

# Oracle® REST Data Services

Release Notes

Release 2.0

E25068-10

June 2014

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These *Release Notes* contain important information not included in the Oracle REST Data Services documentation.

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**Name Change:** Oracle REST Data Services was called *Oracle Application Express Listener* before Release 2.0.6.

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This document contains these topics:

- [Checking for the Most Current Release](#)
- [New Features](#)
- [Changed Behavior](#)
- [Functionality No Longer Supported](#)
- [Bugs Fixed](#)
- [Open Bugs and Known Issues](#)
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## 1 Checking for the Most Current Release

Oracle REST Data Services is released more frequently than the Oracle Database. To view information about or download a more current release, see:

<http://www.oracle.com/technetwork/developer-tools/rest-data-services/overview/index.html>

## 2 New Features

Oracle REST Data Services release 2.0 includes the following new features:

- Support for multi tenant/multiple database connections.  
In previous releases, you could only configure one database connection per listener instance. With Oracle REST Data Services Release 2.0, you can configure multiple database connections. See "Configuring Multiple Databases" in *Oracle REST Data Services Installation and Configuration Guide*.
- Resource Templates are now known as RESTful Services  
The Resource Templates functionality in previous releases has been enhanced and integrated with Oracle Application Express release 4.2. Now known as RESTful

Services, services are now defined using Oracle Application Express. See "Using RESTful Services" in *Oracle Application Express SQL Workshop and Utilities Guide*.

- OAuth2 support for RESTful Services.  
Oracle REST Data Services now uses Open Authorization 2.0 (OAuth2) to secure access to resources generated using RESTful Services.
- RESTful Services support paging of results  
RESTful Services now support paging of results, enabling large result sets to be spread across many page resources instead of a single resource.
- Cross Origin Resource Scripting (CORS) support.  
This release includes a new Origins Allowed field that enables you to include a comma delimited list of other server names to access a protected resource using XMLHttpRequests in web browsers that support the CORS protocol.
- RESTful Services Hyperlinks  
Release 2.0 RESTful Services support a mechanism for result sets to include hyperlinks to other resources.
- Supports Oracle SQL Developer to administer the Oracle REST Data Services  
SQL Developer provides a graphical user interface to enable users to update multiple database connections, JDBC settings, URL Mappings, RESTful Connections, Security, Caching, Pre-Post Processing, Environment, and Excel Settings. SQL Developer also provides statistical reporting, error reporting and logging.
- Supports Oracle SQL Developer 4.0 to define RESTful Services  
Supports SQL Developer 4.0, which provides a graphical user interface to enable users to create, edit, and validate the RESTful Services definitions. See "RESTful Services Administration" in *Oracle SQL Developer User's Guide* for details.

### 3 Changed Behavior

This section describes changed behavior and enhancements in Oracle REST Data Services. (Before Release 2.0.6 the product name was Oracle Application Express Listener.)

**Tip:** This section is current as of the writing of this document. To view the most current information, see [Section 1, "Checking for the Most Current Release"](#).

This section contains the following topics:

- [Changes in Release 2.0.8](#)
- [Changes in Release 2.0.6](#)
- [Changes in Release 2.0.5](#)
- [Changes in Release 2.0.4](#)
- [Changes in Release 2.0.3](#)
- [Changes in Release 2.0.2](#)
- [Changes in Release 2.0.1](#)

- [Changes in Release 2.0.0](#)

**See Also:** ["Bugs Fixed"](#) on page 6

### 3.1 Changes in Release 2.0.8

Oracle REST Data Services release 2.0.8 includes the following changes and enhancements:

- Upgraded the Apache FOP (Formatting Objects Processor) version to 1.1.  
This issue is tracked with Enhancement Request 18646641.

### 3.2 Changes in Release 2.0.6

In release 2.0.6, the product name is changed from *Oracle Application Express Listener* to *Oracle REST Data Services*. This section describes what has changed and not changed, and considerations for those who want to maintain backward compatibility.

#### What Has Changed

- The name of the product has changed.
- The name of the product WAR file has changed from `apex.war` to `ords.war`.
- The format for the name of the product distribution file has changed from `apex_listener.v.v.v.ddd.hh.mm.zip` to `ords.v.v.v.ddd.hh.mm.zip`.
- All locations in the product where the text string *Oracle Application Express Listener* or *Listener* appear have been changed to *Oracle REST Data Services*.
- In standalone mode, and when deploying on WebLogic, GlassFish or Tomcat, the default context path of Oracle REST Data Services is changing from `/apex` to `/ords`.
- References in the product documentation have been updated.

#### What Has NOT Changed

- The names of configuration files have not changed. The default database connection will continue to be stored in `apex.xml`, `apex_rt.xml`, and `apex_al.xml`.
- The names of the various built-in roles that Oracle REST Data Services understands have not changed. In particular the `Listener Administrator` role has not changed.
- The `adminlistener` user name has not changed.

#### Backward Compatibility Considerations

- **Effect on Context Path**
  - Because the name of the WAR file has changed, the context path that WebLogic and Tomcat will assign will also change from `/apex` to `/ords`. If you want to maintain the existing context root of `/apex`, the `ords.war` file must be renamed to `apex.war` before the deployment.
  - During GlassFish deployment you are prompted to specify the context path. The default context path will be `/ords`, but you can change it to `/apex` if you need to.

- Standalone mode will also default to `/ords`. The `--context-path` argument of the standalone command can be used to override this value. Also, Standalone mode will automatically detect any requests starting with `/apex/...` and redirect them to `/ords/...`
- **Effect on Configuration Folder Location**
  - Configuration files will now be located in an `ords/` subfolder of the `config.dir` setting, whereas previously they were stored in an `apex/` subfolder. Oracle REST Data Services has been modified so that if the folder pointed to by `config.dir` already contains an `apex/` folder, then it will continue to use that folder rather than an `ords/` folder. This means that upgrades from an earlier version will continue to use the existing location.

### 3.3 Changes in Release 2.0.5

Oracle Application Express Listener release 2.0.5 includes the following changes and enhancements:

- Enabled standalone mode to specify the context path to be used for the Oracle Application Express static resources. Also included the ability to specify the context path for the Oracle REST Data Services.

This issue is tracked with Enhancement Request 17454946.

### 3.4 Changes in Release 2.0.4

Oracle Application Express Listener release 2.0.4 includes the following changes and enhancements:

- Support for Oracle Database 12c multitenant architecture.

Oracle REST Data Services now supports mapping URLs to Oracle Database 12c pluggable databases (PDBs) using the following approaches:

1. Explicit mapping of individual PDBs using `url-mapping.xml`
2. Automatic mapping of all PDBs connected to a multitenant container database (CDB)

The first approach is useful when an administrator wants to control exactly which PDBs are made available to Oracle REST Data Services. The second approach is useful when an administrator wants to automatically make all PDBs in a CDB available, but with zero administration overhead when new PDBs are plugged in or created.

This issue is tracked with Enhancement Request 17559554.

### 3.5 Changes in Release 2.0.3

Oracle Application Express Listener release 2.0.3 includes the following changes and enhancements:

- Provided a custom request header to enable clients to request that JSON objects include explicit null values, rather than omitting properties whose value is null. Clients can include the `Accept-Formatting: json-nulls=include` header in requests to force Oracle REST Data Services to include explicit null values for columns containing null.

This issue is tracked with Oracle bug 17017425.

- Provided an API to enable Oracle SQL Developer to create and edit RESTful Service definitions.

This issue is tracked with Oracle bug 17017335.

- Provided a means to configure the FOP engine using a FOP configuration file. This provides finer control over the FOP engine, enabling users to configure things such as custom fonts. Also added the `fop.configfile` property to the `defaults.xml` file to specify the location of the FOP configuration file that Oracle Application Express Listener should use.

This issue is tracked with Oracle bug 16848757.

### 3.6 Changes in Release 2.0.2

Oracle Application Express Listener release 2.0.2 includes the following changes and enhancements:

- Modified the behavior of the PL/SQL handler when processing JSON and HTML form data. If the PL/SQL statement references the implicit `:body` parameter, then the JSON or HTML form data is not automatically parsed. This enables PL/SQL handlers to do their own parsing of the data.

This issue is tracked with Oracle bug 16633750.

- Improved the display of the Authorization URI that applications should use to initiate an OAuth 2.0 Approval. The URI displayed is now a fully qualified URL.

This issue is tracked with Oracle bug 16633750.

- Improve the handling of URLs missing a trailing slash. For example `/apex/mapped-url` is now redirected to the proper URL of `/apex/mapped-url/`.

This issue is tracked with Oracle bug 16539061.

### 3.7 Changes in Release 2.0.1

Oracle Application Express Listener release 2.0.1, includes the following changes and enhancements:

- Changed the behavior of BDB storage. Each restart of Oracle REST Data Services now gets its own folder for BDB storage, allowing multiple (for example, clustered) nodes to share a single configuration folder, without getting an error.
- Improved the handling of Media Resources that are generated from large XMLType values.
- Improved the diagnostic information recorded during processing of requests.
- Improved the error message generated when the `icap.server/icap.port` settings are configured incorrectly.

### 3.8 Changes in Release 2.0.0

Oracle Application Express Listener release 2.0.0, includes the following changes and enhancements:

- Added support for multiple database connections.
- Changed configuration file structure to support multiple databases.
- Added command line facility for configuring Oracle REST Data Services.

- Moved storage of RESTful Services (previously known as Resource Templates) to the Oracle Application Express schema.
- Design and creation of RESTful Services is now done using Oracle Application Express.
- Graphical administration of Oracle REST Data Services is now done using Oracle SQL Developer. See "Application Express Listener Administration" in *Oracle SQL Developer User's Guide* for details.
- RESTful Services are now protected using the OAuth2 Protocol.

## 4 Functionality No Longer Supported

The following functionality is no longer supported:

- Oracle REST Data Services no longer supports Oracle Containers for J2EE.
- Oracle REST Data Services no longer supports the Listener Administration web-based version from the previous releases. Use Oracle SQL Developer Listener Administration to configure the Oracle REST Data Services. See "Application Express Listener Administration" in *Oracle SQL Developer User's Guide* for details.

With the addition of OAuth 2.0 support, Oracle REST Data Services no longer supports the following two mechanisms for securing access to resource templates:

- Oracle Single Sign On Integration (OSSO)
- External authentication using Apache JServ Protocol (AJP)

## 5 Bugs Fixed

The following section lists bugs fixed in Oracle REST Data Services (including releases before 2.0.6 when the product name was Oracle Application Express Listener) Numbers in parentheses following the problem description refer to bug numbers in the Oracle Bug Database.

**Tip:** This section is current as of the writing of this document. To view the most current information, see [Section 1, "Checking for the Most Current Release"](#).

This section contains the following topics:

- [Bugs Fixed in Oracle REST Data Services Release 2.0.8](#)
- [Bugs Fixed in Oracle REST Data Services Release 2.0.7](#)
- [Bugs Fixed in Oracle Application Express Listener Release 2.0.5](#)
- [Bugs Fixed in Oracle Application Express Listener Release 2.0.3](#)
- [Bugs Fixed in Oracle Application Express Listener Release 2.0.2](#)
- [Bugs Fixed in Oracle Application Express Listener in Release 2.0.1](#)

### 5.1 Bugs Fixed in Oracle REST Data Services Release 2.0.8

- Fixed a problem where ISO 8601 timestamps were not being generated correctly in non-English locales; the decimal separator of the system Locale was being used instead of the required period character. (18678301)

- Fixed a problem where ORDS displayed the incorrect product version on startup, displaying 2.0.6 instead of the current version. (18717099)

## 5.2 Bugs Fixed in Oracle REST Data Services Release 2.0.7

- Fixed a problem where the connection pool could become exhausted if the database was experiencing errors, causing the JDBC driver to raise 'No more data to read from socket'. (18460198)
- Fixed a problem where ORDS was inadvertently deleting in-use BDB storage folders when working in a clustered environment. (18477608)
- Fixed a problem where if a nested cursor in a result set contains a column whose name starts with a dollar sign (\$), it was not converted to a hyperlink when being rendered as JSON. (18499836)
- Fixed a problem with validation of email addresses during OAuth2 client registration. (18499986)
- Oracle REST Data Services now outputs a warning message when a pool is created using the default pool max size, because this is insufficient for most production environments. (18503281)

## 5.3 Bugs Fixed in Oracle Application Express Listener Release 2.0.5

- Fixed a problem with nested cursors not rendering to JSON correctly in some cases. (17416800)
- Addressed a problem with the acceptable MIME types of a POST or PUT handler not being retrieved by SQL Developer. (17457288)
- Fixed support for parsing .xlsx files when transforming an Microsoft Excel spreadsheet to an Oracle REST Data Services collection. (17584048)
- Addressed a problem with deleting a RESTful Privilege from SQL Developer. (17577922)
- Addressed a problem with JavaScript-based Security Validation functions. (17461066)

## 5.4 Bugs Fixed in Oracle Application Express Listener Release 2.0.3

- Addressed a problem with empty string values being omitted from JSON objects. (17017495)
- Fixed a problem with Cross Origin Resource Sharing (CORS) requests not working for protected RESTful Services. (17017128)
- Fixed a problem with CORS requests not working on Google Chrome and Apple Safari Web Browsers. (17017069)
- Addressed a problem with non-ASCII characters in Content-Disposition HTTP Headers. Oracle REST Data Services now implements RFC 5987 and normalizes Content-Disposition headers to conform to RFC-5987. (16976812)
- Added support for rendering nested results to JSON. Queries can now include nested top level cursors, which are automatically translated into nested JSON arrays. Note this feature does not work with RESTful Services that are using automatic pagination. (16946479)

- Fixed a problem with conditional HTTP PUT and DELETE operations not working correctly. (16885865)

## 5.5 Bugs Fixed in Oracle Application Express Listener Release 2.0.2

- Fixed a problem in which bind variables within comment blocks were not handled correctly. (16665991)
- Fixed a regression in release 2.0.0 and 2.0.1 in which a response of less than 32,766 characters that includes multibyte UTF-8 characters pushes the number of bytes in the response over 32,766 bytes and leads to an ORA-06502: PL/SQL: numeric or value error: character string buffer too small error. (16655432)
- Modified the behavior of the PL/SQL handler when processing JSON and HTML form data. If the PL/SQL statement references the implicit :body parameter, then the JSON or HTML form data is not automatically parsed by Oracle Application Express Listener. This enables PL/SQL handlers to do their own parsing of the data. (16633750)
- Fixed a problem with the Authorization Code OAuth 2.0 Flow which prevents the successful completion of redirects on second and subsequent approvals of an application. (16586773)
- Improved the display of the Authorization URI that applications should use to initiate an OAuth 2.0 Approval. The URI displayed is now a fully qualified URL. (16575037)
- Fixed a regression in release 2.0.0/2.0.1 that prevents some temporary redirects from working correctly on GlassFish, causing the error PWC3990: getWriter() has already been called. (16461737)
- Fixed problems with RESTful Service responses (OWA or LOB based) greater than (>) 32KB generating the error ORA-22922: nonexistent LOB value. (16457018)
- Fixed a problem when generating an OWA response in a RESTful service that produces the following error SEVERE: oracle.jdbc.driver.OracleClobReader cannot be cast to java.io.InputStream. (16456979)
- Fixed problem when the Internal workspace and a regular workspace which both contain a RESTful service with the same URITemplate. The Internal workspace version was chosen instead of the regular workspace version. (16438159)
- Fixed problem with the handling of multibyte characters in request URLs in standalone mode. (16743566)
- Fixed problem with the generation of PDF documents containing non-ASCII characters on Windows platforms. (16715723)
- Fixed problem with the parsing of xml files (for example, url-mapping.xml) on WebLogic when running on non Oracle JDK. (16758176)

## 5.6 Bugs Fixed in Oracle Application Express Listener in Release 2.0.1

- Fixed a regression that occurs only when using an Oracle Database Release 10.x, that prevented Oracle Application Express from working properly, resulting in blank pages.
- Addressed a problem with the handling of very large identifiers that prevented some RESTful Services from being found or dispatched.
- Fixed a problem with JSON streams not being parsed as UTF-8 encoded text.

- Fixed a problem with the dispatching of RESTful Services that was causing a 404 Not Found exception when more than one database was configured.
- Fixed a regression that caused a 503 Service Unavailable status, generated by the PL/SQL embedded gateway, to be mapped to a 404 Not Found status.
- Fixed a problem with the handling of FOP based PDF printing not handling results and XSL that totalled over 32766 bytes in size.
- Fixed a regression with the RESTful Service Media Resource source type that was preventing CLOBs over 4000 bytes in size from being returned without error.
- Fixed a problem with the handling of the `icap.server` and `icap.port` configuration settings.
- Addressed a problem with virus scanning of empty and very small files.
- Fixed a problem with the `debug.debugger` configuration setting not working properly.
- Fixed a problem with class loading in Standalone Mode that was preventing FOP (PDF) printing from working properly.
- Addressed a problem with the reporting of connection pool usage statistics.

## 6 Open Bugs and Known Issues

This section describes bugs and known issues for Oracle REST Data Services.

This section contains the following topics:

- [Oracle Application Express RESTful Service Test Button](#)
- [Customizing Database Configuration Settings](#)

### 6.1 Oracle Application Express RESTful Service Test Button

The Oracle Application Express RESTful Services UI includes a Test button that may be used to test RESTful Services. In Oracle Application Express release 4.2, this button is enabled for all kinds of Resource Handlers. However, it is only actually able to test GET Resource Handlers.

### 6.2 Customizing Database Configuration Settings

In Oracle REST Data Services release 2.0, only configuration settings relating directly to the configuration of database connection pools can be redefined in each individual database configuration. Only settings beginning with the `jdbc.` or `db.` prefixes can be customized per database connection.

## 7 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

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