthetic update will have different behavior depending on the federation
  event type: **COMMITTING_LOCAL** - the change will not be federated to other
  clusters and `CacheStores` will not be called. **REPLICATING** - setting the change
  synthetic is not allowed. An `UnsupportedOperationException` will be thrown.
  COMMITTING_REMOTE - the change will be applied as a synthetic change.
  `CacheStores` will not be triggered and federation will not forward the change to
  other clusters from this destination cluster.

- Changed the Coherence REST example to use Oracle JET.

- Federation internal caches are now excluded from persistence snapshots.

- Fixed an issue where partition distribution may take longer than expected with the
  error message:

  ```
  Unreconcilable ownership conflict; conceding the ownership
  ```

Oracle Coherence for .NET

New features, improvements, and bug fixes added to Oracle Coherence for .NET components.

Enhancements and Fixes for 14.1.1.0

- Fixed an issue where DNS lookups which take longer to complete than the connect-timeout interval would not be interrupted.

- Fixed an issue where an exception may not be thrown if a `ContinuousQueryCache` is in a disconnected state and fails to re-synchronize.

Oracle Coherence for C++

New features, improvements, and bug fixes added to Oracle Coherence for C++ components.

Enhancements and Fixes for 14.1.1.0

- Fixed an issue where an exception may not be thrown if a `ContinuousQueryCache` is in a disconnected state and fails to re-synchronize.

5

Documentation Changes

The documentation errata lists any corrections to the Oracle Coherence documentation.
The Coherence documentation can be found at the following URL:

http://docs.oracle.com/en/middleware

This chapter includes the following section:

- Incorrect Maven Version Number in the Developing Applications Using Continuous Integration Guide

Incorrect Maven Version Number in the Developing Applications Using Continuous Integration Guide

The Installing and Configuring Maven for Build Automation and Dependency Management and the Building Oracle Coherence Projects with Maven chapters in *Developing Applications Using Continuous Integration* contain the incorrect plug-in version number for Oracle Coherenc 14.1.1.0.0 Maven coordinates. The plug-in version number should read 14.1.1-0-0 instead of 12.2.1-0-0.