Quest® Unified Communications Analytics 8.8.2

Release Notes

December 2022

These release notes provide information about this Quest® Unified Communications Analytics release.

About Unified Communications Analytics 8.8.2

UC Analytics was rebranded to Quest and the installation path changed to Quest as of release 8.4.1. If you are upgrading from a version prior to 8.4.1, the UC Analytics program files and binaries are installed in the Quest directory but your storage folder is not changed from its previous location.

Before you install or upgrade UC Analytics, disable any anti-virus software that is running against your storage folder. The anti-virus software locks files in the storage folder, causing issues when the installer attempts to upgrade your stored data or during normal operation, when your configured data collections attempt to update the stored data. You should exclude the storage folder from anti-virus scans.

Unified Communications Analytics (UC Analytics) 8.8.2 is a maintenance release, with enhanced features and functionality.

See New features and priority fixes, Enhancements, and Issues that were resolved in version 8.8..

Upgrading from versions 8.1 or later

If you are upgrading from versions 8.1 or later, perform an in-place upgrade to ensure you maintain your collected data. Do **not** uninstall the previous version. If you uninstall the previous version, you will lose all the collected data.

During upgrade, program files and other binaries are moved to a Quest\UC Analytics folder. However, the storage directory is not moved and remains in the same directory as before upgrade.

Automatic upgrade of custom settings in configuration files

When upgrading to earlier releases of UC Analytics, you either had to manually reapply custom changes to .config files (upgrades from 8.4) or you had copy custom configuration files from a backup directory after upgrade (upgrades from 8.5).

Now, If you have a configuration file with custom settings, (such as job status interval time in the UC.Analytics.Insights.DataEngine.DataCollector.dll.config file), the existing configuration files are automatically copied to a backup folder located at Quest\UC Analytics\Backup Config Files.

When UC Analytics finds backup files in the Backup Config Files folder, it automatically reads the custom values and automatically updates the custom settings in the following configuration files:

If upgrading from 8.4 or an older version:

- Data Engine\Dell.UC.Insights.DataEngine.DataCollector.dll.config
- Data Engine\Dell.UC.Insights.DataEngine.InsightLogic.dll.config
- Data Engine\Dell.UC.Insights.DataEngine.UserSessionManagement.dll.config
- Data Engine\Dell.UC.Insights.DataEngine.Service.exe.config
- Query Engine\doradus.yaml
- Query Engine\log4j.properties
- Storage Engine\cassandra.yaml

When upgrading from 8.4.1 or a newer version:

- Data Engine\UC.Analytics.Insights.DataEngine.DataCollector.dll.config
- Data Engine\UC.Analytics.Insights.DataEngine.InsightLogic.dll.config
- Data Engine\UC.Analytics.Insights.DataEngine.UserSessionManagement.dll.config
- Data Engine\UC.Analytics.Insights.DataEngine.Service.exe.config
- Query Engine\doradus.yaml
- Query Engine\log4j.properties
- Storage Engine\cassandra.yaml

Verifying backup and restore script configuration after upgrade

If you previously configured the backup and restore scripts provided in UC Analytics, you should review the script configuration after upgrade to ensure that the correct paths are specified. As of version 8.4.1, UC Analytics was rebranded to Quest. During upgrade from a version earlier than 8.4.1, the UC Analytics program files and binaries are moved to the Quest installation path but the storage directory is still at the same location as before upgrade.

If you have created a Windows scheduled task to automatically back up the storage directory, verify the following parameters:

- In the backup.bat script, verify that the -storageDirectoryPath parameter contains the path to the correct storage location.

- In the scheduled Windows task that runs the backup, ensure the path to the backup.bat file points to the correct location.

For details about configuring backup and restore batch files, see Appendix E in the *UC Analytics Deployment Guide*.

New features and priority fixes

This 8.8.2 release contains a high priority fix for the following issue

- **Fix for failing Exchange data collections after installing Microsoft security patch KB5001779 on Exchange servers.** After customers installed the Microsoft security update KB5001779 (released April 2021) on their Exchange servers, the Exchange Configuration and the Exchange Public Folders data collection jobs would fail with the error "The syntax is not supported by this runspace. This can occur if the runspace is in no-language mode." (255378)

The following new features, released in version 8.8, are also available:

- **Support to Multifactor Authentication with Microsoft Graph**.

- **You can set an option to exclude today's data from insights for all users.** For environments with a large amount of data, data collections can run for several hours or longer. In this case, you might want to exclude today's data from displaying in insights that show a relative date range such as 7 days or 28 days. The **Exclude Today** option is useful if today's collection jobs have not completed which can result in incomplete data being displayed. On the Admin Settings | Queries page, use the **Exclude Today** option to exclude today's data from appearing in insights for all users. (192987)

- **You can use the new Admin Settings | Credentials page to manage the credentials that are used by multiple data sources to connect using PowerShell/LDAP/EWS and collect data.** You can change the user name and/or the password used by a specific credential and automatically update all the data sources that use that credential. (199479)

- **A new insight, Servers / Server Activity / Summary lets you see the message activity on your Exchange servers for user and system messages.** When you click the Details browser icon, a list of individual messages is displayed. To collect server activity from the Exchange tracking logs, you must select **Server Activity** when configuring the Exchange Tracking Logs data source. (121466)

- **Support is added for the new cmdlets that were introduced in the Microsoft Exchange Online PowerShell V2 module.** Initially, UC Analytics will use the new cmdlets to improve the performance of Exchange Online Native and Exchange Online Hybrid Mailbox Configuration data collections. (197787)

- **Custom settings maintained for Query and Storage Engines during upgrade.** If you have modified settings for the Query Engine or the Storage Engine, when you upgrade UC Analytics specific custom settings are maintained in the following files (207829).

Table 1. Custom properties maintained during upgrade

File name	Property name
Cassandra.yaml	concurrent_compactors
Cassandra.yaml	compaction_throughput_mb_per_sec
log4j.properties	log4j.appender.file.maxBackupIndex
log4j.properties	log4j.appender.file.maxFileSize
Doradus.yaml	Olap_cache_size_mb

Enhancements

The following is a list of enhancements were implemented in version 8.8 in UC Analytics.

Table 2. Installation, resource kit, database, and utilities enhancements

Enhancements	Issue ID
Now UC Analytics creates a Windows scheduled task on the Storage Engine servers to protect the Storage Engine service from the corrupt commit log files in Cassandra database.	73515

Table 3. Configuration and data collection enhancements.

Enhancement	Issue ID
8.8.2 Revised (MFA with Microsoft Graph)	397040
Azure AD, Azure AD Preview and MSOnline PowerShell modules are planned for deprecation.	NA
Microsoft Graph PowerShell is the PowerShell module to use for interacting with Azure AD and other Microsoft services.	NA
UCA is updated to support existing data source collections using Azure AD to new Microsoft Graph PowerShell module	NA
Security to have MFA (Multi Factor Authentication) for the Data Collector Accounts	331410
The Domain Controller data sources now collect the C attribute (country code) for users and contacts from Active Directory. You can add a Country Code column to insights such as Users – Inventory, Rooms – Inventory, Equipment - Inventory, or Mail Contacts - Inventory and you can filter the insights by the new field. For example, to add the Country Code column to the Users – Inventory insight, you would: 1 Select the Customize icon . 2 Click **Manage field columns** and select **Show advanced fields**. 3 Search for Country, select **Country Code** and click **Apply**.	201209
In new installations, Azure AD Connect is now the default option for the AD synchronization method used by the Exchange Online Hybrid User Configuration and the Exchange Online Hybrid Mailbox Configuration data sources. If you are upgrading from a previous version, UC Analytics will keep your existing settings for the option.	208763
UC Analytics now collects custom attributes in AD for distribution groups. Previously, UC Analytics collected the CustomAttribute1 to CustomAttribute15 fields for AD users and contacts only. Now the following data sources will collect custom attributes for groups: • Domain Controller • Exchange Online Hybrid User Configuration • Exchange Online Native User Configuration After you have collected the data, you can insert the appropriate columns in insights such as Groups - Inventory.	189286
To improve UC Analytics Query Engine performance, the default run interval is changed for data source jobs that collect and update data each time the job is run. Previously the default setting was to run the job every hour. Now the default is set to run the job every 4 hours. The change affects the following data sources: • Exchange IIS Logs • Exchange Tracking Logs • Skype for Business/Lync CDR Database • Skype for Business/Lync QoE Database • Cisco CDR Logs	192993

Table 4. Web site, insight, export, and subscription enhancements.

Enhancement	Issue ID
A new column titled Audio / Video Sessions Duration is added to the Skype for Business / Lync Peer-to-Peer Sessions & Conferences - User Activity insight. You can now view the duration for audio / video sessions that occurred within conferences separately.	199044
To group the insights by platform on your home page, you can select **Manage insights** in the top right corner and click **Group by platform**. As of release 8.8, insights are grouped by platform by default for new installations. You can still use the **Manage Insights** function to group or ungroup insights by platform.	130202
When a customer created a mailbox rule that redirected email from one mailbox (User A) to another mailbox (User B), the same message with the distinct message ID would appear in both mailboxes in the UC Analytics insights. The customer requested a method to identify messages generated by the mailbox rule so that duplicate messages could be ignored. Now when you customize an insight that shows email messages, a new insertable field is available under Exchange Email Message called **Is Generated by Mailbox Rule**. To find the new field, select **Show advanced fields** and search for "mailbox rule" or "generated". The following data sources have been updated: • Exchange Tracking Logs • Exchange Mailbox Contents • Exchange Online Mailbox Contents	225321
To harden IIS security, now the "Allow unlisted file name extensions" option and the "Allow unlisted verbs" option are not selected by default in the IIS settings for the UC Analytics web application. Only the required file name extensions and verbs are added in the allowed list.	226816
Service provisioning status is added to the Office 365 User Licenses and Services insight.	81645

Resolved issues

The following is a list of issues resolved in this update.

Table 5. Resolved issues

Resolved issues	Issue ID
System is down, after install of new license file	CR-48080
Quest UCA not working as expected	CR-41357
Storage Crashed	385161
Unable to check Compactionstats	386493
After customers installed the Microsoft security update KB5001779 (released April 2021) on their Exchange servers, the Exchange Configuration and the Exchange Public Folders data collection jobs would fail with the error "The syntax is not supported by this runspace. This can occur if the runspace is in no-language mode."	255378
Some reports do not show the updated data	268019

Issues that were resolved in version 8.8.

Table 6. High priority resolved issues

Resolved issues	Issue ID
After customers installed the Microsoft security update KB5001779 (released April 2021) on their Exchange servers, the Exchange Configuration and the Exchange Public Folders data collection jobs would fail with the error "The syntax is not supported by this runspace. This can occur if the runspace is in no-language mode."	255378

Table 6. High priority resolved issues

Resolved issues	Issue ID
Some reports do not show the updated data	268019

Issues that were resolved in version 8.8.

Table 7. Installation, resource kit, and utilities resolved issues

Resolved issues	Issue ID
UC Analytics would fail to upgrade if the customer had used the FQDN (fully qualified domain name) as the server names during the initial installation.	189228

Table 8. Configuration and data collection resolved issues

Resolved issues	Issue ID
When running an Exchange Configuration data source job, the customer saw warnings in the data source status details such as "Unable to retrieve Exchange Mailbox database copy properties...the operation couldn't be performed because object '***' couldn't be found on '****' ". This warning was caused by UC Analytics attempting to get mailbox database copy status (Get-MailboxDatabaseCopyStatus) from mailbox servers that did not contain a mailbox database. Now UC Analytics skips collecting database properties from mailbox servers that do not contain a mailbox database.	131388
In the Exchange (Exchange Online) Public Folders collection job, when the job collected user permissions for the target public folders on a day in which the job experienced failed attempts, checkpoints could be incorrectly inserted into the database. The incorrect checkpoints caused user permissions for some public folders not to be regathered during the next run. Now, the checkpoints for the Exchange (Exchange Online) Public Folders collection job are correctly synchronized for the type of data being collected (permissions or statistics).	209786
When a PowerShell operation failed, UC Analytics would pause for a few minutes, disconnect the PowerShell session, reconnect a new session, and retry the operation. Also, when the connection attempts exceeded the maximum retry count, UC Analytics would skip the target and move to the next target without disconnecting the PowerShell session. Now UC Analytics disconnects immediately when a PowerShell session fails. This change helps to avoid Office 365 throttling and potential session failures when UC Analytics disconnects and reconnects within a short period of time. The change affects the following data sources: - Exchange Configuration - Exchange Public Folders - Exchange Online Native/Hybrid User Configuration - Exchange Online Native/Hybrid Mailbox Configuration - Exchange Online Mailbox Contents - Exchange Online Public Folders - Office 365 User Subscription Configuration	199877
Customer received an error from the Exchange IIS Logs data source collection such as: "Error: Unable to analyze the Exchange IIS log entries in the IIS log file. Details: Invalid IIS log file: Unexpected 20 fields, instead of 22, on line #5005". However, the line number in the error was not the line number within the log file. Instead, it was a line number within a batch. Customer wanted to be able to identify the specific IIS log line that is missing fields in the IIS log file. UC Analytics now displays the number of line within the IIS log file instead of the number within current batch.	193132

Table 8. Configuration and data collection resolved issues

Resolved issues	Issue ID
The error "Synchronization state data is corrupt or otherwise invalid" was logged in the Exchange Mailbox Contents data collection. A sync token (sync state) describes the status of a mailbox item at a given time. Sometimes a sync token can become corrupt or truncated, possibly if a bad token is sent by the Exchange server in a previous synchronization run. UC Analytics keeps sync tokens in the data collection checkpoints. Now UC Analytics will reset and log any corrupted checkpoints. UC Analytics will regather the specified folder in the mailbox in the next run of collection job.	193001
When calculating email average response times, UC Analytics does not include response times for auto-reply messages which provides a more accurate average. The following data sources are affected by the change: • Exchange Mailbox Contents • Exchange Online Mailbox Contents	192998
UC Analytics now has better handling of PowerShell throttling and the "domain controller change" error in the Exchange Online (Hybrid/Native) Mailbox Configuration data collections. The credential used for resolving targets was not leveraged in the second round in the Exchange Online (Hybrid/Native) Mailbox Configuration data collections. Now the issue is fixed. Also, when the user clicked **Run Now** on a data source that was set to run on a specific Data Engine collector, and if multiple Data Engine collectors were added in a production installation, the data collection would run on all the data collectors. Now the issue is fixed.	223579
UC Analytics retrieved mobile device statistics for all kinds of mailboxes in the Exchange Online (Hybrid/Native) Mailbox Configuration data collections. Now, mobile device statistics are collected for user mailboxes only.	224467
When the Exchange Online Native/Hybrid Mailbox Configuration job had been running for a long time using the same credential, the job would run more and more slowly. To prevent Office 365 throttling, UC Analytics disconnects the PowerShell connection after each round in the job. Now, to further improve collection performance, UC Analytics reconnects the PowerShell session periodically. By default, UC Analytics re-establishes the PowerShell session every 60 minutes. You can modify the interval time by editing the powerShellConnectionReestablishMinutes parameter in the UC.Analytics.Insights.DataEngine.DataCollector.dll.config file. For details, see Appendix F in the *UC Analytics Deployment Guide*.	234190
During some data source collections, if users with an invalid license or users without mailboxes (not mail-enabled) were skipped during the collection, they were incorrectly reported as skipped mailboxes in the job summary and job details messages. Now UC Analytics maintains separate counts for skipped mailboxes and skipped users without mailboxes. The totals are reported separately in the job messages for the following data source collections: • Exchange Mailbox Content Summary • Exchange Online Mailbox Content Summary • Exchange Mailbox Contents • Exchange Online Mailbox Contents • Exchange Calendar • Exchange Online Calendar	159380
In situations in which the system time zone on the UC Analytics server was not in UTC (such as UTC +3), the Last Logon date in the Mailboxes - Inventory insight would be incorrect. Now UC Analytics converts the time zone setting correctly. The following data source collections are affected: • Exchange Configuration • Exchange Online Native Mailbox Configuration • Exchange Online Hybrid Mailbox Configuration	123803
After a user upgraded UC Analytics in a scenario in which multiple data collectors were deployed on the UCA servers, the job status page showed that some jobs had failed. However, no error messages were found in the log files. This issue is now fixed.	161388

Table 8. Configuration and data collection resolved issues

Resolved issues	Issue ID
In the Exchange Tracking Logs and Exchange IIS Logs data collection jobs, the jobs skip any previously gathered files and update the job status to show progress. Also, the data source log file and the job status data table are updated. If an Exchange server log folder or IIS server log folder contained many files that were previously gathered, the jobs would skip the files and continuously update the job status records. For example, there could 64 status updates in one second. Since job status cannot be refreshed that quickly and the updates imposed excessive load on the Query Engine and Storage Engine, UC Analytics has reduced the intensity of job status updates when skipping log files in the Exchange Tracking Logs and Exchange IIS Logs jobs.	175077

Table 9. Insight, export, and subscription resolved issues.

Resolved issues	Issue ID
When a customer exported the Mailboxes - Inventory insight with added columns (such as Owner City or Owner Country) in CSV format and opened the CSV file in Microsoft Excel, some cells in the Size column showed country information instead. For some AD users, the AD attribute "City" contained a carriage return or line feed character which resulted in a line break, and the attribute that followed, Owner Country or Region, was moved to the next line. UC Analytics now handles any special characters when generating CSV or TSV files.	215582
Resolved a defect in which an internal error would occur when a user launched a company insight that had been customized by multiple users.	200976
When two users had customized the same company insight and one of them removed the insight, the company page would become non-functional. This issue is fixed. Also, when a subscription fails due to the subscribed insight having been removed, the resulting error message is updated to provide information about the removed insight.	225765
Previously, when you exported an insight that showed a date range for the displayed data at the top of the insight, the date range time zone did not appear in the exported file. This issue is now fixed.	121562
If the Messages Sent column and the Volume Sent column were removed from Mailboxes / Mailbox Activity / Daily insight, the error message "Internal error occurred during the query request execution" would appear in the export file. Now the issue is fixed.	240586

Known issues

The following is a list of issues, including those attributed to third-party products, known to exist at the time of release.

Table 10. Installation known issues

Known issues	Issue ID
The Azure AD must be re-synced otherwise the licensing details and other information will not be displayed properly.	NA
It is not recommended that you use the built-in domain Administrator account for installing or for accessing UC Analytics. If you have a child domain in your environment, or if you have two root level domains, you will be unable to install the product.	NA
Typically, when you uninstall the product, the Storage directory is removed. If the specified directory cannot be removed (for example, if the directory is on a network drive) an error message appears. You can work around the error by clicking "Ignore". You can manually remove the directory after the uninstallation process is complete.	504453

Table 10. Installation known issues

Known issues	Issue ID
After installing the Storage Engine on a separate computer with multiple network cards, the customer is unable to access the web site ("Application failed to start.") and nothing seems to work. In this case, an incorrect IP address may have been registered for the Storage Engine. **NOTE:** If you are installing multiple Storage Engines on a separate computers that have multiple network cards, the installation may not complete. **Cause** On servers that have more than one IPv4 address, the UC Analytics installer selects one of the IPv4 addresses and registers that as the IP address for the UC Analytics component on that computer. The selected IP address may not be the IP address you want for the UC Analytics Storage Engine. **Workaround** Disable the network cards that have undesired IP addresses, run the UC Analytics installer for the Storage Engine, and re-enable the disabled network cards. If you need to disable a network card that is used for Remote Desktop access to the server, you must install UC Analytics using the physical console instead of Remote Desktop.	654123
In the Autorun.exe, the Download buttons for the software prerequisites may appear to be not working. An error is displayed about a script error on the page. **Cause** On some computers, an iexplore.exe process lingers for about 30 seconds after Internet Explorer is closed. Until the iexplore.exe process exits, the Javascript window.open() call for the Download buttons fails to launch a new Internet Explorer window. **Workaround** Launch the Task Manager and wait until the iexplore.exe process has exited. The Download buttons work correctly.	NA
In a deployment with multiple Data Engine collector roles installed, if you modify your deployment configuration properties using the Deployment Manager, and you clear the Data Engine configuration and reset it, an issue can occur in which the Primary Data Collector cannot be identified. The following error is displayed "You must have one collector role for the Data Engine designated as the primary collector." **Workaround** 1 In the Deployment Manager, select **Manage Deployment	Modify Deployment**. 2 Click **Edit Deployment** and click **Data Engine Advanced**. 3 Select the **Primary Data Collector** check box for the server that hosts collector that should be the primary collector.	774682
If an Office 365 account is added as a product administrator in the Deployment Manager, the account is not granted full access to the Admin Settings. **Workaround** In the UC Analytics web site, in Admin Settings	Security, add the Office 365 user account under the Access to Tenant Configuration heading to grant full access to Admin Settings. You must have already added an Office 365 target environment.	774770
On the Admin Settings - Data Collection page, under Data Sources, you cannot remove data sources if you are viewing the page using iPad or other mobile platforms.	NA
In the Classifications	Threshold Classification page, you can set thresholds for Skype for Business and Lync QoE quality metrics. The page has the recommended thresholds set for Skype for Business 2015 and Lync 2013 by default. Most of these thresholds also apply to Lync 2010. However, if you add a threshold classification that is specific to Lync 2010 only, and you have a mixed environment, the threshold will also be applied to Lync 2013 and later even though the threshold may not be applicable to those versions.	NA

Table 11. Configuration known issues

Known issue	Issue ID
When setting security access to insight data in the Admin Settings	Security page, if you add an Active Directory (AD) user in email address format when the user does not have an associated mailbox, the security access is not set. For example, if you granted unrestricted access to that user, the user would see the error "You do not have the required access rights to view the insight" when attempting to view an insight such as the Mailboxes - Inactive insight.	128425

Workaround

You can add the user and grant data access if you enter the user SAM account name.

Application to support Multi-factor Authentication using Microsoft Graph. The user has to register and set permissions on Azure portal for Microsoft Graph manually.

Workaround

Data sources that connect to Exchange Online using Graph API are:

- Exchange Online Mailbox Contents
- Exchange Online Mailbox Content Summary
- Exchange Online Calendar

To register the UC Analytics application

1 Sign in the Microsoft Azure portal. (You must have global admin rights to register an application.)

2 Search for App registrations in the search box at the top.
OR
In the left navigation pane, click the Azure Active Directory service, click **App registrations** and click **New registration**.

3 On the Register an application page, enter the application registration information:

- Name: Enter a name for the application. For example, UC Analytics.

- Supported account types: **Select Accounts in any organizational directory (Any Azure AD directory - Multi tenant**)

4 Click **Register**.

5 The application is registered in the Microsoft Azure portal and the **Application (client) ID** is displayed.

6 Copy this ID and use it later to set the Azure Application ID in the Target Environments page.

7 Under Manage in the left section, click **Authentication**.

8 Click **Yes** for Default client type and click **Save**.

9 Next, proceed to create a secret for the new app. To achieve this, click on the **Certificates & Secrets** option. Popup will appear.

10 In the popup that appears, click on the **New client secret** link in the **Client Secrets** section in the right panel.

11 Once the new secret is successfully created, a **key** Value will be generated for it as depicted. **Make a note of this key in notepad**.

12 Next, proceed to grant permissions to the Microsoft Graph app, so it can pull the desired metrics. For this, click on the **API permissions** option in the left panel. This will invoke a page in the right panel, click on the **Add a permission** link.

13 Click on **Microsoft Graph** in the **Request API Permissions** window that appears.

14 Click on **Application permissions**. When the **Permission** tree appears, do the following:

- Expand the **Calendar** node and select **Calendars.ReadWrite** options

- Expand the **Groups** node and select **Group.Read.All**,**Group.ReadWrite.All** options.

Table 11. Configuration known issues

Known issue	Issue ID

- Expand the **Mail** node and select **Mail.Read**,**Mail.ReadWrite**,**MailboxSettings.Read** options.
- Expandthe **User** node and select **User.Read.All**,**User.ReadWrite.All** options
- Expand the **Directory** and select **Directory.ReadWrite.All** options.
- Expand the **Application** and select **Application.Read.All** option

15 Finally, click on **Add permissions** to add the chosen permission.

16 When the screen appears, click on **Grant admin consent** for to grant admin consent to the permissions requested

17 Go back to **Microsoft Graph** in the Request **API Permissions** window.

18 Click on **Delegated permissions**.

19 When permission tree appears, do the below step for PowerShell graph calls:

20 Expand the **User** node and select **User.Read** option.

21 Finally click on **Add permissions** to add the chosen permission.

22 Run this script to create **Certificate** in **Personal** Account for **CertificateBase Authentication** for **MFA** in PowerShell.
```
$paramNewSelfSignedCertificate = @{
    Subject           = 'Exchange Online Certificate'
    CertStoreLocation = 'cert:\CurrentUser\My'
    KeySpec           = 'KeyExchange'
    FriendlyName      = 'Exchange Online Certificate
Authentication'}
New-SelfSignedCertificate @paramNewSelfSignedCertificate
```

23 After executing this script **ThumbPrint** is displayed. **Copy** the thumb print in notepad for future steps.

24 Open **Certificate Manager MMC console** and under **Certificates Current User / Personal / Certificates** right-click on the certificate and select All Tasks / Export. Follow the export wizard and ensure to mark **Do not export private key** option and **CER** as the export format.

25 In the **Azure Portal** select **Certificates and Secretes** from the left blade and Upload **certificate** navigating to the **path** where the **certificate** has been **exported/stored.**

26 What we can do is granting an **AzureAD Directory Role** to our application Service Principal. With the **Azure AD** blade selected go to **Roles and administrators** and select **Exchange Administrator** confirming with the Add Assignment button.

27 In **Roles and administrators** and select **Compliance Administrator** . **Repeat** the same steps as above **Exchange Administrator**.

28 Search application by GUID and select it in **Select Member** window.

29 **Add assignments** page **Add** the application.

30 Go to **UCA** installed application **Folder path Data Engine**.
Quest\UC Analytics\Data Engine

31 Open **UC.Analytics.Common.Protocols.PowerShell.dll.config** file as shown.
```
<PSApplicationSettings ApplicationId="xxx"
OrgnisationId="vws1z.onmicrosoft.com" CertificateThumbprint="xx″
TenantGUID="xxx" clientSecret="xxx"/>
```

32 Open **UC.Analytics.Common.Protocols.PowerShell.dll.config** file as shown.

- **Applicationid** - copy the Application id from Azure portal.
- **OrgnisationId** - DNS name of tenant user.
- **CertificateThumbprint** - copy Certificate Thumbprint created from (point 15).

Table 11. Configuration known issues

Known issue	Issue ID
▪ **TenantGUID** - copy Directory (tenant) ID ▪ **clientSecret** - copy Client Secret from (point 8)	
It is mandatory to install Graph Module in PowerShell as UCA supports PowerShell 5.1. Use the command Install-Module Microsoft.Graph since there is a limitation. This is required to run the hybrid environment in both Oauth and MFA. Certificate is mandatory as specified above.	33

NOTE: After saving the changes to the config, it is mandatory to restart the UCA Data Engine Service to reflect the changes.

Table 12. Data collection and resource kit known issues

Known issue	Issue ID
Multifactor authentication supports only 1. Native Data Sources Exchange Online Native Mailbox Configuration 2. Exchange Online Native User Configuration 3. Exchange Online Public Folders Multifactor authentication doesn't support 1. Exchange Online Mailbox Contents 2. Exchange Online Calendar 3. Exchange Online Mailbox Content Summary.	
In the Exchange Online (hybrid and native) data source collections, if the same PowerShell credentials are used for more than one data source, there can be overlapping Azure AD plug-in credential incompatibility. You might notice authentication errors with Azure AD PowerShell cmdlets such as the following: `AdalException: multiple_matching_tokens_detected: The cache contains multiple tokens satisfying the requirements. Call AcquireToken again providing more requirements (e.g. UserId)` `Microsoft.IdentityModel.Clients.ActiveDirectory.AuthenticationContext (IL Offset 0x31): T RunAsyncTask[T](System.Threading.Tasks.Task`1[T])`  `Microsoft.Online.Administration.Automation.CommonFiles.AuthManager (IL Offset 0x11): System.String GetAuthorizationHeader(Microsoft.Online.Administration.Automation. EndPointAlias)` Though UC Analytics recovers from these errors, it is recommended that each Exchange Online data source be configured with its own set of PowerShell credentials.	701364
Previously, UC Analytics might collect incorrect data for mobile devices if a mailbox display name contained a / (forward slash) or a \ (backslash). For example, if there were two mailboxes, /AB and AB, and if mobile device #1 connected to mailbox /AB, and mobile device #2 connected to mailbox AB, UC Analytics would incorrectly match both mobile devices #1 and #2 to mailbox AB. This issue existed only for mailboxes that were migrated from on-premise Exchange to Exchange Online. Though this issue was corrected in version 8.4.2, incorrect mobile device data that was collected previously and stored in the database is not changed. All new collected data will be correct.	700497
UC Analytics does not distinguish between discovery mailboxes and system mailboxes. Discovery mailboxes are collected and recorded as system mailboxes. In insights, there is no indication that a mailbox is a discovery mailbox. You cannot filter on discovery mailboxes.	701077

Table 12. Data collection and resource kit known issues

Known issue	Issue ID
There can be partial ActiveSync data on the day that a user first starts using a mobile device. For example, ActiveSync activity is shown but not associated with a user in the Exchange ActiveSync / Users / Email Activity / Summary insight. This situation occurred when a user started using an ActiveSync device for the first time after the Exchange Configuration collection had successfully run for that day. ActiveSync activity for subsequent days will be correctly associated with the user.	612851
If you have configured the Exchange Configuration data source for a resource forest implementation, if you later add an LDAP connection for more account forests, the data collection does not automatically run to update the data. You must wait until the next day's data collection run to see the new information from the account forest.	644161
In a hybrid environment (Exchange Online and Exchange on-premise), Azure AD Connect (formerly Azure AD Sync) synchronizes on-premises users with Office 365 cloud services for single identities. If the synchronization process is stopped, UC Analytics can double-count users. When the Azure AD Connect synchronization resumes, all new data collections will show the correct user count.	NA
In the Exchange DLP Matches - Details insight, the text in the Justification for Override (insertable) column will appear incomplete if the justification text that was entered by the user contained a semicolon (:) or a single instance of single (') or double (") quotation marks.	605889 605908
The Exchange IIS Logs data collection cannot associate ActiveSync events to a user for some ActiveSync clients with users that have spaces in their Windows logon name (such as MYDOMAIN\N Wong). This issue affects ActiveSync events from the ActiveSync client in Windows Mail. It does not affect the ActiveSync clients in iOS or in Android.	456921
When collecting Exchange data from an Exchange resource forest deployment, there are certain limitations when an active (master) user account has more than one Exchange mailbox, or has more than one archive mailbox, in more than one forest. The master account of the linked mailboxes and of the linked archive mailboxes is correctly recorded. However, only one of the mailboxes that belong to the master account will be reported as its mailbox. Similarly, only one archive mailbox that belongs to the master account will be reported as its archive mailbox.	NA
For any back-end ActiveSync events that have an Exchange server as the authenticated user, the Exchange IIS data collector cannot associate the event to a device and user. The ActiveSync events are gathered but are shown in the insights without a device or a user.	456614
To collect data for personal archive mailboxes (using the Exchange Configuration, Exchange Online Hybrid Mailbox Configuration, or Exchange Online Native Configuration data sources), you select the following two options: - Personal Archive Mailboxes (Configuration) - Personal Archive Mailboxes (Statistics) If you do not select both options for the same data source collection, the Storage Limit Status column is not populated in the Personal Archive Mailboxes - Inventory and Personal Archive Mailboxes - Summary insights.	775039
When entering an organizational unit (OU) when configuring certain data sources, if the user enters an OU in the correct format but with an invalid value, the data collection jobs do not issue a warning or error but resolve 0 targets for the invalid OU. Data will be missing from the insights. Data sources in which you can specify an OU as a target are as follows: - Domain Controller - Exchange Mailbox Contents - Exchange Mailbox Content Summary - Exchange Tracking Logs - Exchange Configuration - Exchange IIS Logs	773630

Table 12. Data collection and resource kit known issues

Known issue	Issue ID

In the Exchange Online data sources, during target expansion, batch size configuration is implemented to improve gathering performance. To ensure that the complete membership of dynamic distribution groups is collected, the batch size values set in the Data Engine collector configuration cannot be less than 1000, and must be greater than or equal to 1000.
 	
The batch size settings for the Exchange Online data source configuration are located in the UC.Analytics.Insights.DataEngine.DataCollector.dll.config file, on the computer that hosts the Data Engine (Collector):
 	
`<exchangeOnlineMailboxContentsJobSettings`
`powerShellBatchSize="1000"`
`/>`
`<exchangeOnlineMailboxJobSettings`
`resolvingBatchSize="1000"`
`/>`
`<exchangeOnlineUserJobSettings`
`powerShellBatchSize="2000"`
`/>`
 	
Do not change these values except under guidance from Quest Support. If you reduce these values to a number less than 1000, some members of the target dynamic distribution groups will not be included in the Exchange Online data collections.
	775273

The received messages count does not include the number of messages sent to an Office 365 mail contact. In an Exchange Online hybrid environment, an Office 365 mail contact can be paired with an on-premises dynamic distribution group to distribute messages internally. When an email message is sent to the Office 365 mail contact, the message is delivered to the dynamic distribution group so that group members receive the message. However, if the Exchange Tracking Logs data source is configured and run in UC Analytics, the "Received Messages" count for the member user will show 0 in insights such as Mail Activity / Internal vs. External insight, even though the user received the message. **Workaround** Disable the Exchange Tracking Logs data source. Use only the Exchange (Exchange Online) Mailbox Contents data source to gather email activity.	236991
In a production installation, where the UC Analytics website role is not deployed on the first UC Analytics server, the Exchange Online collection jobs might fail with the error "Invalid Powershell authentication type settings in config file" after you upgrade UC Analytics from a version older than 8.6.1 Hotfix 1. However, the next run of the data collection will succeed. **Workaround** • Click **Run Now** button manually for the failing collection job in the Admin Settings | Data Collection page. - OR - • Wait till the next scheduled run of the collection job.	254023

Table 13. Website, insights, and export known issues

Known issue	Issue ID
In Exchange 2010, if the Microsoft OWA light version is used, the Outlook on the Web (OWA) insights will display the browser as "Unknown" for Internet Explorer 11, Edge, FireFox, Chrome, and Opera. The issue does not exist in other versions of Exchange or if Safari is the browser.	NA

Table 13. Website, insights, and export known issues

Known issue	Issue ID
If the time zone offset is negative (such as -5), and you apply smoothing to a graph, and the beginning of your date range is before the date when data collection initially started, the total for the smoothed graph is less than the total for the unsmoothed graph. **Workaround** Ensure that the date range does not include the days before data was collected.	694810
In the Mobile Device insights, the Device IMEI column shows <none> for iOS devices. UC Analytics uses the cmdlet Get-MobileDeviceStatistics (for Exchange 2013/2016/2019) and Get-ActiveSyncDeviceStatistics (for Exchange 2010) to get the device IMEI. Due to how the iOS device built-in mail app works, the information is not stored in the internal mobile device logs and is not available to PowerShell, and by extension, to UC Analytics.	704642
In the insight view, If the date range is set to a single day, any trend graph will change to a vertical bar chart but if you export the same insight, the trend graph does not display a bar chart but displays a trend line with a single point.	718893
On the home page, you cannot enlarge or shrink the insight tiles on iPad and other mobile platforms.	NA
After installing Quest UC Analytics and attempting to open the Analytics web site (http://<server>/Analytics), the user sees the following error: "The application failed to initialize." This issue may be caused by a bug in IIS 7.0 in handling extensionless URLs. See the following link for details: http://support.microsoft.com/kb/980368 Install the Microsoft patch to fix this issue.	NA
If the Date format that is set in your UC Analytics user profile is in a different order than the Date and time format that is set in regional settings on your local computer, and you export an insight to .csv or .tsv format, when you open the exported file in Excel, Excel will incorrectly convert the date. **Workaround** Set the order for day/month/year for the user profile Date format to be the same as in the local Date and time format that is set in your computer's regional settings. For example, if the Data and time format on your computer is set to be mm/dd/yyyy, set the Date format in the user profile to also be mm/dd/yyyy. For more information about setting the date format in UC Analytics, see the *Unified Communications Analytics User Guide*.	654748
When you export an insight to either .pdf or to Word (.docx) format, there might be discrepancies in how information is displayed: • Layout of Insights that contain two side-by-side tables can be different from what you see on the screen. • Numbers might sometimes overlap horizontal bars.	NA
In the details browser, the Exchange server details are not shown in the Exchange ActiveSync / Servers / Server Sync Times insight. This scenario can occur if you collect ActiveSync data for a time period from before you installed the product. The insight is populated with the historical ActiveSync data collected from the IIS logs (Exchange IIS Logs data source). However, the server detailed data is populated from the once-a-day "snapshots" collected from Active Directory (Exchange Configuration data source). Since you had not run the Exchange Configuration data collection during that time period, there is no Exchange server detailed information in the database. This issue decreases over time as the server data is accumulated through daily Exchange Configuration data collections.	591123
In the Mailboxes - Folders Inventory insight, if there is a mailbox owner with many folders that span more than one displayed insight page, when you click a heading (such as Size) to sort the fields, sorting does not work.	773936

Table 13. Website, insights, and export known issues

Known issue	Issue ID
The total number or size of messages (Unique Messages, Total Volume) will not always equal the sum of sent and received messages. The reason is that the total includes messages that were "sent on behalf of" and messages that were "sent as", while the total of sent messages does not include these types of message. For example, when user A sent a message on behalf of user B, the insight would show the total number of messages of user B is 1, while the number of sent messages is 0. The following insights are affected: • Mail Activity / Internal vs. External • Mailboxes - Active and Inactive Summary • Mailboxes / Mailbox Activity / Summary • Mailboxes / Mailbox Activity / Daily • Organizations / Departmental Reporting / Mailbox Activity	163943
In the Servers / Server Activity / Summary insight, which shows message activity on your Exchange servers for user and system messages, the totals can vary from MessageStats reports for the following reasons: • In MessageStats you can identify an IP address as an internal IP address but this option is not available in UC Analytics. If you have configured MessageStats with internal IP addresses, UC Analytics will show lower totals than MessageStats for the **Messages Transferred In** counts. • The rules for identifying system messages are different for UC Analytics and MessageStats. For example, if recipient message totals contain messages from health mailboxes, MessageStats counts these messages as user messages but UC Analytics counts any health mailbox messages as system messages.	121466
UCA might randomly encounter an "unlicensed" error though you have installed a valid license file. When the error occurs, you would see the following error message when you launch the UC Analytics website: "No license found or your license has expired. Please apply the license file (.dlv) that you received from Quest or contact your sales representative." **Workaround** • Reinstall the license file using DeploymentManager.exe (Manage Licenses | Add License). - OR - • Manually restart the Data Engine service on all UC Analytics servers.	168306

Table 14. Subscriptions known issues

Known issue	Issue ID
When configuring UC Analytics for subscriptions (Admin Settings | Subscriptions) you have the option to require authentication to the SMTP server that is used for email subscriptions. UC Analytics cannot send subscription emails through Exchange receive connectors that meet **all** the following conditions: • require authentication and do not allow anonymous access • only allow Integrated Windows Authentication (basic authentication is disabled) • have EnableAuthGSSAPI property set to true	605072
Subscriptions might not send long emails, such as insights with large tables, in MHTML or HTML format. Depending on message size limit set on the specified SMTP server for email subscriptions, a subscription in MHTML or HTML format with a long body might be blocked. **Workaround** If a user does not receive an email subscription in MHTML or HTML format, switch the subscription format to either .pdf or .docx format in which the size of the message is much smaller.	606221

Table 14. Subscriptions known issues

Known issue	Issue ID
For Insight Visibility and Security (data access settings), UC Analytics does not support a configuration in which specified users are in a separate forest from the forest in which UC Analytics is installed. For on-premise target environments that are configured for Authentication-enabled, all users that are entered for Insight Visibility and Security must be in the same target environment as UC Analytics.	775501
Time Zone Offsets: When you create a subscription, the current time zone offset (such as UTC - 04:00) is captured and is used for the future subscription schedule. This captured time zone offset does not change with Daylight Saving Time (DST). You must manually change the existing subscription schedule when DST begins and ends. **Using a time zone offset override** Each time you log in, your user profile's time zone offset is updated to the time zone of the client computer. The offset is used for running queries and affects the display of data, including scheduled insights. If you want your data queries to always run using a particular time zone offset regardless of your current location or whether DST is active, you can set an override in your user profile page. To access your user profile, click your user name in the top right corner of the Analytics web site and select **Edit Profile**. If you travel to a different time zone, or when the time changes due to daylight saving, the scheduled subscription emails still use the old time settings until you log in to UC Analytics in the new time zone or after the time switch.	NA

Table 15. Storage Engine and Data Engine known issues

Known issue	Issue ID
The UC Analytics Storage Engine service cannot start due to a failure to read a file descriptor in one of the commit logs. The Storage Engine tries to restart and fails because of a commit log replay issue, resulting in an error in the Cassandra.log file such as the following: `org.apache.cassandra.db.commitlog.CommitLogReplayer$CommitLogReplayException: Could not read commit log descriptor in file /data/commitlog/CommitLog-6-1460632496764.log at org.apache.cassandra.db.commitlog.CommitLogReplayer.handleReplayError(CommitLogReplayer.java:644) [apache-cassandra-3.0.5.jar:3.0.5]` By default the log file is located in the following path: C:\Program Files\Quest\UC Analytics\Storage Engine\bin\Cassandra.log **Workaround** Delete the corrupted commitlog file that is specified in the error message and restart the Storage Engine service.	642319
All the files in the Storage Engine directories must be available for reading and writing at all times. If you have any automated processes running on the Storage Engine directories that lock files, you might encounter problems. The Storage Engine, when it encounters one of its files that cannot be written to or deleted, stops running. You must restart the service to get the Storage Engine working again.	NA
The Data Engine does not communicate with the Query Engine when a proxy is enabled on the Data Engine server. **Workaround** Disable the proxy or ensure that the proxy allows direct communication to the Query Engine server (which can be the same server as the Data Engine).	NA

System requirements

Before installing UC Analytics 8.8.2, ensure that your system meets the following minimum hardware and software requirements.

Hardware requirements

If you are installing UC Analytics, the computer must meet the following minimum requirements:

Table 16. Minimum requirements for hardware.

Type	Minimum
Processor	Minimum: Quad core 64-bit computer.
RAM	Minimum: 24 GB.
Disk	• 5 GB for the application • *X* GB where *X* is the required disk space for collected data For estimates regarding the required disk space for the collected data for different numbers of users for all the platforms, see the *UC Analytics Deployment Sizing.xlsx* spreadsheet which can be found under Documentation in the autorun.exe.
Operating system	One of the following: • Windows 7 (64 bit version) or later • Windows Server 2008 R2 (Service Pack 1) or later • Windows Server 2012 and later • Windows Server 2016 • Windows Server 2019 Any server on which a UC Analytics service or service role is installed must have a static IP address defined. For a distributed deployment, the Remote Registry Service must be running.

About NAS/SAN support

Generally, using a NAS/SAN device for the Storage Engine is not supported. UC Analytics might support specific NAS/SAN devices but Quest would require full testing with the devices, or device simulators, to support them. Since each NAS/SAN device, depending on manufacturer, is unique, Quest will work with NAS/SAN vendors to certify or qualify a device but the NAS/SAN vendor must be willing to assist. To engage a NAS/SAN vendor and initiate the qualification process, you would send an email to your NAS/SAN vendor and contact Quest Support.

Software requirements

To install and run UC Analytics, the following software requirements must be met on the computers that host these specific UC Analytic services:

Table 17. Software requirements

Hosted service	Requirement
Web site	IIS (Internet Information Services) 7.0 or later For the required configuration for IIS logging, see Appendix C in the *Quest UC Analytics Deployment Guide*.

Table 17. Software requirements

Hosted service	Requirement

Data Engine service	• Microsoft .NET Framework 4.6 (full version) or later
	
	• PowerShell 3.0 or later
	
	• TLS (Transport Layer Security) 1.2 protocol must be enabled.
	
	• To use OAuth 2.0 to collect from Office 365, the Exchange Online PowerShell module (v1 or v2) must be installed.
	
	• To collect Office 365 user subscription data, the following software prerequisites must be met:
	
	    ▪ Microsoft Online Services Sign-in Assistant must be installed.
	
	    ▪ Windows Azure Active Directory Module for Windows PowerShell 1.x must be installed. (Version 2.x has different PowerShell cmdlets and will not work.)
	
	Also, since the Microsoft Azure AD cmdlets use the proxy settings for Internet Explorer, ensure that the Internet Explorer proxy settings for the service account are set correctly.

Query Engine service	64-bit Java Runtime Environment (JRE) 8 - OR - Zulu OpenJDK 8 (Zulu Java 8 JRE for Windows, x86 64-bit in .MSI form) For information and downloads, see https://www.azul.com/downloads/zulu-community/
Storage Engine service	64-bit Java Runtime Environment (JRE) 8 - OR - Zulu OpenJDK 8 (Zulu Java 8 JRE for Windows, x86 64-bit in .MSI form) For information and downloads, see https://www.azul.com/downloads/zulu-community/

For information about the rights and permissions needed to configure UC Analytics and by the credentials used to gather information, see the *Quest UC Analytics Deployment Guide*.

Table 18. Supported environments

Requirement	Details
Gathering environment	The following is a list of the minimum environments that are supported for data collection: • Exchange 2010 (SP1 or later) • Exchange 2013 • Exchange 2016 • Exchange 2019 • Exchange Online (Office 365 hybrid deployment with on-premise Exchange) • Exchange Online (native Office 365 deployment) • Lync 2010 • Lync 2013 • Skype for Business 2015 • Skype for Business 2019 • Cisco Unified Communications Manager (CUCM) 9.x to 11.0 and 11.5.

Table 18. Supported environments

Requirement	Details
Supported browsers	To access the UC Analytics web site, use one of the following browsers: • Microsoft Edge • Internet Explorer 10 or later • Google Chrome • Mozilla Firefox • Apple Safari For users with large amounts of data, it is recommended that you ensure your browser is in 64-bit mode. For more information about setting Internet Explorer to 64-bit mode, see the section titled "Using a browser in 64-bit mode" in the *UC Analytics User Guide*.

Product licensing

In release 8.1, UC Analytics switched to a new license type (.dlv) and emailed the new license file to existing customers.

Existing customers on 8.1 or later

If you are an existing customer with 8.1 or later installed, you will have a .dlv license file installed. When you upgrade, your dlv license will continue to work if it is not expired.

To install a new license, use the following procedure to activate it.

To activate a license

1   Copy the license file (xxx-xxxx.dlv) to any single computer on which the UC Analytics Data Engine service is installed.

   You do not need to copy a license file to all computers on which the Data Engine service is installed. When the license is copied to one computer that hosts the Data Engine service, it is updated automatically on all the computers that host the Data Engine service.

2   Start Quest UC Analytics | Quest UC Analytics from the Start menu or run the DeploymentManager.exe file from the product installation directory.

3   Click the **Manage Licenses** button.

4   Click **Add License** and browse to the location where license file (xxx-xxxx.dlv) is copied and install it.

New customers

After you download a trial version or purchase UC Analytics, you will receive a license file (.dlv) through email that is used to activate UC Analytics. After you install UC Analytics but before you can use UC Analytics, you must activate the license.

To activate a license

1   Copy the license file (xxx-xxxx.dlv) to a computer on which the UC Analytics Data Engine service is installed.

2   Start Quest UC Analytics | Quest UC Analytics from the Start menu or run the DeploymentManager.exe file from the product installation directory.

3   Click the **Manage Licenses** button.

4   Click **Add License** and browse to the location where license file (xxx-xxxx.dlv) is copied and install it.

Globalization

This section contains information about installing and operating this product in non-English configurations, such as those needed by customers outside of North America. This section does not replace the materials about supported platforms and configurations found elsewhere in the product documentation.

This release is Unicode-enabled and supports any character set. In this release, all product components should be configured to use the same or compatible character encodings and should be installed to use the same locale and regional options. This release is targeted to support operations in the following regions: North America, Western Europe and Latin America, Central and Eastern Europe, Far-East Asia, Japan.

About us

Quest creates software solutions that make the benefits of new technology real in an increasingly complex IT landscape. From database and systems management, to Active Directory and Office 365 management, and cyber security resilience, Quest helps customers solve their next IT challenge now. Around the globe, more than 130,000 companies and 95% of the Fortune 500 count on Quest to deliver proactive management and monitoring for the next enterprise initiative, find the next solution for complex Microsoft challenges and stay ahead of the next threat. Quest Software. Where next meets now. For more information, visit www.quest.com.

Technical support resources

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at https://support.quest.com.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

•   Submit and manage a Service Request.

•   View Knowledge Base articles.

•   Sign up for product notifications.

•   Download software and technical documentation.

•   View how-to-videos.

•   Engage in community discussions.

•   Chat with support engineers online.

•   View services to assist you with your product.

Third-party contributions

This product contains the following third-party components. For third-party license information, go to http://www.quest.com/legal/license-agreements.aspx. Source code for components marked with an asterisk (*) is available at http://opensource.quest.com.

Table 19. List of third-party contributions

Component	License or acknowledgement
BouncyCastle 1.8.1	MIT N/A
crypto-ts 1.0.2	MIT
Hopscotch 0.1.2	Apache License, Version 2.0
HTML5 Sortable 1.0.0	MIT N/A
Infuse JS 1.0.1	Infuse JS License
	Copyright 2013 infuse.js Romuald Quantin www.soundstep.com
jquery.fileDownload 1.4.2	MIT N/A
Json.NET 6.0	MIT N/A
JQuery 1.8.2	MIT
MailKit 1.18	MIT N/A
MimeKIT 1.18.1	MIT N/A
Moment.js 2.6.0	MIT N/A
OpenSSL 1.0.2l (25-May-2017)	OpenSSL 1.0
	Copyright (c) 1998-2017 The OpenSSL Project. All rights reserved.
	This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).
SharpZipLib 0.86	SharpZipLib License
	The library is released under the GPL with the following exception:
	Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License cover the whole combination.
	As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.
	Note The exception is changed to reflect the latest GNU Classpath exception. Older versions of #ziplib did have another exception, but the new one is clearer and it doesn't break compatibility with the old one.
	Bottom line In plain English this means you can use this library in commercial closed-source applications.
Simple.OData.Client 4	MIT
spin.js 1.2.2	MIT
typeahead.js 0.10.2	Copyright 2013-2014 Twitter, Inc. and other contributors; Licensed MIT
Web Toolkit Javascript SHA-256 1.0*	© 2013 webtoolkit.info Inc. All rights reserved. Creative Commons Attribution England and Wales 2.0
ua-parser 0.7.10	Copyright 2012-2015 Faisal Salman
7-ZIP 9.20	7-ZIP 9.20

Table 20. List of third party components (for Doradus and QUI)

Doradus 3.0 Components & QUI (Quest UI Library) 1.8 Components	License or acknowledgement
Cassandra 3.0.14	Copyright © 2017 The Apache Software Foundation. Licensed under the Apache License, Version 2.0. Apache and the Apache feather logo are trademarks of The Apache Software Foundation.
Cassandra C# Driver 3.9.0	Copyright © 2018, DataStax Licensed under the Apache License, Version 2.0
Cassandra Java Driver 2.1	Copyright 2012-2015, DataStax Licensed under the Apache License, Version 2.0
Google Open Sans 1.0	Apache 2.0
Guava 18.0	Copyright (C) 2011 The Guava Authors Licensed under the Apache License, Version 2.0
Javax Servlet API 3.0.1	Copyright © 2014, Oracle Corporation and/or its affiliates. All rights reserved. Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners. License CDDL + GPLv2 with classpath exception 1.0
Jetty 9.2	Copyright © 2015 The Eclipse Foundation. All Rights Reserved. Licensed under the Apache License, Version 2.0
log4j 1.2	This product includes software developed by the Apache Software Foundation (http://www.apache.org.) Licensed under the Apache License, Version 1.1
Lz4 .NET 1.0.10.93	Copyright © 2014, Milosz Krajewski Licensed under the BSD 2-Clause "Simplified" License
Lz4 Java 1.3	Licensed under the Apache License, Version 2.0
Netty 4.0.44.Final	Copyright © 2018 The Netty project Licensed under the Apache License, Version 2.0
slf4j - Simple Logging Facade for Java 1.7	Copyright (c) 2004-2008 QOS.ch All rights reserved.
snakeyaml 1.11	Licensed under the Apache License, Version 2.0
Snappy Compression Library 1.1	Copyright 2011, Google Inc. All rights reserved.
Twitter Bootstrap 2.1.1 Twitter Bootstrap 2.3.1	Licensed under the Apache License, Version 2.0
Underscore.js 1.5.1	© 2009-2013 Jeremy Ashkenas, DocumentCloud and Investigative Reporters & Editors MIT N/A
Underscore.string 2.3.0	MIT N/A

Legend

! **CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.**

i **IMPORTANT NOTE**, **NOTE**, **TIP**, **MOBILE**, or **VIDEO:** An information icon indicates supporting information.