Oracle® Complex Event Processing

Release Notes

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Oracle Complex Event Processing Release Notes, Release 3.0

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New and Changed Features in Oracle CEP 3.0

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New Features in Oracle CEP 3.0

Version 3.0 of Oracle CEP includes the following new features:

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Multi-Servers and Clustering

You can now configure multiple servers in an Oracle CEP domain, and cluster them together to achieve high availability.

See Configuring and Using Oracle Complex Event Processing Clusters.

Caching

Oracle CEP applications can optionally publish or consume events to and from a cache to increase the availability of the events and increase the performance of their applications. A cache is a temporary storage area for events, created exclusively to improve the overall performance of your application; it is not necessary for the application to function correctly.

See Using Oracle CEP Caching.

Record and Playback of Events

The event repository feature of Oracle CEP allows you to record events flowing through an event processing network (EPN) and store them so you can later play back the events. The event repository is configured per stage, such as a processor or stream.

See Record and Play Back Events Flowing Through an EPN in the Visualizer Online Help document.

Visualizer Administration Console

Oracle CEP Visualizer, henceforth called Visualizer for simplicity, is a Web 2.0 application that consumes data from Oracle CEP, displays it in a useful and intuitive way to system administrators and operators, and, for specificied tasks, accepts data that is then passed back to Oracle CEP so as to change it configuration.

See Overview of Visualizer.

HTTP Publish-Subscribe Adapter

An HTTP Publish-Subscribe Server is a mechanism whereby Web clients, such as browser-based clients, subscribe to channels, receive messages as they become available, and publish messages to these channels, all using asynchronous messages over HTTP. Every instance of Oracle CEP includes a pub-sub server that programmers can use to implement HTTP publish-subscribe functionality in their applications.

See Using and Creating HTTP Publish-Subscribe Adapters.

JMS Adapter

Oracle CEP provides both inbound and outbound JMS adapters that you can use in your event applications to send and receive messages to and from a JMS queue, respectively, without writing any Java code.

See Using JMS Adapters.

Configuration Wizard for Creating Domains

The Configuration Wizard is a new tool for creating Oracle CEP domains.

See Creating a Domain Using the Configuration Wizard.

Event Processing Language (EPL) New Features

The event processing language (EPL) has the following new features:

- **Parameterized Queries—**Parameterized queries allow you to put placeholders inside of an EPL query in the form of a question mark. At runtime you bind these placeholders with values and they are then compiled into regular statements. The process is much like the PreparedStatement in JDBC.

  See Parameterized Queries.

- **Subqueries**—EPL supports both simple subqueries as well as correlated subqueries. In a simple subquery, the inner query is not correlated to the outer query. Correlated subqueries allow `SELECT` clauses to be embedded within another `SELECT` or `WHERE` clause. Both `IN` and `EXISTS` keywords are available when subqueries are used in the `WHERE` clause. Previously they were available only in the `FROM` clause and without the ability to correlate the inner and outer query.

  See Simple and Correlated Subqueries.

- **Dynamic Event Properties**—Dynamic (unchecked) properties are event properties that need not be known at statement compilation time. Such properties are resolved during runtime. The idea behind dynamic properties is that for a given underlying event representation, the properties are not always known in advance. An underlying event may have additional properties that are not known at statement compilation time, but these properties might still be required in an EPL query. The concept is especially useful for events that represent rich, object-oriented domain models or when generic container events are used.

In conjunction with dynamic event properties, the following functions have also been added to this release: `INSTANCEOF`, `CAST`, and `EXISTS`.

See Dynamic Event Properties.

- Output Window Events—Allows you to output the entire contents of the retain window.

  No documentation available for Beta.

Security New Features

No documentation available for Beta.

Changed and Deprecated Features in Oracle CEP 3.0

Version 3.0 of Oracle CEP includes the following changed and deprecated features:

- “Simpler Helloworld Example” on page 1-4
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- “New and Deprecated Options in the Deployer Tool” on page 1-6

Simpler Helloworld Example

The HelloWorld example has been simplified in the following ways:

- The example no longer uses an adapter factory.
- The example no longer extends the default configuration of the components.

See HelloWorld Example.

Programming Model

The Oracle CEP programming model has changed in the following ways:

- Adapters can now also be outbound; previously they were only inbound.

- There is a new component type called event bean. Event beans are very similar to basic Spring beans, but they can take advantage of the full Oracle CEP framework, such as monitoring and record/playback. Event beans are functionally the same as adapters, but should be used as intermediate nodes in the EPN when adapters are used as beginning or ending nodes.
- You can now also use standard Spring beans as nodes in the EPN, although the beans cannot take advantage of Oracle CEP framework.
- Applications can now be suspended and resumed.
- Programmers are no longer required to create an adapter factory when creating adapters. You only need to create an adapter factory if you want to share adapters among applications.
- Spring tags for adapters and event beans now include attributes for setting lifecycle callback methods via the EPN assembly file.
- For adapters, event beans, and Spring beans that want to run in a thread, their Java class should now implement `com.bea.wlevs.ede.api.RunnableBean`.

See Overview of the Oracle CEP Programming Model.

Domain Directory Structure Changes

So as to support clustering and a multi-server environment, the directory structure of the out-of-the-box and sample domains has changed.

Previously, all domain files were located directly under the domain directory, such as *`BEA_HOME`*`/wlevs30/samples/domains/helloworld_domain`, where *`BEA_HOME`* refers to the top-level installation directory of Oracle CEP.

In the 3.0 release, the domain directory contains one or more sub-directories that correspond to a single server; this directory contains all the configuration files for that server. For example, the HelloWorld domain contains a single server whose configuration files are located in the following directory: *`BEA_HOME`*`/wlevs30/samples/domains/helloworld_domain/defaultserver.`

The new Configuration Wizard for creating domains follows this updated directory structure.

See Creating an Oracle Complex Event Processing Domain.

New and Deprecated Options in the Deployer Tool

The `-start` and `-stop` commands of the Deployer tool have been deprecated.

When using the `-install` command to install an application, Oracle CEP automatically starts it after all internal initialization tasks have completed. Subsequently, if you stop and start the Oracle CEP server instance, the application is automatically stopped and started, respectively.

The Deployer tool has two new options: `-suspend` and `-resume`. Users should use `-suspend` to suspend a currently running application, and `-resume` for it to resume running.

See Deployer Command-Line Reference.

Changes in Management, Monitoring, and JMX

No documentation available for Beta.

Changes in Logging

No documentation available for Beta.

Upgrading a 2.0 Application to run on Version 3.0 of Oracle CEP

This section describes the steps you must take to upgrade an application that you developed in Version 2.0 of Oracle CEP (previously called WebLogic Event Server) so that it runs on Version 3.0.

1. Update the `MANIFEST.MF` file to import new versions of Spring framework and Oracle CEP packages, as well as new required packages. In paticular:

   – Update the version of all imported Spring framework packages to `2.5.5`. For example:

   ```
   Import-Package:
      org.springframework.aop.framework;version="2.5.5",
      org.springframework.aop;version="2.5.5",
      ...
   ```

   – Update the version of any imported Oracle CEP packages to `3.0.0.0`. For example:

   ```
   Import-Package:
      com.bea.wlevs.ede;version="3.0.0.0",
      com.bea.wlevs.ede.api;version="3.0.0.0",
      ...
   ```

- Add the following packages to the `Import-Package` header if they are not already included:

  ```
  Import-Package:
     com.bea.wlevs.management.configuration.spi;version="3.0.0.0",
     com.bea.wlevs.management.spi;version="3.0.0.0",
     com.bea.wlevs.monitor;version="3.0.0.0",
     com.bea.wlevs.spi;version="3.0.0.0",
     com.bea.wlevs.spring.support;version="3.0.0.0",
     commonj.work;version="1.4.0.0",
     org.springframework.osgi.extensions.annotation;version="1.1.0",
     com.bea.wlevs.ede.spi;version="3.0.0.0",
     com.bea.wlevs.configuration.internal;version="3.0.0.0",
     ...
  ```

2. If you use Spring or Spring Dyanmic Modules for OSGI (Spring DM) features in your application, it is possible that the declaration of the features in the Spring application context file has changed. If this is the case, you must update these declarations in the EPN assembly file of your Oracle CEP application.

   Note: This change is a result of the upgrade of the Spring framework (from 2.0 to 2.5) that occurred between WebLogic Event Server 2.0 and Oracle CEP 3.0, not as a direct result of the Oracle CEP upgrade.

   Refer to the appropriate 2.5 XSD Schemas for any changes:

   Spring: http://www.springframework.org/schema/beans/spring-beans.xsd

   Spring DM: http://www.springframework.org/schema/osgi/spring-osgi.xsd

   The following bullets list some of the typical changes you might have to make; the following list is not complete.

   - When specifying a property to the `<osgi:service-property>` tag, use the `<entry>` tag with the `key` and `value` attributes, rather than the old `<prop>` tag. For example, update the following 2.0 tag:

     ```
     <osgi:service-properties>
       <prop key="type">SocketAdapterType</prop>
     </osgi:service-properties>
     ```

     to:

     ```
     <osgi:service-properties>
      <entry key="type" value="SocketAdapterType"/>
     </osgi:service-properties>
     ```

- The `value` or `ref` attribute of an instance-property must always be set to an explicit value; it can no longer be an empty string to indicate an implicit use of a default value. For example, update the following 2.0 tag:

```
<wlevs:adapter id="fileAdapter" provider="FileAdapterType">
  <!-- file: empty value uses default
  <wlevs:instance-property name="file" value="" />
  <wlevs:listener ref="algoTradingProcessor"/>
 </wlevs:adapter>
```

  to something like the following:

```
<wlevs:adapter id="fileAdapter" provider="FileAdapterType">
  <wlevs:instance-property name="file" value="test.file" />
  <wlevs:listener ref="algoTradingProcessor"/>
</wlevs:adapter>
```

After you have made the preceding changes, reassemble the application and deploy it to Oracle CEP 3.0. See Assembling and Deploying Oracle Complex Event Processing Applications.

If, during deployment, you get an exception that indicates that a package is invisible, add this package to the `Import-Package` header of the `MANIFEST.MF` file, then reassemble and redeploy the application. Keep adding packages in this manner until the application deploys successfully.

Backward Compatibility

No documentation available for Beta.

Oracle Complex Event Processing Known and Resolved Issues

The following sections describe release information about Oracle Complex Event Processing (or *Oracle CEP* for short) 3.0.

- "Known Issues" on page 2-1
- "Resolved Issues" on page 2-2

For instructions on installing Oracle CEP 3.0, see *Installing Oracle CEP*.

For additional information about the features and capabilities of Oracle CEP, see the *Oracle CEP Getting Started Guide*.

Known Issues

The following section describes known problems in Version 3.0 of Oracle CEP, along with workarounds where possible.

Change Request Number	Description and Workaround
CR318170	When you start a server in a domain with no deployed applications, the `Server STARTED` message may not appear in the command window from which you ran the server start script, even though the server has successfully started.

Change Request Number	Description and Workaround

Resolved Issues

The following section describes problems that were found in Oracle CEP 2.0 and are now fixed.

Change Request Number	Description and Workaround
CR323139	JDBC drivers must support the `getMetadata` feature to work correctly with Oracle CEP; however, Oracle's thin driver 10.2.0.3.0 does not fully support this feature.
CR323199	Packages exported using the MANIFEST.MF's `Export-Package` entry cannot be redeployed withouth re-starting server.
CR324013	The `<wlevs:instance-property>` tag in the EPN assembly file supports only primitive types.
CR327853	Using the `wlevs.Admin` GET command with the `-property` option may return unexpected results.
CR328989	In order to execute a Java user-defined function in an EPL statement, you must put the Java class in the server's boot CLASSPATH.
CR330462	In order to use the `wlevs.admin` GETRULE command, you must have the administrator role, even though this is a read-only command.

Change Request Number	Description and Workaround
CR330602	When invoking the `stopwlevs.cmd` script to stop a running Oracle CEP in a domain, you must specify a URL because the default value is not valid.
CR330773	Before starting an Oracle CEP instance in the helloworld_domain, you must manually ensure that the `wlevs.domain.home` variable in the `startwlevs.cmd` script is set correctly for your particular environment.
CR331780	If you register an event type with an arbitrary name and then try to look up the event type in the repository based on an instance of the event, the event isn't found and a null value is returned.
CR331932	If you configure a pass through stream by setting `max-size=0` and `max-threads=0` in the stream component XML file, then enable monitoring on the stream, and then enable either the average throughput or average latency monitors, both of these monitors will consistently report a metric value of zero even when the stream is under significant load.