

About These Release Notes

These release notes contain important information not included in the Oracle Application Express documentation.

- [Before You Begin](#)
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Before You Begin

Review the following to ensure your readiness for this version of Oracle Application Express.

- [Oracle Database Requirement](#)
- [About Release Numbering Conventions](#)
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Oracle Database Requirement

Oracle Application Express release 20.2 requires an Oracle Database release 11.2.0.4 or later, including Enterprise Edition and Express Edition (Oracle Database XE).

About Release Numbering Conventions

New releases of Oracle Application Express correlate to the calendar year.

In 2018 and starting with release 18.1 and 18.2, Oracle Application Express introduced correlating the release number to the calendar year.

In addition, Application Express now only offers full releases and no longer provides patch set releases (such as 5.1.1). Eliminating patch set releases reduces downtime when updating existing installations. Application Express architecture also enables developers to revert releases if necessary.

Patch set exceptions (PSEs) may still be delivered for major defects. To learn more about PSEs, visit the [Oracle Application Express Known Issues page](#).

About Checking for the Most Current Release

Oracle Application Express 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/apex/downloads/index.html>

About Upgrading to the Latest Oracle Application Express Release

If you already have Oracle Application Express installed, Oracle strongly recommends that you regularly upgrade to the latest version available.

To learn more, see "Upgrading from a Previous Oracle Application Express Release" in the *Oracle Application Express Installation Guide*.

About Determining Your Release Version

To determine which release of Oracle Application Express you are currently running, do one of the following:

- View the release number on the Workspace home page:
 - Sign in to Oracle Application Express.
The Workspace home page appears. The current release version displays in bottom right corner.
- View the About Application Express page:
 1. Sign in to Oracle Application Express.

The Workspace home page appears.

2. Click the **Help** menu at the top of the page and select **About**.

The About Application Express page appears.

See Also:

"About Accessing Your Development Environment" in *Oracle Application Express App Builder User's Guide*

Important Information if Updating from a Release Prior to 20.2

If you are updating from previous release of Oracle Application Express, see the "Changed Behavior" sections in the following documents:

- [Oracle Application Express Release Notes release 20.1](#)
- [Oracle Application Express Release Notes release 19.2](#)
- [Oracle Application Express Release Notes release 19.1](#)
- [Oracle Application Express Release Notes release 18.2](#)
- [Oracle Application Express Release Notes release 18.1](#)
- [Oracle Application Express Release Notes release 5.1](#)
- [Oracle Application Express Release Notes release 5.0](#)
- [Oracle Application Express Release Notes release 4.2](#)
- [Oracle Application Express Release Notes release 4.1](#)
- [Oracle Application Express Release Notes release 4.0](#)

Important Information if Upgrading from Oracle Database Version 12c CDB

If you are upgrading an Oracle Database 12c Release 1 (12.1) multitenant container database (CDB), you must download the patch for Bug 20618595 from My Oracle Support and apply it to your database. To locate this patch, search for **20618595** on the Patches tab.

New Features

Oracle Application Express release 20.2 includes a number of new features. These new features are not present in Application Express release 20.1 and earlier releases.

- [Cards Region](#)

- [Automations](#)
- [Faceted Search Enhancements](#)
- [Report Printing](#)
- [REST Data Source Synchronization](#)
- [REST Data Source Connector Plug-Ins](#)
- [New Web Credential Types](#)
- [Redwood UI](#)
- [Developer Experience Enhancements](#)
- [Item Enhancements](#)
- [Tree Region Enhancements](#)
- [Interactive Grid Enhancements](#)
- [New Name for Web Source Modules](#)
- [JavaScript Library Upgrades](#)
- [New JavaScript APIs](#)
- [Template Directives](#)

Cards Region

The new Cards Region is a lightweight report region, declaratively supporting customizations of layout, appearance, icon, badge, media, and actions. Use cards to embed and share media sourced from BLOB column, URL, or video in iFrame. Cards are useful for presenting a variety of information in small blocks. As Cards usually provide entry to more detailed information, you can include a number of actions as button or links declaratively.

Automations

Automations are a sequential set of PL/SQL actions, triggered by query results. They are used to monitor data and then perform the appropriate action (such as auto-approving specific requests and sending email alerts).

An automation can be triggered *on Schedule* or *on Demand*, by invoking the **APEX_AUTOMATION** package.

Query results can be derived from:

- Table or View, SQL Query, or a PL/SQL function returning a SQL Query
- Local Database or REST Enabled SQL
- REST Data Source (formerly known as Web Source Modules)

Faceted Search Enhancements

- Bar or pie charts of facet value counts. Quickly display a chart of facet value counts in a dialog or "dashboard" area.
- Groups of checkbox facets for Boolean columns. Checking the facet will find records that match the `YES` or `TRUE` value of the column.
- Input Field facet type supports comparing a user-entered value with the facet column. This enables faceted searches such as finding stores within a user-entered number of miles or records where a column contains the user-entered text.
- Performance optimization for distinct value facets.

Report Printing

- Built-in PDF printing and Excel download for Interactive Reports, Interactive Grids and Classic Reports. Ensure to enable PDF and Excel as additional download formats in your region attributes. Users can change the page orientation and size in the download dialog.
- Interactive Report - Send E-Mail: All download formats can now be attached.
- Enhanced integration with BI Publisher.
- New `APEX_REGION.EXPORT_DATA` and `APEX_DATA_EXPORT` APIs to programmatically generate PDF, CSV, Excel, HTML, JSON and XML files.
- Built-in PDF now supports Chinese, Japanese and Korean languages.

REST Data Source Synchronization

Application Express supports data synchronization from a *REST Data Source* (formerly known as Web Source Modules) to a local table. Synchronization can run either *on Schedule* or *on Demand* by calling the **`APEX_REST_SOURCE_SYNC`** package. Developers don't need to build custom PL/SQL code in order to copy data from REST services to local tables; Application Express provides this as a declarative option.

- Application Express can generate the local target table automatically, based on the attributes of the REST Data Source.
- REST Source Data can be *appended* or *merged* to the local table. *Replacing* all local data is also supported.
- Application Express components using the REST Data Source can be configured to use the local table instead.
- Technical details like HTTP request limits, commit intervals, or delete methods for the *Replace* mode are configurable.

REST Data Source Connector Plug-Ins

The Application Express Plug-In infrastructure has been extended to support *Connector Plug-Ins* for external REST APIs. This enables Application Express to fully leverage REST API features like *result pagination* or *server-side filtering*, also for third-party REST Services which are *not* Oracle Rest Data Services (ORDS) or Oracle Fusion SaaS Services.

- The developer creates a Plug-In of the *REST Data Source* type.
- The Plug-In code handles REST service-specific implementation details like the pagination style or how filters are passed to the REST API.
- When Application Express invokes a REST Data Source (such as to render a report), the engine invokes the Plug-In code and passes all relevant context information.
- The Plug-In code executes one or multiple HTTP requests and passes results back to the Application Express engine.
- Application Express processes the REST response received from the Plug-In.

New Web Credential Types

Application Express 20.2 introduces new *URL Query String* and *HTTP Header* types for Web Credentials. This enables developers to also use the secure and encrypted credential storage for REST Services, for example, which expect an API key as part of the URL. Application Express makes sure that such sensitive parts are not written to debug or execution logs.

A Web Credential can now be protected by providing a URL pattern. Application Express only uses the Web Credential for URLs starting with the given pattern; otherwise an error message displays. To change the URL pattern, the secret part of the Web Credential needs to be entered again.

Redwood UI

Universal Theme now supports a new Redwood Light theme style, available via Theme Roller. Refresh your existing apps to uptake the latest version of Universal Theme and this new theme style.

Developer Experience Enhancements

- Page Designer enhancements support **multiple tabs in the Property Editor** pane, making it more efficient to access the attributes of a region.
- A **new code editor** throughout the development environment, resulting in a greatly improved code editing experience. The improved editor includes enhanced code completion, syntax highlighting and vastly improved accessibility.
- The **Embedded Code** utility enables developers to inspect the SQL, PL/SQL, and JavaScript contained within an Application Express application. Having the ability to view the embedded code makes conducting tasks such as code reviews,

security evaluations, or application tuning more convenient. Code can be saved to the file system from the App Builder, or using the *APEXExport* utility.

- Quick SQL enhancements support the **saving of a model**, and the automatic population of a Primary Key using column default.

Item Enhancements

- New **Checkbox** item type. This single checkbox offers an alternative to the Switch item type for Boolean columns. Also works in Interactive Grid, including outside of edit mode. The previous Checkbox type is renamed *Checkbox Group*.
- **File Browse** item type enhancement supports rendering as a drop zone, supporting the drag and drop of a file to be uploaded.
- **Rich Text Editor** item type has been upgraded to use CKEditor 5 and now supports markdown output.
- **Text Field** item type has a new Text Case setting to optionally transform the user-entered text to upper or lower case.
- The **Text Field** Trim Spaces and Text Case settings and **Textarea** Trim Spaces settings are now applied on the client in addition to the server.

Tree Region Enhancements

Tree region type now supports lazy loading and refresh without reloading the full page.

Interactive Grid Enhancements

New Interactive Grid **Saved Report Static ID Support**:

- Linking to Interactive Grid saved reports uses the saved report static ID instead of the report name.
- As of this release, the `APEX_IG` API now requires using the saved report static ID (instead of the report name) when linking to Interactive Grids.

New Name for Web Source Modules

Web Source Modules are now named **REST Data Sources**.

JavaScript Library Upgrades

- Oracle JET 9.1.0
- jQuery 3.5.1
- CKEditor 5
- Monaco Editor 0.20.0

New JavaScript APIs

New functions:

- `apex.item.attachHandler` - Adds a new way for item plug-in developers to initialize their items.
- `apex.lang.loadMessages`
- `apex.lang.loadMessagesIfNeeded`

New properties added to model `FieldMeta`:

- `dataType`
- `calcValue`
- `aggregates`
- `dependsOn`

The existing `defaultValue` property can also now be a function.

New property added to model `RecordFieldMetadata`:

- `stale`

New Options for `TableModelView` and `Grid` widgets:

- `hideEmptyFooter`
- `noDataIcon`
- `pagination.hideSinglePage`



See Also:

[Oracle Application Express JavaScript API Reference](#)

Template Directives

Specific attributes identified in Page Designer help as "Supports Template Directives" support conditions and iteration based on items or columns along with symbol substitution. This applies to some attributes of the new Cards region and Interactive Grid (such as HTML Expressions). Client-side symbol substitutions also support column and item property references such as label and display.

See Also:

- Using Template Directives in the *Oracle Application Express App Builder User's Guide*
- [apex.util.applyTemplate](#) in the *Oracle Application Express JavaScript API Reference*

Changed Behavior

This section is current as of the writing of this document. To view the most current listing of changed behavior, go to the Known Issues page:

<https://www.oracle.com/tools/downloads/apex-downloads/apex-202-known-issues.html>

Changed behavior in this release includes:

- [Browser Requirements](#)
- [apex_rest.getreport API Removed](#)
- [apex_rest.getservicedescription API Removed](#)
- [Runtime Error in Common Schemas](#)
- [Render File Browse item as a Drop Zone](#)
- [Client-side symbol substitution no longer returns display value](#)
- [Default Encoding for CSV Files in Data Loading Changed to ISO-8859-1](#)
- [Checkbox renamed to Checkbox Group](#)
- [Changes to the CSV export of a Classic Report or Interactive Report](#)
- [Changes to the JavaScript item interface](#)
- [Region Attributes and Printing Properties Relocated in Page Designer](#)
- [Shortcuts and Target Attributes for Side and Mega Menu Navigation](#)
- [Database Object Dependencies Utility Removed](#)
- [Compatibility Mode](#)
- [Enabling Network Services in Oracle Database 11g or Later](#)

Browser Requirements

Oracle Application Express requires a JavaScript-enabled browser and supports the current and prior major release of Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge.

apex_rest.getreport API Removed

The previously deprecated API `apex_rest.getreport` was removed from aApplication Express as of this release.

apex_rest.getservicedescription API Removed

The previously deprecated API `apex_rest.getservicedescription` was removed from aApplication Express as of this release.

Runtime Error in Common Schemas

Application Express by default prohibits running user code as a CDB common schema. When such a schema is used as an application schema or to run code in SQL Workshop, a runtime error occurs. Customers who need to use common schemas must recompile a SYS owned package using the following conditional compilation:

```
SQL> alter session set plsql_ccflags='apex_enable_common_user:true';
SQL> alter package sys.wv_dbms_sql_apex_200200 compile body;
```

Render File Browse item as a Drop Zone

The File Browse item type contains new attributes such as `Display As` which does enables File Browse to render as Dropzone.

Client-side symbol substitution no longer returns display value

Previously when using `applyTemplate` (such as in interactive grid), when you reference a page item or column item that has a display value, the display value was substituted in the template output. For example: a select list `P1_SEL_MOOD` with option `value='H'` and `display label='Happy'` when used in template `I am &P1_SEL..` would output `I am Happy`. whereas the server would output `I am H`.

The client now behaves the same as the server. Use `%display` to show the display value. For example: `I am &P1_SEL%display..`

Default Encoding for CSV Files in Data Loading Changed to ISO-8859-1

Prior to this release, CSV files uploaded to Data Loading in SQL Workshop were encoded in Unicode by default.

Now, when uploading CSV files to Data Loading in SQL Workshop, the default encoding is ISO-8859-1.

You can change the encoding using the File Encoding select list on the preview screen.

Create Websheet Disabled by Default

By default, the ability to create Websheet applications is disabled in this release.

To enable the creation of Websheet applications, set the `WEBSHEET_CREATE_ENABLED` instance parameter to `Y` using the `APEX_INSTANCE_ADMIN` package.

Checkbox renamed to Checkbox Group

The Checkbox item is renamed to Checkbox Group. There are no changes in functionality.

This name change creates consistency with "Radio Group" and enables the new single checkbox to use the more appropriate name Checkbox.

Changes to the CSV export of a Classic Report or Interactive Report

The CSV output of a Classic Report or Interactive Report no longer encloses each value with the `enclose` character.

The CSV output of an Interactive Report no longer substitutes `NULL` values with the "Show Null Values as" message.

For backward compatibility, specify `CSV_LEGACY` as Optimizer Hint in Region Source Attributes.

Changes to the JavaScript item interface

Any code that relies on undocumented, unsupported internal details of the JavaScript item interface API may require updates, including the `item.callbacks` property and the `apex.page.itemCallbacks` property.

The `pItemImpl` object passed to `apex.item.create` now becomes the item instance and the default item behavior is the prototype. This change enables item plug-in developers to give their item new methods or properties more easily.

Region Attributes and Printing Properties Relocated in Page Designer

Prior to this release, these properties were available to edit by selecting the relevant region's sub-node in the Rendering Tree on the left of the page, then the Property Editor would display the properties for the current selection.

As of this release, to simplify the editing experience, you no longer see the Attributes and Printing sub-nodes in the tree. Now, you select the region and the Attributes and Printing (if available) tabs display in the Property Editor next to the region's other main properties.

Shortcuts and Target Attributes for Side and Mega Menu Navigation

Link target and keyboard shortcut attributes work for Side Navigation Menu and Top Navigation Mega Menu lists.

Prior to this release, they only worked for Top Navigation Menu.

To use shortcuts: open Navigation Menu Template Option in Shared Components, and click **Add Actions**. Give the navigation list entries values for ID Attribute and Shortcut Key. Setting the link target value to `_blank` opens the link in a new tab.

See Also:

Viewing Templates on the Templates Page in the *Oracle Application Express App Builder User's Guide*

Database Object Dependencies Utility Removed

The app-level utility "Database Object Dependencies" is removed from this release because the dependency report omitted many of the new attributes for functionality in recent releases and gave an incomplete assessment of the objects used in your app.

Oracle may update this functionality in a future release.

Compatibility Mode

The application attribute **Compatibility Mode** controls the compatibility mode of the Application Express runtime engine. Certain runtime behaviors change from release to release. You can use the Compatibility Mode attribute to obtain specific application behavior. This section lists Compatibility Mode changes by release. Note that all mode changes are inclusive in that all changes in older releases are included in newer releases.

Compatibility Mode Changes in Mode 4.1

In Oracle Application Express release 4.1, Automatic DML forms raised an error when rendering the page if the column name of the source of an item was invalid. Prior to Oracle Application Express release 4.1, an invalid column name of the source of an item would not raise an error when rendering the page but it would also not set session state of the item.

Also, in Oracle Application Express release 4.1, there are two new application Security Attributes to control Browser Security: **Cache** and **Embed in Frames**. Enabling the Cache attribute enables the browser to save the contents of your application's pages in its cache, both in memory and on disk. The Embed in Frames attribute controls if the browser displays your application's pages within a frame. Applications running in a Pre-4.1 Compatibility Mode function as if the Cache is enabled and as if Embed in Frames is set to allowed. Applications running in Compatibility Mode **4.1** or later respect the specific Browser Security attributes.

Also, in Oracle Application Express release 4.1, because of bug 12990445, the following changes were implemented for Automatic Row Processing (DML) process types. The code which performs the INSERT was changed to determine if the columns should be included in the INSERT statement. Note that these are the same checks which occur before an UPDATE. These new checks include:

- Is the source type a DB Column?
- Is the page item contained in the POST request? For example, if the page item is conditional it will not be contained in the POST request if the condition evaluates to FALSE during page rendering.
- Is the page item not of type Display Only where Save State is set to No?

To enable these behaviors, set the Compatibility Mode to **4.1** or later. For behavior that matches earlier releases, set the Compatibility Mode to **Pre-4.1**.

Compatibility Mode Changes in Mode 4.2

In Oracle Application Express release 4.2 due to changes for the new grid layout, when a page is rendered, all regions in a certain display point are evaluated before rendering that display point, to find out if they should be displayed or not (so that the grid layout knows how many columns to render). The regions where the evaluation returned true will be executed and displayed. However, this will not work if a PL/SQL based region sets session state which is then used in a subsequent region condition to determine if the region should be displayed. In that scenario, the condition has already been checked before the display point is rendered. Use computations or PL/SQL processes to set session state before any region is displayed. In previous versions, the condition was evaluated right before each region was displayed.

In Oracle Application Express release 4.2, computations and processes with a processing point Before Region(s) do now fire before any region gets rendered. Computations and processes with a processing point After Region(s) fire after all regions have been rendered. In previous versions, the computations and processes fired just before and after the region display point Page Template Body (1-3).

Oracle Application Express Patch Set 4.2.2 added two new Compatibility Mode changes for Compatibility Mode **4.2**:

- Text areas were changed to always use the Maximum Width attribute to restrict text input.

- Enhanced security for report column links, where the link contains both JavaScript and references to other report column substitutions, for example:

```
javascript:alert( 'Delete #NAME#' );
```

In the previous example, *NAME* is a column name in the report.

Prior to Oracle Application Express release 4.2.1, to protect against possible cross-site scripting vulnerabilities, you would have had to explicitly escape any column values in the report source, so that they could safely be used in JavaScript links. When running in Compatibility Mode **4.2**, Oracle Application Express automatically JavaScript escapes column name substitutions referenced in JavaScript links if the column is defined to escape special characters.

To fix this, Oracle recommends that you remove the manual JavaScript escaping from your report source and use of the native escaping.

Compatibility Mode Changes in Mode 5.0

In Oracle Application Express release 5.0, referencing a Static Application File with `#WORKSPACE_IMAGES#` no longer returns the application file. Instead, use `#APP_IMAGES#`.

The API calls

to `wwv_flow_custom_auth_std.logout`, `wwv_flow_custom_auth_std.logout_then_go_to_page`, `wwv_flow_custom_auth_std.logout_then_go_to_url`, and `apex_custom_auth.logout` are desupported and will raise a runtime error instead of logging out from the Oracle Application Express session. Instead, use the `apex_authentication.logout` entry point.

Prior to release 5.0, developers using data upload did not have the option to choose a date format. Instead, a parser checked for the best format to match the user's entry or an end user could enter their own format. Oracle Application Express release 5.0 includes a new item that enables the user to choose an application date format or user entered format. Because applications created before release 5.0 do not have an item, a Compatibility Mode of **5.0** checks if the user has entered some data. If no data has been entered, it picks the application date format.

When a session timeout occurs and no timeout URL is specified, Oracle Application Express raises an error instead of redirecting to the application's home page. If the session setup for an Ajax requests fails, Oracle Application Express also raises an error. For Ajax requests that expect JSON, the response is a JSON string with members that describe the error. For other requests, the error appears on an error page.

Page items based on a database column where the attribute Source Used is set to **Only when current value in session state is null** will raise an error when the page item gets rendered. Using this setting for a database column is very dangerous and can result in accidentally overwriting data when viewing and saving multiple records. Always set the Source Used attribute to **Always, replacing any existing value in session state**.

Compatibility Mode Changes in Mode 5.1 / 18.1

In Oracle Application Express 18.1, buttons where the Execute Validations attribute is set to **Yes** also perform some client-side validations (such as item required checks) and will not submit the page until all issues are fixed. In previous versions this flag was just used to determine if server-side validations should be executed.

Tip:

Please pay attention when changing the Compatibility Mode to 5.1/18.1. Buttons, such as Cancel or Previous, where the Execute Validation flag has incorrectly been set to **Yes** and which use an After Submit branch, never execute validations when the user clicks the button. You can address this issue by using the new client-side validations, or by setting Execute Validations to **No**.

In release 5.1, any Ajax-based Dynamic Actions where the "Wait for Result" attribute is set to `Yes` perform an asynchronous Ajax call. Prior to 5.1, such calls would be made synchronously.

Compatibility Mode Changes in Mode 19.1

In Oracle Application Express 19.1, the Rich Text editor now enforces validation of the `Max Length` item attribute. When the length of the HTML markup exceeds the `Max Length` value, the system produces an error message.

Compatibility Mode Changes in Mode 19.2

In Oracle Application Express 19.2, Classic Reports render empty column values as an empty cell instead of using a "non-breaking white-space" (` `).

Enabling Network Services in Oracle Database 11g or Later

You must enable network services in Oracle Database 11g or later versions to send outbound mail, use Web services, or use PDF report printing in Oracle Application Express.

When and Why Network Services Must be Enabled

Enabling network services enables support for sending outbound mail in Oracle Application Express, use of Web services in Application Express, and PDF report printing with BI Publisher.

By default, the ability to interact with network services is disabled in Oracle Database 11g Release 2 or later. Therefore, if you are running Application Express with Oracle

Database 11g Release 2 or later, you must use the new `DBMS_NETWORK_ACL_ADMIN` package to grant connect privileges to any host for the `APEX_200200` database user. Failing to grant these privileges results in issues with:

- Sending outbound mail in Application Express.
Users can call methods from the `APEX_MAIL` package, but issues arise when sending outbound email.
- Consuming web services from Application Express.
- Making outbound LDAP calls from Application Express.
- PDF report printing with BI Publisher.

 **Note:**

When upgrading Application Express on a database 12c or newer, based on the configuration of the old Application Express version the upgrade automatically configures Network Services.

 **Tip:**

To run the examples described in this section, the compatible initialization parameter of the database must be set to at least 11.1.0.0.0. By default an 11g or 12c database will already have the parameter set properly, but a database upgraded to 11g or 12c from a prior version may not. For information about changing database initialization parameters, see *Creating and Configuring an Oracle Database in Oracle Database Administrator's Guide*.

 **See Also:**

About Report Printing in *Oracle Application Express App Builder User's Guide*.

Granting Connect Privileges Prior to Oracle Database 12c

Demonstrates how to grant connect privileges to any host for the `APEX_200200` database user.

The following example demonstrates how to grant connect privileges to any host for the `APEX_200200` database user. This example assumes you connected to the

database where Oracle Application Express is installed as SYS specifying the SYSDBA role.

```
DECLARE
  ACL_PATH VARCHAR2(4000);
BEGIN
  -- Look for the ACL currently assigned to '*' and give APEX_200200
  -- the "connect" privilege if APEX_200200 does not have the privilege
  -- yet.

  SELECT ACL INTO ACL_PATH FROM DBA_NETWORK_ACLS
    WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;

  IF DBMS_NETWORK_ACL_ADMIN.CHECK_PRIVILEGE(ACL_PATH, 'APEX_200200',
    'connect') IS NULL THEN
    DBMS_NETWORK_ACL_ADMIN.ADD_PRIVILEGE(ACL_PATH,
    'APEX_200200', TRUE, 'connect');
  END IF;

EXCEPTION
  -- When no ACL has been assigned to '*'.
  WHEN NO_DATA_FOUND THEN
    DBMS_NETWORK_ACL_ADMIN.CREATE_ACL('power_users.xml',
    'ACL that lets power users to connect to everywhere',
    'APEX_200200', TRUE, 'connect');
    DBMS_NETWORK_ACL_ADMIN.ASSIGN_ACL('power_users.xml', '*');
  END;
  /
  COMMIT;
```

The following example demonstrates how to provide less privileged access to local network resources. This example enables access to servers on the local host only, such as email and report servers.

```
DECLARE
  ACL_PATH VARCHAR2(4000);
BEGIN
  -- Look for the ACL currently assigned to 'localhost' and give
  APEX_200200
  -- the "connect" privilege if APEX_200200 does not have the privilege
  -- yet.

  SELECT ACL INTO ACL_PATH FROM DBA_NETWORK_ACLS
    WHERE HOST = 'localhost' AND LOWER_PORT IS NULL AND UPPER_PORT IS
  NULL;

  IF DBMS_NETWORK_ACL_ADMIN.CHECK_PRIVILEGE(ACL_PATH, 'APEX_200200',
    'connect') IS NULL THEN
    DBMS_NETWORK_ACL_ADMIN.ADD_PRIVILEGE(ACL_PATH,
    'APEX_200200', TRUE, 'connect');
  END IF;
```

```

EXCEPTION
  -- When no ACL has been assigned to 'localhost'.
  WHEN NO_DATA_FOUND THEN
    DBMS_NETWORK_ACL_ADMIN.CREATE_ACL('local-access-users.xml',
      'ACL that lets users to connect to localhost',
      'APEX_200200', TRUE, 'connect');
    DBMS_NETWORK_ACL_ADMIN.ASSIGN_ACL('local-access-
users.xml', 'localhost');
  END;
  /
  COMMIT;

```

Granting Connect Privileges in Oracle Database 12c or Later

Procedures `CREATE_ACL`, `ASSIGN_ACL`, `ADD_PRIVILEGE` and `CHECK_PRIVILEGE` in `DBMS_NETWORK_ACL_ADMIN` are deprecated in Oracle Database 12c. Oracle recommends to use `APPEND_HOST_ACE`.

The following example demonstrates how to grant connect privileges to any host for the `APEX_200200` database user. This example assumes you connected to the database where Oracle Application Express is installed as `SYS` specifying the `SYSDBA` role.

```

BEGIN
  DBMS_NETWORK_ACL_ADMIN.APPEND_HOST_ACE(
    host => '*',
    ace => xs$ace_type(privilege_list => xs$name_list('connect'),
      principal_name => 'APEX_200200',
      principal_type => xs_acl.p_type_db));
  END;
  /

```

The following example demonstrates how to provide less privileged access to local network resources. This example enables access to servers on the local host only, such as email and report servers.

```

BEGIN
  DBMS_NETWORK_ACL_ADMIN.APPEND_HOST_ACE(
    host => 'localhost',
    ace => xs$ace_type(privilege_list => xs$name_list('connect'),
      principal_name => 'APEX_200200',
      principal_type => xs_acl.p_type_db));
  END;
  /

```

Troubleshooting an Invalid ACL Error

Learn how to identify any invalid ACL error by running the query.

If you receive an ORA-44416: Invalid ACL error after running the previous script, use the following query to identify the invalid ACL:

```
REM Show the dangling references to dropped users in the ACL that is
assigned
REM to '*'.
```

```
SELECT ACL, PRINCIPAL
       FROM DBA_NETWORK_ACLS NAACL, XDS_ACE ACE
       WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL AND
              NAACL.ACLID = ACE.ACLID AND
              NOT EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME =
PRINCIPAL);
```

Next, run the following code to fix the ACL:

```
DECLARE
  ACL_ID  RAW(16);
  CNT     NUMBER;
BEGIN
  -- Look for the object ID of the ACL currently assigned to '*'
  SELECT ACLID INTO ACL_ID FROM DBA_NETWORK_ACLS
         WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;

  -- If just some users referenced in the ACL are invalid, remove just
those
  -- users in the ACL. Otherwise, drop the ACL completely.
  SELECT COUNT(PRINCIPAL) INTO CNT FROM XDS_ACE
         WHERE ACLID = ACL_ID AND
               EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME = PRINCIPAL);

  IF (CNT > 0) THEN

    FOR R IN (SELECT PRINCIPAL FROM XDS_ACE
              WHERE ACLID = ACL_ID AND
                    NOT EXISTS (SELECT NULL FROM ALL_USERS
                                WHERE USERNAME = PRINCIPAL)) LOOP

      UPDATE XDB.XDB$ACL
      SET OBJECT_VALUE =
          DELETEXML(OBJECT_VALUE,
                    '/ACL/ACE[PRINCIPAL="' || R.PRINCIPAL || '"]')
      WHERE OBJECT_ID = ACL_ID;
    END LOOP;

  ELSE
    DELETE FROM XDB.XDB$ACL WHERE OBJECT_ID = ACL_ID;
  END IF;

END;
```

/

REM commit the changes.

COMMIT;

Once the ACL has been fixed, you must run the first script in this section to apply the ACL to the `APEX_200200` user.

Deprecated Features

Deprecated features are features which Oracle plans to desupport or remove in a future release of Oracle Application Express. If a feature is related to application metadata or an API, existing applications can still use the feature, but Oracle strongly recommends that developers start to modify their applications as described in this section. Use Application Express Advisor to scan existing applications for deprecated attributes.

- [Deprecated Productivity and Sample Applications](#)
- [Websheets Deprecated](#)
- [Migration Workbench Deprecated](#)
- [WWW_FLOW_EPG_INCLUDE_LOCAL for Web Entry Points Deprecated](#)
- [Download Interactive Report as RTF is Deprecated](#)
- [Productivity and Sample Apps Only Workspace Deprecated](#)

See Also:

Running Advisor to Check Application Integrity in the *Oracle Application Express App Builder User's Guide*

Deprecated Productivity and Sample Applications

Starting with Application Express release 21.1, Application Express will no longer distribute Productivity and Sample Applications with the product. Instead, Oracle will make a collection of Starter Applications, Sample Applications, and Sample Plug-Ins available for download online.

The following Productivity Applications have been deprecated and will be removed in Application Express release 21.1:

- APEX Application Archive
- Application Standards Tracker
- Customer Tracker
- Data Reporter

- Group Calendar
- Incident Tracking
- Opportunity Tracker
- P-Track
- Quick Poll
- Survey Builder

The following list of views are deprecated in this release and will be removed in 21.1:

- APEX_PKG_APP_ACTIVITY
- APEX_PKG_APP_AUTHENTICATIONS
- APEX_PKG_APP_AVAILABLE
- APEX_PKG_APP_INSTALL
- APEX_PKG_APP_INSTALL_LOG
- APEX_PKG_APP_INSTALLED
- APEX_PKG_APPS

The upload of custom applications to the Productivity and Sample Applications repository is also deprecated, and support will be removed in 21.1.

Websheets Deprecated

Websheets are deprecated as of this release.

Websheets are currently supported in this release, however they will be removed in a future release.

Migration Workbench Deprecated

The Migration Workbench (Application Migration / App 4400) is deprecated as of this release and will be removed in a future release.

WWV_FLOW_EPG_INCLUDE_LOCAL for Web Entry Points Deprecated

Changing the supported web entry points by compiling `WWV_FLOW_EPG_INCLUDE_LOCAL` is deprecated as of this release. Use `APEX_INSTANCE_ADMIN.ADD_WEB_ENTRY_POINT` and `APEX_INSTANCE_ADMIN.REMOVE_WEB_ENTRY_POINT` to manage the list of supported entry points instead.

The default list in releases earlier than 20.2 contains several legacy entry points. These are now disabled by default. To enable these legacy entry points, you can set instance parameter `ENABLE_LEGACY_WEB_ENTRY_POINTS` to Y.

Download Interactive Report as RTF is Deprecated

Downloading an interactive report in Rich Text Format (RTF) is deprecated as of this release. It will be removed in a future release.

Productivity and Sample Apps Only Workspace Deprecated

Productivity and Sample Apps Only Workspaces are deprecated as of this release.

Starting with Application Express release 21.1, Application Express will no longer support Productivity and Sample Apps Only Workspaces. Any existing workspaces of this type will automatically switch to a Full Workspace in release 21.1.

Deprecated in Previous Releases

The following section lists features which were deprecated in a previous release but have not been fully removed or desupported from Oracle Application Express.

Oracle strongly recommends that developers start to modify their applications as described in this section. Use Application Express Advisor to scan existing applications for deprecated attributes.

- [Deprecated JavaScript Functions](#)
- [jQuery UI Deprecated](#)
- [REST Administration Interface Deprecated](#)
- [Post Calculation for Page Items Deprecated](#)
- [Show / Hide All Page Items On Same Line attributes deprecated](#)
- [AnyChart, AnyMap, and AnyGantt charts Deprecated](#)
- [apex.server Plug-in and Process Function Async Option Deprecated](#)
- [apex.widget.initPageItem Function Deprecated](#)
- [Popup LOV Template Deprecated](#)
- [afterModify is Deprecated](#)
- [apex.navigation.dialog.fireCloseHandler function is Deprecated](#)
- [apex.page.confirm pMessage Parameter is Deprecated](#)

Deprecated JavaScript Functions

The following functions are deprecated as of this release:

Universal Theme JavaScript API function:

- `apex.theme42.util.mq` (use `apex.theme.mq` instead)

jQuery UI Deprecated

As of this release, jQuery UI is deprecated. Oracle recommends that customers update third-party Application Express plug-ins and custom JavaScript code to remove any jQuery UI references.

Native Application Express components that use jQuery UI will continue to function, but support will be removed in a future release.

REST Administration Interface Deprecated

As of this release, the REST Administration Interface is deprecated. This feature will be removed in a future release.

See Also:

- Using the REST Administration Interface in the *Oracle Application Express Administration Guide*
- Using the REST Administration Interface in the *Oracle Application Express API Reference*

Post Calculation for Page Items Deprecated

The "Post Calculation" functionality of page items is deprecated.

This functionality remains for existing page items where it has been used, but you can no longer set it for new page items nor add it to existing page items where it has not been used in the past.

Show / Hide All Page Items On Same Line attributes deprecated

In Dynamic Actions, the Show and Hide actions have attributes "Show all page items on same line" and "Hide all page items on same line," respectively. These attributes were designed for forms with a table-based layout. Because Universal Theme no longer uses table-based layout, these attributes are deprecated.

This functionality remains for existing Dynamic Actions where it was set to Yes, but developers cannot select it for new Dynamic Actions.

AnyChart, AnyMap, and AnyGantt charts Deprecated

The legacy AnyChart, AnyMap and AnyGantt charting components are deprecated as of this release, and will be removed in the next release. Use the JET charting solution instead.

 **See Also:**

"Switching from AnyChart to JET Chart" in the *Oracle Application Express App Builder User's Guide*

apex.server Plug-in and Process Function Async Option Deprecated

In a future release the async option will be ignored and all Ajax requests will be asynchronous.

apex.widget.initPageItem Function Deprecated

The function `apex.widget.initPageItem` is deprecated. Item plug-in creators should use `apex.item.create` instead.

Popup LOV Template Deprecated

The Popup LOV template type is deprecated. A future release of Application Express will not use this template to render Popup LOV dialogs.

afterModify is Deprecated

The `apex.item` callback `afterModify` is deprecated. It was used primarily for jQuery Mobile, which is no longer supported.

apex.page.confirm pMessage Parameter is Deprecated

The default value for the `apex.page.confirm` parameter `pMessage` is deprecated. In the future this parameter will be required.

apex.navigation.dialog.fireCloseHandler function is Deprecated

The `apex.navigation.dialog.fireCloseHandler` function is deprecated. It will be removed in a future release.

Desupported Features

Desupported features are no longer available. If a desupported feature has to do with application metadata or APIs, then existing applications may not work as they did previously. Oracle recommends modifying the application to replace the feature.

- [Theme Style "Vista" Desupported in Universal Theme](#)
- [apexrefresh Event is Desupported](#)
- [APEX_ERROR.GET_ARIA_ERROR_ATTRIBUTES Desupported](#)
- [APEX_UTIL.STRING_TO_TABLE Function Desupported](#)
- [APEX_UTIL.TABLE_TO_STRING Function Desupported](#)
- [APEX_PAGE.IS_JQM_SMARTPHONE_UI is Desupported](#)
- [openModal and closeModal are Desupported](#)
- [Tabular Forms Desupported](#)
- [Desupported Web Listeners](#)
- [Internet Explorer 11 Desupported](#)
- [Calendar PDF Printing Desupported](#)
- [Desupported Productivity Apps](#)
- [Desupported JavaScript Functions](#)

Theme Style "Vista" Desupported in Universal Theme

As of this release, users can no longer select the Vista Theme style from the Create Application wizard. The Vista theme style is desupported.

Oracle recommends that customers use the Vita theme style instead, then use Theme Roller to achieve a similar look and feel to Vista.

apexrefresh Event is Desupported

Using the `apexrefresh` event to refresh a region is desupported.

Previously, you could refresh a region with code such as this:

```
apex.event.trigger( "#myRegionStaticID", "apexrefresh" );
```

Instead, use the `apex.region().refresh()` method. For example, you can replace the above code with:

```
apex.region("myRegionStaticID").refresh();
```

APEX_ERROR.GET_ARIA_ERROR_ATTRIBUTES Desupported

`APEX_ERROR.GET_ARIA_ERROR_ATTRIBUTES` is desupported.

Developers can replace this functionality with `apex_plugin_util.get_element_attributes`, which provides better support with native functionality.

APEX_UTIL.STRING_TO_TABLE Function Desupported

`APEX_UTIL.STRING_TO_TABLE` is desupported.

Use `APEX_STRING.STRING_TO_TABLE` instead.

APEX_UTIL.TABLE_TO_STRING Function Desupported

`APEX_UTIL.TABLE_TO_STRING` is desupported.

Use `APEX_STRING.TABLE_TO_STRING` instead.

APEX_PAGE.IS_JQM_SMARTPHONE_UI is Desupported

The PL/SQL function `APEX_PAGE.IS_JQM_SMARTPHONE_UI` is Deprecated is no longer supported.

openModal and closeModal are Desupported

The undocumented theme specific functions `openModal` and `closeModal` are desupported.

Resolution

Use the `apex.theme.openRegion` and `apex.theme.closeRegion` functions or the corresponding dynamic actions "Open Region" and "Close Region."

Tabular Forms Desupported

Creation of new legacy tabular forms is no longer supported as of this release.

The `APEX_ITEM` API is considered legacy code and should not be used for new development.

Existing tabular forms continue to function.

Use interactive grids instead of tabular forms.

Desupported Web Listeners

As of this release, support for the following web listeners is desupported:

- Oracle HTTP Server (`mod_plsql`)
- Embedded PL/SQL Gateway

In the future, Application Express will only support Oracle REST Data Services.

Internet Explorer 11 Desupported

As of this release, support for Internet Explorer (IE) 11 is no longer supported.

Only the current and prior major release of Microsoft Edge (and Google Chrome, Mozilla Firefox, Apple Safari) are supported.

Calendar PDF Printing Desupported

The "Export to PDF" functionality of the CSS Calendar region is now desupported.

Desupported Productivity Apps

The following Productivity Apps are desupported as of this release:

- Bug Tracking
- Checklist Manager
- Competitive Analysis
- Decision Manager
- Live Poll
- Meeting Minutes
- Script Planner

Desupported JavaScript Functions

As of this release, the following functions are desupported.

Theme-specific global functions:

- `openModal`
- `closeModal`

`apex.item` namespace:

- `afterModify`

`apex.page.confirm` parameter:

- `pMessage` default value

Other:

- `$d_Find`
- `$d_LOV_from_JSON`
- `$dom_JoinNodeLists`
- `$dom_Replace`

- `$f_Enter`
- `$f_First_field`
- `$s_Split`
- `$tr_RowMoveFollow`
- `$u_ArrayToString`
- `$u_js_temp_drop`
- `$u_SubString`
- `$x_Check_For_Compound`
- `$x_object`
- `$x_Show_Hide`
- `addLoadEvent`
- `ajax_Loading`
- `apex.navigation.dialog.fireCloseHandler`
- `base_disableItem`
- `confirmDelete2`
- `dhtml_ShuttleObject`
- `doMultiple`
- `findPosX`
- `findPosY`
- `flowSelectAll`
- `getScrollXY`
- `hideShow`
- `html_GetTarget`
- `html_ReturnToTextSelection`
- `html_RowDown`
- `html_RowUp`
- `html_StringReplace`
- `htmldb_ch`
- `htmldb_ch_message`
- `htmldb_doUpdate`
- `htmldb_goSubmit`
- `htmldb_item_change`
- `ie_RowFixFinish`
- `ie_RowFixStart`

- `json_SetItems`
- `lc_SetChange`
- `selectString`
- `setCaretToBegin`
- `setCaretToEnd`
- `setCaretToPos`
- `setSelectionRange`
- `setValue2`
- `widget.util.disableIcon`
- `wiget.util.enableIcon`

Fixed Bugs

The following section lists bugs fixed in this release.

Table Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
11714463	PAGE LOAD DYNAMIC ACTION FAILS TO AFFECT RICH TEXT EDITOR ITEM TYPES
18188460	UI: SINGLE VALUE / ITEM CHECKBOXES RENDER UNNECESSARY GROUP TAG
20696803	CODE EDITOR CODE COMPLETION INACCESSIBLE WITH JAWS
25245829	INTERACTIVE GRID: SINGLE ROW VIEW: KEYBOARD ISSUES WITH SOME LINKS AND BUTTONS
25565254	INTERACTIVE GRID FILTER DOESN'T WORK ON MULTI VALUE COLUMNS SHUTTLE, CHECKBOXES
25652098	ITEM MAXIMUM LENGTH ATTRIBUTE NOT CORRECT FOR VARCHAR COLUMN W/ CHAR SEMANTICS
28069813	INTERACTIVE GRID SCROLL, AGGREGATE, CONTROL BREAK DOESN'T OBEY COLLAPSED STATE
28626128	INTERACTIVE GRID ROW CAN BE DELETED AFTER DUPLICATE AND SAVE
29416983	INTERACTIVE GRID MASTER DETAIL ISSUES WHEN DETAIL INSTANCES HAVE MANY ROWS
29754010	ERROR WHEN USING MAP-VIEWER V2 API WITH THEME ROLLER IN APEX
30360211	UNIQUENESS OF PAGE ALIAS ACROSS THE APPLICATION IS NOT ENFORCED

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
30473457	INTERACTIVE GRID: TEXT AREA MARKED CHANGED WHEN NOT CHANGED
30618169	UNCAUGHT TYPEERROR WITH APEX PAGE WITH BOTH BOTH A POPUP LOV AND A URL REGION
30728792	CLASSIC REPORT CSV DOWNLOAD FAILS AFTER APEX APPLICATION MIGRATED TO 19.1
30733498	QUICK EDIT OPENS GLOBAL PAGE IF GLOBAL PAGE HAS INLINE DIALOGS
30770173	INTERACTIVE GRID: AFTER ADDING A ROW WITH DATEPICKER ITEM, SAVE HANGS IN FIREFOX
30801170	USING A DYNAMIC ACTION TO ENABLE/DISABLE A FIELD IN AN INTERACTIVE GRID FAILS AFTER THE FIRST CHANGE
30902888	HTML 5 BAR CHART PLUGIN HAS CONFUSING LINKS FOR SCREEN READERS
30944688	APEX_THEME.SET_USER_STYLE CAUSES ISSUES IF MULTIPLE APPS SHARE SAME SESSION
30965541	WHEN USING COLOR PICKER AND PRESSING 'ESC', CLOSSES THEME ROLLER AND ERROR IS PRODUCED
30969083	AUTHENTICATION SWITCH IN SESSION DOES NOT WORK ON INITIAL REQUEST
30975988	APEX_DATA_PARSER / SQL WORKSHOP DATA LOADING SHOULD PROVIDE A "FORCE TRIM WHITESPACE" OPTION
30982076	TEXTAREA ALLOWS TO ENTER MORE CHARACTERS THAN SPECIFIED IN MAXIMUM LENGTH ATTRIBUTE
30985042	STAR RATING ITEM INCORRECTLY SETS VALUE ON CLICK EVENT
30997511	INTERACTIVE GRID MASTER DETAIL ADD ROW ON DETAIL GIVES JAVASCRIPT ERROR IF 1 MASTER RECORD NOT SELECTED
31008753	"IS HIDDEN" SWITCH IN WEB SOURCE MODULE > DATA PROFILE > COLUMNS DIALOG MIXES UP YES AND NO
31011905	INTERACTIVE GRID RAISES "INTERNAL ERROR" ON SAVE WHEN PK COLUMN HAS "SEQUENCE" DEFAULT AND SEQUENCE NAME SPECIFIED IN LOWER CASE

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
31013186	SETTING DEBUG IN DEV TOOLBAR FAILS WITH FRIENDLY URLS
31067197	INTERACTIVE GRID: AGGREGATION LINE DUPLICATED FOR MORE THAN 50 ROWS
31074354	FORM REGION COLUMN IS NOT UPDATED WHEN ANOTHER FORM ITEM ON THE SAME COLUMN EXISTS, WHICH IS "CONDITIONED OUT"
31121847	PREPARE_URL: LINKS WITH APP/USER CHECKSUM GENERATED IN JOBS ARE INVALID
31136919	"COPY TO OTHER PAGE" DOES NOT WORK FOR INTERACTIVE GRID COLUMN VALIDATIONS
31145675	CREATE FACETED SEARCH PAGE ERRORS OUT IF TABLE DOES NOT BELONG IN WORKSPACE SCHEMA
31175085	INTERACTIVE GRID COLUMN WITH LARGE "SQL EXPRESSION" THROWS ORA-06502 (ASSOCIATIVE ARRAY KEY VIOLATES ITS TYPE CONSTRAINTS) WHEN DML IS EXECUTED
31178904	INTERACTIVE GRID WITH MARKDOWN EDITOR : SEARCH DOESN'T HAPPEN FOR MARKDOWN COLUMN
31180890	INTERACTIVE GRID: ERROR - LOV COLUMN WITH CASCADING PARENT ITEMS BASED ON WEB SOURCE
31198904	FRIENDLY URL: GETTING 404 ERROR FOR FIRST TIME PASSWORD CHANGE FOR END USER
31200582	TEXT AREAS ANNOUNCE DUPLICATE LABELS TO SCREEN READERS
31219482	INTERACTIVE GRID CHART VIEWS THROWS ORA-904 (INVALID IDENTIFIER) WHEN AGGREGATION AND SORT BY VALUE IS ENABLED
31245629	FACETED SEARCH HIDE RADIO BUTTONS ATTRIBUTE DOES NOT WORK
31247345	REMOVE LEGACY ACL WIZARD AND DDL
31309191	ADDING NEW WEB SOURCE OPERATION PARAMETER THROWS ORA-2291 IF A SHARED LOV USES THIS WEB SOURCE MODULE
31330739	INTERACTIVE GRID HIGHLIGHT OPTION - ENTERING COLORS BY HAND THROWS ERROR ORA-06502

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
31330965	WHEN USING THE POPUP LOV FROM APEX WITH GOOGLE RECAPTCHA SHOWS JAVASCRIPT ERROR
31344315	INTERACTIVE REPORT ERRORS OUT WITH ORA-6502 WHEN TOO MANY FILTERS (ABOUT 30+) ARE ADDED
31352694	REPLACE TIMESTAMP WITH LOCAL TIME ZONE COLUMNS
31357942	SAMPLE DATA SET ISSUE USING OTHER LANGUAGES THAN ENGLISH
31364757	APEX_DATA_PARSER IS VERY SLOW IF PARSED DATA CONTAINS A LOT OF ENQUOTED LINE FEEDS
31366060	COPY DOWN THROWING ERROR "UNCAUGHT TYPEERROR: CANNOT READ PROPERTY 'TRIGGER'
31450791	APEX_REGION.OPEN_QUERY_CONTEXT FAILS WITH ORA-904 FOR INTERACTIVE REPORT GROUP BY VIEW WHEN GROUP BY COLUMN IS HIDDEN
31454691	ACCESSIBILITY ISSUES WITH REST WORKSHOP
31472808	MASTER DETAIL: GETTING ORA-20999 UPON CLICKING ON EDIT FOR DETAIL ROW
31498325	INTERACTIVE REPORT > PAGINATION ROW COUNT INCORRECT WHEN MAX ROWS TO PROCESS IS SET
31511086	PAGE CANNOT BE SUBMITTED WHEN AN INTERACTIVE GRID COLUMNS USES STAR RATING
31512450	DEVELOPER TOOLBAR: MISSING MESSAGE FOR PAGE ITEMS WITH NO TEMPLATE
31516909	GANTT CHART DOESN'T REFRESH DATA WHEN NO DATA FOUND
31520637	PUBLIC CHECKBOX NOT CHECKED WHEN SAVING EXISTING CUSTOM INTERACTIVE REPORT WHICH IS PUBLIC
31523316	LIST DETAILS PAGE 4000:4050 HAS INACCESSIBLE ICONS FOR CONDITIONAL AND COPY COLUMNS
31524482	THEME PAGE > IS UNIVERSAL THEME COLUMN CONTAINS INCORRECT VALUE / ACCESSIBLE LABEL
31534646	FRIENDLY URL: ISSUES WITH USER AND APPLICATION LEVEL CHECKSUMS

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
31551131	APEX ADMINISTRATION SERVICES DOESN'T PRESERVE DARK/LIGHT MODE
31572273	SQL WORKSHOP DATA LOADING DOES NOT RAISE ERROR FOR MORE THAN 20 CLOB COLUMNS
31573215	"FIRE ON INITIALIZATION" PROPERTY FOR DYNAMIC ACTIONS IS NOT SET CORRECTLY
31582789	APEX_DATA_PARSER THROWS ORA-1426 (NUMERIC OVERFLOW) FOR CSV FILES LARGER THAN 2G
31605614	ITEM SUBSTITUTION FINDER MODAL DIALOG LAYOUT ISSUES
31606071	INTERACTIVE GRID CANNOT ADD A ROW IF READ ONLY COLUMN IS PART OF A CONTROL BREAK
31611613	APEX_EXEC.EXECUTE_PLSQL TREATS NON-VARCHAR2 IN PARAMETERS (BINDS) AS NULL
31612299	PAGE DESIGNER: CLASSIC REPORT COLUMNS CANNOT BE REORDERED WITH A SCREEN READER
31624522	ACCESSIBILITY ISSUES WITH OUR MENU IMPLEMENTATION
31629892	COPY APPLICATION: 'COPY TO' REVERTS BACK TO 'COPY FROM' APP NAME AFTER ENABLING COPY SUPPORTING OBJECT DEFINITIONS
31643831	CREATE APP WIZARD > CHOOSE ICON DIALOG > ICON COLOUR RADIOS MISSING ACCESSIBLE LABELS
31662176	SUCCESS_MSG.SINGLE_ROW_UPDATED NOT DOCUMENTED AS TRANSLATABLE MESSAGE
31665929	SESSION TIME ALERTS SHOULD USE THE WORD 'ENDED' INSTEAD OF 'EXPIRED'
31666231	FORM REGION DOES NOT EXECUTE DELETE ACTION, IF NO PAGE ITEMS EXIST, EXCEPT PRIMARY KEY
31667669	FLOATING LABEL DOESN'T BEHAVE CORRECTLY FOR DATE PICKER AND POPUP LOV ITEM TYPES
31673040	JET CHART: DONUT CHART NOT RESPECTING PIE SELECTION EFFECT SETTING

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
31694881	MARKDOWN TYPE COLUMN IS NOT RENDERED IN CLASSIC REPORTS WITH NON-STANDARD TEMPLATE
31726393	CREATE SUPPORTING OBJECT FROM DATABASE OBJECT INCORRECTLY FILTERS ANY OBJECT WITH NAME STARTING WITH SYS
31755999	HTML 5 BAR CHART PLUG-IN NOT RENDERING VALUE WITH FORMAT MASK
31768792	COPY PAGE FROM OTHER APP DOES NOT COPY WEB SOURCE PARAMETERS FOR REGIONS CORRECTLY
31769340	JET CHART: TICK LABEL FONT ATTRIBUTES SHOULD BE HIDDEN WHEN NO TICK LABEL SHOWN
31769724	REPORT USING A SQL QUERY WITH WHERE CLAUSE AND ORACLE TEXT INDEX COLUMN FAIL WITH ORA-907
31775348	REST ENABLED SQL > UTILIZATION REPORT OMITTS SHARED LIST OF VALUES USE
31784358	"PAGE ITEMS TO SUBMIT" ATTRIBUTE IN PAGE DESIGNER IS LIMITED TO 255 CHARACTERS
31791970	SQL WORKSHOP DATA LOADING CAN FAIL WITH HTTP-500 WHEN CSV FILE WITH INVALID
31809249	APEX INSTALLATION CAN FAIL IN SOME ENVIRONMENTS DUE TO MISSING SEMICOLON IN APEX_VIEWS.SQL
31812780	APEX_JSON.PARSE: VALUE_ERROR WHEN A JSON VALUE CONTAINS LARGE CSV DATA
31813930	"ROW RANGES X TO Y" PAGINATION SCHEME DOES NOT WORK FOR LEGACY TABULAR FORMS
31820226	JET CHART: LABEL FONT ATTRIBUTES NOT APPLIED TO GANTT OR STATUS METER GAUGE CHARTS
31831814	LIGHT MODE: SQL WORKSHOP QUERY BUILDER COLOUR CONTRAST ISSUES
31866911	LINKING TO INTERACTIVE GRID REPORTS "IN" OPERATOR NOT PARSING VALUES
31891890	INTERACTIVE GRID ALWAYS SHOWS HORIZONTAL SCROLLBAR WHEN HEADINGS FIXED TO REGION

Table (Cont.) Fixed Bugs in Oracle Application Express 20.2

Bug Number	Description
31962055	FACETED SEARCH SELECT LIST FACET SHOWS OPTIONS WITH ZERO COUNT
31962253	ORACLE_APEX_DICTIONARY_CACHE FAIL WITH ORA-06502 CHARACTER TO NUMBER CONVERSION ERROR
31972864	POPUP LOV WITH A NULL DISPLAY VALUE DEFINED IS INACCESSIBLE TO SCREEN READERS
31989560	APEX_SESSION.CREATE_SESSION DURING POST-AUTH CAUSES ERROR WHEN ACCESSING COOKIE NAME
32016471	APEX_LANG.EMIT_LANGUAGE_SELECTOR_LIST ONLY SHOWS LANGUAGES APEX IS TRANSLATED INTO

Table Fixed Bugs in 20.2 – Productivity and Sample Apps

Bug Number	Description
23604456	APPLICATION STANDARDS TRACKER: CANNOT DELETE AUTOMATED TESTING JOB
30228768	CUSTOMER TRACKER: ACCESS CONTROL CONFIGURATION EITHER INCORRECT OR MISLEADING
30902911	QUICK POLL: POLLS REGION ON PAGE 1 IS DIFFICULT TO UNDERSTAND WITH A SCREEN READER
30973070	P-TRACK: ON LEAP YEAR DATE NOT VALID FOR MONTH SPECIFIED ORA-06512
30988789	GROUP CALENDAR SAMPLE: CHECKSUM ERROR FOR LAST_VIEW APP ITEM ON PAGE 12
31316744	GROUP CALENDAR - MAIN CALENDAR DISPLAY OF TIME ISSUE
31352674	REPLACE TIMESTAMP WITH LOCAL TIME ZONE COLUMNS IN PACKAGED APPS
31662877	PACKAGED APPS: ISSUE SHOWING CORRECT TIMESTAMP FORMAT IN DATA REPORTER FILTER REPORTS

Open Bugs and Known Issues

This section describes bugs and known issues for Oracle Application Express release 20.2.

 **Tip:**

This section is current as of the writing of this document. To view the most current listing of changed behavior, go to the **Known Issues** page:

<https://www.oracle.com/tools/downloads/apex-downloads/apex-202-known-issues.html>

- [Interactive Grid Cell Shows LOV Return Value Rather Than Display Value](#)
- [Survey Builder Incompatible with Friendly URLs](#)
- [Known Issue with Interactive Reports After Data Reporter Upgrade](#)
- [Known Issue Using Component View in Firefox](#)
- [Removal of AnyChart Flash Components from Images Folder](#)
- [Known Issues for jQuery UI and jQuery Upgrade](#)
- [Known Issues for RESTful Services and Oracle REST Data Services \(ORDS\)](#)
- [Interactive Grid support for REST Enabled SQL](#)
- [Legacy Team Development Workspace Attribute Issue](#)
- [Group By Component Type mode prevents Default View](#)
- [Language Support for Native PDF Printing in Interactive Grid](#)

Interactive Grid Cell Shows LOV Return Value Rather Than Display Value

Prior to this release, when you used a column symbol substitution for a LOV column, it would substitute the LOV display value.

Now, the column symbol substitution return value is consistent with the way the server handles symbol substitution.

Update column substitutions attributes (such as HTML Expression and Link Text) by adding `%display` to the syntax. For example: change `&COLUMN_NAME.` to `&COLUMN_NAME%display.`

Survey Builder Incompatible with Friendly URLs

Issue

Survey Builder cannot submit surveys when friendly URLs option are enabled.

There is no resolution at this time.

Bug #32020793.

Known Issue with Interactive Reports After Data Reporter Upgrade

Do not upgrade Data Reporter if you created an interactive report in the previous version. If Data Reporter contains an interactive report, upgrading the app to the newer version breaks editing of interactive report columns.

If you encounter this issue, please follow the workaround documented in Bug 31041739.

Known Issue Using Component View in Firefox

Issue

In Firefox, Component View may not appear after navigating away from it in the browser.

Resolution

In Page Designer, click **Utilities** (wrench), select **Show**, and select **Component View**. Reload the page if prompted. The tab appears before the page reloads, but disappears after reloading.

Removal of AnyChart Flash Components from Images Folder

In a previous release, the AnyChart and AnyGantt flash `.swf` files were removed from the `/images` folder. This results in AnyChart map chart and gantt charts no longer rendering. No error message displays, instead the region will be blank.

See Also:

"Switching from AnyChart to JET Chart" in the *Oracle Application Express App Builder User's Guide*

Known Issues for jQuery UI and jQuery Upgrade

jQuery 3.1.1 breaks compatibility with earlier 2.x versions. For applications that still rely on removed 2.x functionality, you can use the jQuery Migrate plug-in (to include this plug-in, set the Desktop User Interface Details attribute **Include jQuery Migrate to Yes**).

If your application relies on removed 1.x jQuery APIs, that functionality no longer works as of Oracle Application Express release 18.1. You must update the JavaScript to only use jQuery 3.1 APIs. See the jQuery migration guides to learn more:

- To migrate from 1.x to 2.x see <http://jquery.com/upgrade-guide/1.9/>
- To migrate from 2.x to 3.x see <https://jquery.com/upgrade-guide/3.0/>

jQuery UI 1.12.x has changed the folder structure and files that make up the library compared to version 1.10.4. If you have direct references to any of the old file filenames, you must update them to the new name. For example, if you previously referenced the tabs widget with `#JQUERYUI_DIRECTORY#ui/#MIN_DIRECTORY#jquery.ui.tabs#MIN#.js`, you must change it to `#JQUERYUI_DIRECTORY#ui/widgets/#MIN_DIRECTORY#tabs#MIN#.js`.

The Oracle Application Express specific bundle `jquery-ui-apex[.min].js` that loads by default for Application Express desktop UI pages (either as `jquery-ui-apex.js` or as part of `desktop[_all].min.js`) includes all the core files, the drop effect, and the following widgets:

- button
- checkboxradio
- controlgroup
- datepicker
- dialog
- draggable
- droppable
- resizable
- selectable
- sortable
- tooltip

This is essentially the same set as in 1.10.4 with the addition of sortable. If you have a separate reference to sortable, you can remove it.

The `jquery-ui-apex[.min].css` file loads by default and includes all the jQuery UI CSS files. If you had references to individual jQuery UI CSS files, you can remove them.



See Also:

[JET v4.2.0 Release Notes](#)

Known Issues for RESTful Services and Oracle REST Data Services (ORDS)

Customers using Oracle Application Express 18.1 and Oracle REST Data Services 18.1 may encounter the following issues when developing and deploying RESTful Services.

- [Issue when Migrating Application Express RESTful Services with a Null URI to ORDS](#)
- [Issue when Workspace Name Differs From First Provisioned Schema Name](#)
- [Issue when Using SQL Developer or SQL Scripts to Enable ORDS on an Application Express 18.1 or later Schema](#)

Issue when Workspace Name Differs From First Provisioned Schema Name

Issue

This issue affects all releases of Oracle REST Data Services **except** 17.4.1 and 18.2 or later and all releases of Application Express (ORDS services can be created by SQL Developer or an API). This issue exists for services created in the First Apportioned Schema of a workspace when the workspace name and schema name are different.

Due to an error in the way older releases of Oracle REST Data Services retrieve information about the Application Express environment, Oracle REST Data Services cannot serve ORDS Based RESTful Services if a given workspace name does not match the first provisioned schema name. This error was corrected in Oracle REST Data Services 17.4.1 but regressed in Oracle REST Data Services 18.1.

The following examples describe the issue:

- A user has existing APEX Based RESTful Services and migrates them to Oracle REST Data Services, then modifies the ORDS Based RESTful Services definition. If the user calls the services and expects the new logic to perform, instead the older APEX Based RESTful Services are still called. If the user then goes to the APEX Based RESTful Services page, deletes the original service, and runs the service expecting to call the ORDS service, the user instead gets a 404 error.
- If a user creates new ORDS Based RESTful Services in the first provisioned schema but does not have corresponding APEX Based RESTful Services, a 404 error results when the user calls the services.

There is no supported resolution at this time.

Issue when Migrating Application Express RESTful Services with a Null URI to ORDS

Issue

Prior to 5.1, the Application Express RESTful Services interface enabled users to create RESTful service modules with a null URI Prefix (users could also create

multiple modules with null URI Prefixes). The URI templates in all modules had to be unique in order to share the null URI Prefix across the services.

Example Module Definitions with Null URI Prefixes

Consider the following definitions:

Module 1

```
Name:           MyMod1
URI Prefix:     NULL

URI Templates:  /Template1
                /Template2
```

Module 2

```
Name:           MyMod2
URI Prefix:     NULL

URI Templates:  /Template3
                /Template4
```

In effect, these definitions create a single virtual service with four templates with *null* for the URI Prefix. These can be called in the following ways:

```
http://server.com/ords/mySchema/Template1
http://server.com/ords/mySchema/Template2
http://server.com/ords/mySchema/Template3
http://server.com/ords/mySchema/Template4
```

Where:

- `http://server.com` - the **server URL**.
- `ords` - the **ORDS alias**.
- `mySchema` - the **Path Prefix**.
- `null` - the **null Module URI Prefix**. Does not appear in the call, but is processed by the services.
- `Template1` - the **URI Template**.

While the ability to create null URI Prefixes was disabled in Application Express 5.1, legacy services that were defined in prior releases were migrated and functioned as long as they were not deleted. However, when migrating these services to Oracle REST Data Services, the ORDS Based data model does not accept multiple modules with duplicate URI Prefixes (including null prefixes).

The logic to migrate APEX Based RESTful Services to Oracle REST Data Services in Application Express 18.1 is a simple pass-through to an Oracle REST Data Services procedure (introduced in Oracle REST Data Services 17.4.1). However, the logic of that procedure fails to process multiple modules with a null base path. Users in this

situation who try to migrate to Oracle REST Data Services encounter a "Duplicate Value" and throw an `ORA-0001` error (Oracle bug 27916570).

Resolution

Logic added to the migration procedure merges all modules that have null URI Prefixes. The rules are as follows:

Oracle REST Data Services 18.2

All affected modules collapse into a single ORDS Based module named `merged.apex.rest.services`

If **any** of the APEX Based modules being merged are published, the new merged module publishes.

If **none** of the APEX Based modules being merged are published, the new merged module does not publish.

All **roles** associated with APEX Based modules being merged are assigned to the new merged module.

The **pagination size** of the merged module is set to the largest pagination size in the modules being merged.

For APEX Based modules with null URI Prefixes that also have duplicate URI templates, the following occurs:

- The **most recently updated** template maintains the duplicate URI.
- All other templates are given the prefix `dup001_*`
- The comment for the template contains: 1) the original module name that it migrated from, and 2) the original Template URI.

Oracle Application Express 18.1

If you have **one module or none** with a null URI Prefix, the services migrate successfully regardless of your release of Oracle REST Data Services (the migration is only available in Oracle REST Data Services 17.4.1 or later).

If you have **two or more modules** with a null URI Prefix, one of the following occurs:

- If you have Oracle REST Data Services 18.2 or later, the modules migrate using the rules above.
- If your Oracle REST Data Services release is older than 18.2, a warning message displays and you cannot migrate your services to Oracle REST Data Services until you upgrade to 18.2 or later.

Issue when Using SQL Developer or SQL Scripts to Enable ORDS on an Application Express 18.1 or later Schema

Issue

This issue affects systems running ORDS 17.4 or prior and Oracle Application Express 18.1 or later.

This issue only affects schemas that are assigned to an Application Express workspace.

The issue occurs when you use SQL Developer or SQL Scripts (however, not RESTful Services in SQL Workshop) to enable ORDS for a schema, when that schema is also assigned to an Application Express Workspace.

RESTful Services ensures that the `ORDS_SCHEMA_ALIAS` and the `APEX_PATH_PREFIX` synchronize. However, when ORDS enables a schema using another method, the `APEX_PATH_PREFIX` does not sync. When these two items are out of sync, ORDS returns a 404 error when attempting to access ORDS services defined within the schema.

Resolution

To sync the `APEX_PATH_PREFIX` with the `ORDS_URI_PREFIX`:

1. In Application Express, click **SQL Workshop** then **RESTful Services**.
2. Click the **Configure** button to launch the ORDS Schema Attributes modal dialog.
3. For Schema Alias, select the alias.
4. Click the **Save Schema Attributes** button.

This sets the same value for both the `ORDS_SCHEMA_ALIAS` and the `APEX_PATH_PREFIX`.

Interactive Grid support for REST Enabled SQL

Issue

Oracle REST Data Services (ORDS) REST Enabled SQL has a limit of 1000 bind variables in a REST Enabled SQL request. As a result, when Interactive Grid DML sends more than 1000 column values, the following error displays: "Internal ORDS OUT Bind limits exceeded."

Solution

Reduce the amount of DML rows.

Legacy Team Development Workspace Attribute Issue

When a workspace administrator sets the Workspace level attribute `Enable Team Development` under the Legacy Team Development section to `NO`, the new Team Development application is also disabled.

Group By Component Type mode prevents Default View

Issue

Due to the removal of "Sort by Processing Order" and "Group by Component Type" from Page Designer, developers may be stuck in "Group by Component Type" mode without a way to switch back to the default view ("Sort by Processing Order").

Resolution

1. In Page Designer, open Developer Console in the browser, and run the following command:

```
JavaScript:pageDesigner.saveBoolPref( "GROUP_BY_COMPONENT_TYPE",  
true );
```

2. Refresh the page.

Language Support for Native PDF Printing in Interactive Grid

When you print unicode characters from scripts which require Complex Text (CTL) (such as Arabic, Devanagari, Hebrew, Tamil and Thai), those characters are substituted with a missing character (□) in the PDF document.

There is no resolution at this time.

Supported Languages

All Latin European Language Coverage: Albanian, Asturian, Basque, Bosnian Latin, Catalan, Croatian, Czech, Danish, Dutch, English, Estonian, Faroese, Finnish, French, Galician, German, Hungarian, Icelandic, Irish, Italian, Kalaallisut, Kashubian, Latin, Latvian, Lithuanian, Luxembourgish, Maltese, Manx, Northern Sami, Norwegian (Bokmål+Nynorsk), Polish, Portuguese, Romanian, Scottish Gaelic, Serbian Latin, Slovak, Slovenian, Spanish, Swedish, Swiss German, Turkish, Welsh, Western Frisian.

Additional Supported Latin-based Languages: Afrikaans, Fijian, Filipino, Inuktitut Latin, Kinyarwanda, Luba-Lulua, Malagasy, Malay, Nauru, North Ndebele, Northern Sotho, Nyanja, Palauan, Rundi, Sango, Shona, South Ndebele, Southern Sotho, Swahili, Swati, Tokelau, Tsonga, Tswana, Turkmen, Tuvalu, Xhosa, Zulu.

Cyrillic Language Coverage: Russian, Belarusian, Bosnian, Bulgarian, Macedonian, Serbian, and Ukrainian.

CJK Language Coverage: Simplified Chinese, Traditional Chinese, Japanese, and Korean.

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>.

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Privacy Notice

This privacy notice describes what to expect when Oracle Application Express directly collects information about users of applications that you create or install. Note that all Application Express internal applications (such as Application Builder) are written in Application Express, so the same facts apply to developers and administrators who are using these applications. Oracle is not responsible for information collection of applications that were developed by customers.

Event Logging

Application Express provides extensive logging of user triggered events. For example, developers and administrators can use this data to find security and performance issues. The log data includes the user's IP address and application username plus event specific information. Below is a brief list of event log types.

- **Activity Log** - Page views and Ajax requests. Can be disabled by developers and instance administrators.
- **Login Access Log** - Successful and failed login attempts.
- **Debug Log** - Application-specific instrumentation, such as internal variable values. Disabled by default, the debug log can be enabled by end users and developers.
- **Click Count Log** - Clicks on external links within applications.
- **Web Service Activity Log** - Requests to external web services from inside the database.
- **Developer Activity Log** - Changes to application components.
- **SQL Workshop Log** - History of SQL statements in the development environment's SQL Workshop.

Cookies and Related Technologies

Application Express does not use any third-party cookies, but it does use functional cookies (no tracking) and the browser's SessionStorage and LocalStorage for maintaining the login session and for personalization. This is essential for application

security, performance, and ease of use. Below are details about the cookie and storage names that Application Express uses and their intended use.

Session Cookies

- `ORA_WWV_USER_instance id` - Security cookie for internal applications, like Application Builder.
- `ORA_WWV_APP_application id`, `ORA_WWV_APP_workspace cookie id`, `custom name` - Security cookie for applications. Developers can choose custom cookie names in an application's authentication scheme.
- `ORA_WWV_RAC_INSTANCE` - Session cookie for the Real Application Cluster (RAC) node instance number, for node pinning on the web server. Only sent when multiple RAC nodes are detected.

Persistent Cookies

- `ORA_WWV_REMEMBER_LANG` - The user's selected application language.
- `ORA_WWV_REMEMBER_UN` - (Optional) Workspace and username of the previous login to the development environment login page. See check box "Remember workspace and username" on the development environment login page for details.
- `LOGIN_USERNAME_COOKIE` - (Optional) Username of the previous login to developed applications. See check box "Remember username" on login pages of new applications for details. To make this cookie optional on login pages of existing applications, add a "Remember username" checkbox to the page. The API documentation for `APEX_AUTHENTICATION.GET_LOGIN_USERNAME_COOKIE` and `APEX_AUTHENTICATION.SEND_LOGIN_USERNAME_COOKIE` has examples for the PL/SQL process code to set the check box value and to only send the cookie when the check box is checked.

Session Storage

- `ORA_WWV_apex.builder.devToolbar.grid` - This stores the current setting of the Development Toolbar's Show Layout Columns option.
- `ORA_WWV_apex.builder.themeRoller.application id.*` - This stores settings of the Development Toolbar's Theme Roller popup.
- `.4000.4500.*` - This stores the current tab in each of the tab sets of Page Designer.
- `APEX.userHasTouched` - This is used to remember if the user has interacted with the application using touch (a touchstart event has been seen). It is used by some components to customize the user experience when using touch devices.
- `.application id.page.*.activeTab` - This remembers the last tab selected for Region Display Selector regions or regions using the Tabs Container template that have enabled the option to save the current tab
- `ORA_WWV_apex.Calendar.application id.page.region id.lastview` - This remembers the last viewed calendar period.

- `.application id.page.*.preferenceForExpanded` - This remembers the expanded state for collapsible regions.
- `ORA_WWV_apex.MED_*.splitterPosition` - This stores the splitter bar position for various Interactive Grid settings dialogs.

Local Storage

- `ORA_WWV_apex.builder.devToolbar.options` - This stores the Developer Toolbar user preference settings: Auto Hide, Show Icons Only, and Display Position.
- `ORA_WWV_apex.builder.pageDesigner.useComponentView` - This stores the users preference for the Page Designer's Component View tab.
- `ORA_WWV_apex.builder.pageDesigner.model.componentIds` - This stores a pool of not yet used IDs for new components in Page Designer.

Check for Updates

When developers log in to the Application Express development environment, they get a notification when a new version is available. To get this version information, Application Express sends a request to an oracle.com server on a bi-weekly basis. It passes anonymized, statistical information about the development server (such as database version and Application Express component usage) that the Application Express product development team uses to make decisions about the products' future. This check is enabled by default, but can be disabled by instance administrators. To learn more, review the `CHECK_FOR_UPDATES` parameter in "APEX_INSTANCE_ADMIN" in the *Oracle Application Express API Reference*.

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