



Vertex Indirect Tax O Series 9.0 SR11 MP2

Release Notes

November 2022

These Release Notes provide information about the latest release of the Vertex® Indirect Tax *O Series*® platform. For each Major Release (for example, O Series 9.0), Vertex issues Service Releases (for example, O Series 9.0 SR1) that contain enhancements and fixes for defects. In between Service Releases, Vertex issues Maintenance Packs (for example, O Series 9.0 SR1 MP1) that address higher-priority defects.

These notes are not meant to replace the documentation and online help. For detailed information about installing and using Vertex software, refer to the Documentation (see page 139) section.

All information in these Release Notes and the accompanying documentation is subject to change with subsequent service releases.

Release 9.0 SR11 MP2

Calculation Engine change

Fix

1. An issue where tax was applied to shipping charges when there was no tax in the invoice is resolved.

Release 9.0 SR11 MP1

System changes

Fixes

1. An issue where the Tax Journal Export failed is resolved.
2. An SR11 issue where the Tax Journal Export ran successfully but no transactions were moved to the Reporting database is resolved. This issue occurred when both of these conditions existed:
 - The Direct Data Movement parameter `taxjournalexport.EnableDirectCopy` was enabled in the `vertex.cfg` file.
 - The **Segment** check box on the Tax Journal Export filter page was not selected.

If the **Purge Data After Export** check box was selected at the time of export, potential data loss was possible.

Release 9.0 SR11

API change

Tax Configuration API change

Multiple configuration endpoints that enable you to manage locations for Taxpayers were added to the Tax Configuration APIs. More information can be found on the Vertex Developer Network's Tax Configuration REST APIs page (<https://tax-config-api.vertexcloud.com/>).

TaxGIS in Retail LITE

TaxGIS for LITE is enhanced to run fully cached TaxGIS data to improve Tax Area Lookup, enabling full TaxGIS capabilities.

Complete these steps:

For your full deployment at central headquarters

To generate a Tax Engine Extract (TEE) file that contains the data necessary to run a fully cached TaxGIS:

1. Add `taxgis.jurisdictionfinder.retail.v2=true` to your `vertex.cfg` file.
2. On the Vertex O Series user interface's Tax Engine Extract page, select an **Update Type** of **Global**.

Note: After you set `taxgis.jurisdictionfinder.retail.v2=true`, the **Tax Areas** options don't apply. Use the default value.

3. Copy the file to your point-of-sale (POS) location.

For your POS deployment

1. Copy the TEE file to `vertexroot\data\taxdata`.
2. Add these parameters to your `vertex.cfg` file:
 - `taxgis.jurisdictionfinder.enable.class.overrides=true`
 - `taxgis.jurisdictionfinder.JurisdictionFinderPersisterClass=com.vertexinc.vec.taxgis.persist.VecTaxGisPersister`
 - `taxgis.jurisdictionfinder.LookupStrategyClass=com.vertexinc.vec.taxgis.domain.VecLookupStrategy`
 - `taxgis.jurisdictionfinder.VecCacheClass=com.vertexinc.vec.taxgis.persist.zip.VecTaxGisZipCache`

Calculation Engine changes

1. An issue in which the calculation result returned an incorrect VAT Registration ID when the Place of Supply (situs) location was swapped is resolved.

With this release, the taxing jurisdiction VAT registration number for the buyer is returned if the buyer is VAT registered in that jurisdiction. This change affects supply of services with situs treatments of Default Services and Electronically Supplied Services for international locations outside the United States and Canada. It may also affect certain cross-border supply-of-goods transactions.

For example, if a supply of service is taxable in Germany and the buyer is registered for VAT in Germany, Vertex O Series returns the buyer's German VAT registration number. If the buyer is not registered in the taxing jurisdiction, Vertex O Series returns the VAT registration number based on alphabetical order.

As a result of this change, certain workarounds or Tax Assist rules you may have created to select VAT registration numbers for buyers may no longer be needed. Vertex recommends you review your existing Vertex O Series configuration to determine if any existing workarounds or Tax Assist rules are still needed.

2. An issue where out of sync tax registration dates - for example, if the end date of the tax registration is before the start date of the taxpayer - caused tax calculations to stop is resolved.
3. An issue in which a US country-level registration was causing tax to be calculated in local jurisdictions of an unregistered state is resolved.
4. An issue that caused a null pointer exception (NPE) when running transactions in a multiple-thread environment is resolved.
5. An issue where Vertex O Series returned inconsistent results when the Transaction Dump setting was enabled and a Tax Assist rule was in place is resolved.
6. An issue in which Federal Withholding Tax was included in Total Tax for service transactions in Brazil is resolved.
7. An issue in which Vertex O Series successfully calculated a transaction after a timeout-failure response is resolved.

Configuration parameter changes

Settings

The following parameters are located on the O Series user interface in System > Administration > Settings:

1. With the new **Push Tax Assist Location to Transaction Level** setting, you have these options for applying a line-item location assigned via Tax Assist:
 - Use the default setting of `true` to promote the location to the transaction level, where it is shared by all line items.
 - Set this parameter to `false` to have the location apply only to the line item that triggered the Tax Assist rule.
2. The freight category code **Ancillary Delivery Charge** was added as a selection in the **Setting Value** drop-down list of the **Default Freight Category Code** setting. This category contains Vertex tax rule content for the European Union, UK, Switzerland, and Norway. Fees charged for transportation of the goods are regarded as ancillary to the supply of the underlying goods.

New configuration parameter

The `taxjournalexport.journalSegmentSize` parameter enables you to set the segment size of journal data being moved to the Reporting database via the Direct Data Movement feature. If you do not add this parameter to the `vertex.cfg` file, the default segment size is `100000` records.

Database change

1. In support of future functionality for backdating tax rules, the `historicallyConsistentInd` field was added to the `TaxRule` and `TaxRuleDetail` tables.

Retail Tax Extract (RTE) change

1. An issue in which the Retail Tax Extract (RTE) incorrectly showed a tax amount when a bracket tax rule was deferred to a nontaxable or exempt tax rule is resolved.

Optimized data taxability changes

An issue with the taxability differences between the optimized Monthly Data Update (MDU) and the standard MDU is resolved in SR11. These differences were evident in the Taxability Matrix and Transaction Tester results.

In the SR10 Release Notes packaged with the build, it was mistakenly reported that the issue was resolved. The SR10 Release Notes were updated. We apologize for the inconvenience this documentation error may have caused.

Performance changes

1. An error that was causing Spring log files to be mistakenly created is resolved.

Tax Setup changes

Enhancement


1. The **Archived Rules** check box was added to the Taxability Mapping Advanced Search page. When selected, the results include mappings tied to archived and deleted optimized rules.

Fixes

1. An issue in which the Vertex O Series user interface was not displaying the expected error message, or writing the error to the log file, when a duplicate tax rule was being created is resolved.
2. An issue in which user-defined invoice text codes were not displayed in the **Invoice Text** field when creating or updating an invoice text rule is resolved.
3. When editing a Tax Assist rule, the **End Date** in the calendar now defaults to the currently selected As of Date. This fix resolves an issue where – when the Start Date was set to a date earlier than the As of Date – the End Date defaulted to the Start Date of the rule.
4. In the Allocation Tables feature, a record now properly displays the record type - FixedAmount, Percent, or Remainder - that you select from the **Type** drop-down list. This fix resolves the issue where the record type displayed as *undefined*.

Reporting changes

1. An issue where multi-partition users could run reports only in their default partition, even when having permissions in other partitions, is resolved.

2. When setting up a filter in a Custom Reports - VRA extract definition, the **In List** and **Not In List** operators now provide  so you can select from a list of possible values. This fix resolves an issue where the selection lists did not display, requiring you to enter precise values.

System changes

Enhancement

1. A check was added to the Tax Journal Export process that compares the record counts between the tax area jurisdiction names table from the TPS schema and from the Reporting schema. If there is a difference, the Tax Journal Export job is set to a warning status and a message is created.

Fixes

1. For the Returns Export feature in Data Management, the option to **Select All** jurisdictions is now available on the **Jurisdictions** drop-down menu.
2. In the Data Management Task Log, the export file name that was specified when a task was run is now retained during a download. This fix resolves an issue where file names changed to `download.txt` during downloads.
3. An issue with cache refresh, where one cache was not being refreshed after a monthly data update was applied, that caused inaccurate license information in a multi-partition environment is resolved.
4. Vertex O Series no longer logs a message when no conversion rate exists for the specified currencies. In this instance, no error is returned to the user, and a 1:1 conversion rate is used.

Accessibility improvements

Vertex is committed to ensuring the use of O Series for all users, including people with visual, auditory, and neurological disabilities. With this release, we continue to make improvements to keyboard focus indication and screen reader conformance, making it easier for impaired users to navigate the interface. Vertex will continue to improve the accessibility of the user interface in upcoming releases.

Installation note

Java Development Kit 11 (JDK11) and the Oracle WebLogic Server

Access to hyperlinks on the O Series user interface home page is blocked when using Oracle WebLogic Server 12.2.1.4.

To correct this issue, set the `-DUseJSSECompatibleHttpsHandler` option in `JAVA_OPTIONS` in the WebLogic startup script to `true` and restart WebLogic. Refer to WebLogic documentation for steps on how to set `JAVA_OPTIONS`.

Upgrade older versions of WebLogic to 12.2.1.4.

Known issues

Transaction Tester document date refresh

The document date in the Transaction Tester user interface refreshes to the current As of Date after the Calculate button is clicked. The correct date is maintained in the XML request and used by the Calculation Engine to process the transaction.

This will be resolved in a future release.

Certificate Center-O Series sync interval

The Sync Interval setting configures the amount of time between sync operations for the two applications.

Vertex recommends that you do *not* set the interval less than 1 minute. Shorter intervals may cause unexpected delays. The default is 5 minutes.

Release 9.0 SR10

Deploy the O Series Configuration API before applying 9.0 SR10

To deploy the O Series Configuration API, you must make a change to the `vertex.cfg` file before applying the Vertex O Series 9.0 SR10 patch to either an existing Vertex O Series 9.0 instance or to a new 9.0 installation.

Note: Backup the `vertex.cfg` file before you make any changes to it.

Complete the following steps to edit a parameter in the `vertex.cfg` file:

1. Access the `vertex.cfg` file on your network.
2. Use a text editor to do the following:
 - a. Open the `vertex.cfg` file.
 - b. Locate the `web.applications` parameter.
 - c. Add O Series Configuration API to the parameters. For example, your change may look like the following:

From:

```
web.applications=O Series UI,O Series Calculation Services,O  
Series Configuration Services,Exemption Certificate Portal
```

To:

```
web.applications=O Series UI,O Series Calculation Services,O  
Series Configuration Services,Exemption Certificate Portal, O  
Series Configuration API
```

- d. Save the `vertex.cfg` file.
3. Stop your web application service.
4. Restart your web application service to make the changed `vertex.cfg` file effective.

Track your changes to the `vertex.cfg` file and the backup files. See the *Configuration Parameters Reference Guide* for more information.

If the web.applications parameter is not present in the vertex.cfg file

- The O Series Configuration API is deployed by default, just like all other WAR files. In this case, you do not need to configure the web.applications parameter.
- You can copy and paste the **To:** version from the procedure above to the vertex.cfg file, and edit it to your specific needs. This also causes the O Series Configuration API to be deployed when the patch is applied.

Set up multiple web services if needed.

API changes

Vertex Developer Network

Documentation for all available Vertex Indirect Tax O Series APIs can now be accessed from the Vertex Developer Network at <https://developer.vertexcloud.com>.

Tax Calculation API fix

An issue where taxes calculated correctly at the LineItem level were not displayed in the response is resolved.



Tax Configuration API change

Vertex Indirect Tax O Series Configuration REST APIs are now available for On-Premise and O Series Cloud users. Documentation of the Configuration REST APIs was added to the Vertex Developer Network site and can be accessed with other API documentation at developer.vertexcloud.com or accessed directly at tax-config-api.vertexcloud.com.

Accessibility improvements

Vertex is committed to ensuring the use of O Series for all users, including people with visual, auditory, and neurological disabilities. With this release, several accessibility requirements are addressed, making it easier for impaired users to navigate the interface.

Improvements to keyboard focus indication and screen reader conformance now apply to these elements on selected pages:

- Buttons, such as Search, Save, Close, and Refresh
- Check boxes
- Radio buttons
- Table navigation controls
- Date pickers
- The state of accordion elements – such as Advanced searches – that expand and collapse
- Tax Assist navigation
- The  and  icons, for Vertex-defined entities and user-defined entities

Vertex will continue to improve the accessibility of the user interface in upcoming releases.

Batch Client Interface (BCI) changes

1. An issue with BCI that caused duplicate transactions when more than one application server is configured to run the BCI process against a shared BCI database is resolved.
2. An issue with BCI that caused a script to fail when using the control table to send batches, and sending a large number of batches, is resolved.
3. The length of the Intrastat Commodity Code field was changed from 8 characters to 10 characters.

Calculation Engine changes

Fixes

1. An issue in which a negative amount entered as a new line item to credit a previous line item amount on a PO-backed invoice calculated incorrectly is resolved.
2. An issue in which the calculation result for a transaction was incorrect when line item numbers were omitted or repeated is resolved.
3. An issue in which the nominal rate calculated incorrectly for a line item is resolved.

4. An issue in which distribute tax events for Colorado and Oklahoma caused input tax errors is resolved.
5. Transaction Tester response times were improved for simple quotation and invoice requests.
6. An issue where an active registration was treated as unregistered during calculation was resolved.
7. An error with the LITE Calculation Engine failing to find VAT group data in the Tax Engine Extract file was resolved. The LITE Calculation Engine no longer attempts to retrieve deprecated VAT group data.
8. An issue where the use of conflicting taxability category mappings caused transactions to be identified incorrectly as taxable is resolved.
9. An issue where user-defined taxability changes were not being recognized by the calculation service, even after restart, is resolved.
10. A Brazil Differential ICMS (DIFAL) tax rounding issue, which occurred when processing a Sales Order and Invoice for an End Consumer - Non-Taxpayer, is resolved.

Database changes

1. In support of identifying a customer as a nonCommercial entity, the `nonCommercialInd` field was added to the `PartyDetail` table in the TPS schema.
2. In support of Vertex Certificate Center, the `customLookupField1Value` column was added to the `PartyDetail` table in the TPS schema.

Supported platforms changes

Enhancements

1. Support for the PostgreSQL 13 and PostgreSQL 14 database servers was added.
2. Support for IBM DB2 11.5 database server was added.
3. Support for Red Hat Enterprise Linux (RHEL) 8 operating system was added.

Upcoming changes

Vertex is providing the following information about upcoming supported platform changes to assist with your planning. The vendors of these platforms have retired or are about to retire standard support for these versions. With a future service release (O Series 9.0 SR12), support will be ending for the following:

Database servers

- Oracle 12
- Postgres SQL 10
- Microsoft SQL Server 2014
- Microsoft SQL Server 2016
- Microsoft SQL Server 2017

Operating systems

- Red Hat Enterprise Linux (RHEL) 7
- Windows Server 2012 R2
- Windows Server 2016

JAVA version

- JDK 1.8 (Java 8)

My Enterprise changes

Enhancement

1. A **Non Commercial** check box was added to the General tab on the Add Customer page. When selected, this check box indicates that the customer is not a business for tax calculation purposes.

Fix

1. For identifying the taxability drivers to which a limited certificate applies, the ability to **Select All** drivers and **Clear All** drivers are now provided in the Select Taxability Drivers dialog box.

Tax Setup change

1. Previously, the Taxability Analysis tab displayed incorrect taxabilities for some items when the optimized MDU file was enabled. This was resolved.

Reporting changes

Enhancement - Standard Reports

1. The Taxability Matrix Report now provides taxability information for Leasing and Rental taxability categories in the United States, Mexico, and Canada. A new **Transaction Type** field enables you to select Sales, Lease, or Rental for your reports.
2. When setting up filters for extract definitions in Custom Reports-VRA, you can now click an icon to identify more than one **Value** for an **Operator of In List**.

Fixes

1. An issue that caused data extracts that were submitted via web services to fail was resolved.
2. An issue that caused two-digit decimal codes of numeric Flex Fields to be truncated - for example, 150.33 truncated to 150 - in the Transaction Detail report was resolved.

System changes

Enhancements

1. If you use Vertex Certificate Center, the system-level **Sync Executor Count** setting enables you to configure the number of executors syncing between O Series and Certificate Center. The setting's value is the number of partitions that can actively sync in a given interval.

Enter a whole number greater than 0.

The default is 5.

The maximum is 250.

2. Tax Engine Extract is updated to include a new **Export to Cloud** check box. This feature enables you to upload the TEE file to O Series Cloud for use by O Series Cloud services (if available).

Selecting this check box:

- Differentiates this file from TEE files that are meant for Vertex Retail LITE POS
- Moves the files to a staging area to be handled by the Cloud upload process

3. Enhancements were made to ensure that Vertex O Series is logging certain error messages at a more meaningful level.
 - Vertex O Series no longer logs a message about the transaction threshold limit. The transaction threshold limit is still included on the About page.
 - In certain cases, `Validate XML with schema` errors were changed to the DEBUG logging level, rather than the ERROR logging level. By default, these errors no longer display. If you want these messages to display, refer to "Enable Schema Validation" in the *Configuration Parameters Reference Guide*.
4. An issue with opening or generating PDFs within O Series was resolved.
5. A new setting - **Allow Fair Market Value and Extended Price to have different signs** - enables you to allow the fair market value and extended price of a line item to have different signs. For example: if the value of a returned item is recorded as a *negative* amount, but you need to show the fair market value of the item as a *positive* amount. For more information about this setting, refer to the *Vertex O Series Help*.
6. Security enhancements were applied to Exemption Certificate Manager (ECM).

Fixes

1. You can now run a Returns Export task for one day by selecting the same Start Date and End Date. There is no longer an error when the same start and end dates are selected for this task.
2. In the Settings feature, the **Search** field now filters the Settings table to display only those setting names that have text that matches the typed character string. For example, if you type `historic` in the **Search** field, the Settings table displays **Allow Historical Edits** and **Approximate Tax Areas Historically**.
3. An issue where the Alabama Rental Tax was included in calculations when the **Disable the Gross Receipts Tax Imposition Type Inclusion Rules in Alabama** setting was set to `true` is resolved.
4. An issue where changes to a user role for multi-partition users did not always display on the Users data extract (**Reporting > Custom Reports -VRA > Extract Results > Users**) is resolved.
5. An issue where a user assigned the Master Administrator role was not able to view **Client Credentials** when their default partition was not the Admin partition is resolved.
6. An issue where log files were not sortable by column is resolved.
7. The Exemption Certificate Portal (ECP) was updated to prevent login errors after creating a new user and when using multiple browsers within a session.

8. An issue where processing order user settings stopped working after patching to O Series 9.0 SR8 is resolved.

Known issue

While you can create Client Credentials for a user who doesn't have an API user role, those credentials do not work when you make a call through the REST API. This will be fixed in a future release.

Release 9.0 SR9 MP2

Calculation issue

1. For the Colorado Retail Delivery Fee that is effective as of July 1, 2022, O Series was enhanced so that this fee is applied appropriately to qualified transactions. If your business is affected by this fee:

- To apply the fee once per invoice when multiple delivery charges are billed on an invoice, you must apply O Series Interim Update 223.01.
- To prevent the fee from applying to invoices where all line items are nontaxable, install the O Series 9.0 SR9 MP2 maintenance pack.
- It is no longer necessary to map nontaxable items to the **Colorado Retail Delivery Fee 100% Exempt** qualifying condition. You can delete these mappings.

Note: *If you are unable to apply the O Series 9.0 SR9 MP2 maintenance pack before July 1, 2022, Vertex recommends that you continue mapping to the **Colorado Retail Delivery Fee 100% Exempt** qualifying condition for invoices containing all exempt or nontaxable items.*

Vertex will add returns filing codes for the fee in Returns Update 307 in July.

Release 9.0 SR9 MP1

Security issue

To address the security vulnerability in the Spring Framework libraries (Spring4Shell, CVE-2022-22965), the O Series release was updated to mitigate the risk based on the recommended approach from Spring / VMWare.

There were no changes required for the Spring Framework Cloud vulnerability (CVE-2022-22963).

Release 9.0 SR8

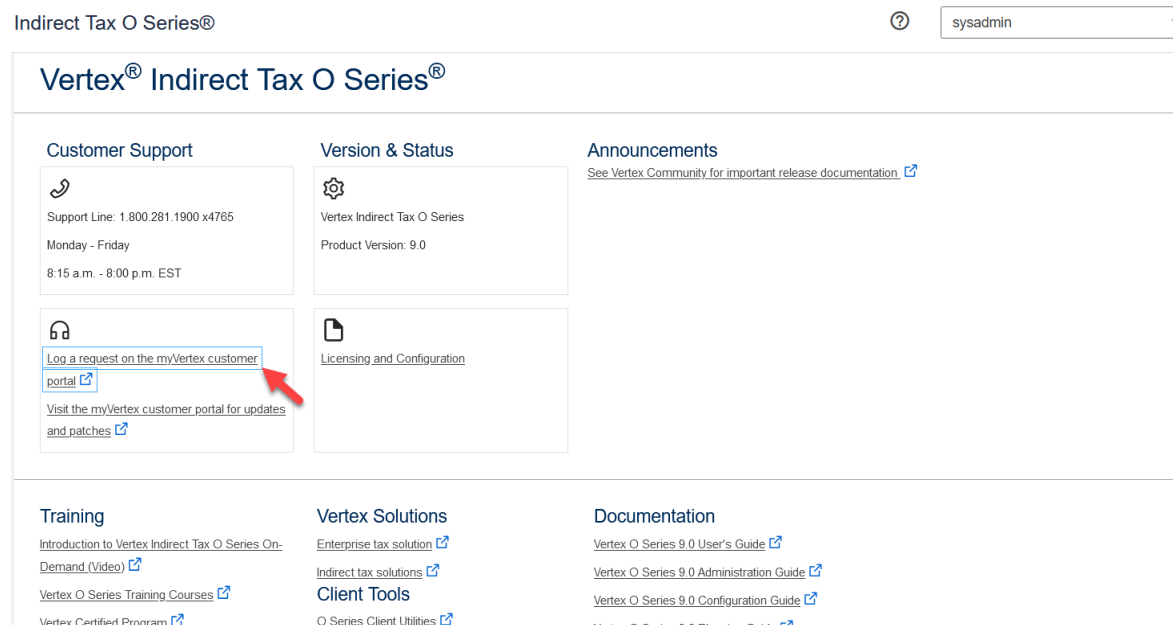
Security issue

The Apache Tomcat log4j2 libraries in Vertex O Series are updated to version 2.17.1 to remediate a number of vulnerabilities that have been discovered. For additional information, refer to the communication on Vertex Community (<https://community.vertexinc.com>). (OS25673)

Accessibility improvements

Vertex is committed to ensuring the use of O Series for all users, including people with visual, auditory, and neurological disabilities. With this release, several accessibility issues are resolved, making it easier for visually impaired users to navigate the interface. The improvements to the Vertex Indirect Tax O Series home page are:

- The layout and design was changed to increase accessibility.
- Focus indicators (the blue outline shown below) display on all interactive elements when an element is in focus.
- Larger standard icons, with alternate text for each icon that can be read by screen readers, were added. (OS24992, OS24993, OS24994)



My Enterprise changes

Enhancements

1. The bulk upload of taxability drivers has several enhancements:
 - It now handles simultaneous processing of batches. You can upload multiple CSV files, one after another, without waiting for a previous file to complete processing before starting another upload.
 - It provides columns for Start Date and End Date in the template files so you can identify the effective dates for each driver record. (OS24985)

2. If you license Vertex Certificate Center when it becomes available, you can set up an information sync with O Series so data flows between the applications. (ECM5958)

The sync occurs in specific ways based on the type of information.

For example:

- New customers can be created in either application, but changes to approved customers can only come from O Series.
- Certificate information only flows from Certificate Center to O Series, and only approved certificates are part of the sync.

You can find more information on:

- Sync specifics in the *O Series Help*
- O Series settings to enable sync in the *Configuration Parameters Reference Guide*.

Tax Setup changes

Enhancement

1. The bulk upload of taxability mappings has several enhancements:
 - It now handles simultaneous processing of batches. You can upload multiple CSV files, one after another, without waiting for a previous file to complete processing before starting another upload.
 - It provides columns for Start Date and End Date in the template files so you can identify the effective dates for each mapping record.

(OS24985)

Fix

1. On the Taxability Analysis tab, fields were expanded to fully display the contents. (OS16684)

Tools change

Enhancement

1. A script was created to increase the length of the **Intrastat Commodity Code** (Transaction Tester > Line Item > Other tab) from 8 to 10 characters to accommodate new reporting requirements. If you have questions or need the script, contact Vertex Customer Support. (OS25031)

Reporting changes

Fixes

1. These issues with the Tax Rules, Taxability Mapping, and Data Update Impact (Tax Rules) data extracts were resolved:
 - The extracts did not properly reflect the optimized tax rules after an update to Tax Rule Optimization (TRO).
 - The extracts sometimes failed when certain fields were selected. (OS23172)
2. For the Returns Export Reports in the Standard Reports feature, an issue is resolved that prevented users in On-Demand deployments from selecting a file for export. The `Access Denied` message no longer displays when using the Select Files dialog box. (OS25676).

System changes

Enhancements

1. The Tax Journal Export direct copy process was enhanced to work with a Postgres database. Refer to the Direct Data Movement chapter in the *Configuration Parameters Reference Guide* for more information. (OS1026, CR108636)
2. If you license Vertex Certificate Center when it is available and set up a sync with O Series, you can override the default environment for your sync.

For example, if you want to sync O Series with a Certificate Center Development environment, add these lines to your O Series `vertex.cfg` file:

```
cloud.auth.serviceUrl=dev_auth_url  
ccc.serviceUrl=dev_ccc_url
```

The `dev_auth_url` and `dev_cc_url` represent the locations of your alternate environments. There are no default values.

Remove these lines from the config file to resume syncing to your production environment. (OS24421)

Fix

1. For the Tax Data Import feature, an issue is resolved that prevented users in On-Demand deployments from selecting a file for import. The `Access Denied` message no longer displays when using the Select Files dialog box. (OS25676).

Miscellaneous change

1. An issue is resolved that caused a null pointer exception during O Series startup and prevented web services from starting up. (OS25275)

Release 9.0 SR9

System changes

Enhancements

1. To support user management, it is now possible to filter users displayed on the **System > Security > Users** page by partition and by user name or email.
2. When importing a file, the Select File(s) dialog box is improved to reduce the number of steps required.

Fix

1. All log levels for log4j and logback are now set to WARNING (not INFO). This resolves an issue with excessive debug logging. (OS23742, RQ66546).

Calculation Engine changes

Fixes

1. The Calculation Engine now correctly processes the NO_TAX element when a taxpayer is not registered in a jurisdiction. It now creates a NO_TAX element for the primary imposition, rather than the first imposition (alphabetically by name). (OS25071)
2. An issue in which Distribute Tax transactions were not processing correctly for small tax amounts is resolved. (RQ66542)

Database changes

Enhancement

1. In support of a future bundling feature:
 - New tables were added to the TPS schema.
 - New columns with foreign key constraints were added to existing tables in the TPS schema.

On-Demand change

Enhancement

1. Changes were made to enable Enterprise SSO in On-Demand. Enabling this feature will require assistance from a Vertex On-Demand Administrator. When it is available, instructions on how to enable Enterprise SSO will be posted to Vertex Community.

Release 9.0 SR8 MP1

System changes

Enhancement

1. Vertex shortened the default Certificate Center Sync Interval from 15 minutes to 5 minutes.
If you license Vertex Certificate Center and set up an information sync with O Series, the Sync Interval determines how often the applications check for changes in the records that are shared. You can adjust the sync interval in O Series. Navigate to **System > Administration > Settings > Certificate Center** as a Master Administrator.

Fix

1. The issue in which LDAP users could no longer log in to O Series is resolved. (RQ69365)

Calculation Engine change

1. An issue in which the Calculated Tax and Effective Rate was incorrectly populated in a child line item is resolved. (RQ71362)

Release 9.0 SR8

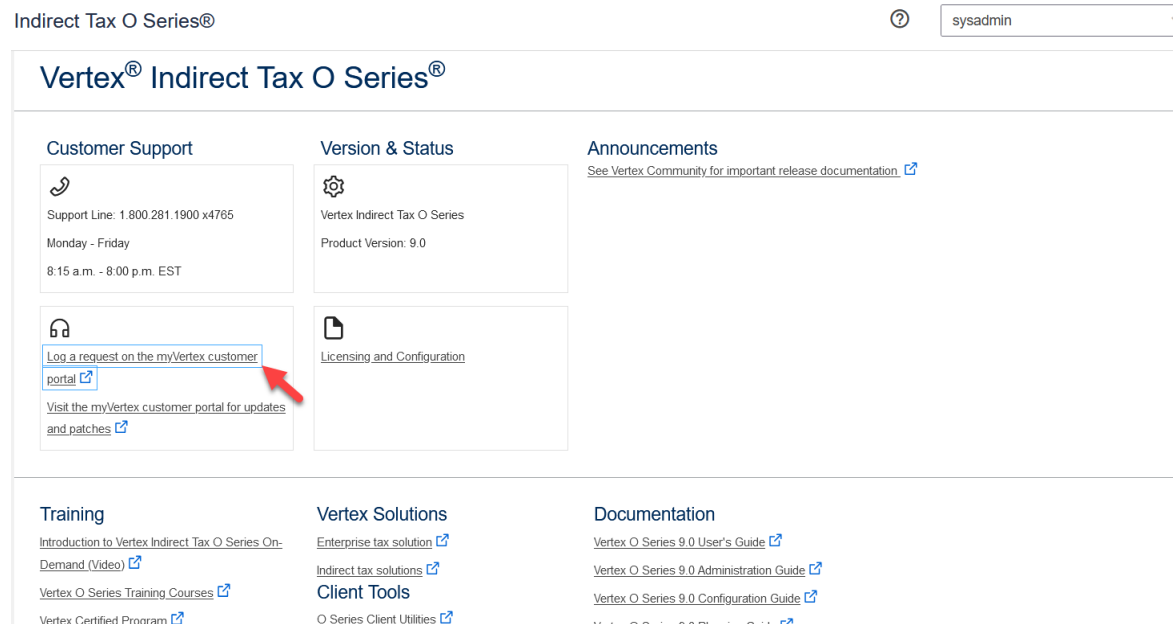
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 - The extracts did not properly reflect the optimized tax rules after an update to Tax Rule Optimization (TRO).
 - The extracts sometimes failed when certain fields were selected. (OS23172)
2. For the Returns Export Reports in the Standard Reports feature, an issue is resolved that prevented users in On-Demand deployments from selecting a file for export. The `Access Denied` message no longer displays when using the Select Files dialog box. (OS25676).

System changes

Enhancements

1. The Tax Journal Export direct copy process was enhanced to work with a Postgres database. Refer to the Direct Data Movement chapter in the *Configuration Parameters Reference Guide* for more information. (OS1026, CR108636)
2. If you license Vertex Certificate Center when it is available and set up a sync with O Series, you can override the default environment for your sync.

For example, if you want to sync O Series with a Certificate Center Development environment, add these lines to your O Series `vertex.cfg` file:

```
cloud.auth.serviceUrl=dev_auth_url  
ccc.serviceUrl=dev_ccc_url
```

The `dev_auth_url` and `dev_cc_url` represent the locations of your alternate environments. There are no default values.

Remove these lines from the config file to resume syncing to your production environment. (OS24421)

Fix

1. For the Tax Data Import feature, an issue is resolved that prevented users in On-Demand deployments from selecting a file for import. The `Access Denied` message no longer displays when using the Select Files dialog box. (OS25676).

Miscellaneous change

1. An issue is resolved that caused a null pointer exception during O Series startup and prevented web services from starting up. (OS25275)

Release 9.0 SR7

Major new feature


Vertex O Series 9.0 SR7 adds the Multi-Partition User feature, which enables:

- Users to switch between multiple partitions to which they are assigned, without logging out and signing back in under a different user name, as previously required.
- Users with Partition System Administrator role permissions to add users and assign roles in all the partitions that they administer, without logging out and signing back in under a different user name.


For more information about using this feature, refer to the *Vertex O Series Administration Guide*. Vertex plans to enhance the Multi-Partition User feature in upcoming releases. Check future release notes for details.

Accessibility improvements

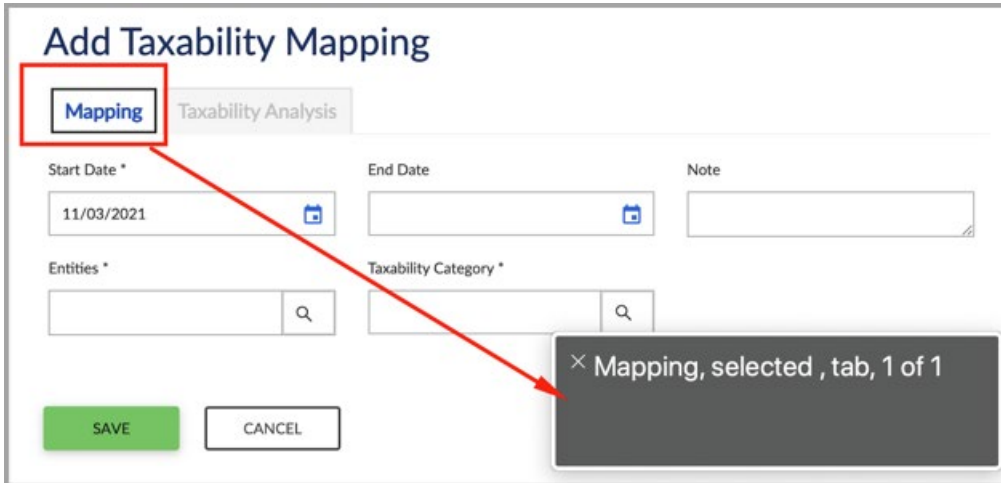
Vertex is committed to ensuring the use of O Series for all users, including people with visual, auditory, and neurological disabilities. With this release, several accessibility issues are resolved, making it easier for visually impaired users to navigate the interface. The improvements to accessibility of buttons and tabs are:

- Audible descriptions of icons and buttons that do not have descriptive text. (OS21349)
- Audible descriptions of tabs when they are in focus. (OS21333)
- Focus indicators on tabs that show when a tab is in focus. For better readability and clarity, the tab font is larger and bolder with more contrast. If there is a validation error on the tab, an  icon displays on the tab label. (OS24745)

Add Taxpayer

General 	Registrations	Locations	Discount Codes	Contact	Rounding Rules
---	---------------	-----------	----------------	---------	----------------

- Standard keyboard navigation across tabs. You press **Tab** to move to the next tab and **Shift-Tab** to move to the previous tab.
- Textual descriptions for the user interface element that is currently in focus. The text box provides better cues for what screen element is selected, uses sharper color contrast for visually impaired users, and explains any error states.



Additional accessibility issues will be resolved in future service releases.

My Enterprise changes

Enhancements

1. A new bulk upload capability for taxability drivers is available via the **Upload** button on the Taxability Drivers page. The bulk upload enables you to import multiple drivers into an O Series partition in a batch file. Vertex provides a template file that you populate with your information and then upload to the partition. (OS21483)
2. Additional custom fields are now available for customers. When you add a customer, you can enter values for up to 10 custom fields on the **Custom Fields** tab.

A system administrator can change the labels of these custom fields in the **System > Administration > Preferences > General** table.

If you license Vertex Certificate Center when it is available, the custom fields you populate in Vertex O Series can also display on the Certificate Center customer record via an automatic sync. (OS22102)

Tax Setup change

Enhancement

1. A new bulk upload capability for taxability mappings is available via the **Upload** button on the Taxability Mapping page. The bulk upload enables you to import multiple mappings into an O Series partition in a batch file. Vertex provides a template file that you populate with your information and then upload to the partition. (OS21483)

Reporting changes

Fix

1. An issue where a Custom Reports - VRA data extract definition with a very large record count would get stuck in a loop, increasing the record count, was resolved. (OS23838)

Retail Tax Extract (RTE) improvement

Fix

1. Vertex enhanced the Retail Tax Extract (RTE) to reduce memory usage and improve system performance. (OS24406)

System change

Fix

1. An issue that caused the Batch Certificate Import using Tax Data Import to not work was resolved. (OS22662)

Known issue

Web Services will not start

The Web Service process will not start if there are errors with the configuration of user-defined taxability categories.

The Web Service can be started with these errors by adding the following parameter to the vertex.cfg file:

```
tps.calc.TaxCatMapLookupEnabled=false
```

This will be resolved in a future release. (RQ69886)

Release 9.0 SR6 MP1

About the 9.0 SR6 MP1 Release

Vertex inadvertently introduced a defect in O Series 9.0 SR6. This 9.0 SR6 MP1 release is intended to replace the withdrawn 9.0 SR6 release.

My Enterprise change

1. File upload processing was improved for internal APIs by making the file upload directory configurable. (OS24626)

Note: A new bulk upload capability for taxability drivers will be available in the O Series 9.0 SR7 release. You can see the interface for this enhancement in the Taxability Drivers feature in 9.0 SR6 MP1 – via the **Upload Files** button – but it is not yet functional. The bulk upload will enable you to import multiple drivers into an O Series partition in a batch file. Vertex will provide a template file that you populate with your information and then upload to the partition. (OS21483)

Tax Setup change

1. Tax Assist includes three new fields available for use with both pre-calculation and post-calculation Tax Assist rules. These fields enable the addition or override of OSS (One Stop Shop) registrations in the European Union (EU):

- **seller.taxRegistration.type**
- **customer.taxRegistration.type**
- **vendor.taxRegistration.type**

(OS22695)

Note: A new bulk upload capability for taxability mappings will be available in the O Series 9.0 SR7 release. You can see the interface for this enhancement in the Taxability Mapping feature in 9.0 SR6 MP1 – via the **Upload Files** button – but it is not yet functional. The bulk upload will enable you to import multiple mappings into an O Series partition in a batch file. Vertex will provide a template file that you populate with your information and then upload to the partition. (OS21483)

Reporting change

1. An issue where users could not enter a specific date and time stamp in data extracts is resolved. The **Transaction Process Time** field now accepts a date and time stamp. (OS21484)

System changes

Enhancement

1. Vertex Cloud Indirect Tax Intelligence (ITI) is a separately licensable tax-specific, cloud-based data visualization, risk management, and business planning tool. It empowers tax professionals and indirect tax departments to optimize performance and maximize insights to improve tax outcomes and mitigate risks.

A link to ITI was added to the menu on the main O Series page. To learn more, click here (<https://www.vertexinc.com/solutions/products/vertex-cloud-indirect-tax-intelligence>). (OS22930)

Fixes

1. For transactions that involve direct pay permits in Texas, the Returns Export process now allocates local consumer use taxes to the appropriate tax category codes. O Series considers the special rules in Texas, which is a modified origin state with a hierarchy of what local taxes to collect. O Series allocates consumer use tax for different Texas localities (SPD/City/County) by assigning these tax category codes during a Returns Export process:

- Code 18 for City and County consumer use taxes
- Code 19 for SPD consumer use taxes

This change enables you to properly classify and report your tax data in Texas. It resolves an issue where O Series summarized local consumer use taxes on the Returns Export report, rather than breaking them out by SPD taxes and city/county taxes. This resulted in discrepancies between the Transaction Detail data extract and the Returns Export State Report. These reports now consistently report local consumer use taxes in Texas. (OS17276, VTX062915)

2. An issue that caused the Tax Data Import file to fail for Vertex Cloud customers is resolved. Now, you cannot edit the lookup table if the As of Date is earlier than the start date of the lookup table. (OS22523)
3. The About page now correctly displays the full URL value. This change resolves an issue where the full URL was not displayed after SSL was enabled. (OS21619)
4. This release resolves an issue with role creation, where a role created by a Master Administrator only displayed in the admin partition, rather than in all partitions and regardless of the partition in which it was created. Roles created by a Master Administrator now correctly apply globally to all partitions. (OS24613)

Security changes

1. An issue that occurred with user password changes is resolved. When making changes to an account, note that there is a cache refresh delay of up to five minutes; five minutes is the default setting, and it is configurable. (OS21919)
2. Security improvements were made with this release. (OS21668, OS21669, OS21385, OS22503)

Calculation Engine changes

1. For Purchase Order transactions with child line items – and a configuration where the **Calculate Vendor Tax** indicator is set to `true` – O Series now correctly calculates tax only for the seller. Previously, O Series calculated tax for both the seller (Seller Use Tax) and the buyer (Consumer Use Tax) for each jurisdiction. (OS19844)
2. For a tax-inclusive invoice verification transaction, with an extended price that was a negative amount, the issue that incorrectly identified the extended price and fair market value as having different signs is resolved. The logic that verifies the signs of extended price and fair market value now works as intended. This error occurred when the **Assume Vendor Registration for Invoice Verification** setting was turned on. (OS21300)
3. For Purchase Order (PO) and Evaluated Receipts Settlement (ERS) transactions in Canada – where the vendor is registered for GST at the country level, but not for PST at the provincial level – the appropriate tax rate is now applied for consumer use tax.

Previously, these transactions did not return the correct tax amount for consumer use tax. This issue occurred with PO and ERS transactions with the following criteria:

- The flag to calculate tax from both perspectives was selected (either **Calculate Self-Accrual** is selected in Transaction Tester or `calculateVendorIndicator=true` in XML request).
- A line-item tax had a tax type of Consumer Use Tax.

(OS22596)

Configuration parameter changes

1. If you license Vertex Certificate Center when it is released, settings were added to enable you to sync information with Vertex O Series:

- **Certificate Center Client ID**
- **Certificate Center Client Secret**

Both of these values are needed to enable sync. If you change the values later, sync may be affected.

- **Enable Sync** - Default is disabled, so sync must be enabled.
- **Sync Interval** - The amount of time between sync operations. Default is 15 minutes.
- **Sync Window Start Time** - The time of day sync operations begin. Default is 00:00.
- **Sync Window End Time** - The time of day sync operations end. Default is 24:00.

The sync interval, start, and end times are configured at the *system* level, not the partition level.

(OS21946, OS23404)

2. When setting up taxpayer registrations, you can disable certain impositions from applying in tax calculations for a jurisdiction. These impositions have a No Tax result. You can also enable the **Do Not Show NoTax Results** setting to suppress No Tax results in XML responses. Two new configuration settings enable O Series to return a No Tax result in the XML response when that result applies to either a primary imposition or to an output notice or invoice text code. The new settings are:

- **Return No Tax elements for primary impositions**
- **Return No Tax elements with Output Notices or Invoice Text Codes**

These settings override the **Do Not Show NoTax Results** setting so that impositions that are specifically disabled are removed from the XML response while other No Tax results are included in the response.

The settings also resolve an issue where a disabled imposition in a taxpayer registration was incorrectly included in the XML response as No Tax when the **Do Not Show NoTax Results** setting was enabled. (OS831)

Database changes

1. In support of improved import performance of tax rules during the Optimized Tax Rule Import, the index `XAK1TaxRuleQualCoS` was added to the `TaxRuleQualCondSet` table in the TPS schema. (OS21876)
2. Custom Field 4 through Custom Field 10 were added to the `PartyDetails` table in the TPS schema. (OS22100)
3. The `PartitionCccSyncDetail` table was added to the UTIL schema in support of the future release of the Cloud Certificate Center. (OS21831)

Performance changes

1. Performance is improved for transactions with a large number of line items and for configurations with a large number of taxability category mappings. (OS11978)
2. A defect in Vertex O Series error handling is resolved. This change resolves an issue that caused a null pointer exception (NPE). (OS22784)
3. An issue that caused the O Series UI to not load correctly when using certain load balancers is resolved. (OS23226)

Tax Rule Optimization changes

1. In an O Series instance that uses Tax Rule Optimization, an issue is resolved with Rate Lookup when using the **Show Previous/Future Rates** option in an advanced search. The issue prevented historic and future tax rates, start dates, and end dates from displaying correctly. The correct rates and effectivity dates are now returned and displayed successfully. (OS20062)
2. Several issues with the Tax Rules search after applying the optimized Monthly Data Update are resolved. (OS22983)

Release 9.0 SR5

Major new feature

Vertex O Series 9.5 adds RESTful application programming interfaces (APIs), enabling integration and access to web services through Hypertext Transfer Protocol (HTTP). RESTful APIs available in this release include:

- Calculation
- Tax Area Lookup
- Transaction Management

For more information about using Vertex O Series RESTful APIs to create your integration, refer to the *Vertex O Series RESTful API Integration Guide* and the online specifications at <https://tax-calc-api.vertexcloud.com/>.

Coming soon

Vertex Cloud Indirect Tax Intelligence (ITI) is a separately licensable tax-specific, cloud-based data visualization, risk management, and business planning tool. It empowers tax professionals and indirect tax departments to optimize performance and maximize insights to improve tax outcomes and mitigate risks.

As an introduction to ITI, Vertex is offering free access to two new ITI dashboards for our valued customers. The new dashboards will provide customers with powerful insights from their own company data.

The first ITI release will include these dashboards:

Dashboard	Description
Indirect Tax Dashboard	<ul style="list-style-type: none">• View your tax activity to easily identify trends and variances.• See a state-by-state summary of your sales and use tax data.
Nexus Risk Dashboard	<ul style="list-style-type: none">• Monitor your progress toward state nexus thresholds to identify upcoming registration needs.• View your sales transactions and dollar volumes by state and compare them against state nexus thresholds.

To learn more, click here
(<https://www.vertexinc.com/solutions/products/vertex-cloud-indirect-tax-intelligence>).

My Enterprise changes

Fixes

1. Changes were made to the way certificate search results display. An issue where the Images column on the Certificates page cut off some links to certificates is resolved. (OS13505, VTX64595)
2. An issue that caused slow performance when using user-defined roles while searching for or adding customers (**My Enterprise > Customers**) is resolved. (OS18709, VTX065876)
3. An issue that caused a search for a customer name to return multiple customers, rather than the specific customer for that name, is resolved. (OS12863, VTX063444)
4. An issue that caused a null pointer exception when end dating a taxability driver is resolved. (OS12967)
5. An issue where an upgraded O Series 9.0 customer could not end date a taxability driver without error is resolved. The issue occurred when there was a high number of user-defined tax rules associated with a taxability driver. (OS19671, VTX063533)

Tax Setup changes

Fixes

1. For a user-defined calculation rule where the **Use Standard Rate** option is selected, and multiple standard rates are present, the Rate field now displays **Varies** instead of a single rate. This fix prevents an error that occurred when multiple standard rules are present and **Use Standard Rate** was selected. (OS14816, VTX064151)
2. An issue with assigning volume via a Tax Assist Rule is resolved. (OS21570)

Tools changes

Enhancements

1. If a city changes its name, the new name is picked up together with the old name in the **City** field of the Transaction Tester. For example, when you enter **TYS** in this field, both Tysons Corner and Tysons are available to choose as the applicable city. (OS15308, VTX063999)

2. When you perform a Tax Area Lookup, the full Canadian postal code is returned when all the following apply:
 - The request is for an address in Canada.
 - **Retrieve Full Vertex Addresses** is selected.
 - The parameter `taxgis.lookupStrategy.CanadaPostalCodeOverride` is set to `true` in the `vertex.cfg` file.
- (OS20385, VTX062299)

Reporting changes

Enhancement

1. The ability to download reports as a ZIP file is added to the Extract Results, Report Output, and Log Files pages. From the **Actions** menu, select **Download**. (OS18548)

Extract Results

(ALL) SEARCH DELETE ALL REFRESH

Extract Name	Data Source	Template	Format	Run Date	Status	Record Count	Size (KB)	
Exempt Sales without Certificate Sample Report	Vertex O Series 9.0	Transaction Detail	PDF	06/28/2021 12:05 PM	COMPLETED	0	2	<div>Actions</div> <div>View</div> <div>Delete</div> <div>Download</div>

Showing 1-1 of 1 rows PREV 1 NEXT

Fixes

1. An issue that prevented some O Series 9.0 customers from running extract reports against previous versions of their Reporting database (O Series 4.0 through 8.0) is resolved. (OS19150, VTX066097)
2. An issue where a specific time could not be entered in the **Create Date** field for a Custom Reports - VRA data extract filter is resolved. A date with a data-type definition of date and time can be entered as a specific date and time stamp. (OS14207, VTX06404)
3. An issue where the loading indicator on the page didn't disappear when you deleted a report from the Extract Results page and there were no other reports listed in the table - meaning the table was empty – is resolved. (OS19769)

System changes

Enhancements

1. The Add Partition and Edit Partition pages (**Systems > Security > Partitions**) now include the following fields (OS20710, OS20494):
 - **UUID** - Displays the universally unique identifier for the partition. This field is display-only.
 - **Production** - Select this check box to include only production data on any reports, such as the Partitions data extract.
2. The partition element of the contextual bar is enhanced to be a partition selector. In this release, it displays only the current partition. With multi-partition user functionality, available in a future release, it will enable you to select other partitions to which you have access. (OS13727, OS19972)

Fixes

1. An issue where an upgraded O Series 9.0 customer could not log in to O Series using a newly created user is resolved. (OS10556, VTX062347)
2. An issue where O Series failed to start when log4j logging is enabled is resolved. (OS21165)
3. An issue in which an attempt to delete the Admin partition returned an error of `System partition cannot be deleted` is resolved. (OS21489)
4. An issue in which multiple database connections were erroneously opened while viewing the Reporting database is resolved. (OS18443, VTX065740)
5. A user clicking the **View** link on the Task Log page can now view task log details for Tax Journal Export and Tax Journal Purge tasks. This issue occurred only when the report was run by a Master Administrator, but viewed by a user *without* the Master Administrator role. (OS21142)
6. An issue that prevented Tax Data Import from importing some exemption certificates is resolved. With changes to how O Series verifies coverage effectivity dates, valid certificates now import properly. (OS21469, RQ59721)
7. An issue that caused the Tax Journal Export to run for longer than expected is resolved. (OS19088, VTX066098)

Configuration parameter changes

Settings

New settings for entity data limits specify the maximum number of records for an entity that can exist in an O Series partition. If a user attempts to add a record that exceeds this limit, an error message provides a notification that the limit is reached.

The entities for which this data limit can apply are taxpayers, customers, vendors, taxability drivers, taxability mappings, and certificates. The names of the settings are:

- **Taxpayer Limit**
- **Customer Limit**
- **Vendor Limit**
- **Taxability Driver Limit**
- **Taxability Mapping Limit**
- **Exemption Certificate Limit**

(OS19858)

Configuration file

You can now add the `ecp.noNewCustomers` configuration parameter to `vertex.cfg` to prevent New Customer from displaying as an option when you create a new user for the Exemption Certificate Portal (ECP). Selecting New Customer during setup creates a new customer record in Vertex O Series.

If the parameter is added and set to `true`, Existing Customer is the only option during ECP user setup. You must enter a customer code for an existing Vertex O Series customer to continue the setup. (OS21130)

Calculation Engine change

Fix

1. A null pointer exception that occurred when there was an exemption certificate applied to a transaction, where the transaction also contained a line item with a bracket tax, is resolved. (OS8742,VTX061627)

Database changes

1. In support of the Indirect Tax Intelligence (ITI) integration, the production indicator flag - `prodInd` - was added to the Source table in the UTIL schema. (OS20501)
2. A new table named `SourceLicense` was added to the UTIL schema to support partition-level licensing on the Cloud. (OS20704)

Security changes

Fixes

1. A security vulnerability, where JavaScript code entered in an O Series user interface field subsequently executed on the client, is resolved. (OS19162)
2. Instructions for configuring HTTP Strict Transport Security (HSTS) in Tomcat were added to the *Vertex Indirect Tax O Series Installation Guide*. (OS20407)
3. To prevent sensitive information from saving in browsers, O Series now disables autocomplete suggestions for user name and password on the login page. (OS20644)
4. The O Series session timeout now occurs properly after the specified inactivity interval. (OS20644)
5. Users can now authenticate to O Series by using Active Directory when running LDAP. (OS21648)
6. Vertex supports encryption for the `oauth.client_secret` in the `vertex.cfg` file, using the encryption tool that is packaged with O Series. O Series accepts both encrypted and unencrypted client credentials. If you encrypt the client secret, O Series decrypts it before using it. (OS21188)

Known issue

EU OSS Extract report

In the exchange rates file, if there are leading spaces before currency amounts, be sure to delete those spaces before running the extract. Leading spaces cause the extract to fail.

For example, this file downloaded from the ECB website has leading spaces:

```
Date, USD, JPY, BGN, CZK, DKK, GBP, HUF, PLN, RON, SEK, CHF, ISK, NOK, HRK, RUB,
TRY, AUD, BRL, CAD, CNY, HKD, IDR, ILS, INR, KRW, MXN, MYR, NZD, PHP, SGD, THB,
ZAR,
2021-06-28, 1.1910, 132.13, 1.9558, 25.499, 7.4369, 0.85710, 351.98, 4.5070,
4.9268, 10.1268, 1.0969, 147.30, 10.1763, 7.4964, 86.0594, 10.4130, 1.5753, 5.9159,
```

Remove the spaces as shown here:

```
Date, USD, JPY, BGN, CZK, DKK, GBP, HUF, PLN, RON, SEK, CHF, ISK, NOK, HRK, RUB, TRY, AUD, BRL, CAD, CN  
Y, HKD, IDR, ILS, INR, KRW, MXN, MYR, NZD, PHP, SGD, THB, ZAR,  
2021-06-  
28, 1.1910, 132.13, 1.9558, 25.499, 7.4369, 0.85710, 351.98, 4.5070, 4.9268, 10.1268, 1.0969, 1  
47.30, 10.1763, 7.4964, 86.0594, 10.4130, 1.5753, 5.9159, 1.4687, 7.6922, 9.2459, 17274.78, 3.
```

Documentation errata

In the 9.0 SR4 MP1 Release Notes, OS21165 was reported as being included in the 9.0 SR4 MP1 release; it is actually included in the 9.0 SR5 release.

Release 9.0 SR4 MP1

Administration changes

Enhancement for federated security

1. Vertex supports encryption for the `oauth.client_secret` in the `vertex.cfg` file, using the encryption tool that is packaged with O Series. O Series accepts both encrypted and unencrypted client credentials. If you encrypt the client secret, O Series decrypts it before using it. (OS21188)

Release 9.0 SR4

Improve performance with Tax Rule Optimization

What is Tax Rule Optimization?

Tax Rule Optimization changes the way tax rule data is stored in the O Series database. Vertex has updated the Monthly Data Update (MDU) to contain optimized tax rule data. By modifying the database structure to condense and remove duplicate data, the memory used by the data is reduced.

These areas are improved:

- MDU file size
- MDU load times
- O Series startup times
- Cache refresh times
- O Series memory/heap requirements

Refer to the *Tax Rule Optimization Getting Started Guide* for more information about how to take advantage of this feature.

How to implement this feature

Note: *If you have questions about Tax Rule Optimization, contact Vertex Customer Support before implementing it.*

The process to download and apply your MDU has *not* changed. You just choose the *optimized* MDU file, rather than the traditional MDU file. The first time you load the optimized MDU, there is one additional step to "opt in."

Changes to calculation logic

This performance improvement is based on a fundamental change to calculation logic for tax rules that have qualifying conditions with multiple taxability categories.

When there are multiple qualifying conditions in a tax rule *from the same independent branch* of the taxability category tree, the Calculation Engine uses OR logic when determining whether to apply a tax rule to a line item. It applies a tax rule if *at least one* of the taxability category conditions in the branch exists on the line item.

Previously, O Series used AND logic and applied a tax rule only if all the taxability categories in the tax rule from the same independent branch were present on the line item.

Changes to the O Series user interface

When this feature is turned on in an O Series instance, here are the changes you see:

- When there are more than two taxability category qualifying conditions in a tax rule, the tax rule search result displays the first two categories. You must click **...** in the Actions column and select VIEW to see all qualifying conditions.
- When you view or edit a tax rule with multiple qualifying conditions, the Qualifying Conditions tab displays taxability categories by independent branch, as shown in this section of the tab:

Taxability Category / Taxability Driver / Flexible Field / Tax Basis		Condition	Actions
<div><div><div>+</div> General</div><div><div>-</div> Property Type</div></div>		A taxability category from each of these branches must be present (AND).	
01 Residential			
02 Residential-Income Producing		N/A	Edit Delete

The new contextual bar

With this release, the global elements that establish the context for your work are now located on a *contextual bar* at the top of the page. These elements include:


- The partition to which you are logged on
- The perspective selector for Supplies and Procurement
- The As of Date selector

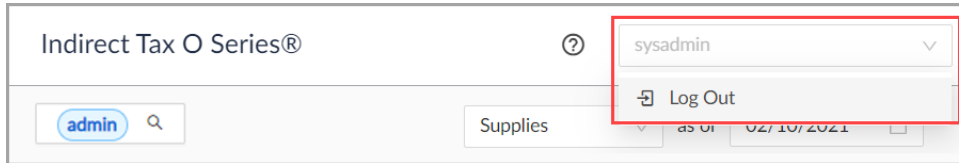
Indirect Tax O Series®
?
sysadmin

admin

Supplies

as of
02/10/2021

Note as well that there is a new Help icon, , and that a drop-down menu displays the current user name. To log out of O Series, use this drop-down menu to select **Log Out**.



Support for EU VAT 2021

If your business is affected by the EU VAT 2021 changes that become effective in July 2021, this O Series release provides several enhancements that support the expanded e-commerce distance selling scenarios in the legislation.

With this service release, Vertex makes updated European Union (EU) One Stop Shop (OSS) functionality available to you in advance of July 2021 so you have the opportunity to test it in your deployment, along with the EU OSS data from Vertex that will be made available in the May 2021 monthly data update.

To use EU OSS in O Series, you must apply both the 9.0 SR4 release and the supporting monthly data update to your production deployment ahead of the July 1 effectivity of the EU OSS provisions.

Here are the changes to the O Series user interface:

- There are now three types of taxpayer registrations for EU distance sales setup: Union Scheme, Non-Union Scheme, and Import Scheme.
- The taxpayer's Member State of Identification (MSI) issues separate VAT registration numbers for each scheme. To meet this requirement, O Series implements new registration number formats.
- New Output Notice IDs of 38, 39, and 40 provide invoice text for EU OSS transactions for each scheme.
- The EU MOSS Extract is repurposed to become the EU One Stop Shop Extract, with which you can generate an extract file of either Union Scheme, Non-Union Scheme, or Import Scheme transaction data. This file can be used for importing EU OSS transactions into your compliance reporting product.
- A new parameter for the registration types is added to the runEuMossExtract client utility. The parameter is `-g taxRegistrationType` and the possible values are `UNION_SCHEME`, `NON_UNION_SCHEME`, and `IMPORT_SCHEME`.

For details, refer to the *O Series Help* or the *European Union One Stop Shop Tipsheet* on the Vertex Community.

My Enterprise changes

Enhancement

1. Vertex offers several enhancements for European Union (MOSS):
 - You can change a Union Scheme taxpayer to a Non-Union Scheme taxpayer by changing the Registration Type.
 - A Non-Union Scheme taxpayer can now have a local VAT registration ID for the same country where it has a Member State of Identification (MSI) registration ID, and these IDs can be different.
 - A Union Scheme taxpayer's local registration ID can be different from its MSI registration ID.
 - A Union Scheme taxpayer is no longer required to have a local registration in the MSI.
 - A Union Scheme taxpayer is not required to have a physical presence in the MSI.(OS18210, VTX065706)

Fixes

1. For a Limited certificate that must be mapped to more than one taxability driver, the Select Entities dialog box now enables you to map to taxability drivers that are different entity types (for example, to a Product driver and to a Product Class driver). This fix resolves an issue where the dialog box cleared a previously selected driver when you refiltered for a different entity type. (OS14910, VTX064043)
2. The issue in which an active certificate would be deleted when a user created an expired version of the certificate via the Allow Historical Edits setting is resolved. (OS15832)
3. For district selection on taxpayer, customer, and vendor registrations, the Impositions Registration Details tab now displays districts by specific district name (for example, Assumption Parish Drainage District) rather than by a general district name (for example, Drainage District). This change enables you to more precisely identify and select the districts for which you want to apply tax. (OS17502, VTX065292)
4. The issue in which duplicate certificate records were created on Tax Data Export, causing failure on Tax Data Import of the export file, is resolved. (OS17616, VTX065463)

Tax Setup change

Enhancement

1. For allocation of accruals across child line items, this release provides two methods for processing the child line items:
 - Process the accrual tax amount by grouping all allocated line items according to jurisdiction type and then adjusting the taxes based on the order of the jurisdiction type. This order is country, main division, subdivision, city, and district. (This is the default method and uses the same accrual processing that has been in effect for O Series 8.0 and 9.0.)
 - Calculate the accrual amounts for allocated line items independently of the line item's expected accrual amount. (This was the accrual processing that originally applied in O Series 6.0 and 7.0.)

The new **Accrue Assisted Line Items as Independent Line Items** configuration setting enables you to select the method. For details, refer to the Allocation Tables section in the *O Series Help*. (OS8618, VTX061597)

System changes

Enhancements

1. The new **Accrue Assisted Line Items as Independent Line Items** setting provides two options for processing accruals in transactions with child line items that are created by an allocation. One option groups all allocated line items according to jurisdiction type (this is the default setting), and the other option allocates line items independently of the line item's expected accrual amount. (OS8618, VTX061597)
2. With the new **Log Level for Invalid Address Exceptions** setting, you can override the logging threshold for invalid addresses that are passed to Vertex O Series. Consider if the number of logging events for invalid addresses can impact your throughput and change the log level accordingly.

This setting can be set at the system level and at the partition level. The possible settings are:

- FATAL
- ERROR
- WARNING
- OPS

- TRACE
- DEBUG
- Use System Setting (for partition level only)

They work in conjunction with the system logging threshold parameter, `util.log.LoggingThreshold`, in the `vertex.cfg` file. For details, refer to the *O Series Help* or to the *Configuration Guide*. (OS18078)

Fixes

1. An issue in which Tax Data Import allowed invalid mappings (the mapping effective date was before the effective date of a category) is resolved. (OS6875, VTX060878)
2. The Tax Data Import process now correctly imports null values into tax allocation tables. This change resolves an issue where a null column was incorrectly imported as a 0 value. (OS13492, VTX063713)
3. An issue with the Returns Export process that changed a negative exempt sale to a positive amount is resolved. This issue resulted in the Transaction Detail data extract totals not matching the Returns Export State Report totals. (OS11769, VTX062861)
4. The `vertex-ws-spring` system-level log files now roll over according to the default grooming metrics in the `logback.xml` file. When the current log file exceeds the specified size, a new log file is created. (OS17524, VTX064979)
5. In the Alternative Region Type list (**Tools > Tax Area Lookup > By Address > Advanced Search**), countries with territories are now displaying correctly. This fix resolves an issue where the territories were not included in the list. (OS14153, VTX063994)

Calculation Engine change

1. The issue with the nominal rate being returned incorrectly when a taxability rule deferred to a standard rule is resolved. (OS19587)

Administration change

1. O Series user interface code is now contained within the `ui.war` file. The old `oseries-ui.war` file still exists, but only contains code that redirects you to the new relative path `/ui/calc-config` if you use the old relative path `/oseries-ui`.

For example: If you bookmarked the home page as

`/oseries-ui/supplies/2021-03-19/system/home`, you are redirected to `/ui/calc-config/supplies/2021-03-19/system/home`. (OS15089, OS17645)

Reporting change

Fix

1. An issue that caused a Null Pointer Exception (NPE) in the Taxability Matrix Report is resolved. This issue was caused by an incorrect license check. (OS16721, VTX063549, VTX062447, VTX063284)

Configuration parameter changes

Enhancements

1. This release adds flexibility to accrual processing of transactions with child line items that are created by an allocation. The new **Accrue Assisted Line Items as Independent Line Items** setting provides these options:
 - When set to `false`, O Series processes the accrual tax amount by grouping all allocated line items according to jurisdiction type and then adjusting the taxes based on the order of the jurisdiction type. This order is country, main division, subdivision, city, and district. The sum of the vendor-charged tax plus the child line-item accrual amounts *cannot* exceed the total calculated tax for the line item. (This is the same accrual processing that has been in effect for O Series 8.0 and 9.0.)
 - When set to `true`, O Series calculates the accrual amounts for allocated line items independently of the line item's expected accrual amount. The sum of the vendor-charged tax plus the child line-item accrual amounts *can* exceed the total calculated tax for the line item. (This was the accrual processing that applied in O Series 6.0 and 7.0.)

The default value is `false`. (OS8618, VTX061597)

2. With the new **Log Level for Invalid Address Exceptions** setting, you can override the logging threshold for invalid addresses that are passed to Vertex O Series. Consider if the number of logging events for invalid addresses can impact your throughput and change the log level accordingly.

This setting can be set at the system level and at the partition level. The possible settings are:

- FATAL
- ERROR
- WARNING
- OPS

- TRACE
- DEBUG
- Use System Setting (for partition level only)

They work in conjunction with the system logging threshold parameter, `util.log.LoggingThreshold`, in the `vertex.cfg` file. For details, refer to the *O Series Help* or to the *Configuration Guide*. (OS18078)

3. The `oauth.client_secret` configuration parameter, which defines the client password for OAuth token validation, supports **bcrypt 2a** encryption. The default password is now encrypted in the `vertex.cfg` file for new installations. (OS14206)

Fix

1. For O Series instances where the **Force Distribute Tax on Failure – Supplies** setting is `true`, an issue that occurred for distribute tax transactions in which all taxes were fees or quantity taxes is resolved. An error no longer displays and these transactions complete successfully. (OS19121)

Database changes

1. In support of the Monthly Data Update Tax Rule Optimization, the following changes were made to the TPS schema:
 - A new table named `TaxRuleMapping` was added that maps traditional tax rule IDs to optimized tax rule IDs. (OS14181)
 - A new nullable column named `constTaxRuleId` was added to the `TaxabilityMapping` table. (OS14181)
 - Audit columns in the new tax rule tables added in O Series 9.0 SR3 were changed to `NUMBER(18)` type and have new names: `createTimestamp` and `lastUpdateTimestamp`. (OS14181, OS16564)
 - The `deletedInd` column was removed from the `TaxRuleDetail` table and added to the `TaxRuleMain` table.

The `TaxRuleMain` and `TaxRuleDetail` tables were added, but not used, in O Series 9.0 SR3 in preparation for use in this release. (OS16556)
 - A new nonunique index was added to the `TaxRuleMain` table in the single column `taxRuleQualCondSetId`. (OS16556)
 - A new index was added to the `TaxRuleMain` table in support of no cache calculation. (OS18214)

2. `UUID` and `displayName` columns were added to the Source table in the UTIL schema. (OS14231)
3. In support of the Multi-Partition Users feature, the following changes were made to the UTIL schema:
 - A new table named `UserSourceRole`, which replaces the existing `UserRole` table, was added. Existing `UserRole` assignments are migrated to the `UserSourceRole` table as part of the Service Release patch.
 - The `not null` constraint was removed from the `sourceID` column of the `AppUser` table. (OS14869, OS14956)

Retail changes

Fixes

1. An issue that caused an error when applying the `store_location_update` utility for Vertex Indirect Tax Retail is resolved. (OS14987, VTX064201)
2. An issue where customers using the shared data directory could not see the RTE files that are created in the tax data folder is resolved. The issue occurred if you customized the default data directory in the `vertex.cfg` file to use an absolute file path, rather than a relative file path. Ensure that you use escape backslashes properly in the file path, as shown in this example:

```
com.vertexinc.dataDirectory.location=\\\\somesharednetworkfolder\\  
subfolder1\\subfolder2
```

(OS8872, VTX061760)
3. To address a series of warning messages that displayed when executing the `runRetailTaxExtract` command, Vertex updated a third-party library. The messages are no longer generated. (OS17285, VTX065174)

Supported platforms change

1. Support for the PostgreSQL 12 database server was added.

Security changes

1. This release addresses potential security vulnerabilities in the user and task log endpoints. (OS19166)

-
2. The version of Apache Tomcat bundled with O Series was upgraded to 9.0.43. (OS19502, VTX066403)

Web Services change

1. The issue in which VersionRequest failed when logging in with a trustedId is resolved. (OS18843)

Performance changes

1. An issue in which Linux users could not shut down O Series using the shutdown.sh script has been resolved. (14400, VTX064010)
2. Total shutdown time for O Series has been dramatically reduced, regardless of the method used. (14400, VTX064010)

Known issues

On-Demand DDL change

When data definition language (DDL) updates are attempted in an O Series On-Demand instance, this warning message can display sporadically:

```
Database connections do not contain sufficient privileges to make database DDL changes.
```

This message can occur even when the appropriate database privileges are set up. You can ignore this warning and proceed with work in your On-Demand instance. (OS19481)

Northern Ireland in taxpayer/customer/vendor registrations

If you have taxpayer, customer, and vendor entities for which you selected the United Kingdom – and all its children – as registration jurisdictions before January 1, 2021, you see the following when viewing and editing the entity registrations after this date:

- When viewing the entity registrations, only Isle of Man displays as a child jurisdiction of the United Kingdom.
- When editing the entity registrations, both Isle of Man and Northern Ireland display as child jurisdictions of the United Kingdom. This is because O Series activated a database indicator for all United Kingdom states when the entity was created. Northern Ireland was not considered a child jurisdiction in O Series before January 1, 2021, but it is now.

To effectively select Northern Ireland for a taxpayer, customer, or vendor entity that was created with a United Kingdom registration before January 1, 2021, use this workaround:

1. Change the As of Date to January 1, 2021.
2. Edit the entity registrations, navigate to United Kingdom, clear the Northern Ireland check box, and save the entity.
3. Edit the entity registrations again, navigate to United Kingdom, select Northern Ireland, and save the entity.

(OS18414, VTX065746)

Transaction Detail extract

In some cases, when you delete a Transaction Detail extract report from the Extract Results page, the loading indicator on the page doesn't disappear. However, if you refresh the page, the indicator disappears and the report is successfully deleted. This is a user interface issue that will be resolved in a future release. (OS19769)

Release 9.0 SR3 MP2

My Enterprise changes

1. Search performance is improved in O Series instances with large numbers of customers. This fix resolves an issue that caused excessive search times when searching for customers. (OS14849, VTX063937)

2. For Single Use certificates and Limited certificates in O Series On-Demand, O Series now distinguishes appropriately between certificates that have similar criteria, such as two Single Use certificates for a customer that have different invoice numbers or two Limited certificates for a customer that have different taxability drivers.

This fix resolves an issue where – when the

`tps.common.persist.party.Certificate.onDemandCache` parameter in the `vertex.cfg` file was set to `true` – O Series sometimes did not apply the expected certificate. To enable this fix, consider two new parameters that you can add to your `vertex.cfg` file:

- For Single Use certificates:
`tps.common.persist.party.Certificate.onDemandCache.check.single.use`
- To read certificate details from the database rather than cache:
`tps.common.persist.party.Certificate.onDemandCache.load.from.db`

For details on these parameters, refer to Configuration parameter changes or the *Configuration Parameters Reference Guide*. (OS13739, OS11486, VTX062741)

Tax Setup change

1. In the Tax Assist feature, the `roundingGroupByTaxRate` field was added to enable the rounding of invoice line items grouped by tax rate, rather than tax date, for individual transactions. (OS14672, VTX064116)

Reporting change

1. The Data Update Impact (Tax Rules) data extract in **Custom Reports - VRA** identifies when tax rule changes in an O Series release impact your taxability mappings. Previously, this extract reported mappings to automatic rules for taxability categories in the Commodity Code, General, Manufacturing, and Qualifying Conditions branches of the taxability category tree, but not mappings to any conditional rules in these categories.

With the 9.0 SR3 MP2 release, O Series now also evaluates mappings to conditional rules when reporting how tax rule changes impact your taxability mappings. For example, it will now evaluate the following mapping to a conditional rule for the Periodicals Delivered Electronically taxability category. (OS14811, VTX064016)

<input type="checkbox"/>	Automatic Rule
<input checked="" type="checkbox"/>	1. Taxability Category: Educational, cultural or scientific publications 2. Taxability Category: Periodicals Delivered Electronically

System changes

Fixes

1. An issue that occurred when the Company Name, Division, or Department Name is changed after the initial Tax Journal Export runs is resolved. This issue only affected Postgres SQL. (OS13687, VTX063494)
2. An issue that caused Tax Journal Purge to remove non-exported transactions is resolved. (OS15091)
3. An issue that caused data extracts in the scheduler to run slowly - in environments with high numbers of scheduled jobs - was fixed. (OS13791, VTX063824)

Calculation Engine change

1. The issue with sorting during tax calculation that resulted in the error "Comparison method violates its general contract" is resolved. (OS15384, OS16553, VTX062685)

Administration change

Fix

1. An issue that occurred with job filters run via the runActivity.sh command line script – where the filters were missing a date time stamp – is resolved. (OS8580, VTX061577)

Configuration parameter changes

vertex.cfg file

New parameters were created and can be added to the vertex.cfg file:

1. Two parameters were added to support the `tps.common.persist.party.Certificate.onDemandCache` parameter. The parameters only apply if the value of `tps.common.persist.party.Certificate.onDemandCache` is set to `true`. The new parameters enable you to distinguish appropriately between certificates that have similar criteria by reading certificate details from the database rather than the cache. The parameters are:

- `tps.common.persist.party.Certificate.onDemandCache.check.single.use`
- `tps.common.persist.party.Certificate.onDemandCache.load.from.db`

For details on these parameters, refer to the *Configuration Parameters Reference Guide*. (OS13739)

Security change

Fix

1. An issue in which OnDemand user accounts were locked after using a temporary password provided as part of the password reset request is resolved. (OS9553, VTX061770)

Performance changes

1. Tax calculation performance was improved for transactions that involve taxpayers with many business locations. (OS15305, VTX064106)

Known issue

European Union member state selections

O Series functionality for European Union (EU) Mini One Stop Shop (MOSS) includes the ability to identify which EU country is a taxpayer's Member State of Identification for MOSS purposes. On the Taxpayers > Registrations tab, the **Member State** field provides a list of EU trade bloc countries from which you can select the Member State of Identification.

With Brexit taking effect on January 1, 2021, the United Kingdom will be removed from the **Member State** list. Because O Series currently handles Northern Ireland as a territory of the United Kingdom, Northern Ireland will no longer be available for selection in the **Member State** field after January 1, 2021. (OS16554)

Release 9.0 SR3 MP1

Tools changes

An issue in which all Transaction Tester financial events, except Quotes and Purchase Orders, were incorrectly posting to the Tax Journal is resolved. (OS17052)

Release 9.0 SR3

My Enterprise changes

1. After working with an entity in My Enterprise, a navigational improvement returns you to the page of search results from which you accessed the entity. Previously, you were returned to the initial page of search results.

For example, O Series now returns you to page 2, rather than to page 1, of the search results table when:

- You select an Action of Edit for an entity on page 2 of the search results table and then click CANCEL in that entity record.
- You view page 2 of the search results table, click ADD to add a new entity, and then click CANCEL while creating that entity.

(OS6765, OS6773, OS11349)

2. When searching for customers or certificates in My Enterprise, a message now notifies you when only a subset of the records that match the search criteria is returned – for example, if only the first 1,000 of 3,000 certificates that match the search criteria is returned. O Series provided this information in version 8.0 and now provides it in version 9.0 as well. (OS11697)
3. An issue in which certificate start dates in the past could not be changed when the **Allow Historical Edits** setting was set to `true` is resolved. (OS10291)

Tax Setup changes

1. After working with a taxability mapping, imposition, or tax rule in Tax Setup, a navigational improvement returns you to the page of search results from which you accessed the entity. Previously, you were returned to the initial page of search results.

For example:

You select an Action of Edit for an entity on page 2 of the search results table and then click CANCEL in that entity record. O Series now returns you to page 2 - rather than to page 1 - of the search results table.

(OS6770, OS6771, OS6776, OS6781, OS6782, OS6783, OS6784)

2. In the Calculation and Max Tax features, when specifying a value for the **Basis Reduction Percentage** field on the Details tab, you now enter the value in percentage notation.

For example:

- If the percentage is 25%, enter 25 in this field. O Series then uses .25 for calculation purposes.
- If the percentage is 15.5%, enter 15.5 in this field. O Series then uses .155 for calculation purposes.

Previously, O Series 9.0 required the value to be entered in decimal notation (for example, 25% had to be entered as .25 and 15.5% had to be entered as .155). This change makes O Series 9.0 consistent with previous O Series versions. (OS8172)

3. In the Lookup Table feature, the following issues are resolved:

- When using the **Import(Update)** option to add a new value for a record that already exists, O Series now correctly adds the new value in a new record and end dates the existing record so that both records display in the lookup table. This fix resolves an issue where O Series incorrectly replaced the value of the existing record. (OS9349)
- An issue that occurred when saving lookup table records – where the end date was earlier than the start date – is resolved. The lookup table records are now saved with appropriate start and end dates. (OS11030)
- An issue where O Series prevented deletion of a lookup table record is resolved. You can now delete a record from a lookup table as expected by setting the As of Date to the start date of the record and selecting Delete in the Actions column. You can inactivate the record by entering an end date that is the same as the start date. (OS12968)

For resolution of issues related to import of allocation table records, refer to System changes (see page 58). (OS11904)

4. For cases where multiple invoice text messages are associated with the same imposition within a jurisdiction, O Series now appropriately returns each message in the transaction XML response message. These invoice text messages are now contained within one <InvoiceTexts> node in the XML response message. (OS12202)
5. On the Taxability Analysis tab, qualifying condition text now displays for conditional rules, when applicable, for the selected taxability category, imposition type, and jurisdiction. This fix resolves an issue where this explanatory text was missing in the conditional rule description. (OS12368)

Tools changes

1. After viewing a rate lookup in Tools, a navigational improvement returns you to the page of search results from which you accessed the rate information. Previously, you were returned to the initial page of search results.

For example, if you select an Action of VIEW for a rate on page 2 of the search results table and then click CANCEL while in that rate record, O Series now returns you to page 2, rather than to page 1, of the search results table. (OS6785, OS6786)

2. The recoverable and unrecoverable currency amounts reported in Transaction Tester results are now consistent with the amounts reported in the XML response messages. This fix resolves an issue where the amount was correct in the XML response but was rounded off when displayed in Transaction Tester. (OS8846)

System changes

Enhancement

1. For the Tax Data Import feature, if any lookup table detail (table properties or records) or allocation table detail (table properties, columns, or column records) in the import file is invalid, O Series:

- Rejects *all* records for the associated lookup table or allocation table.
- Writes a message to the log file to indicate which records are in error.

You must correct the error condition in the import file before attempting another import of the entire lookup table or allocation table. Note that after you correct the error and retry the import of the table, the import of that specific table can potentially fail again if O Series encounters another error. This import evaluation helps to prevent import of data that is incompatible with O Series logic.

An example of invalid lookup table or allocation table records are two records that have identical field values but overlapping effectivity dates – that is, the time periods specified by the start dates and end dates of the records overlap. (OS11679, OS13644)

Fixes

1. For O Series On-Demand deployments, an issue where a Partition System Administrator could not assign a user-defined role to a new user is resolved. User-defined roles now display as expected in the Roles drop-down list on the Add User page. (OS12639)
2. An issue in which LDAP user login and logout data were not showing up in the Activity Log is resolved. A successful LDAP user login or logout activity now shows in the Activity Log with the user's name in the User Name column. Note the behavior when a login attempt is invalid:
 - If an LDAP user's login attempt fails because of an invalid user name, this invalid name displays in the Summary column and the User Name column is blank.
 - If an LDAP user name is valid but the login attempt fails because of an invalid password, the user's name displays in the User Name column, but a message displays that the login attempt failed. (OS13724)

3. For a Tax Data Import of allocation tables, an issue where an expired record failed to import is resolved. This issue occurred when the import file had two records with the same field values, but one of the records had expired and the other record was active. O Series now imports both records with the start dates and end dates that are specified in the import file.

Note that, in cases where an import file has two records with the same field values, there cannot be overlapping dates. If two records in the import file have identical field values *and* overlapping dates, O Series:

- Rejects *all* records for the associated allocation table.
- Writes messages to the log file to indicate which records are in error.

You must correct the error conditions in the import file before attempting another import of the allocation table. (OS11904)

4. The following Tax Data Export issues were addressed:
 - An issue where some CERTIFICATE_COVERAGE records were not exported is resolved. (OS11906)
 - An issue where certificate records were missing taxpayer information is resolved. This issue occurred for certificates that had taxpayers that were end dated. (OS11852)

Diagnostic Report changes

The Diagnostic Report feature performs checks on your Vertex O Series setup and environment and provides troubleshooting information for any errors or warnings that are detected. Access this feature on the Vertex O Series user interface by navigating to **System > Data Management > Diagnostic Report**. Only users with a Master Administrator role can access this feature.

Enhancements

O Series 9.0 SR3 enhances this report by performing several new validation checks:

1. It checks limited scope certificates to ensure that the taxability driver exists and that a limited scope certificate start date is before the taxability driver end date. (OS12167)
2. It checks for invalid certificate start dates and end dates. This validation check is to ensure that the start date is before the end date. (OS12135)
3. It checks for empty or invalid values in required fields on certificates, which make the certificate invalid. (OS12663)
4. It checks to ensure that the issue date is before the expiration date for certificate coverages. (OS12140)

5. It identifies if the certificate coverage end date is before the start date, which is an invalid condition. (OS13766)

If any of these validation checks find that a required condition is not met, O Series logs a message that explains the error and indicates the need for correction.

Fixes

1. An issue in which invalid data checks incorrectly caused errors to display on the report is resolved. (OS11268, VTX062553)
2. An unnecessary index check on SAP HANA databases was removed. This check caused issues to display on the report in error. (OS13021, VTX062032)

Administration changes

Enhancements for logging

1. Beginning with this release, you can use the Simple Logging Facade for Java (slf4j) library as your Java application logging API layer. Refer to the *Administration Guide* for more information. (OS11957)
2. When O Series is configured to use the slf4J logger, and the logger is configured to log in JSON fragments, each O Series log entry is logged as a JSON fragment. JSON is a data format that is machine readable. (OS7266)
3. The Partition ID (where applicable) is added by default to each log message. If you use partitions, this change enables you to track events and activity in specific partitions. The `vertex.cfg` file contains a setting `util.log.IncludePartition=true`. To turn this feature off, set this parameter to `false`. This feature is available for default, log4j, and slf4J logging implementation. Refer to the *Configuration Parameters Reference Guide* for more information. (OS9449)
4. You can log HTTP headers from calculation and tax area lookup requests, and you can rename those headers when they are logged. You must value the `util.log.Metadata` parameter in `vertex.cfg`. The value of the parameter specifies the name of each HTTP header to log, as well as the name to give to that header when it gets logged. You can specify multiple headers by separating each pair with a comma.

For example: `util.log.Metadata={X-Trace-Id="CorrelationId",
X-Forwarded-For="ClientIp"}`

Refer to the *Configuration Parameters Reference Guide* for more information. (OS7269)

Configuration parameter changes

Enhancements

1. The **Return Detailed Tax Calculation Timings** setting is added to System > Administration > Settings. When set to `true`, additional timing metrics are returned in SOAP and JSON responses for use in troubleshooting performance issues. (OS9434)
2. The option to include the `oidc.post_logout_redirect_uris` parameter to the `vertex.cfg` file is added. The parameter enables the creation of a list of valid URIs for redirecting users after a successful logout. (OS10430)
3. The column size for configuration parameter overrides is increased to 2,000 characters. This change provides the ability to enter long values for settings. (OS11068)

Fix

1. An issue in which certificate start dates in the past could not be changed when the **Allow Historical Edits** setting was set to `true` is resolved. (OS10291)

Batch Client Interface changes

1. An issue that caused a null pointer exception (NPE) when running Batch Client Interface (BCI) transactions in a multiple-thread, clustered environment is resolved. (OS9283)
2. An issue where `InputTaxIsImport` was being used instead of `InputTaxTaxAreaId` to determine whether or not to include the Input Tax fields is resolved. (OS11952, VTX061775)

Web Services change

1. For security purposes, in SOAP responses that include Username and Password, the password is no longer displayed and is now replaced with six asterisks (`*****`). (OS5495)

Security changes

1. Validation measures and contextual encoding now prevent cross-site scripting via the login user name. (OS10877)
2. O Series now properly validates files before uploading to check that the file extension matches the supported O Series file types. The supported file types are BMP, GIF, JPG, JPEG, PDF, PNG, CSV, XML, ZIP, TXT, and OUT. For actual inspection of files for malware, Vertex recommends that O Series files be stored in a file system that has virus scanning and end-point security. (OS11023)

3. O Series web applications consistently use secure HTTP methods. Insecure HTTP methods are disabled, and any calls to O Series web applications that use HTTP methods that are not available return a customized HTTP ERROR 405 message. (OS11025)
4. When Microsoft SQL database connection errors occur, a generic error message now displays. This fix resolves an issue where SQL error messages inadvertently included system data and debugging information. (OS11027)
5. O Series uses frame-prevention techniques that deflect clickjacking attempts. (OS11044)

Performance changes

1. Database changes were made to improve the load time for Brazil Premium data. (OS14304)
2. An issue in which inactive database connections made during the user login process were not released is resolved. (OS13874)

Database changes

O Series can now make database schema changes in both software patches (service releases) and monthly data updates (MDUs). This release includes some minor database schema modifications that improve performance and add database tables for future functionality.

Please ensure that the user applying the patch or update has the appropriate permissions to make database schema changes.

Release 9.0 SR2 MP2

Calculation Engine changes

1. When the **tps.common.persist.party.Certificate.onDemandCache** parameter in the vertex.cfg file is set to `true`, active certificates are now applied during tax calculation, when appropriate. Previously, newly created certificates were not loaded to the cache and were not always available to exempt items during tax calculation. (OS11486)
2. Transactions that have multiple levels of nested child line items now complete without error. (OS11932)

Configuration parameter changes

1. The following configuration parameters for managing the number of idle database connections were added to the `vertex.cfg` file:

- `util.app.connectionPool.cleanupServiceInterval`
- `util.app.connectionPool.maxIdleConnections`
- `util.app.connectionPool.maxIdleTime`

For more information, refer to the *Configuration Parameters Reference Guide*. (OS8738)

2. The mechanism for authentication in a Lightweight Directory Access Protocol (LDAP) integration is modified to allow more flexibility. The search scope configuration parameter, `ldap.dirContext.searchScope`, in the `vertex.cfg` file is now used only for authorization, *not* authentication.

This means that users will be authenticated based on the entire LDAP. However, authorization still prevents unwarranted access. Administrators need to ensure that the users listed within O Series are properly authorized. If there are more users listed than should be authorized, then modify the LDAP setup and configuration to only allow authorized users. (OS12243)

My Enterprise changes

1. A performance issue that occurred in O Series instances with a large volume of taxpayers is resolved. Search results for taxpayers and entities that are based on taxpayers now return in a timely manner. (OS10888)
2. Certificates with the same ID in Exemption Certificate Wizard (ECW) and Vertex O Series now synchronize as expected. (OS11988)

Retail LITE change

1. An issue that caused a null pointer exception (NPE) when starting up a Vertex Retail LITE instance of O Series is resolved. This issue occurred when certain user-defined taxability rules were present in the Tax Engine Extract file. Vertex Retail LITE now starts up successfully. (OS12366, VTX063297)

SAP HANA

1. Vertex has resolved defects that were affecting O Series 9.0 on-premise deployments that use the SAP HANA database server. This server is now fully operational when used with O Series 9.0.

Release 9.0 SR2 MP1

Calculation Engine change

1. An issue with European Union (EU) Missing Trader Intra Community (MTIC) calculations – where a domestic reverse charge was not applied where appropriate – is resolved. This issue occurred for transactions, such as accruals, that were run from the Procurement perspective. The reverse charge applies to intra-country, business-to-business transactions of certain goods and services – such as cell phones, video games, and portable computers – in accordance with the EU VAT Directive. (OS11708)

My Enterprise changes

1. When editing taxpayers, customers, vendors, and certificates that were created in O Series 8.0 and imported into O Series 9.0, the **Select Jurisdictions** dialog box now correctly reflects the jurisdictions that were previously selected on the **Registrations** tab as jurisdictions in which the entity is registered. This fix resolves an issue where this dialog box showed checked boxes for jurisdictions that had not been selected as registered jurisdictions. (OS10289)


Tax Setup change

1. In the Tax Assist feature, three new fields provide added flexibility in creating post-calculation Tax Assist rules for exemption certificates, including certificates that are created in Vertex® Exemption Certificate Wizard:
 - **tax.exemptionCertificateCreationSource**
 - **tax.exemptionCertificateEcwCertificateId**
 - **tax.exemptionCertificateNumber**

For information about these fields, refer to the *O Series Help*.

(OS10868)

Reporting change

1. In the Custom Reporting - VRA feature, when filtering on certain date-related fields, you can now use the **Value** field to either select from a list of relative time period options or enter a specific date and time stamp. The methods for specifying the filter time frames are the following:
 - Select an operator of **In Time Period** and click  in the **Value** field to select a relative time period from the dialog box that displays.
 - Select an operator of **Equals** and enter a specific date and time in the **Value** field. Enter the value in the `MM/DD/YYYY HH:MM meridian` format, where *meridian* is `am` or `pm`. An example is `08/24/2020 12:00 am`. If the time stamp is not relevant for your purposes, you can specify only the date.

Previously, when filtering on date-related fields in O Series 9.0, you were required to select a specific date by using the calendar selector. This change for 9.0 SR2 MP1 restores functionality from O Series 8.0. (OS10684)

System changes

1. An issue in which On-Demand Partition System Administrators were not able to assign specific roles to a user when adding a new user is resolved. (OS9127)
2. For customers using Java 11, the scheduler process generated an error when editing an existing schedule for a Custom Reports - VRA data extract filter. This is resolved. (OS9872, VTX062248)

Configuration parameter changes

1. The configuration parameter `allowed.upload.file.types`, which specifies file types that can be uploaded to O Series, now applies to files uploaded on the **My Enterprise > Certificate Management > Forms** page. (OS10082)
2. An issue in which certificate start dates in the past could not be changed when the **Allow Historical Edits** setting was set to `true` is resolved. (OS10291)

Address Cleansing change

1. With O Series deployments on the IBM AIX platform, O Series was experiencing connectivity issues that caused Address Cleansing errors.

Add the following Java JVM parameters to resolve this issue:

- `-Dcom.ibm.jsse2.overrideDefaultTLS=true`
- `-Dcom.ibm.jsse2.overrideDefaultProtocol=TLSv12`

(OS10716)

Release 9.0 SR2

Coming soon - database updates

In a Vertex O Series future release, O Series will support the ability to make database schema changes in both software patches (service releases) and monthly data updates (MDUs). This will enable Vertex to provide new functionality in a more responsive manner rather than waiting for a major release, and without requiring planned downtime for a database upgrade. These changes will not affect operation of O Series.

Examples of possible database changes include the following:

- Adding a new table
- Adding a column to an existing table
- Changing a column's data type or size

Beginning in O Series 9.0 SR2, initial programming changes are being made to prepare for this feature. You will see no changes to the MDU or patch process until this functionality is released. When this functionality is released, the database user will need permission to make database schema changes (DDL changes) when applying data updates or patches.

Permission to make database schema changes is needed for the following Vertex databases:

- Utility database
- Transaction Processing System (TPS) database
- Tax Journal databases, which includes Accumulator databases
- Reporting database
- TaxGIS database
- Retail Tax Extract (RTE) database

(OS1264, OS1639)

Message on O Series home page for database upgrade

As part of the preparation for database upgrade enhancements in a future release, you may see the following message on the O Series home page:

A DB Upgrade ZIP file has not been provided. Skipping the DB Upgrade processing.

You can ignore this message. It is harmless and indicates that no database upgrades were made for the update. In a future release, this message may contain information about database changes that are applied as part of an update. Database changes will be documented in future Release Notes.

Calculation Engine changes

Enhancement

1. When support logging is enabled in Transaction Tester, an XML response message now identifies any derived taxability categories that the Calculation Engine used when processing the transaction. To use this logging, select **Enable Support Logging** on the Other tab in Transaction Tester. This logging also identifies taxability drivers, mapped taxability categories, and situs conclusions used in transaction processing. (OS911)

Fixes

1. The Gross Amount data now uses the filing currency amount on the following reports: Invoice Tax Detail Report and Transaction Summary Recap Report. (OS2964, VTX059956)

2. Tax calculation on shipping charges for line items with an extended price of \$0 are now handled consistently when the shipping charge is positive and when it is negative. The Calculation Engine now returns no tax for shipping in both cases. Previously, when a negative shipping charge was entered for a line item with a \$0 extended price, the Calculation Engine erroneously returned a negative tax. (OS3975)
3. An issue with a Vertex® Indirect Tax for Communications tax-inclusive calculation that resulted in an error is resolved. This error occurred on transactions that included the following:
 - A parent line item for which no tax was calculated
 - An amount-based child line item that was tax inclusive(OS8845, VTX061642)

My Enterprise changes

Enhancements

1. To address the Incoterms 2020 rules that are issued by the International Chamber of Commerce, a new Shipping Term of **Delivered at Place Unloaded (DPU)** is added to the list of Shipping Terms that are available for assignment to taxpayer, customer, and vendor entities, as well as to specific transactions. To use this Shipping Term, you must apply Monthly Data Update (MDU) 202. For January 2020 forward, DPU replaces the **Delivered at Terminal (DAT)** term. DAT remains available for historical purposes.

The DPU term applies when a seller clears goods for export, contracts for the carriage of the goods, and arranges for unloading at the place of destination. The place of destination is any location that is agreed upon by the parties. The seller assumes the associated costs and risks, unless the buyer does not fulfill the customs clearance obligations at import and the goods are temporarily held at another location; in this case, the buyer assumes the costs and risks until it obtains customs clearance. The seller again assumes the costs and risks until the goods are delivered at the agreed-upon location. (OS1800, OS6145)

2. O Series no longer supports reason codes with a value of 0 (zero). This value is not available in Reason Code selection lists when adding or editing reason codes for taxpayers, customers, vendors, and taxability drivers.

If you have entities that use a reason code of 0 (zero), note the following:

- Existing entities that have a reason code of 0 (zero) remain as is. Edit those entities in 9.0 SR2 to select a valid code from the **Reason Code** drop-down list.
- If you export the entities that have a reason code of 0 (zero) and then attempt to import them to an O Series 9.0 SR2 instance, the import process completes with failures. To avoid these failures, do one of the following:
 - Before running the Tax Data Export task, edit the entity records on the O Series user interface to select a valid reason code.
 - After running the Tax Data Export task and before running the Tax Data Import task, change the export file to replace each 0 (zero) reason code with a valid value.
- To identify entity records that currently have a reason code of 0 (zero), run Custom Reports - VRA data extracts for Taxpayers, Customers, Vendors, and Taxability Drivers, and use a filter of `Reason Code Equals 0`.

This change resolves an issue where O Series enabled you to select a reason code of 0 (zero) but the Returns Export process generated an error when encountering a reason code of 0 (zero).

Because reason codes are written to the Tax Journal and are in a returns export, Vertex recommends that you run tests to pass transactions that are impacted by this change to your returns product to ensure you get the expected results. (OS929)

3. If you create a customer certificate in ECW, the ECW signer name – truncated to 20 characters – flows to the **Department** field in Customer > Contacts to populate this required field. (OS8006)

Fixes

1. An issue with several My Enterprise features that displayed the initial page of search results after you canceled out of the view, edit, or add functions is resolved. The user interface now displays the most recent search results page. For example:

The result of a certificate search is 9 pages. You navigate to page 7 of the search results to find the certificate you want to view. After you view the certificate, you click CANCEL to close the view page. You are returned to search results page 7, rather than page 1.

(OS5914, OS6766)

2. An issue is resolved that caused the loading indicator to freeze when View was clicked from the Actions column on the Certificate Portal > Taxpayer Mapping page. (OS6413)

Tax Setup changes

Enhancements

1. For calculation rules, a new apportionment option of **Trigger - Zero Taxable Amount** is now available. With this method, when *a taxable line item has an extended amount of zero*, O Series handles the taxability of the associated ancillary charge as follows:
 - If all line items on the invoice are nontaxable, the associated ancillary charge is nontaxable.
 - If all line items on the invoice are exempt, the associated ancillary charge is exempt.
 - If the invoice line items have mixed taxability, at least one line item is taxable, and all taxable line items have a zero extended amount, the associated ancillary charge is nontaxable.
 - If the invoice line items have mixed taxability where at least one line item is taxable with an extended amount that is not zero, the associated ancillary charge is taxable.

(OS5247)

2. O Series no longer supports reason codes with a value of 0 (zero). If you have existing calculation rules that use a reason code of 0 (zero), note the following:
 - Existing rules that have a reason code of 0 (zero) remain as is. Edit those rules in 9.0 SR2 to select a valid code from the **Reason Code** drop-down list.
 - If you export the rules that have a reason code of 0 (zero) and then attempt to import them to an O Series 9.0 SR2 instance, the import process completes with failures. To avoid these failures, do one of the following:
 - Before running the Tax Data Export task, edit the calculation rules on the O Series user interface to select a valid reason code.
 - After running the Tax Data Export task and before running the Tax Data Import task, change the export file to replace each 0 (zero) reason code with a valid value.
 - To identify calculation rules that currently specify a reason code of 0 (zero), run the Custom Reports - VRA data extract for Tax Rules, and use a filter of `Reason Category Equals 0`.

Because reason codes are written to the Tax Journal and are in a returns export, Vertex recommends that you run tests to pass transactions that are impacted by this change to your returns product to ensure you get the expected results. (OS929)

3. For situs (Place of Supply) rules, the situs treatment of **EU One Stop Shop** changes to **Electronically Supplied Services** with Monthly Data Update 202. The former situs treatment applied to only ESS transactions in the European Union. The new situs treatment applies to ESS transactions in various jurisdictions outside the U.S. and Canada, including the EU. The place of supply for electronically supplied services (ESS) follows special rules and is based on the location of the customer. When adding a situs treatment rule for ESS transactions for those jurisdictions, select **Electronically Supplied Services** to trigger ESS processing.

Fixes

1. In the Taxability Mapping feature, when mapping to a jurisdiction that does not have an automatic rule:
 - A conditional rule is no longer selected by default.
 - You are not required to select a conditional rule to save the mapping.(OS5999)
2. Performance is improved when deleting multiple tax rules. This fix resolves an issue where delays occurred when deleting tax rules. (OS7340)
3. An issue that caused the O Series page to be blank when editing a user-defined basis rule is resolved. (OS9352)

Tools changes

Enhancement

1. When support logging is enabled in Transaction Tester, an XML response message now identifies any derived taxability categories that the Calculation Engine used when processing the transaction. To use this logging, select **Enable Support Logging** on the Other tab in Transaction Tester. This logging also identifies taxability drivers, mapped taxability categories, and situs conclusions used in transaction processing. (OS911)

Fix

1. An issue that caused Tax Area IDs to display in scientific notation in XML responses is resolved. For both Transaction Tester and web services XML responses, the Tax Area IDs now display correctly. (OS1230)

Reporting changes

Enhancement

1. The Reporting menu option labeled **VRA** is now labeled **Custom Reports - VRA**. (OS3948)

Fixes

1. An issue where Custom Reports - VRA data extract definitions could not be edited when O Series 6.0 data was the data source is resolved. (OS5894, VTX060655)
2. An issue that occurred when adding or editing a certificate – where certificate validation failed to set a default expiration date when it was required for the certificate type – is resolved. (OS5882)

System changes

Enhancements

1. A new credential generating tool is available via **System > Security > Client Credentials** on the O Series user interface. With this feature, you can create the client credentials that enable integrations to access the Application Programming Interface (API) and web services, and to configure each account with the appropriate level of access. For more information, refer to the *O Series Help*. (OS898)
2. For the Tax Journal Export feature, Vertex decreased the time required to complete the export by streamlining the Vertex-supplied tax data that is exported to the Reporting database. When no monthly data update has been run since the last Tax Journal Export, O Series now exports only user-defined Transaction Processing System (TPS) data in the Tax Journal Export process. (OS8377)
3. In the Accumulation Purge feature, the transaction date data purge options have changed. For the **Purge Transaction Date Data on or before** option, you now enter the four-digit year for which and before which you want to purge accumulation data from the Accumulator database. The **Purge Transaction Date Data prior to** option was removed from the feature. (OS6942)
4. In the Settings feature, a new setting – **Disable Gross Receipts Tax Imposition Type Inclusion Rules in Alabama** – enables you to disable inclusion rules specific to the gross receipts imposition type in Alabama during the calculation process. Vertex O Series executes all other applicable rules. When selected, this setting applies to all jurisdictions in the state of Alabama. It does not apply to any gross receipts tax imposition types outside of Alabama. This setting is not selected by default. (OS1825)

5. In the Settings feature, several improvements make it easier for you to edit setting values:
 - When editing a setting, a single click is now needed – rather than a double click – to activate the setting text field, change a check box selection, or make a drop-down list selection.
 - After you modify a setting value, the field is outlined in yellow and a tooltip displays to indicate that additional action is needed. For example, *Pending Save* may display when you hover over the changed field to indicate that you must click **SAVE** at the bottom of the page for a setting change to take effect.
 - If you enter a value in an invalid format, a tooltip warning message displays when you hover over that field. For example, if you enter a non-numeric value in a numeric field, the field is outlined in red and the *Value must be numeric* message displays.
 - Where appropriate, the **Actions** column now provides the **ADD** or **DELETE** button for a setting override. Previously, the **Action** column displayed + and x icons for adding and deleting setting overrides.

(OS2602)

Fixes

1. When an API User role was added to an existing user role, the API user role did not take effect unless the web services was reset. This was fixed. (OS918, CR108191)
2. An issue with Tax Data Export – where the export completed with a failure when a user-defined communications service code was part of the export – is resolved. The Tax Data Export now completes successfully with a user-defined communications service code included in the export data. (OS2407)
3. In the Settings feature, the following issues are resolved:
 - You can now modify a parameter value while there is text in the **Search** field. Previously, when you entered text in this field, you could not modify values in the **Setting Value** column until you removed the text from the **Search** field.
 - For user-defined child settings – for example, with the **Assume Vendor Registration for Invoice Verification** setting – you can now delete the setting.

(OS2602)

Configuration changes in the vertex.cfg file

Enhancement

1. For Vertex O Series instances running Lightweight Directory Access Protocol (LDAP), all required configuration parameters are given default values, if left unvalued. This change ensures that LDAP does not fail if a required configuration parameter is not valued. (OS2302)

Fixes

1. When O Series is installed without federated security, O Series assigns a default value of DBASE – if no other value is assigned – to the `common.fw.rba.userRepository` setting in the vertex.cfg file. O Series can then start successfully without having to modify the configuration. For information about federated security, refer to the *Federated Security Quick Reference*, which is available on the Vertex Community (<https://community.vertexinc.com>). (OS6827, VTX61104)
2. When the `ldap.dirContext.searchScope` parameter value was set to 2 (SUBTREE_SCOPE), the LDAP service was not successfully searching for and authenticating users in subfolders of the current directory context. This is resolved. (OS8149)

Administration change

Fix

1. When an API User role was added to an existing user role, the API user role did not take effect unless the web services was reset. This is fixed. (OS918, CR108191)

Communications service taxes changes

Enhancements

1. Accumulation is enhanced to support O Series deployments that use multiple servers for performance and availability purposes. This change enables multiple servers to share the same Accumulator database.

To use this enhancement in this release, the `accumulatorIndex.sql` data definition language (DDL) script is required to update the Accumulator database. This DDL script introduces a new, required index to the Accumulator database. It does not change the existing structure of the database or existing data.

Vertex recommends that all existing Accumulator data be purged from the database before using the DDL script.

The DDL script can be requested from Vertex Customer Support. In addition to running the DDL script, you must ensure that the accumulator cache environment variable is set to `false` in the `web.xml` file as explained below.

To ensure accumulator caching is not enabled, complete the following steps:

- a. Open the `web.xml` file in a text editor. This file is located in the `vertexroot\tomcat\webapps\vertex-ws\WEB-INF` directory.

The environment variable entry looks as shown below:

```
<env-entry>
    <description>Whether or not to use cache in the
accumulator.</description>
    <env-entry-name>CalcEngineAccumulatorUseCache</env-entry-name>
    <env-entry-type>java.lang.Boolean</env-entry-type>
    <env-entry-value>>false</env-entry-value>
</env-entry>
```

- b. The default value of the `<env-entry-value>` element is `false`. If the value in the `<env-entry-value>` element is `true`, change it to `false` and save the file.

- c. Restart the application server.

(OS6088)

2. A new field is available in BCI to support communications services taxes and other multicomponent calculations. The **multiComponentIndicator** field enables calculations for bundled services in Vertex Communications. (OS6698)

Fix

1. An issue with a Vertex® Indirect Tax for Communications tax-inclusive calculation that resulted in an error is resolved. This error occurred on transactions that included the following:

- A parent line item for which no tax was calculated
- An amount-based child line item that was tax inclusive

(OS8845, VTX061642)

Batch Client Interface (BCI) change

Enhancement

1. A new field is available in BCI to support communications services taxes and other multicomponent calculations. The **multiComponentIndicator** field enables calculations for bundled services in Vertex Communications. (OS6698)

Security change

1. Vertex O Series now enforces role-based permissions on access to the client credential endpoints and restricts the access to authorized users:
 - A Master Administrator has access (Create, Read, and Delete) to all endpoints.
 - A Partition System Administrator has access to endpoints that are paired to a service account within the partition:
 - This administrator cannot access endpoints that are not paired with a service account.
 - This administrator can create client credentials only if they include information about the service account that belongs to the partition.
 - Users without a Master Administrator or Partition System Administrator role cannot access client credential endpoints.

An endpoint is defined as a unique URL that enables the client to interact with data resources. (OS5865)

Performance changes

1. For O Series instances that have a large number of certificates, startup and cache refresh performance are improved. (OS6574)
2. Vertex decreased the time required to complete a Tax Journal Export by streamlining the Vertex-supplied tax data that is exported to the Reporting database. When no monthly data update has been run since the last Tax Journal Export, O Series now exports only user-defined Transaction Processing System (TPS) data in the Tax Journal Export process. (OS8377)

Compatibility issues affecting deployments using SAP HANA

Vertex has become aware of compatibility issues that may affect O Series 9.0 on-premise deployments using the SAP HANA database server that will be resolved in an upcoming O Series release. Vertex will work with SAP HANA users that are currently in production on O Series 9.0 or planning to upgrade to version 9.0 on a revised plan that takes into account the issues Vertex has discovered with SAP HANA on 9.0.

Please note that these compatibility issues do not affect O Series 8.0 users. SAP HANA v2.0 database server support is still available for O Series 8.0 SR3.

If this affects your current deployment or future plans, please contact your Technical Account Manager or call Customer Support at 800.281.1900, extension 4765, to speak with a Vertex O Series Support Analyst.

Release 9.0 SR1 MP2

System changes

1. The Tax Data Import task now successfully processes files in which taxpayer records are in any order. This fix resolves an issue where errors occurred when importing a file in which the taxpayer records were not in hierarchical order. (OS6762)
2. An issue with Tax Data Import - where duplicate customer contact records prevented the customer record from being imported - is resolved. Duplicate records are now ignored. (OS7294)

Web Services change

1. For enumerated values that changed between O Series 8.0 and O Series 9.0, O Series now handles both the old value and the new value when processing transactions that are submitted via web services. For example, the enumerated values for the `tax.inputOutputType` field in Tax Assist changed in O Series 9.0 as follows:

O Series 8.0 value	O Series 9.0 value
INPUT	Input Tax
OUTPUT	Output Tax
INPUT_OUTPUT	Input and Output Tax
IMPORT	Import Tax

When a Tax Assist rule references a lookup table that uses an 8.0 value for the `tax.inputOutputType` field, O Series now processes the transaction appropriately. This fix resolves an issue where the Calculation Engine erroneously did not process Tax Assist rules that used the `tax.inputOutputType` field based on 8.0 values. (OS8064)

Exemption Certificate Wizard change

When a new certificate with a jurisdiction, customer, and reason type is downloaded via Vertex® Exemption Certificate Wizard (ECW), the following occurs:

- When Vertex O Series does not have a certificate with the same values, a new ECW-sourced certificate is created.
- When Vertex O Series already has an active certificate with the same values, the *current* Vertex O Series certificate is inactivated and a *new* ECW-sourced certificate is created, as of the certificate Effective Date.

The current Vertex O Series certificate is *always* inactivated in this scenario. The replacement occurs whether or not Form IDs are present. So a current certificate *with* a Form ID can be replaced with a new certificate *without* a Form ID, which can occur when a customer uploads an image via ECW without answering the setup questions.

- If Vertex O Series already has two active certificates with the same values, one with a Form ID and one without a Form ID, the following occurs:
 - If the new ECW-sourced certificate *has* a Form ID, *both* current Vertex O Series certificates are inactivated and the *new* ECW-sourced certificate is created as of the certificate Effective Date.
 - If the new ECW-sourced certificate does *not* have a Form ID, only the current Vertex O Series certificate *without* a Form ID is inactivated. The current Vertex O Series certificate *with* a Form ID is not affected.

(OS6988)

Message on O Series home page for database upgrade

As part of the preparation for database upgrade enhancements in a future release, you may see the following message on the O Series home page:

A DB Upgrade ZIP file has not been provided. Skipping the DB Upgrade processing.

You can ignore this message. It is harmless and indicates that no database upgrades were made for the update. In a future release, this message may contain information about database changes that are applied as part of an update. Database changes will be documented in future Release Notes.

Release 9.0 SR1 MP1

Calculation Engine changes

1. For a transaction that includes a non-specific address – for example, Italy – and has transaction and line item tax dates that differ, O Series no longer returns a null pointer exception (NPE) when a line item tax date precedes the effective date of a specific jurisdiction that the Calculation Engine evaluates when running jurisdiction calculation trials.

An example of this type of transaction is one that specifies a destination of Italy and has a line item with a tax date in 2019. One of the possible jurisdictions for trials based on the transaction tax date is the jurisdiction Italian Waters of Lake Lugano, which has an effective date of January 1, 2020.

Previously, the trial calculation for that jurisdiction caused an NPE because the jurisdiction was not effective for the line item's tax date. Now, O Series makes the proper checks so there is no error. (OS2870)

2. For Brazilian transactions, the Calculation Engine now factors the apportionment rate into the effective rate that is used to calculate Differential ICMS (DIFAL) tax for the destination jurisdiction. This fix resolves an issue where O Series calculated DIFAL based on the nominal rate and did not apply the necessary apportionment rate. (OS3011)
3. An issue is resolved that caused a null pointer exception (NPE) in a distribute tax transaction with a line item that had a shipping sub-line item. (OS5970)

My Enterprise changes

1. This release includes the following changes to the Taxability Drivers feature:
 - An issue that caused a null pointer exception (NPE) when searching for taxability drivers is resolved. This issue occurred in deployments with more than 1,000 taxability drivers (OS5971, VTX060793)
 - For a **Limited** certificate that is mapped to more than one taxability driver, the mappings now persist after saving the certificate and display properly when viewing or editing the certificate. This fix resolves an issue where only one taxability driver persisted when saving a certificate for which multiple taxability drivers were selected. This issue occurred in deployments with more than 1,000 taxability drivers. (OS5760, OS5801, VTX060705)
 - An issue that limited you to typing 20, rather than 40, characters in taxability driver selectors is resolved. (OS2293, VTX059654)
2. Certificate validation now behaves consistently when using the Data Management **Certificate Validation** feature and when using the **Certificates** feature. This fix resolves an issue where validation results were not the same for both features. Now, when the Data Management Certificate Validation process evaluates a certificate with no expiration date in a jurisdiction that uses a validation rule of the *Years from Issue* type, it automatically sets and saves an auto-generated expiration date on the certificate. (OS2461, VTX059462)

Tax Setup changes

1. This release contains the following changes that are related to user-defined impositions in the Impositions feature:
 - An error that occurred when attempting to edit the impositions is resolved. (OS5990)
 - The **Is VAT** selection for tax type now persists in the Tax Data Import process. This fix resolves an issue where the setting did not import successfully. If you have run a Tax Data Import and encountered this issue, you must add the imposition tax type of VAT to the import file before attempting the import again. (OS2790)

2. This release contains the following changes to Tax Rules features:
 - The issue that disallowed entry of a decimal point or a zero in the **Percent** field in the Basis rule feature is resolved. (OS5878)
 - The issue that caused an error when saving user-defined inclusion rules and user-defined basis rules for China is resolved with monthly data update (MDU) 197.2. This issue was caused by incomplete jurisdiction definitions from MDU 197. (OS5844, VTX060762)
3. For Tax Assist rules that use a lookup table to assign a value to the lineType field, the issue that caused an error when splitting a text string from the lookup table into the various data fields that are necessary to set the lineType is resolved. (OS6072)

Reporting changes

1. This release contains the following changes to VRA features:
 - An issue with the VRA > Sample Extracts feature – where the fields did not populate properly when copying or editing a sample extract – is resolved. Selecting the **COPY** and **EDIT** buttons on a sample data extract now opens the sample extract and pre-populates the fields correctly. (OS4819)
 - An issue where the filter was missing when importing a VRA data extract definition is resolved. This occurred when the imported VRA data extract definition had only one filter. (OS2304, VTX059651)

System changes

1. An issue that displayed the incorrect status for Reporting Purge tasks is resolved. (OS903, CR106983)
2. Tax Data Export now includes user-defined commodity codes in the export file. This fix resolves an issue where the user-defined commodity codes were omitted from the export file. (OS2946)
3. Tax Data Import now persists the **Is VAT** selection for tax type in user-defined impositions. This fix resolves an issue where the setting did not import successfully. If you have run a Tax Data Import and encountered this issue, you must add the imposition tax type of VAT to the import file before attempting the import again. (OS2790)

4. The following changes were made to Tax Engine Extract:
 - Tax Engine Extract is updated to include both unit conversion rules and line type mapping rules data. (OS1870, OS1871)
 - An issue where the Tax Engine Extract process did not correctly filter down to the selected jurisdictions is resolved. (OS4375)
5. The following changes were made to Settings:
 - An issue with the Required Region Types For Address (Calc Override) setting is resolved. With this issue, O Series did not recognize that a child override had been deleted from the setting. (OS2276, VTX059597)
 - For the Alternative Region Type setting, child lines with empty settings can now be deleted. This fix resolves an issue where a child line could not be deleted if its value had not been set. (OS2462, CR109266)

Script available for Reporting database change

In O Series 9.0, the maximum length of code flexible field values increased from 40 characters to 250 characters. For clients that installed O Series 9.0 using O Series Installer versions 9.0.0.0.320 or earlier, the Tax Journal Export process fails if a transaction includes a code flexible field with a value greater than 40 characters. This issue is caused by a restriction in the Reporting database that allows only up to 40 characters in a flexible field.

To increase the field length for code flexible fields in the Reporting database, Vertex provides `ALTER TABLE` database correction scripts that you can request from Customer Support. Your database administrator can run the script against the Reporting database to expand the length of the affected table columns to 250 characters. The following scripts are provided for each supported database server:

Database server	Script file
Microsoft SQL Server	RDBLnItmStrngFlxFld-sqlserver-fix.sql
Oracle	RDBLnItmStrngFlxFld-oracle-fix.sql
IBM DB2	RDBLnItmStrngFlxFld-db2-fix.sql
Postgre SQL	RDBLnItmStrngFlxFld-postgres.fix.sql
SAP HANA	RDBLnItmStrngFlxFld-hana-fix.sql

If you installed O Series 9.0 with version 9.0.0.0.320 or earlier, apply the script if you plan to use flexible fields that are longer than 40 characters. If you are installing O Series 9.0 with O Series Installer version 9.0.0.0.321 or later, this issue is resolved and it is not necessary to apply the script. (OS4352)

Retail LITE change

1. An issue that caused an error when running a transaction in Retail LITE - where the transaction triggered a Tax Assist rule that used a lookup table - is resolved. Retail LITE no longer erroneously attempts to establish a database connection when processing Tax Assist rules that use lookup tables. (OS6426, VTX060982)

Federated security changes

1. An issue with federated security – where O Series appended duplicate copies of the same `oauth_web_server_redirect_uri` into the `oauth_web_detail` table when the 9.0 web service was stopped and restarted – is resolved. (OS4342, VTX060463)
2. The `oauth_client` service now validates the inputs to the following parameters and returns an appropriate error message if the input is invalid:

Parameter	Error messages
<code>/oauth_client/service_account</code>	<code>expDays</code> and <code>tokenExp</code> must be a number greater than or equal to 0.
<code>/oauth_client</code>	<ul style="list-style-type: none"> • <code>access_token_validity</code> and <code>refresh_token_validity</code> must be a number greater than or equal to 0. • <code>grant_type</code> must be one of the following: password implicit refresh_token client_credentials

(OS4630)

Supported platform changes

1. Vertex added support to O Series for the following database servers:
 - Microsoft SQL Server 2019
 - Oracle 19c
2. Vertex has retired support for the Wildfly application server.

Release 9.0 SR1 MP1

Calculation Engine changes

1. For a transaction that includes a non-specific address – for example, Italy – and has transaction and line item tax dates that differ, O Series no longer returns a null pointer exception (NPE) when a line item tax date precedes the effective date of a specific jurisdiction that the Calculation Engine evaluates when running jurisdiction calculation trials.

An example of this type of transaction is one that specifies a destination of Italy and has a line item with a tax date in 2019. One of the possible jurisdictions for trials based on the transaction tax date is the jurisdiction Italian Waters of Lake Lugano, which has an effective date of January 1, 2020.

Previously, the trial calculation for that jurisdiction caused an NPE because the jurisdiction was not effective for the line item's tax date. Now, O Series makes the proper checks so there is no error. (OS2870)

2. For Brazilian transactions, the Calculation Engine now factors the apportionment rate into the effective rate that is used to calculate Differential ICMS (DIFAL) tax for the destination jurisdiction. This fix resolves an issue where O Series calculated DIFAL based on the nominal rate and did not apply the necessary apportionment rate. (OS3011)
3. An issue is resolved that caused a null pointer exception (NPE) in a distribute tax transaction with a line item that had a shipping sub-line item. (OS5970)

My Enterprise changes

1. This release includes the following changes to the Taxability Drivers feature:
 - An issue that caused a null pointer exception (NPE) when searching for taxability drivers is resolved. This issue occurred in deployments with more than 1,000 taxability drivers (OS5971, VTX060793)
 - For a **Limited** certificate that is mapped to more than one taxability driver, the mappings now persist after saving the certificate and display properly when viewing or editing the certificate. This fix resolves an issue where only one taxability driver persisted when saving a certificate for which multiple taxability drivers were selected. This issue occurred in deployments with more than 1,000 taxability drivers. (OS5760, OS5801, VTX060705)
 - An issue that limited you to typing 20, rather than 40, characters in taxability driver selectors is resolved. (OS2293, VTX059654)

2. Certificate validation now behaves consistently when using the Data Management **Certificate Validation** feature and when using the **Certificates** feature. This fix resolves an issue where validation results were not the same for both features. Now, when the Data Management Certificate Validation process evaluates a certificate with no expiration date in a jurisdiction that uses a validation rule of the *Years from Issue* type, it automatically sets and saves an auto-generated expiration date on the certificate. (OS2461, VTX059462)

Tax Setup changes

1. This release contains the following changes that are related to user-defined impositions in the Impositions feature:
 - An error that occurred when attempting to edit the impositions is resolved. (OS5990)
 - The **Is VAT** selection for tax type now persists in the Tax Data Import process. This fix resolves an issue where the setting did not import successfully. If you have run a Tax Data Import and encountered this issue, you must add the imposition tax type of VAT to the import file before attempting the import again. (OS2790)
2. This release contains the following changes to Tax Rules features:
 - The issue that disallowed entry of a decimal point or a zero in the **Percent** field in the Basis rule feature is resolved. (OS5878)
 - The issue that caused an error when saving user-defined inclusion rules and user-defined basis rules for China is resolved with monthly data update (MDU) 197.2. This issue was caused by incomplete jurisdiction definitions from MDU 197. (OS5844, VTX060762)
3. For Tax Assist rules that use a lookup table to assign a value to the lineType field, the issue that caused an error when splitting a text string from the lookup table into the various data fields that are necessary to set the lineType is resolved. (OS6072)

Reporting changes

1. This release contains the following changes to VRA features:
 - An issue with the VRA > Sample Extracts feature – where the fields did not populate properly when copying or editing a sample extract – is resolved. Selecting the **COPY** and **EDIT** buttons on a sample data extract now opens the sample extract and pre-populates the fields correctly. (OS4819)
 - An issue where the filter was missing when importing a VRA data extract definition is resolved. This occurred when the imported VRA data extract definition had only one filter. (OS2304, VTX059651)

System changes

1. An issue that displayed the incorrect status for Reporting Purge tasks is resolved. (OS903, CR106983)
2. Tax Data Export now includes user-defined commodity codes in the export file. This fix resolves an issue where the user-defined commodity codes were omitted from the export file. (OS2946)
3. Tax Data Import now persists the **Is VAT** selection for tax type in user-defined impositions. This fix resolves an issue where the setting did not import successfully. If you have run a Tax Data Import and encountered this issue, you must add the imposition tax type of VAT to the import file before attempting the import again. (OS2790)
4. The following changes were made to Tax Engine Extract:
 - Tax Engine Extract is updated to include both unit conversion rules and line type mapping rules data. (OS1870, OS1871)
 - An issue where the Tax Engine Extract process did not correctly filter down to the selected jurisdictions is resolved. (OS4375)
5. The following changes were made to Settings:
 - An issue with the Required Region Types For Address (Calc Override) setting is resolved. With this issue, O Series did not recognize that a child override had been deleted from the setting. (OS2276, VTX059597)
 - For the Alternative Region Type setting, child lines with empty settings can now be deleted. This fix resolves an issue where a child line could not be deleted if its value had not been set. (OS2462, CR109266)

Script available for Reporting database change

In O Series 9.0, the maximum length of code flexible field values increased from 40 characters to 250 characters. For clients that installed O Series 9.0 using O Series Installer versions 9.0.0.0.320 or earlier, the Tax Journal Export process fails if a transaction includes a code flexible field with a value greater than 40 characters. This issue is caused by a restriction in the Reporting database that allows only up to 40 characters in a flexible field.

To increase the field length for code flexible fields in the Reporting database, Vertex provides `ALTER TABLE` database correction scripts that you can request from Customer Support. Your database administrator can run the script against the Reporting database to expand the length of the affected table columns to 250 characters. The following scripts are provided for each supported database server:

Database server	Script file
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Retail LITE change

1. An issue that caused an error when running a transaction in Retail LITE - where the transaction triggered a Tax Assist rule that used a lookup table - is resolved. Retail LITE no longer erroneously attempts to establish a database connection when processing Tax Assist rules that use lookup tables. (OS6426, VTX060982)

Federated security changes

1. An issue with federated security – where O Series appended duplicate copies of the same `oauth_web_server_redirect_uri` into the `oauth_web_detail` table when the 9.0 web service was stopped and restarted – is resolved. (OS4342, VTX060463)
2. The `oauth_client` service now validates the inputs to the following parameters and returns an appropriate error message if the input is invalid:

Parameter	Error messages
<code>/oauth_client/service_account</code>	<code>expDays</code> and <code>tokenExp</code> must be a number greater than or equal to 0.
<code>/oauth_client</code>	<ul style="list-style-type: none">• <code>access_token_validity</code> and <code>refresh_token_validity</code> must be a number greater than or equal to 0.• <code>grant_type</code> must be one of the following:<ul style="list-style-type: none"><code>password</code><code>implicit</code><code>refresh_token</code><code>client_credentials</code>

(OS4630)

Supported platform changes

1. Vertex added support to O Series for the following database servers:
 - Microsoft SQL Server 2019
 - Oracle 19c
2. Vertex has retired support for the Wildfly application server.

Release 9.0 SR1

Support for Missing Trader Intra-Community (MTIC) anti-fraud legislation

This release adds data content and functionality that simplifies and automates the jurisdictional requirements of Missing Trader Intra-Community (MTIC) fraud within the European Union (EU).

What is MTIC fraud?

MTIC refers to organized fraud schemes in the EU that exploit differences in how value added tax (VAT) is handled in different EU member states. In simple MTIC cases, fraudsters sell goods and charge VAT to buyers without remitting the tax to the authorities. In more complex "carousel" schemes, fraudsters import goods and sell them through a series of companies before exporting them again. The first company in the domestic chain charges VAT to a buyer, but does not pay the tax to the government, becoming what is known as the *missing trader*. The exporters of these goods then claim and receive the reimbursement of VAT payments that never occurred.

What is the Vertex solution for MTIC fraud?

To help combat this MTIC fraud in the EU, O Series now has Vertex-supplied tax rules that use a domestic reverse charge mechanism to transfer the responsibility to collect and pay VAT from the seller to the buyer. This mechanism applies to intra-country, business-to-business transactions of certain goods and services – such as cell phones, video games, and portable computers – in accordance with the EU VAT Directive.

For the domestic reverse charge mechanism, some EU countries specify transaction thresholds that must be met for the reverse charge to apply to sales of certain goods and services. Vertex provides up-to-date post calculation evaluation tax rules for each country's thresholds. These rules are available starting with Monthly Data Update (MDU) 197. For a list of the countries and taxability categories for which Vertex supplies tax rules, refer to the *Summary of Changes* document on the Vertex Community and on the O Series home page.

Applying thresholds and reverse charges to your transactions

To use the domestic reverse charge logic in transactions when certain thresholds are exceeded, you must map your taxability drivers to the appropriate taxability categories that are identified in the *Summary of Changes*. With the proper mappings, O Series analyzes the extended price of the applicable transaction line items and, if it exceeds the threshold, automatically applies the reverse charge to those line items.

For more information about the Vertex solution for MTIC and how to set up your O Series instance to apply this solution to the appropriate transactions, refer to the *Missing Trader Intra-Community Anti-Fraud Support Tipsheet* on the Vertex Community.

Calculation Engine changes

1. An issue that caused an over-accrual for a multicomponent invoice – particularly where a sub-line item was taxed but the parent component line item was not taxed – is resolved. (OS265, CR108561)
2. O Series 9.0 now processes invoices with more than 1,000 line items. This fix resolves an issue that resulted in a SQL exception when performing a reversal request on a large invoice in an Oracle database. (OS303, CR106736)
3. In transactions that pass a negative unit price and a negative quantity, the extended price and the fair market value are now returned as negative values. Previously in some transactions, the extended price and fair market value were positive when a transaction included a negative unit price and a negative quantity. (OS836, CR107791)
4. For Argentina Turnover Tax processing, basis apportionment rules are now correctly applied when a Clave Única de Identificación Tributaria (CUIT) number has different rates for different provinces. This fix resolves an issue where Tax Assist rules could not apply to line items that were apportioned by basis apportionment rules. (OS844, CR108549)
5. An issue where the XML response for a transaction did not include a max tax rule ID when the rule applied to tax calculation is resolved. This issue occurred only when the rule applied at the *first* tier; it did *not* occur when the rule applied at higher tiers. Now, the max tax rule ID correctly displays in the XML response when it applies at the first tier. (OS873, CR108631, VTX057748)
6. An issue that caused a post-calculation Tax Assist rule to set an incorrect flexible field value is resolved. With this issue, the Calculation Engine incorrectly processed the Tax Assist rule for the following line items:
 - For line items with impositions that were turned off at the taxpayer level
 - For NO_TAX line items that should have been eliminated from the calculation results because the `com.vertexinc.tps.common.domain.doNotShow_NoTax_Results` parameter was set to `true`

Each time the rule was processed, a different value was assigned to the flexible field, which resulted in an incorrect final value. The Calculation Engine now processes the Tax Assist rule for only the appropriate line items and returns the correct flexible field value. (OS944, CR107992, VTX053936)

7. An issue that occurred with Quotation requests – where an override of a Destination location code with address fields produced inconsistent results – is resolved. The Calculation Engine now applies the overrides consistently and correctly. (OS1473, VTX058648)
8. For a transaction with an applicable max tax rule, the *position* of a credit line item in the transaction – relative to positive line items – no longer has an effect on the total calculated tax. This fix resolves an issue where different placements of a negative line item in a transaction caused different tax amounts to be calculated when the applicable max tax rule had tier types of Quantity or Quantity Rate. (OS1588, CR104140)
9. For tax-on-tax basis calculations, O Series now handles situations where the included tax is from a different location role or a different tax area. For example, if the taxable basis for the Administrative Origin location must include the tax for the Destination location, O Series now correctly includes the Destination tax in the taxable basis. This fix resolves an issue where a tax was not included in the taxable basis at all the appropriate jurisdiction levels. (OS2102, CR109091)
10. An issue that included an incorrect filing category code in calculation results is resolved. With this issue, one invoice's filing category code was incorrectly applied to the XML response for the next invoice that was processed. (OS2510, VTX059690)
11. An issue that caused transactions to fail in Transaction Tester when the taxpayer code was provided in the request is resolved. This issue occurred in O Series instances that use an IBM DB2 database. (OS4044, VTX059418)

My Enterprise changes

Enhancement

1. In the Certificate Management feature, you can now insert a **Ecw Uuid** field into your letter templates. This field is a unique identifier for the Vertex® Exemption Certificate Wizard combination of customer and certificate. (OS1430)

Fixes

1. This release changes the import reverse charge mechanism for the Taxpayers, Customers, and Vendors features to function as an override of default situs logic. This mechanism is available via the **Import Reverse Charge** check box on the Impositions Registration Details tab for these features and now has the following behaviors:
 - When this check box is selected for a particular jurisdiction and imposition, the Calculation Engine calculates Import VAT at the appropriate destination rate and creates output notices for Import VAT and Reverse Charge – regardless of the default situs determination for import reverse charge.
 - When this check box is clear, the Calculation Engine uses the default situs logic.

Previously, the only way to process a transaction as an import reverse charge was to select this check box for the appropriate taxpayer, customer, or vendor. If the check box was cleared, no import reverse charge applied to transactions, regardless of situs determination.

Note: *With this new behavior, consider any changes that you may need to make to the setup for your taxpayers, customers, and vendors to process import reverse charges. If you now see import reverse charges in transactions for which it previously did not apply, it is because of this 9.0 SR1 change.*

(OS937, CR104230, VTX046266)

2. This release includes the following changes to the Taxpayers feature:
 - An issue with taxpayer location start dates – where the start dates for existing taxpayer locations incorrectly changed to the start date for a newly added location – is resolved. This issue occurred with locations outside the U.S. (OS878, CR108688)
 - An issue that caused a null pointer exception when searching for jurisdictions while editing a taxpayer registration is resolved. (OS1664, VTX059049)
 - An issue with taxpayers' European Union Mini One-Stop Shop (EU MOSS) registrations – where a registration was unintentionally deleted when saving edits to a taxpayer record – is resolved. EM MOSS registration data now persists when saving a taxpayer record. (OS2175)
 - An issue that caused an error while saving a taxpayer registration is resolved. The error occurred when Include New Impositions was cleared and a user-defined imposition type was present. (OS2520, VTX059752)
 - An issue that prevented user-defined imposition types from displaying on the Impositions Registration Details tab of the Taxpayers > Registrations page is resolved. (OS2595, VTX059859)

- An issue that caused the **EDIT LOCATION** button to become unavailable when editing taxpayer data is resolved. This issue was caused by null fields, and the O Series user interface now properly handles null fields that are imported via Tax Data Import or via an upgrade from O Series 8.0 to O Series 9.0. (OS3764, VTX060235)
3. This release includes the following changes to the Certificates feature:
- In the Certificates feature, on the Jurisdictions tab, the Exemption Type field is now labeled **Telecom Exemption Type**. The Exemption Type field is no longer included in an Advanced Search of the Certificates feature. (OS618)
 - An issue that prevented updated certificates from displaying on the O Series user interface is resolved. This issue occurred when any certificate update caused a critical change to the certificate record. (OS1045, VTX057264)
 - An issue that caused a certificate to be omitted from search results is resolved. (OS1799, CR109143)

Tax Setup changes

Enhancements

This release provides the following Tax Setup enhancements:

1. If you are licensed for Vertex® Indirect Tax for Communications, you can now modify Vertex-defined unit conversion rules and create user-defined unit conversion rules via the **Unit Conversion** feature in Tax Setup > Conversion > Unit Conversion. Unit conversion rules are used in Vertex O Series communications tax processing to determine the appropriate unit conversion to use in a calculation, based on the line type that is passed with the transaction. (OS1301)
2. If you are licensed for Vertex® Indirect Tax for Communications, you can now modify Vertex-defined line type mappings and create user-defined line type mappings via the **Line Type Mapping** feature in Tax Setup > Conversion > Line Type Mapping. Line type mappings are used to associate line types that are passed with the transaction to existing unit conversion rules. (OS1278 to OS1282)
3. For scenarios where you want to apply the taxability of the main jurisdiction to all lower-level jurisdictions, you can create a cascading calculation rule. This feature enables you to build *one calculation rule* that applies to a main jurisdiction and all its lower-level jurisdictions, rather than having to create *separate calculation rules* for each jurisdiction.

For the Calculation feature, two new options are added to the Details tab to indicate if the taxability applies for only the same imposition that is selected on the General tab or to all impositions for lower-level jurisdictions. These options display only when you select a taxability of Exempt or Nontaxable. These options are the following:

- **Cascading for lower level and same imposition**
- **Cascading for lower level and all impositions**

(OS1286)

4. The following two fields are added to the Post Calculation Evaluation feature, primarily to support tax rules for Missing Trader Intra-Community (MTIC) anti-fraud support:
 - **Scope** field. This field identifies the level – either invoice level or line-item level – at which the Calculation Engine evaluates threshold limits when processing a post calculation evaluation rule.
 - **Reverse Charge** check box. When selected, this check box indicates that the tax responsibility transfers from the seller to the buyer. O Series then applies the situs logic for the buyer's country.

(OS1285)

5. For the Tax Assist Addresses field, **location code** is added to the collection of address information. This field enables you to set one complete address collection (location role) to another complete address collection (location role). Location roles are Administrative Origin, Administrative Destination, Physical Origin, and Physical Destination. (OS940, CR107402)

Fixes

1. For the Taxability Mapping feature, the issue that kept taxability mapping search results from sorting by Code and by Entity is resolved. (OS1402, VTX058397)
2. This release resolves the following issues with Tax Assist:
 - An issue that occurred with a situs override that was set up with a Tax Assist rule – where O Series did not apply the override to all relevant situs conclusions – is resolved. This issue occurred in a scenario where a service took place in a country other than the buyer's country, and a Tax Assist rule was set up to change the situs to Administrative Origin. The VAT tax calculation now correctly applies to the Administrative Origin and is reported as such in the XML response message. (OS815, VTX058147)
 - An issue that occurred with the `customer.isBusiness` indicator in XML requests – where this indicator in a pre-calculation Tax Assist rule did not work correctly when set to `false` and when the customer details applied only at the line-item level – is resolved. (OS875, CR108821)

- You can now specify whether the *original line-item tax date* or an *assisted tax date* is used to determine the effective Tax Assist rules to apply to a calculation. An assisted tax date is available when a Tax Assist rule changed the line item's original tax date to another date. To specify the appropriate date for the Calculation Engine to use when determining applicable Tax Assist rules, use the new **Use Assisted Tax Date** setting in System > Administration > Settings.

When this setting's value is `true`, Vertex O Series uses the available assisted tax dates. When the value is `false`, Vertex O Series uses the original line-item tax date. This setting applies at the partition level. (OS881, CR106899)

- A meaningful message now displays during tax calculation when a post-calculation Tax Assist rule requires a Destination, Administrative Destination, Physical Origin, or Administrative Origin address in a transaction, but this address is not passed with the transaction request. Previously, a null pointer exception occurred in this situation. (OS1083, VTX058758)
- The ability to use a pre-calculation Tax Assist rule to evaluate the `mainDivision` value that is passed in on a request and to set it to a different `mainDivision` value is restored. For example, the following type of condition and conclusion is now valid and no longer causes an error:

IF Destination.mainDivision = ABC

SET Destination.mainDivision to "PA"

(OS2104, CR109195)

- For Tax Assist fields with enumerated values that changed between O Series 8.0 and O Series 9.0, O Series now handles both the old value and the new value during processing. This change resolves an issue where errors occurred when processing Tax Assist rules that used enumerated values from O Series 8.0. (OS2559, CR109323, VTX059787)
- An issue that caused a null value to be returned when using a join statement in a Tax Assist rule is resolved. (OS2785, CR106115)

Reporting changes

Vertex® Indirect Tax Reporting & Analysis (VRA) is the Vertex O Series reporting tool that is used to create standard and custom reports using O Series data. Vertex is evolving this product to leverage the capabilities of the former Data Extract feature of Vertex O Series and to no longer require an IBM® Cognos deployment.

The former VRA tool that required a Cognos deployment is now referred to as *Legacy Vertex Reporting & Analysis (Legacy VRA)*. The Legacy VRA feature is available for a limited time only to users that have a Cognos license that they procured from Vertex. To access Legacy VRA, you must submit a request to Customer Support.

You now see the following modified Reporting menu structure on the O Series user interface:

 Reporting	—
Standard Reports	—
Report Output	
Filters	
Report Scheduler	
VRA	—
Extract Definitions	
Extract Results	
Sample Extracts	
Legacy VRA	

The following table shows the changes to the Reporting menu structure between O Series 9.0 and prior releases, with the changes highlighted in **bold**:

9.0 Reporting menu	Prior releases Reporting menu
Reporting	Reporting
Standard Reports	Standard Reports
Report Output	Report Output
Filters	Filters
Report Scheduler	Report Scheduler
VRA	Data Extract
Extract Definitions	Extract Definitions
Extract Results	Extract Results
Sample Extracts	Sample Extracts
Legacy VRA	VRA

(OS1968, OS1969)

Enhancements

1. A new template in Reporting > VRA > Extract Definitions – **Certificates With Customer History** – enables you to report on the certificates that are managed in O Series, based on customer data for a specified time frame. This data extract includes the same fields as the Certificates data extract, but also includes fields for Customer Start Date and Customer End Date.

This template is especially useful for certificates that were created with Vertex® Exemption Certificate Wizard (ECW) and for which the temporary Customer Code was changed to another Customer Code. In this case, you can filter the data extract to include certificate information for only the current Customer Code. (OS850, CR107606)

2. The Certificates extract now includes the following fields:
 - **ECW Certificate ID** - The number of the ECW certificate
 - **ECW Sync ID** - A number that ECW generates to synchronize certificate information between ECW and Vertex O Series
 - **ECW UUID** - A unique identifier for the combination of customer and certificate

(OS1430)

- Four of the Taxability Matrix reports now display the Parent Category ID column to enable you to see inherited taxability. The reports and the tabs on which the ID display are as follows:

On this report...	The Parent Category ID column displays on these tabs...
Taxability Matrix - Canada	Canadian Supplies Canadian Procurement
Taxability Matrix - Mexico	Mexican Supplies Mexican Procurement
Taxability Matrix - United States	US Sales Tax US Consumer Use Tax
Taxability Matrix - VAT	VAT

(OS854, CR108098)

- The Extract Definition page now displays time periods, such as Current Week and Previous Quarter, when you select the In Time Period option in the Operator field. (OS665, VTX058452)

Fixes

- An issue that caused the selected posting date to not function when running a Transaction Detail data extract is resolved. (OS277, CR106568)
- An issue with the Data Update Impact (Tax Rules) data extract – where records for some tax rate changes from a monthly data update were missing on the report – is resolved. (OS874, CR108733)
- An issue that caused the tax amount of a split transaction to be included in the nontaxable amount is resolved. This occurred on the Transaction Recap Report when there was a nontaxable amount due to bracket rounding rules. (OS924, CR99788)
- An issue with bracket tax structure that caused an error in the gross amount on the Transaction Summary Report is resolved. This error occurred when the transaction's gross amount was three decimal digits. (OS877, CR108687)
- An issue that caused omissions from the Unmapped Taxability Drivers data extract is resolved. (OS948, CR108797)
- An issue that caused a blank pop-up message when viewing certain Data Extract reports, such as the Invoice Tax Detail Report, is resolved. (OS2275, VTX059257)

System changes

Enhancements

1. For changes to the Settings feature, refer to Configuration parameter changes (see page 102).
2. For the Tax Journal Export feature, invoice text codes are now included in exports to the Reporting database. Up to four invoice text records per imposition are posted to the Tax Journal and exported in the Tax Journal Export process. (OS640, CR108142)
3. For the Tax Engine Extract feature, you can now use the **Partitions** field to filter the Global Data file by partition. Selecting one or more partitions reduces the size of the extract file that you send to individual POS locations. (OS855, 108246)

Fixes

1. An issue that caused valid users to not display on the user interface is resolved. (OS1457, VTX058849)
2. For the Users feature, an issue that prevented the Roles drop-down list from displaying is resolved. This issue occurred only for a partition system administrator and when the debug parameter was turned on in the vertex.cfg file. (OS2862, VTX059554, VTX060020)
3. For the Data Update History feature, an issue that caused an error when users attempted to open a Data Update History document is resolved. This issue occurred in O Series instances where the `common.datarelease.RootDirectory` parameter in the vertex.cfg file specified a directory other than the default directory. (OS325, CR106828)
4. An issue that caused a Tax Journal Export to fail when a transaction included a code flexible field value greater than 40 characters is resolved with the application of special scripts. Vertex provides `ALTER TABLE` scripts that you can run against the Reporting database to expand code flexible field table columns to 250 characters. These scripts are available on the Vertex Community. For more information, refer to Script available for Reporting database change (see page 82). (OS4352)
5. This release includes the following changes to the Tax Data Export feature:
 - An issue that caused partial certificate data to be exported is resolved. (OS876, CR108823)
 - An issue is resolved where Taxpayer records were not included in the export because a business location had an end date. Taxpayer records that have business locations with end dates are now included in the export. (OS1493)
 - An issue that caused Tax Data Export to fail is resolved. This occurred when the pipe character was used as the delimiter between data elements. (OS1670, CR109117)

- When the business location effectivity dates are outside the range of taxpayer effectivity dates, O Series now logs a *warning message* for the business location record and does not include it as part of the export file. Previously, O Series logged an *error message* for a business location record when the dates did not coincide with the taxpayer dates. (OS1678, VTX057986)
- An issue that prevented a Tax Data Export file from downloading and that displayed a blank error message is resolved. The Tax Data Export file is now downloaded to the user's designated partition directory. The Tax Data Export file will be prevented from downloading to a null partition directory. (OS2401)

6. This release includes the following changes to the Tax Data Import feature:

- An issue that prevented taxability mapping changes in a Tax Data Import file from updating the mapping in the target import partition is resolved. The conditional rule that is associated with a taxability mapping is now activated or deactivated as specified in the import file. (OS857, CR108744)
- An issue that caused Tax Data Import to fail is resolved. This occurred when the pipe character was used as the delimiter between data elements. (OS1670, CR109117)
- An issue that caused errors – where the import file included Tax Assist rules that used the tax.inputOutputType field – is resolved. The enumerated values for this field changed in O Series 9.0. For enumerated values that changed between O Series 8.0 and O Series 9.0, O Series now handles both the old value and the new value during processing. The values for the tax.inputOutputType field are as follows:

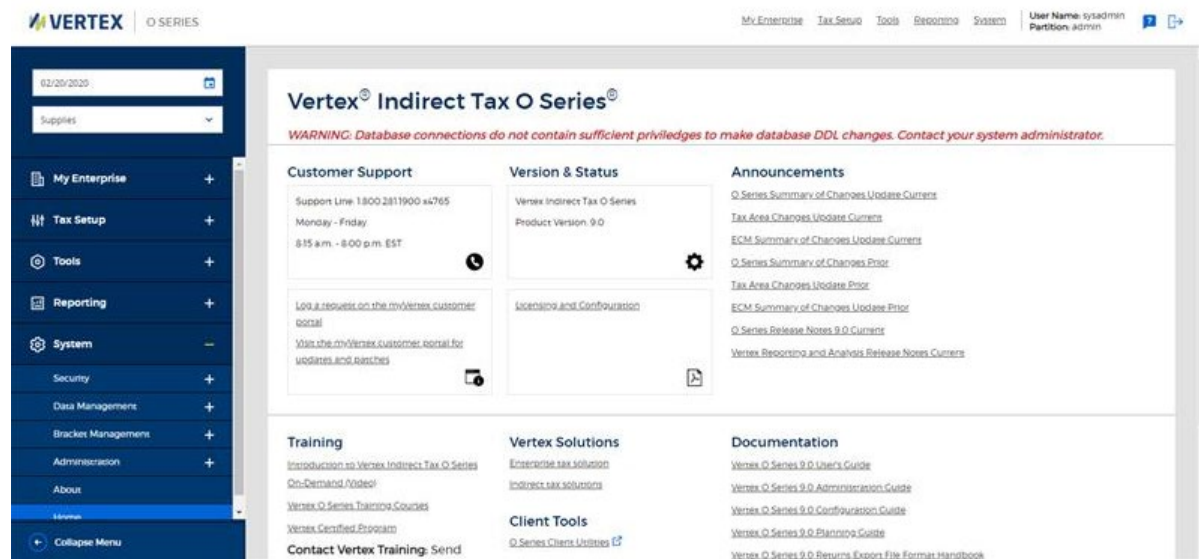
O Series 8.0 value	O Series 9.0 value
INPUT	Input Tax
OUTPUT	Output Tax
INPUT_OUTPUT	Input and Output Tax
IMPORT	Import Tax

(OS2559, OS4188, CR109323, VTX059787, VTX060248)

Message on O Series home page for database DDL changes

Beginning with this release, Vertex O Series displays a warning on the home page if a user does not have sufficient permissions to make database DDL changes.

For 9.0 SR1, you can ignore this warning. In a *future release*, if you see this warning and you are a user who applies the data updates, contact your system administrator to obtain the appropriate database permissions.



(OS2000)

On-Demand changes

1. An issue that caused a blank error message to display is resolved. (OS2081, VTX059257)
2. An issue that prohibited storage of a network location as the user preference for a company logo is resolved. (OS2242, CR108370)
3. An issue that set the User Disabled indicator to true for an active user is resolved. (OS1207, CR108927)
4. An issue that caused the About page to display No content is resolved. (OS3076, VTX058563)

Configuration parameter changes

The following changes apply to the parameters in the vertex.cfg file:

1. A new parameter in the vertex.cfg file –
`connector.taxjournal.file.mark.db.journal.records.exported` – enables you to mark the journal entries in the Tax Journal database as exported. Vertex recommends that you set this parameter to `true` when using a dual write system and when your `connector.taxjournal.file.dual.writes` parameter is set to `true`. (OS853, CR108013)
2. The following three Security Assertion Markup Language (SAML) parameters were added to the vertex.cfg file:
 - **saml.keystore.location** - Defines the location of the SAML keystore. This keystore contains the certificate that SAML uses to verify the assertion signature.
 - **saml.keystore.alias** - Defines the keystore alias.
 - **saml.keystore.password** - Defines the keystore password.(OS1019)

The following changes apply to the parameters that are available on the O Series user interface under System > Administration > Settings:

1. For the setting **Include Charged Tax in Allocated Line Item**, a value of `false` now correctly ignores sub-line items in an allocation table when accruing tax. This fix resolves an issue where this setting had a value of `false` and O Series incorrectly apportioned calculated tax to allocation table sub-line items. (OS861, CR108817)
2. A new setting – **Transactional Logging Threshold Limit** – enables you to restrict individual transactions from overriding the default logging threshold beyond an allowable level. The selected value for this setting represents the lowest-level logging threshold that a transaction can specify to override the default logging threshold. Available values are FATAL, ERROR, WARNING, OPS, TRACE, and DEBUG. For more information about these values, refer to the *Vertex O Series Help*. (107917)
3. The following new settings enable you to define a date range for which transaction posting dates are valid:
 - **Minimum Posting Date Threshold**. This is the earliest date for which a transaction posting date is valid.
 - **Maximum Posting Date Threshold**. This is the latest date for which a transaction posting date is valid.

If a transaction posting date is earlier than the minimum date or later than the maximum posting date, O Series fails the transaction. For more information, refer to the *Vertex O Series Help*. (OS842, 108504)

4. A new setting – **Use Assisted Tax Date** – enables you to specify the date that determines the effective Tax Assist rules to apply to a calculation:
 - When the value for this setting is `true`, Vertex O Series uses the available assisted tax date.
 - When the value for this setting is `false`, Vertex O Series uses the original line-item date.

This setting applies at the partition level. (OS881, 106899)

Batch Client Interface (BCI) change

1. An issue that caused the **runBatchClientInterface** client utility to incorrectly set a local database status is resolved. (OS342, CR105764)

Retail LITE change

1. The installation procedure for Retail LITE is updated. This procedure now includes options for configuring the Tax Journal and Utility databases as part of your Retail LITE installation.

Performance tuning

1. Vertex reduced the overhead involved in synchronization and currency rounding, which should yield significant performance improvement in those areas. (OS2889)

Release 9.0 MP4

Security change

1. To prevent XML external entity attacks, O Series now disables document type definitions (DTDs). (OS2397, VTX059694)

Release 9.0 MP3

Calculation Engine changes

1. An issue with multi-component accrual transactions – where vendor-charged taxes were not applied to all appropriate child line items and resulted in an over-accrual – is resolved. (108497)
2. An issue with rounding for Leasing invoice and quotation transactions – where the invoice total was incorrectly rounded down by one cent – is resolved. This issue occurred in tax-inclusive transactions that used max tax rules. (108634)
3. An issue with tax calculation when lower-level imposition overrides existed for a taxpayer is resolved. For invoice and quotation transactions, O Series did not calculate tax as expected when a taxpayer had lower-level jurisdictions selected for an imposition on the Taxpayers > Registrations > Impositions Registration Details tab. (OS661)

Tax Setup change

1. A new Tax Assist field, **bundleType**, enables you to apply the highest component rate to all the components in the bundle, as the bundle is defined in an allocation table. If **bundleType** is not defined, each component of the bundle is processed at its standard rate. This field is useful for Communications Tax setups. (107318)

Tools change

1. In Transaction Tester, the following invalid options were removed from the selection lists:
 - For the **Line Type** selection list, the **ZZZ - Default Line Type** option was removed.
 - For the **Direction** selection list, the **911/Network-N** option was removed.

If you already selected either of these options for a transaction, the Line Type or Direction parameter is empty in 9.0 MP3 but still shows **zzz** or **N** in the XML response message until you select and save a valid option. (108375)

Reporting change

1. An issue with the Reporting > Standard Reports > Report Scheduler feature – where reports did not run when scheduled and O Series logged a Java exception in the log file – is resolved. This issue occurred in environments with Java OpenJDK11. (108407)

System changes

1. In the Batch Transaction feature, when you upload a file to a batch for verification purposes, you must identify whether the file is a request file or a response file by using the new **File Type** drop-down list in the Upload File dialog box. (107127)
2. An issue with the O Series Returns Export State report – where O Series incorrectly handled negative nontaxable amounts as absolute values and added them to gross amounts – is resolved. Negative nontaxable amounts are now subtracted from gross amounts. This issue resulted in O Series Returns report totals not matching Vertex Indirect Tax Returns report totals. (107783)
3. An issue with the Data Management > Scheduler feature – where tasks did not run when scheduled and O Series logged a Java exception in the log file – is resolved. This issue occurred in environments with Java OpenJDK11. (108407)
4. An issue with the License Manager Report – where line items were incorrectly duplicated for a licensed region – is resolved. For the items that factor into the metrics that are presented on this report, refer to the *O Series Help*. (108479)

Login change

1. A login issue for Vertex O Series On-Demand – where the message `User disabled` incorrectly displayed on the O Series login page when the entered user credentials were actually active – is resolved. (108927)

Web Services change

1. An issue that caused an error when attempting to run the batch (.bat) and shell (.sh) scripts for web services, including the LookupTaxArea web service, is resolved. The batch and shell scripts for O Series 9.0 are renamed to show the major release number – for example, `lookuptaxareas90.bat` and `lookuptaxareas90.sh`. (108562)

Batch Client Interface (BCI) change

1. The **Parent Line Item Number** field indicates the line item number that is designated as the parent line item for a particular line item in a transaction. This field supports tax calculation for bundled services in Vertex Communications. (OS568, CR106441)

Exemption Certificate Wizard change

1. When a buyer code from Vertex® Exemption Certificate Wizard (ECW) is renamed as a customer code in Vertex O Series, an error occurs in the IBM AIX JVM environment. To avoid this error, set the ecw.service value in the vertex.cfg file with a port number as follows:

ecw.service=https://devecwportal.vertexsmb.com:443/

This issue will be fixed in a future O Series release. (107584)

Brazil change

1. To identify the NCM code for a Brazilian transaction, you now have the option to map a taxability driver to an NCM taxability category and pass that taxability driver with the transaction. This is an alternative to passing the NCM code directly in the transaction. (108447)

Release 9.0 MP2

Security change

1. This release provides security enhancements for the O Series 9.0 platform. Vertex strongly recommends that customers update their software to the latest O Series patch level, especially when security enhancements are included in the release.

It is always advised to follow best practices and adhere to password security, complexity, expiration, and system access standards. Part of these standards should include changing the default O Series user name and password before deploying an environment to production. (108766, 108803)

Tools change

1. An issue with the Latitude/Longitude feature that prevented O Series from calling the Latitude/Longitude web service is resolved. The SSL certificate required to call the web service is now added automatically. (108542)

Database change

1. An issue that prevented O Series 9.0 from deploying with Oracle database servers is resolved. The vertex.cfg file was modified to address this issue. (108765)

Release 9.0 MP1

Calculation Engine change

1. An issue with Florida transactions that had tax-inclusive line items – where the tax amount for other line items in the transaction was incorrect – is resolved. To indicate that a line item amount includes tax, either the Tax Included check box is selected in Transaction Tester or `taxIncludedIndicator=true` is included in the XML request message. For these types of transactions, O Series now calculates the appropriate tax. (108360)

My Enterprise change

1. An issue is resolved that prevented company logos and other image files from uploading to certificate letters that were generated with the Letter Batches feature. This issue occurred when the `com.vertexinc.dataDirectory.location` parameter was set to a location that was not in the `vertexRoot` directory. Image files now upload to certificate letters when the `dataDirectory` is configured to a location other than the `vertexRoot` directory. (108371)

Tax Setup changes

1. For a transaction that processes a Tax Assist rule that uses the JOIN function to concatenate data from flexible fields, O Series now concatenates data for only those flexible fields that are present in the transaction. This fix resolves an issue where the XML response message included `null` for flexible fields that were part of the Tax Assist JOIN statement but were not included in the transaction XML request message. (106115)
2. An issue with allocation tables that split child items into different whole number percentages – where O Series incorrectly calculated some tax amounts using a decimal percentage and then marked an amount as nontaxable – is resolved. (108299)
3. When allocation tables with names that include special characters are used in Tax Assist rules, they no longer result in an error when the rule is processed. (108334)

Tools change

1. In Transaction Tester, the following line type options in the Content drop-down list are not valid and are being removed from the selection list:
 - 911/Data/Voice - N - 911/Data/Voice
 - Data Stream Type - Z - Data Stream Type

If you already selected either of these options for a transaction, the Content parameter is empty in 9.0 MP1 but still shows **N** or **Z** in the XML response message until you select and save a valid Content option of **B**, **D**, or **V**. (108438)

Reporting change

1. An issue that prevented scheduled Standard Reports filters from running at the scheduled time is resolved. (108407)

System changes

1. The Retail Tax Extract (RTE) task in Data Management now correctly includes the taxpayer registration jurisdictions that are in effect during the specified number of days in the Days After System Date field. For example, if the RTE task specifies one day after the system date in this field and is run on June 30, the extract includes taxpayer registrations that are in effect – according to taxpayer start date and end date – on July 1.

This fix resolves an issue where the RTE did not include taxpayer registration jurisdictions that were in effect on the specified number of days after the system date. (108342)

2. An issue that prevented scheduled Data Management activities from running at the scheduled time is resolved. (108407)

Configuration parameter change

1. An issue with the vertex.cfg file – where multiple entries for the same parameter were created when applying an O Series Service Release or Maintenance Pack – is resolved. (104943)

XML changes

1. An O Series 7.0 Get Extract Status XML request for a Data Extract definition now completes successfully in an O Series 9.0 deployment. This fix resolves an issue where a 7.0 Get Extract Status request resulted in the error `Access is Denied`. (108366)
2. If you use prior XML schema versions to call O Series 9.0, review a few backwards compatibility issues in the "If you are upgrading to Vertex O Series 9.0" chapter of the *XML Integration Guide*. (108398)
3. An issue that caused an error when using `ImpositionToProcess` elements is resolved. (108592)

Address Cleansing and TaxGIS changes

1. Address Cleansing now returns a valid address when a special character is in the XML request message. This fix resolves an issue where Address Cleansing returned an invalid address when a special character was in the XML request message. (108419)
2. An issue that caused errors with TaxGIS when using the sample Tax Area Lookup API is resolved. This issue prevented identification of valid Tax Area IDs and resulted in an invalid address exception. Because TaxGIS settings are now loaded properly, the sample Tax Area Lookup API identifies valid Tax Area IDs. (108471)

Retail LITE change

1. An issue that prevented completion of a Tax Engine Extract task with +ZIP5 and Global data is resolved. This issue occurred in O Series instances that run Microsoft SQL Server 2016 databases or Oracle 12 databases. (107909)

Release 9.0

Major new features

Vertex O Series 9.0 adds major features in several areas, including a new user interface, new tax content, expanded reporting, improved security, and added database support. This section describes the following O Series 9.0 enhancements:

- For an improved user experience, it provides a new, modern user interface that leverages industry-standard HTML5 technology.
- For tax calculation, it now delivers tax content and calculation functionality for Vertex® Indirect Tax for Communications (Vertex Communications) and expanded support for Brazil taxation.
- For an expanded view of O Series taxability, the Taxability Matrix Report now extends jurisdictional coverage to include the United States, Canada, Mexico, China, European Union member states, and most other countries that impose sales tax, value added tax (VAT), or goods and services tax (GST). It contains more data elements and is conveniently available via the O Series user interface.
- For situations where a physical address is not available, you can now make jurisdiction assignments in the United States by latitude and longitude coordinates.
- For enhanced security, it supports federated security models for managing user credentials, verifying logins to O Series, and providing single sign-on convenience.

- Database support is expanded to include SAP HANA and PostgreSQL databases.

Read further for more information about these new features.

A new Vertex O Series user interface

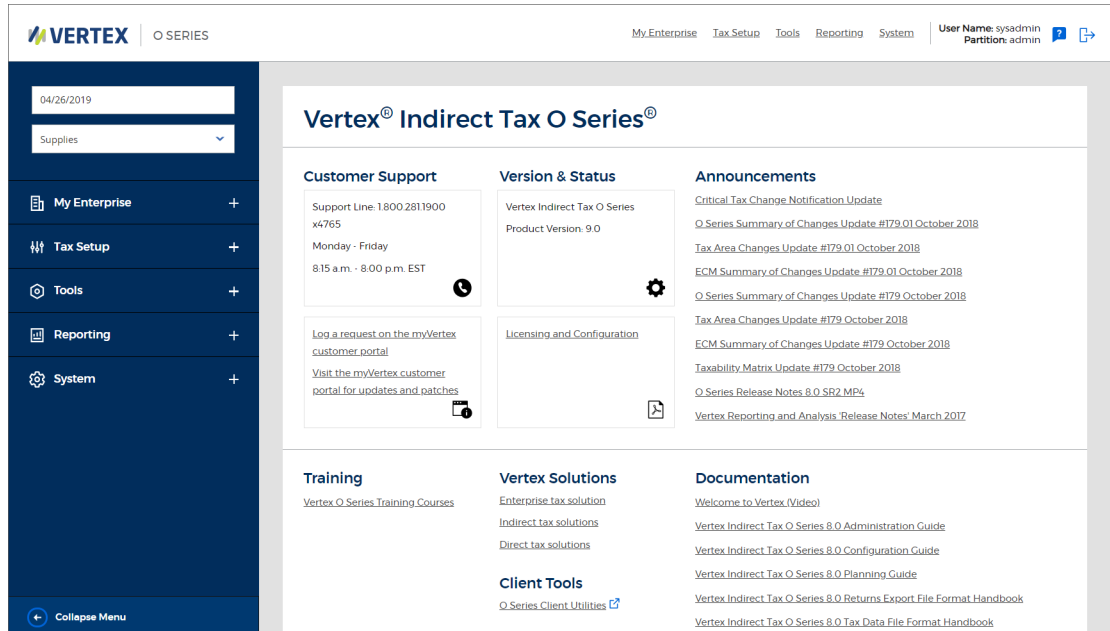
Vertex O Series 9.0 provides you with a new, modern user interface that applies industry-standard HTML5 technology. The smooth navigation of this interface yields an enhanced user experience, especially with Tax Assist. Because Vertex has preserved basic screen layout and navigation, you should recognize familiar features and functions and quickly adapt to the new interface.

With HTML5, Vertex enables you to mitigate the associated risks of the end of life for Adobe Flash Player, which Adobe will retire at the end of 2020. In addition to offering a more modern and robust presentation, O Series 9.0 with HTML5 technology offers significant benefits, such as the following:

- Being the preferred industry standard for developing user interfaces
- Support on all mobile devices, including tablets and smart phones
- Support of more current browser versions
- Faster and more responsive applications

Enhanced look and feel of the O Series user interface

Here's a peek at the look and feel of O Series 9.0:



As you can see, the user interface is organized around the same five major groups of functions - My Enterprise for tax data, Tax Setup for mapping and tax rules, Tools for testing and lookups, Reporting for standard reports and data extracts, and System for security, data management, and administration.

Navigation in O Series 9.0 is very similar to that of previous versions, as are the field names and the placement of fields on tabs. You will notice that certain controls are upgraded with industry-standard techniques. For example:

- Collapse features enable you to hide menus and expressions to open up screen real estate and avoid the need to scroll.
- An Actions control enables you to view, edit, clone, and delete items.
- Search results and lists of items are displayed in sets of pages that you can peruse by using pagination controls, rather than scroll bars. With these controls, you can navigate through paged content by using either the Next or Previous page links or links to specific numbered pages.
- You can easily navigate to the O Series home page from anywhere in the user interface by clicking on the Vertex logo.

Enhanced navigation in Tax Assist

The new Tax Assist interface clearly organizes the rule building blocks to reflect the logic that you use in crafting a rule. For example, the rule is organized across the following three tabs:

- The rule properties on the Main tab
- The rule IF statement on the Condition tab
- The rule SET-TO statement on the Conclusions tab

Expressions that you use to build the IF and SET-TO statements are located on a Basic tab and an Advanced tab to the right of the statements. These expressions include operators, fields, values, functions, and lookups. They are organized in the same groups and have the same labels as expressions in the O Series 8.0 version of Tax Assist.

Here are previews of the Condition tab and the Conclusions tab:

Add Pre-Calculation Rule

Main
Condition
Conclusions

IF

Scratch

SAVE
CANCEL

Collapse Expressions

Basic
Advanced

OPERATORS

AND
OR

isNull
isNotNull

=
<>

<
>

<=
>=

+
-

*
/

FIELDS

Taxability Drivers, Codes, Names, Types
Numbers, Amounts, Rates, Tax Area IDs

True or False
Dates

VALUES

String Values
Numeric Values

Boolean Values
Date Values

Drag to Delete

Add Pre-Calculation Rule

Main
Condition
Conclusions

SET TO

ADD CONCLUSION

Scratch

SAVE

CANCEL

Collapse Expressions

Basic
Advanced

FIELDS/VALUES

Addresses

Overrides

Output Notice ID Field

Arrays

Included Impositions

Removed Impositions

Returns Field

FUNCTIONS

SUBSTR()

JOIN()

DAYS BTW()

ROUND()

OVERRIDE()

TAX REG()

REMNR()

CONTAINS()

UPPER()

MONTH()

DAY()

YEAR()

INCL IMP()

REM IMP()

ADD RETURNS FIELD()

IS MAPPED()

Drag to Delete

Communications services taxes

Vertex O Series 9.0 now brings United States, including its territories, and Canadian support for communications services taxes, surcharges, and fees to the Vertex O Series platform. The Vertex Communications license provides access to Vertex-defined tax rules and rates for various communications scenarios. This Vertex Communications data is available in a separate monthly update file that you download from the Vertex Community.

To support communications tax calculation, Vertex provides several new taxability categories in the **General > Services > Telecommunication Services** branch of the taxability category tree. New categories are provided for **Cable Services**, **Satellite Television Services**, and **Streaming Services**, as well as other facets of communications tax. Refer to the *Summary of Changes* document on the Vertex Community for details.

New and enhanced features that support communications tax calculation

Communications tax calculation is accomplished by the addition of new features and by modifications to established features that leverage the power of O Series to calculate communications tax.

- **Line-based taxation**

Line-based taxation enables tax calculation of multiple line types within jurisdictions on transactions. It supports line types, accumulation of line counts and line-based taxes across multiple transactions and line types, and customizable line-based rates and rules. (64124)

- **Max tax accumulation processing**

O Series 9.0 enables accumulation and applicability of max-tax and tier-tax amounts for a particular location or line type by customer or invoice across multiple transactions over a specified period of time. As part of this enhancement, the Accumulation feature is now available in Tax Setup > Tax Rules, enabling the creation, viewing, and overriding of accumulation rules.

In Tax Assist, the transaction-level fields **accumulationCustomerNumber** and **accumulationInvoiceNumber**, along with the line-item-level field **accumulationLocation**, are available for building pre-calculation Tax Assist rules.

In Transaction Tester, the **Accumulation Customer Number** and **Accumulation Document Number** fields are available on the transaction-level Other tab. The **Accumulation Location** field is available on the line item-level Other tab.

In Data Management, the Accumulation Purge feature is available for the removal of stored data that is no longer needed for reporting purposes. (64120)

- **Included tax**

As an enhancement to the Inclusion tax rule feature, O Series 9.0 retains and writes out included tax amounts to the XML response and to the Tax Journal. Included taxes also show in Transaction Tester results.

For reporting on included taxes, the **Telecom IncludedTax** field is available in the Batch Client Interface Transaction Log Data Extract template. (64126)

- **Situs taxing location override**

O Series 9.0 enables default situs conclusions and output to be overridden for a line item, single transaction, or multiple transactions in a single batch. (106444)

- **Bundled services**

Bundled services are a means of selling a group of products as a single product. To set up processing of tax calculation for bundled services, you use several features and options in O Series 9.0. The *Communications Tax Guide* describes the process of defining bundles in 9.0. (64121)

- **Proration**

The ability to provide a proration percentage is now available in Transaction Tester, enabling the Calculation Engine to assess prorated taxes and flat fees. (100108)

- **Quantity-based taxation**

O Series 9.0 supports the inclusion of tier-tax logic in quantity-based tax calculations for quantity-based factors, including the following:

- Billed lines
- Trunk lines
- Call minutes
- Line
- Channel
- Line types
- Direction
- Content
- Status

(64122, 64125)

- **Franchise fees**

O Series 9.0 provides the framework for you to define franchise areas and the associated fees that are negotiated between jurisdictions and vendors. The *Communications Tax Guide* describes the process of defining franchise fees for tax calculation. (64113, 106649)

- **Communication tax exemption certificates**

O Series 9.0 supports exemption certificates for communication taxes and enables you to manage certificates by exemption type. You specify the exemption type when adding a certificate under My Enterprise > Add Certificate > Jurisdictions. You can then search for certificates by exemption type under My Enterprise > Certificates > Advanced Search. (64257, 64259)

- **Regulated utility**

Being a taxpayer defined as a regulated or unregulated utility may change how taxes are calculated in O Series. To define taxpayers as regulated or unregulated utilities in O Series 9.0, navigate to My Enterprise > Taxpayers > Add/Edit Taxpayer and select the appropriate option from the **Utility Provider** field. To define a taxpayer as a regulated or unregulated utility in the Transaction Tester, select the appropriate option from the **Utility Provider** field at the transaction level on the Basic tab. (64143)

- **Unit conversion**

Vertex-defined unit conversion rules are used in O Series 9.0 communications tax processing to determine the appropriate unit conversion to use in a calculation, based on the line type that is passed with the transaction.

- **Communications service code analysis**

The Communications Service Codes feature enables you to evaluate taxability information about Vertex-defined codes for line types, direction, status, and content. If needed, you can create user-defined codes.

For the Data Extract templates that support the Vertex Communications features, refer to the Enhancements - Reporting (see page 125) section of these *Release Notes*.

For the Batch Client Interface (BCI) fields that support the Vertex Communications features, refer to the BCI (see page 127) section of these *Release Notes*.

Expanded Taxability Matrix

O Series 9.0 provides several enhancements to the Taxability Matrix that Vertex traditionally generates monthly and posts to the Vertex Community for users to download. Both O Series on-premise users and O Series On-Demand users can now run a Taxability Matrix report to their specifications from within the O Series user interface by using the Standard Reports feature. Navigate to Reporting > Standard Reports > Report Output to specify the parameters and generate a report.

As with the Taxability Matrix that is provided on the Vertex Community, the new O Series 9.0 Taxability Matrix report is in a multi-tab Excel format and includes the exempt and taxable status for each taxability category in a jurisdiction. In addition, this report now includes the following enhancements:

- Extended jurisdictional coverage that includes the United States, Canada, Mexico, China, European Union member states, and most other countries that impose sales tax, VAT, or GST. Taxability Matrixes report at the state level for the U.S. and at the provincial level for Canada. Taxability Matrixes for jurisdictions that use VAT report at the country level.
- The ability to filter the report by taxpayer and jurisdiction, resulting in a smaller, more manageable report that enables you to more quickly see the changes that impact your business. Report filters also provide the ability to generate country-specific reports.
- The inclusion of user-defined taxability categories on the report.
- The inclusion of the taxability category IDs.
- For jurisdictions that use commodity codes, the ability to report taxability by commodity code and the corresponding taxability category.

The Taxability Matrix displays taxability for each category based on the rules that apply to that category only. The report does *not* reflect inherited taxability, such as when a taxability driver is mapped to a qualifying condition from a parent taxability category.

Tax area determination by latitude and longitude coordinates

Tax area determination by latitude and longitude coordinates is now integrated into O Series. When this capability is licensed, the following features provide the ability to identify United States Tax Area IDs and jurisdictions for tax calculation by entering latitude and longitude coordinates:

- The Tax Area Lookup feature. Navigate to **Tools > Tax Area Lookup > By Coordinates**.
- The Transaction Tester feature. Navigate to **Tools > Transaction Tester** and display the **Addresses** tab.

This feature is useful for businesses that conduct operations in remote geographic areas where street-level information is not available. Often, the most precise way to identify these locations is by latitude and longitude.

Latitude Longitude Services can be licensed as an add-on feature for Vertex® Indirect Tax O Series®. (101830)

Federated security

The Vertex O Series 9.0 environment implements federated security identity management. In addition to providing centrally managed credentialing and token-based authentication, this newer security technology enables a user to access multiple systems without entering credentials more than once. With federated security, an O Series user authenticates once with an identity provider, which can be a third party, and this authentication is shared with the service provider, which is Vertex.

A delegation authentication model enables a user to authenticate once with an identity provider and share this authentication with multiple web applications. This enables single sign-on capabilities that can be leveraged for all Cloud, mobile, web, and network applications for use with O Series. Vertex O Series 9.0 supports both Security Assertion Markup Language (SAML) 2.0 and OAuth 2.0 federated security models.

If you are using an external identity provider, you must configure O Series to work with that identity provider using OAuth or SAML. If you use a connector service account, be aware that there is a new O Series user role - API User - that must be set up. This role provides access to GIS and tax-calculation services. For the required setup to configure an identity provider, for more information about the API User role, and to implement federated security, refer to the *Administration Guide*.

To support federated security, a new command line utility - `createClientCredentials` - automatically creates the client credentials that enable connectors to access the Application Programming Interface (API) and web services. This utility enables you to configure each account with the appropriate level of access. For details about this utility, refer to the *Administration Guide*. (100736, 106884)

Enhanced support for Brazil taxation

Vertex continues to enhance its Vertex® Indirect Tax for Brazil solution and offers the following enhancements with O Series 9.0. For details, refer to the *O Series Brazil Guide*.

- To provide you with data that is required on the Nota Fiscal, the following new fields are returned in XML response messages:
 - `NominalRate` - This field provides the active ICMS tax rate of the origin state or destination state that is used to calculate Differential ICMS.
 - `TaxApportionmentRate` - This field provides the apportionment rates for the origin state and the destination state that are applied to the Differential ICMS amount to determine the origin tax and the destination tax.
 - `BasisReductionPercentage` - This field provides the percentage by which the basis amount is reduced in a tax calculation.

- `MarkupRate` - This field provides the markup rate that is used in the calculation of ICMS ST and FECOP ST.

With the availability of these XML elements, it is no longer necessary to create flexible fields and Tax Assist rules to pass this information to your host system. (101538, 101922, 105092)

- Streamlined processing of material origin codes eliminates the extra setup that was required to translate material origin codes both before and after transaction processing. The official material origin codes 0 to 8 from the ICMS CST Table A can be passed between O Series and your host system using the `materialOrigin` XML element.

It is no longer necessary to set up O Series to translate the official material origin codes to the Vertex material origin codes before transaction processing. For post-calculation conversion, it is no longer necessary to set a configuration parameter that translates the Vertex material origin codes back to the official material origin codes. (105351)

- To accommodate invoice text requirements, O Series now provides more complete invoice text information with transaction results. For all financial events, the new `InvoiceTexts` element is included in XML responses, and it contains the following information:
 - Invoice text message
 - Invoice text code
 - Invoice text rule ID

Up to four invoice text records per imposition are posted to the Tax Journal. Fields for the four Invoice Text Rule IDs are available in the Transaction Detail data extract.

If you are upgrading from O Series 8.0 to O Series 9.0, note the following:

- With the availability of these elements, it is no longer necessary with Legal Classification of IPI invoice text for you to create a lookup table and post-calculation Tax Assist rule that converts filing category codes to invoice text codes.
- For backward compatibility, if you submit an O Series 8.0 XML request in an O Series 9.0 deployment and an invoice text rule is processed, the invoice text and invoice code for the first invoice text rule populate the `taxCode` and `SummaryInvoiceText` values.

For more information, refer to the *O Series Brazil Guide*. (103296, 106537)

Support for additional databases

Vertex O Series supports two new database platforms on both O Series deployment options - O Series on-premise and O Series On-Demand. These platforms are as follows:

- SAP HANA, which is one of the first data management platforms to handle both transactions and advanced analytical processing on a single data copy. Users gain a single secure environment for all mission-critical data assets, enabling the efficient management of large volumes of structured and unstructured data to improve total cost of ownership.
- PostgreSQL is an open source, object-relational database that is known for its proven architecture, reliability, data integrity, robust feature set, and extensibility. (101688)

Note: *Vertex Reporting & Analysis 9.0 is only supported on the Oracle, Microsoft SQL Server, and IBM DB2 database platforms. A future enhancement is planned to implement Vertex Reporting & Analysis on the PostgreSQL database platform.*

Enhancements and fixes in 9.0

My Enterprise changes

Enhancements

1. The structure of the My Enterprise menu is modified to group the following taxability driver features under **Taxability Driver Management** in the menu hierarchy:
 - Taxability Drivers
 - Commodity Codes
 - Communications Service Codes
2. For ease of using the Registrations tab in the Taxpayer, Customer, and Vendor features, the new Imposition Registration Details subtab consolidates fields from these O Series 6.0, 7.0, and 8.0 subtabs: Registration Details tab, Impositions tab, and Lower Levels tab.
3. The Taxpayer feature now includes the **Utility Provider** field for defining a taxpayer as a regulated or unregulated utility. (64143)
4. The new **Communications Service Codes** feature enables you to search for specific Vertex-supplied communications codes in O Series and to review taxability information about the codes that are mapped to taxability categories. You can search on codes for line types, direction, status, and content.

5. O Series now supports the Harmonized Commodity Description and Coding System (HSN) for India taxation. This commodity code system is an international nomenclature for classifying traded products. In the Commodity Codes feature, you can search for specific HSN codes and review information about those codes. Using the Taxability Mapping feature, you can map taxability drivers to HSN taxability categories, which are supplied by Vertex with the standard jurisdictional rates and rules. (103308)
6. With a Vertex Communications license, the Certificates feature now includes the **Exemption Type** field for identifying and managing certificates by exemption type. (106686)
7. To improve organization and interpretation of the Non-Compliance Report, the following changes apply to the report output:
 - For a certificate that includes the state, the report includes one record for the customer's certificate in that state. For example, if a customer is non-compliant with a request for a New York certificate, the report includes one record for New York but does not show records for lower-level jurisdictions.
 - For certificates that do not include the state, the report includes a record for each lower-level jurisdiction for which the customer is non-compliant with a certificate request. For example, if a customer is non-compliant with a request for a certificate that applies to three cities, the report includes three records with the city names as the jurisdiction.(107391)

Fix

1. An issue with certificate rejection – where a null pointer exception (NPE) occurred when rejecting a certificate that was created in Exemption Certificate Portal (ECP) or Exemption Certificate Wizard (ECW) – is resolved. (107640)

Tax Setup changes

Enhancements

Taxability Categories

1. O Series now supports the Harmonized Commodity Description and Coding System (HSN) for India taxation. This commodity code system is an international nomenclature for classifying traded products. Using the Taxability Mapping feature, you can map taxability drivers to HSN taxability categories, which are supplied by Vertex with the standard jurisdictional rates and rules. The HSN taxability categories are located in the Commodity Code branch of the taxability category tree. (103308)

Tax Rules

1. The new Accumulation feature supports accumulation processing for Vertex Communications and enables you to create, view, and override accumulation tax rules that define max-tax and tier-tax amounts for a particular location or line type by customer or invoice across multiple transactions over a specified period of time. You can locate this feature by navigating to Tax Setup > Tax Rules > Accumulation in the O Series user interface. (64120)
2. Changes to calculation methods for calculation rules support Vertex Communications line-based processing. These changes include the following:
 - A new **Tiered - Rate/Modifier** calculation method for amount-based transactions that applies a percentage to a tax rate for taxable amounts
 - A new **Tiered - Quantity/Modifier** calculation method that applies a percentage to a tax rate within a tier
 - For the **Tiered - Quantity** calculation method, a new **Flat Tax** option and the ability to add tiers to the tier structure
 - For the **Tiered - Quantity/Rate** method, the ability to add tiers to the tier structure(99631)
3. Changes to calculation methods for max tax rules support Vertex Communications line-based processing. These changes include the following:
 - A new **Tiered - Rate/Modifier** calculation method for amount-based transactions that applies a percentage to a tax rate for taxable amounts
 - A new **Tiered - Quantity/Modifier** calculation method that applies a percentage to a tax rate within a tier
 - For all tiered methods, support for invoice accumulation functionality, the ability to indicate that a flat tax applies, and the ability to add tiers to the tier structure(99631)

Tax Assist

1. A new Tax Assist interface clearly organizes the rule building blocks to reflect the logic that you use in crafting a rule. The rule is organized across the following three tabs:
 - The rule properties on the Main tab
 - The rule IF statement on the Condition tab
 - The rule SET-TO statement on the Conclusion tab

Expressions that you use to build the IF and SET-TO statements are located on a Basic tab and an Advanced tab to the right of the statements. These expressions include operators, fields, values, functions, and lookups. They are organized in the same groups and have the same labels as expressions in the O Series 8.0 version of Tax Assist.

2. In Tax Assist, there are new and efficient ways to change rule precedence and the sequence in which the Calculation Engine processes the rules. You can now directly edit rule sequence numbers or you can use the Move Up and Move Down actions to alter rule sequence in the list. (101711)
3. The **prorationPercentage** field enables you to pass in a percentage to be used when calculating a prorated tax amount or prorated flat-fee amount. (100108)
4. The **accumulationCustomerNumber**, **accumulationInvoiceNumber**, and **accumulationLocation** fields enable you to pass in information that is related to tax-accumulation processing for communications taxes. (64120)

Flexible Fields

1. The maximum length of Code flexible fields was increased from 40 to 250 alphanumeric characters. (89619).

Fix

1. When using the IS MAPPED function in a Tax Assist rule, an error message now displays if the function is not assigned a Boolean value of `true` or `false`. A Boolean comparison is required to save and obtain meaningful results. (105744)

Tools changes

Enhancements

Transaction Tester

1. You can identify registrations for any jurisdiction level when testing transactions for any supplies or procurement financial event. To identify the registration jurisdiction, use the new **Jurisdiction** field on the Registration tab. Previously, you could identify registrations for only country-level jurisdictions. (98671)
2. A **Proration Percentage** field on the transaction-level Other tab enables you to specify a percentage by which a tax amount or flat-fee amount is multiplied to calculate a prorated tax or flat fee. (100108)

3. For transactions that require accumulation processing for communications taxes, the **Accumulation Customer Number** and **Accumulation Document Number** fields are available on the transaction-level Other tab. The **Accumulation Location** field is available on the line item-level Other tab. (64120)
4. Determining tax areas by latitude and longitude coordinates is integrated into Transaction Tester. You can use the **Latitude** and **Longitude** fields on the Addresses tab to identify jurisdictions for tax calculation. (101830)

Tax Area Lookup

1. The Tax Area Lookup tool now includes an option to identify the Tax Area IDs and jurisdictions for tax calculation by entering latitude and longitude coordinates. To use this feature, navigate to **Tools > Tax Area Lookup > By Coordinates**. (101830)

Fix

1. An issue that caused an expired rate to display in the Rate Lookup feature is resolved. This feature now displays the most recent active rate. (107670)

Reporting changes

Enhancements

Standard Reports

1. The O Series Taxability Matrix is now available as a standard report that you can build to your specifications. With additional jurisdictional coverage that includes the United States, Canada, European Union member states, Mexico, and many other VAT countries, you can generate a Taxability Matrix at the country level and at the state or province level, where applicable.

You can filter the report by taxpayer and/or by jurisdiction and – for jurisdictions that use commodity codes – you can report taxability by commodity code. Taxability category IDs and user-defined taxability categories are now included in the matrix. To use this feature, navigate to **Reporting > Standard Reports > Report Output** and select **Taxability Matrix**. (98782, 102044, 103964)

Note: Review the legend on the first tab of this report. New nomenclature on this legend indicates that if a conditional rule is not applicable in a given jurisdiction, the cell displays as blank. (106448)

Data Extract

1. The Transaction Detail Data Extract template contains several new fields.
 - The following fields are available to report on communications taxes:
 - **Proration Percentage**
 - **Included Tax Amount**
 - **Inclusion Rule ID**
 - **Telecom Line Type**
 - **Telecom Direction**
 - **Telecom Content**
 - **Telecom Status**
 - **Accumulation Location**
 - The **Sender** field identifies which server sent a transaction to Vertex O Series. (101891)
 - The **Passed In Commodity Code** field identifies the commodity code that was passed to O Series in the transaction XML request message. This commodity code can differ from the commodity code that the Calculation Engine used when calculating tax. To identify the commodity code that was used in the tax calculation, review the new `usedCommodityCode` element in the transaction XML response message. (106222)
 - The **Invoice Text Rule ID** fields and the **Summary Invoice Text** field enable you to report on invoice text for Brazil transactions. To accommodate invoice text requirements in Brazil, up to four Invoice Text Rule IDs can be reported for a line item. (106537)
2. The Tax Rules Data Extract template contains the following new fields for reporting on tax-accumulation processing:
 - **Accumulate as Imposition Name**
 - **Accumulate as Imposition Type**
 - **Accumulate as Jurisdiction Name**
 - **Accumulate as Jurisdiction Type**
 - **Accumulation Period Type**
 - **Accumulation Type**
3. The Batch Client Interface Transaction Log Data Extract template includes the **Telecom IncludedTax** field for reporting included tax amounts. (64126)
4. The **Proration Percentage** field is available in the Batch Client Interface Transaction Log and Transaction Detail Data Extract templates. If a proration factor is specified for a transaction, this field displays the percentage. (100108)

5. The Regions Data Extract template includes the **ZIP 4 Start Date** field and the **ZIP 4 End Date** field that display the effective date and end date, respectively, of the ZIP+4 Code range. (105555)
6. With a Vertex Communications license, the Certificates Data Extract template includes an **Exemption Type** field that identifies the type of exemption that was selected for the certificate when it was added to O Series. (106686)

Fix

1. An issue that caused the Taxpayer Registrations Jurisdictions Report to include duplicate jurisdictions is resolved. This situation occurred for jurisdictions that were renamed at some point. (105506)

System changes

Enhancements

1. In Data Management, the new Accumulator Purge activity is available to purge selected data from the Accumulator database. You can specify criteria for the purge, including an accumulation document number, customer code, jurisdiction, and transaction date. (106592)
2. In Administration, printing an Activity Log is now done by creating and running an extract definition using the Activity Log template.

Fix

1. An issue that occurred when exporting commodity-code information from the Tax Journal to the Reporting database is resolved. (105513)

Batch Client Interface (BCI) changes

Several new fields are available in BCI to support communications services taxes and other O Series 9.0 enhancements.

1. The following fields support the accumulation of multiple tax types for max tax calculation (64120):
 - **accumulationCustomerNumber**
 - **accumulationInvoiceNumber**
 - **accumulationLocationCode**

2. The following fields support multi-line taxation (64124):
 - **teleCommContent**
 - **teleCommDirection**
 - **teleCommLinetype**
 - **telecomStatus**
3. The **Latitude** and **Longitude** fields support tax area determination by latitude and longitude coordinates. (101830)
4. The **prorationPct** field provides the proration percentage to be used for tax calculation. (100108)

XML schema changes

Using the 9.0 XML schema to develop integrations enables you to fully leverage the new 9.0 release capabilities. In addition, Vertex O Series 9.0 also supports the 6.0, 7.0 and 8.0 XML schema.

XML request and response messages are updated to support the O Series 9.0 features. To review the specific XML schema changes for O Series 9.0, refer to Chapter 7 of the *XML Integration Guide*.

Vertex O Series Web Services change

1. For a Direct Pay Permit that is set up in your instance, the associated tax result type that is returned in the XML response is `DPP Applied`. (103509)

Configuration parameter changes

Settings

The following parameters are located in the O Series user interface in System > Administration > Settings:

1. The new **Ignore Exemption Certificate Expiration Date** setting enables you to keep an exemption certificate active despite its having reached its expiration date. Set this parameter to `true` to ignore the exemption certificate expiration date and include the certificate in transaction processing. The default value is `false`. Reporting and compliance letter functionality are not affected by this setting. (88051)
2. The new **Enabling Accumulation** setting, when selected, enables the accumulation of transactions.

3. The new **Accumulator Cache Initial Years** setting enables you to load data into the Accumulator cache based on the specified number of years, instead of loading all data for all years. For example, with the default setting of 1, the system loads only cached data that is dated one year from the As of Date. For example, if the As Of Date is 01/01/2020, the system loads only cached data from 01/01/2019 and later.
4. The new **Accumulator Cache Refresh Delay** setting enables you to define the minimum number of milliseconds between accumulator cache refresh updates. Possible values are 100 to 172800000 (48 hours). Caches are refreshed only during heartbeat processing. Refresh values are always rounded to the next whole number increment of master controller heartbeats. Vertex recommends that you keep the default value (300000) for this setting.

vertex.cfg file

The following parameters are located in the vertex.cfg file:

1. A number of parameters were added in support of federated security, including properties for OAuth 2.0 and SAML 2.0 integration. These parameters can be found in the Federated security parameters section of the *Configuration Parameters Reference Guide*.
2. A number of parameters were added to enable you to configure your account lockout policy. The following parameters in the vertex.cfg file specify how O Series handles failed login attempts and account lockouts:
 - `auth.password.lockout`
 - `auth.password.lockoutMins`
 - `auth.password.reset.email.subject`
 - `auth.password.reset.email.text`
3. The default value for the `util.log.MaxArchive` parameter is now 7. This parameter defines the maximum number of days that log files are retained before they are automatically deleted. (102542)
4. The default value of the `taxjournalexport.allowUpdateDate` parameter is changed from `false` to `true`. When set to `true`, a Tax Journal Export task moves only records that have changed since the last posting update. (106065)

5. The following parameters were moved from the Application.Properties file to the vertex.cfg file:

- oseries.datasource.driverClassName
- oseries.datasource.url
- oseries.datasource.username
- oseries.datasource.password

The installation program automatically assigns the parameter values based on user input during the installation process. (106726)

Vertex Reporting & Analysis changes

The Vertex Reporting & Analysis 9.0 release includes significant changes to configuration parameters, file names, directories, and other areas that affect how you deploy both Reporting & Analysis and Cognos. Review the *Vertex Indirect Tax Reporting & Analysis Administration Guide* for information about deploying Vertex Reporting & Analysis and Cognos before you attempt to complete an installation.

For information about using Reporting & Analysis 9.0 after it is deployed, refer to the *Vertex Indirect Tax Reporting & Analysis User's Guide* and the *Online Help*.

Note: *Vertex Reporting & Analysis 9.0 is supported only on the Oracle, Microsoft SQL Server, and IBM DB2 database platforms. A future enhancement is planned to implement Vertex Reporting & Analysis on the PostgreSQL database platform.*

Security enhancements

1. The Vertex O Series 9.0 environment implements federated security identity management. In addition to providing centrally managed credentialing and token-based authentication, this newer security technology enables a user to access multiple systems without entering credentials more than once. For more information, refer to the *Administration Guide*. (100736)
2. To support federated security, a new command line utility - `createClientCredentials` - automatically creates the client credentials that enable connectors to access the Application Programming Interface (API) and web services. This utility enables you to configure each account with the appropriate level of access. For more information, refer to the *Administration Guide*. (106884)

Supported platforms changes

1. Vertex added support for the following platforms in O Series 9.0:
 - Application servers: Apache Tomcat 9, Wildfly 17
 - Operating systems: IBM AIX 7.2, SUSE Linux 15, Microsoft Windows Server 2019
 - Database servers: SAP HANA 2.0, PostgreSQL 10, Microsoft SQL Server 2017
 - Java Virtual Machines: Oracle OpenJDK version 11 Java Development Kit
2. Vertex retired support for the following platforms in O Series 9.0:
 - Application servers: Netweaver 7.5, Apache Tomcat 8.5, Wildfly 10
 - Operating systems: IBM AIX 7.1, SUSE Linux 11
 - Database servers: IBM DB2 10.5, Oracle 11.2, Microsoft SQL Server 2012
 - Web browsers: Firefox, Internet Explorer 10 and 11, Safari 10 and 11. Although Firefox and Safari are not supported in O Series 9.0, they will be supported in a subsequent release.
 - Adobe Flash Player Plug-in: Beginning with O Series 9.0, the Adobe Flash Player Plug-in is no longer supported.

Note: Due to changes that Vertex made to support the Oracle OpenJDK version 11 Java Development Kit, the O Series 9.0 release does not deploy on the SAP Netweaver application server. Therefore, do not apply this patch if you run O Series on a Netweaver server. To upgrade to O Series 9.0, consider switching to an Apache Tomcat server or another supported application server.

Installation notes

If you are installing Vertex O Series for the first time, refer to the instructions in the *Installation Guide* to install Vertex O Series 9.0. To apply a Service Release or Maintenance Pack, follow the instructions below. Applying a release installs files on your system. Do not remove these files.

Applying this release

Before you begin

Review these requirements before applying a release:

- Ensure that your Vertex O Series 9.0 License file is copied into the Vertex Home directory.
- You must provide passwords for the admin and sysadmin accounts during installation.
- Ensure that your application server user account and the user account that you used to install this release have full read, write, create, and delete access to the Vertex root directory and all subdirectories.
- Ensure that the Web Archive (WAR) and Enterprise Archive (EAR) files for the O Series components are in your web directory. If these files were moved, the service release or maintenance pack may not install correctly.
- The JavaFX deployment libraries are no longer bundled with Java in Java 11. If you use the user interface version of the O Series installation, you need to download and install the JavaFX libraries in addition to Java. Alternatively, use a properties file installation.

Caution: *If you have modified Tomcat's default logging configuration, make sure you back up your Tomcat logging properties before applying the update. If you have modified the settings, they will be overwritten when a patch is applied.*

Database considerations

- Vertex recommends that you back up all O Series databases before applying a release. To ensure the integrity of the system, always back up all O Series databases at the same time. If you need to restore any one database, you must restore all the databases.
- For service releases, ensure that the user applying the patch has the appropriate permissions to make database schema changes.
- Vertex recommends that you turn off schema validation before applying a release.
- If you have multiple instances of O Series pointing to one database, you *must* wait until the patch application is completed on one instance before applying the patch to the next instance. If you have multiple instances of Vertex O Series for load balancing, refer to "Avoid downtime in a load-balanced cluster" for information about minimizing downtime when applying an O Series patch.
- If you have purchased Legacy Vertex Reporting & Analysis, ensure that your database user ID has permission to create a database view.

Server-specific notes

- Review the installation information for deploying your servlet container, as well as the pre-installation and post-installation information, for any notes or special instructions that are related to your particular web application server.
- If you are applying this release to a system running the AIX Operating System, be sure to perform the installation of the release as a user in the root group.
- If you plan to deploy O Series by using Oracle WebLogic, you must deploy the O Series WAR files after applying the patch.
- To implement Windows Integrated Authentication for the database connection between O Series and Microsoft SQL Server using Microsoft SQL Driver, ensure that the `sqljdbc_auth.dll` file is in the windows system path on each application server. The `sqljdbc_auth.dll` is bundled with the Microsoft JDBC driver. Download the driver from Microsoft and extract the .dll.

Avoid downtime in a load-balanced cluster

If you have multiple instances of O Series pointing to one database and are applying an O Series patch, you can avoid downtime by following this process *for each instance*:

1. Remove an application instance from the load balancer.
2. Stop the application instance.
3. Apply the O Series patch.
4. When the patch completes installation, start the instance.
5. Wait a few minutes for the cache to load.
6. Add the instance back to the load balancer.

Caution: *You must wait until the patch installation is complete before applying the patch to the next instance.*

Applying this release

Complete these steps to apply the release:

Copy the JAR file for the release (vertex-o-series-patch-9.0.11.2.nn.jar) to the patch directory, located under the Vertex root directory where O Series is installed.

Note: *This is an approximate file name for the .jar file, where "nn" represents the final number in the build process for this Service Release.*

1. Change the working directory to the patch directory.
2. Stop the application server.
3. Undeploy the web applications.
4. Enter the following command to launch the installer and apply the release:

```
java -jar vertex-o-series-patch-9.0.11.2.nn.jar
```

(Alternative) If you use a jdbc driver other than the one that Vertex supplies, enter this command:

```
java -cp jdbc_driver_files;vertex-o-series-patch-9.0.11.2.nn.jar  
com.vertexinc.tpc.common.install.patch.PatcherBootstrap
```

where:

`jdbc_driver_files` is the full path and file name of the installed jdbc driver file or files.

5. Deploy the web applications.

Removing this release

Before you begin

Review the following information before removing a patch:

- Back up the information in your vertex.cfg file before removing the patch. When you remove the patch, a new Vertex configuration file (vertex.cfg) is created and the current vertex.cfg file is overwritten, causing any information that you entered to be lost.
- Do not replace the vertex.cfg file that was created during patch removal with the vertex.cfg file from the current patch. Doing so may result in errors or unwanted system behavior because configuration options may have changed.

Procedure

Complete the following steps to remove this release:

1. Stop the application server.
2. Undeploy the web applications.
3. Change the working directory to the Vertex `root\patch` directory.
4. Enter the following command to launch the installer and remove the release:

```
java -jar vertex-o-series-patch-9.0.11.2.nn.jar -remove
```

(Alternative) If you use a jdbc driver other than the one that Vertex supplies, enter the following command:

```
java -cp jdbc_driver_files;vertex-o-series-patch-9.0.11.2.nn.jar  
com.vertexinc.tps.common.install.patch.PatcherBootstrap -remove
```

where:

`jdbc_driver_files` is the full path and file name of the installed jdbc driver file or files.

5. Deploy the web applications. Refer to the *Installation Guide* for details.

Known issues

On-Demand DDL change

When data definition language (DDL) updates are attempted in an O Series On-Demand instance, this warning message can display sporadically:

```
Database connections do not contain sufficient privileges to make database DDL changes.
```

This message can occur even when the appropriate database privileges are set up. You can ignore this warning and proceed with work in your On-Demand instance. (OS19481)

Northern Ireland in taxpayer/customer/vendor registrations

If you have taxpayer, customer, and vendor entities for which you selected the United Kingdom – and all its children – as registration jurisdictions before January 1, 2021, you see the following when viewing and editing the entity registrations after this date:

- When viewing the entity registrations, only Isle of Man displays as a child jurisdiction of the United Kingdom.
- When editing the entity registrations, both Isle of Man and Northern Ireland display as child jurisdictions of the United Kingdom. This is because O Series activated a database indicator for all United Kingdom states when the entity was created. Northern Ireland was not considered a child jurisdiction in O Series before January 1, 2021, but it is now.

To effectively select Northern Ireland for a taxpayer, customer, or vendor entity that was created with a United Kingdom registration before January 1, 2021, use this workaround:

1. Change the As of Date to January 1, 2021.
2. Edit the entity registrations, navigate to United Kingdom, clear the Northern Ireland check box, and save the entity.
3. Edit the entity registrations again, navigate to United Kingdom, select Northern Ireland, and save the entity.

(OS18414, VTX065746)

Transaction Detail extract

In some cases, when you delete a Transaction Detail extract report from the Extract Results page, the loading indicator on the page doesn't disappear. However, if you refresh the page, the indicator disappears and the report is successfully deleted. This is a user interface issue that will be resolved in a future release. (OS19769)

European Union member state selections

O Series functionality for European Union (EU) Mini One Stop Shop (MOSS) includes the ability to identify which EU country is a taxpayer's Member State of Identification for MOSS purposes. On the Taxpayers > Registrations tab, the **Member State** field provides a list of EU trade bloc countries from which you can select the Member State of Identification.

With Brexit taking effect on January 1, 2021, the United Kingdom will be removed from the **Member State** list. Because O Series currently handles Northern Ireland as a territory of the United Kingdom, Northern Ireland will no longer be available for selection in the **Member State** field after January 1, 2021. (OS16554)

Home page display

Beginning with Vertex O Series 9.0, the calls made to access links from the O Series home page (for example, the Summary of Changes in the Announcements panel and the guides in the Documentation panel) are made from the server. If your firewall does not allow the calls, you cannot access these documents. To resolve this issue, open port 443 where Vertex O Series 9.0 is installed and enable access to `downloads.vgtsi.com`, where these documents are stored. (OS9281)

My Enterprise

- O Series creates a subdirectory for every certificate that is created. For the AIX operating system, there is a known limitation of 32767 subdirectories in a single directory. If you have a large certificate volume, Vertex recommends using a different operating system.
- The Forms feature for emailing certificate forms currently does not process an email that is sent to an external email address.

Reporting

- In Data Extract, the **Data Source** column on the Extract Definitions and Extract Results pages displays `OSERIES_8_0` to indicate that an upgraded extract has an O Series 8.0 file as the data source.

System

In O Series 9.0, the maximum length of code flexible field values increased from 40 characters to 250 characters. For clients that installed O Series 9.0 using O Series Installer versions 9.0.0.0.320 or earlier, the Tax Journal Export process fails if a transaction includes a code flexible field with a value greater than 40 characters. This issue is caused by a restriction in the Reporting database that allows only up to 40 characters in a flexible field.

To increase the field length for code flexible fields in the Reporting database, Vertex provides `ALTER TABLE` database correction scripts that you can request from Customer Support. Your database administrator can run the scripts against the Reporting database to expand the length of the affected table columns to 250 characters. Separate scripts are provided for each supported application server.

If you installed O Series 9.0 with version *9.0.0.0.320 or earlier*, apply the script if you plan to use flexible fields that are longer than 40 characters. If you are installing O Series 9.0 with O Series Installer version *9.0.0.0.321 or later*, this issue is resolved and it is not necessary to apply the script. (OS4352)

Web Services

For users that are created via web services, a cache refresh must occur before those users can log in to the O Series user interface. With default settings, this refresh can take up to 5 minutes. (108292)

XML Schema

In O Series 8.0 and 9.0, the `rateClassification="Outside the Scope"` attribute is returned under a Taxes element when a nontaxable override is used in the request (`<TaxOverride overrideType="NONTAXABLE"/ >`). This happens when the 7.0 XML schema is used with 8.0 or 9.0, even though the Taxes node in 7.0 has no `rateClassification` attribute. (OS4120)

Supported platforms

Due to changes that Vertex made to support the Oracle OpenJDK version 11 Java Development Kit, O Series 9.0 does not deploy on the SAP Netweaver application server. Therefore, do not apply this patch if you run O Series on a Netweaver server. If you need the 9.0 software features, consider switching to an Apache Tomcat server or another application server.

Documentation

The following documents are available for Vertex O Series, either on the O Series user interface home page or in Vertex Community:

Installation Guide contains information that system administrators need to install and configure Vertex O Series.

Hardware and Software Requirements lists minimum hardware requirements for supported application servers, database servers, and the user interface. It also lists software requirements for application servers and the Java Application Programming Interface (API). This tipsheet is specific to O Series 9.0.

Supported Platforms lists supported application servers, database servers, Java versions, operating systems, and web browsers for O Series 6.0, 7.0, 8.0, and 9.0.

Upgrade Guide provides best practices and procedures for upgrading to O Series 9.0 from O Series 6.0, 7.0, and 8.0.

Administration Guide contains information about configuring and maintaining Vertex O Series.

Configuration Parameters Reference Guide provides reference information about the configuration parameters in the Vertex configuration file (vertex.cfg) and the preferences and settings in the O Series user interface.

Communications Guide describes the tax content and calculation functionality for Vertex Communications. The guide includes procedures for line-based taxation, max tax accumulation processing, bundled services, proration, franchise fees, and managing communication tax exemption certificates. This guide will be available with an upcoming release of O Series.

Tax Data File Format Handbook describes the required tax data file formats to import and export data between Vertex O Series and your financial host system.

Client Utilities User's Guide provides information about using command line utilities and web services that enable you to perform specific Data Management and File Transfer activities. These activities can be performed in both an On-Demand environment and in an on-premise environment.

Federated Security Quick Reference Guide provides setup and configuration information for this feature.

Clustering, Load Balancing, and High Availability Tipsheet provides information about setting up a cluster of application servers to run Vertex O Series with load balancing software.

Reducing the Impact of the Monthly Data Update on Tax Calculation Tipsheet provides a procedure for reducing disruption to your transaction processing when applying the monthly data update.

Reporting Database Views Tipsheet provides views of information for the data in the Reporting database. These views provide a standard interface to the Reporting database data and can be accessed by any tool that is capable of querying a database via SQL.

Integration Guides

XML Integration Guide contains information that software developers need when using an XML interface to integrate Vertex O Series with a financial host system. This guide is distributed as a ZIP archive containing annotated O Series schema in HTML format.

Java Integration Guide contains information that software developers need when using a Java Application Programmer's Interface (API) to integrate Vertex O Series with a financial host system.

Batch Client Interface Guide contains information that IT professionals need to process multiple transactions via the Batch Client Interface without creating a full integration to the financial host system.

Vertex O Series Web Services Integration Guide provides information for the software developer who uses the Vertex O Series Web Services to generate XML messages that are used in a calling application – such as an ERP, CRM, or other system – to find and retrieve tax data that is stored in Vertex O Series databases.

Planning Guides

Planning Guide provides a roadmap to the Vertex O Series implementation process. It helps you to proactively plan each step of your O Series deployment to ensure a smooth implementation. It also provides implementation considerations for specific countries and regions.

Leasing Planning Guide explains how to leverage Vertex Indirect Tax for Leasing and automate the taxability and ongoing maintenance of rental and leasing rules.

Hospitality Planning Guide helps you set up Vertex O Series to successfully calculate lodging and hospitality tax transactions.

Lodging Rate Data File Integration Guide includes instructions for downloading the Lodging Rate Data files and determining Tax Area IDs for use with the Lodging Rate Data file.

Lodging Rate Data File Format spreadsheet provides descriptions, data type, length, and valid values for the Lodging Rate Files fields, Lodging Rate Inclusions File fields, and Lodging Rate Tax Area Jurisdictions File fields in an Excel file.

On-Demand Guides

On-Demand Getting Started Guide provides an overview of activities for start-up and ongoing tax compliance operations with Vertex O Series On-Demand.

On-Demand Implementation Guide provides details about configuration and integration during the O Series On-Demand onboarding process. It reviews administration activities, taxability setup, data management, reports, and returns.

On-Demand Customer Upgrade Guidelines provides guidance to prepare for the upgrade and for data migration of your On-Demand environment.

Historical Reporting Database Import Service Getting Started Guide explains how to implement this service for storing and accessing prior versions of O Series Reporting databases.

Retail Guides

Retail Getting Started Guide (LITE) and *Retail Getting Started Guide (RTE)* provide a high-level overview of the Vertex Retail installation and integration process. It describes the deployment, the associated installation files, and the features that are associated with the deployment.

Retail Installation and Administration Guide (LITE) and *Retail Installation and Administration Guide (RTE)* explain how to plan, install, configure, and maintain Vertex O Series for Retail to support tax calculation at multiple point-of-sale locations.

Retail Tax Extract (RTE) Integration Guide explains how to build an interface between the Vertex O Series deployment at your headquarters and your multiple point-of-sale locations by using Vertex's Retail Tax Extract data model.

Returns Guides

Returns Export Data File Format Handbook provides information about the Returns Export file that is generated from Vertex O Series. The Returns Export file is used to transfer data for transactions in the U.S., Canada, and Puerto Rico from Vertex O Series to Vertex Indirect Tax Returns for tax return filing.

VAT Returns Export Data File Format Handbook provides information about the VAT Returns Export file that is generated from Vertex O Series. The VAT Returns Export file is used to transfer data for transactions in global jurisdictions from Vertex O Series to Vertex Returns or a third-party returns processing application.

Returns Reconciliation Guide provides a set of best practices to follow to accelerate the data reconciliation process between Vertex O Series and Vertex Returns.

Exemption Certificate Guides

Certificate Center Help and *Getting Started with Certificate Center* document the cloud-based exemption management system to organize and track the certificates provided by your customers.

Exemption Certificate Manager Help provides information about setting up and managing certificates in the O Series user interface.

Exemption Certificate Manager Administration Guide provides concept and process information about defining user access and roles and about managing data.

Exemption Certificate Manager Configuration Guide provides information about certificate parameters in the vertex.cfg file and about certificate preferences and settings in the O Series user interface.

Exemption Certificate Wizard Integration Guide provides information about setting up ECW on your system so that your customers can create exemption certificates on your website.

Exemption Certificate Wizard Configuration Portal Help provides an overview of ECW and ECW Portal, certificate searches, and ECW Portal configuration and administration.

Exemption Certificate Portal User's Guide provides information for tax personnel who use O Series to map taxpayers to Exemption Certificate Portal instances and then manage certificates that are created on those instances.

Central and South America Guides

Brazil Guide helps you set up Vertex O Series to calculate tax in Brazil.

Argentina Guide helps you set up Vertex O Series to calculate tax in Argentina.

UNSPSC Integration describes how the United Nations Standard Products and Services Codes (UNSPSC) work with O Series taxability categories.

UNSPSC Version Update describes changes to the UNSPSC that affect how O Series taxability categories are mapped. This tipsheet is updated when changes from a new UNSPSC version become available in the Vertex monthly data update.

Online Assistance

In addition, the following documentation is installed with O Series:

- *O Series Help* provides page-specific, context-sensitive online assistance to tax professionals and system administrators who are using the O Series user interface. To access the Help, click the Help link from any page in the interface.
- *O Series Javadoc* provides reference information that details the methods for tax calculation and Tax Area Lookup to programmers who are using the O Series Java API.

Legacy Vertex Reporting & Analysis

Legacy Vertex Reporting & Analysis Release Notes provides installation notes and information about release enhancements, defects, and known issues.

Legacy Vertex Reporting & Analysis Administration Guide provides installation and configuration information for Legacy VRA.

Legacy Vertex Reporting & Analysis User's Guide provides processes and procedures for creating reports and queries via Vertex and Cognos applications.

Viewing the guides

- To view the PDF guides, Adobe Reader is required. If needed, go to the Adobe Web site at www.adobe.com/products/acrobat/readstep2.html to download a free copy of Adobe Reader. For best viewing of our product documentation, Vertex recommends that you use the latest version of Adobe Reader.
- To view the HTML-based integration guides, extract each ZIP file to a local disk and open the default.htm file or the index.htm file.

Contacting Vertex

- **Vertex Customer Support:** Log in to <https://community.vertexinc.com> and navigate to **Support > Create Case**, or call 800.281.1900. Please have your Customer Number or Case Number available.
- **Vertex Community:** <https://community.vertexinc.com>.
- **Mail:** 2301 Renaissance Blvd. King of Prussia, PA 19406 United States.
- **Telephone:** 800.355.3500 or 610.640.4200.
- **Web:** www.vertexinc.com/.