Quest® Unified Communications Diagnostics 8.5.2

Deployment Guide

Legend

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

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

UC Diagnostics Deployment Guide
Updated - June 2021
Software Version - 8.5.2

Contents

Installing and upgrading Unified Communications Diagnostics

- Installation and performance considerations
- UC Diagnostics software prerequisites
- SQL Server installation prerequisites
- Deployment recommendations for the Management Console
- About cluster support
- Installing components on multiple computers
- Manually installing the Management Console database
- Manually upgrading the Management Console database
- Configuring existing UC Diagnostics to work with SQL Always On
- Backing up and restoring UC Diagnostics
- Moving UC Diagnostics to a another server

Installation and performance considerations

Before you install UC Diagnostics, ensure your system meets the specified system requirements depending on the type of environment or organization you are running. It is recommended that you install UC Diagnostics on one of the following operating systems depending on the environment you are monitoring,

Table 1. Recommended operating systems depending on monitored environment.

Environment	Operating System
Exchange 2007/2010/2013/2016	Any operating system
BlackBerry	Any operating system
Office Communications Server 2007 and 2007 R2	Any operating system
Lync Server 2010	Any operating system
Lync Server 2013 Skype for Business 2015	Any operating system
Office 365	Any 64-bit operating system

For more information about Exchange environment prerequisites, see Diagnostic Services for Exchange 2007 on page 9, Diagnostic Services for Exchange 2010 or Exchange 2013 on page 9, or Diagnostic Services for Exchange 2016 on page 9.

Port configuration for monitoring servers in DMZ

UC Diagnostics connects with Windows RPC connections. For monitoring servers in a DMZ environment, the following ports must be open:

- Browsing UDP:137,138

- DNS Resolution UDP:53

- Event Viewer TCP:139

- File Sharing access TCP:139

- Logon Sequence UDP:137,138 TCP:139

- NetLogon UDP:138

- Pass Through Validation UDP:137,138 TCP:139

- Performance Monitor TCP:139

- Printing UDP:137,138 TCP:139

- Registry TCP:139

- Server Manager TCP:139

- RPC TCP:135

The ports must be bidirectional.

For more information on the network ports, protocols, and services that are used by Microsoft client and server operating systems, server-based programs, and their subcomponents, see http://support.microsoft.com/kb/832017.

The port information in the above article should not be used to configure Windows Firewall. For information about configuring Windows Firewall, see the following Microsoft Web sites:

- http://technet.microsoft.com/en-us/library/cc779199(WS.10).aspx

- http://technet.microsoft.com/en-us/network/bb545423.aspx

What files should be excluded from automatic anti-virus scans?

If certain files or processes are locked by anti-virus scan software, it can affect the ability of UC Diagnostics to operate. The following files should be excluded from anti-virus scans:

Management Console

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightDianosticTest.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\CollectorRecovery.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightDistributedCollector.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightDiagnosticTestEngine.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightRemotingServer.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightRemotingServerNoImpersonation.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\PowerShell64ProxyHost.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SpotlightLaunch.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\iwsnaptrap.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\SupportBundle.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\ManagementConsole\Binaries\OcsEdgeServerConfiguration.exe

Diagnostic Console

- C:\Program Files (x86)]\Quest\UC Diagnostics\DiagnosticConsole\Binaries\LyncPowerShellProcess64.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\DiagnosticConsole\Binaries\PowerShellProcess64.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\DiagnosticConsole\Binaries\BlackBerrySnmpTester.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\DiagnosticConsole\Binaries\SOMMiscProxy.exe

- C:\Program Files (x86)]\Quest\UC Diagnostics\DiagnosticConsole\Binaries\DataReplayProxy.exe

- C:\Program Files (x86)]\Quest\Spotlight\Console\Spotlight.exe

- C:\Program Files (x86)]\Quest\Spotlight\Plug-ins\DatasourceSOM.exe

Web Reports

- C:\Program Files (x86)]\Common Files\Quest Shared\Web Reports\QSchedExec.exe

Install license

- C:\Program Files (x86)]\Common Files\Quest\ProductLicenseInstaller.exe

UC Diagnostics software prerequisites

The following section provides the software prerequisites for UC Diagnostics components.

Table 2. System requirements for UC Diagnostics components.

Component	System Requirements
Operating System	One of the following: - Microsoft Windows 8 (32 bit or 64 bit) - Microsoft Windows 8.1 (32 bit or 64 bit) - Microsoft Windows Server 2012 (64 bit) - Microsoft Windows Server 2012 R2 (64 bit) - Microsoft Windows 8.1 with update (32 bit or 64 bit) - Microsoft Windows Server 2012 R2 with update (64 bit) - Microsoft Windows Server 2016 (64 bit) **NOTE:** To run health tests against Office 365, UC Diagnostics must be installed on a 64-bit operating system.

Table 2. System requirements for UC Diagnostics components.

Component	System Requirements
Database	One of the following: • Microsoft SQL Server 2012 SP 4 • Microsoft SQL Server 2012 Express Edition SP 4 • Microsoft SQL Server 2014 SP 2 • Microsoft SQL Server 2014 Express Edition SP 2 • Microsoft SQL Server 2016 SP 1 • Microsoft SQL Server 2016 Express Edition SP 1 • Microsoft SQL Server 2017 • Microsoft SQL Server 2017 Express Edition **NOTE:** If you are installing the database on a remote computer, ensure remote connections are enabled on the SQL server and you have sufficient permissions to create/modify the database. **NOTE:** If you are using SQL Server Always On, you must have configured an availability group listener that connects to the primary replica. For SQL Server 2017, only availability groups that deploy on a Windows Server Failover Cluster (WSFC) are supported.
Diagnostic Services (Health Tests) for all Environments	• Microsoft .NET Framework 4.5.1 • Microsoft Data Access Components (MDAC) 2.8 MDAC 2.8 comes with your operating system. If MDAC is removed, UC Diagnostics cannot run.
Diagnostic Services for Exchange 2007	The following prerequisites are needed for Exchange 2007: • Exchange Management Console (EMC) 2007 SP 1 and Update Rollup 1 or later The version of Exchange Management Tools version installed on your UC Diagnostics computer must match the Exchange version on the Exchange server. For example, if Exchange 2007 SP 2 is installed, install Exchange Management Console 2007 SP 2 on your UC Diagnostics computer. If your organization is mixed and contains Exchange 2007 servers, you must install EMC 2007 SP 2 or later. • Exchange Server MAPI Client and Collaboration Data Objects (MAPI & CDO) Build 8.3.0.8353.000 or later **NOTE:** Microsoft Outlook must not be installed on the same computer where MAPI & CDO is installed.
Diagnostic Services for Exchange 2010 or Exchange 2013	The following prerequisites are needed for Exchange 2010 or 2013: • Microsoft PowerShell 2.0 or later • MAPI & CDO version 8.3.0.8353.000 or later (required for certain health tests). You can download from: https://www.microsoft.com/download/details.aspx?id=42040
Diagnostic Services for Exchange 2016	The following prerequisites are needed for Exchange 2016: • Microsoft PowerShell 2.0 or later
Diagnostic Services for BlackBerry	The following prerequisites are needed for BlackBerry: • MAPI & CDO version 8.3.0.8353.000 or later (required for certain health tests).
Diagnostic Services for Lync/Skype for Business	The following prerequisites are needed for Lync/Skype for Business: • Microsoft PowerShell 2.0 or later

Table 2. System requirements for UC Diagnostics components.

Component	System Requirements
Diagnostic Services (Health Tests) for Office 365 (Exchange Online and Skype for Business Online)	The following prerequisites are needed for Office 365: • Microsoft PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module
	For more information, see Diagnostic Services (Health Tests) for all Environments on page 9.
Diagnostic Console for all Environments	Microsoft .NET Framework 4.5.1
Diagnostic Console for Exchange 2007	EMC 2007 SP 1 or later
Diagnostic Console for Exchange 2010	Microsoft PowerShell 2.0 or later
Diagnostic Console for Exchange 2013	Microsoft PowerShell 2.0 or later
Diagnostic Console for Exchange 2016	Microsoft PowerShell 2.0 or later
Diagnostic Console for Lync 2013/Skype for Business 2015	Microsoft PowerShell 2.0 or later
Web Reports	For installing Web Reports, you need one of the following: • IIS 7.0 or later with the following enabled: World Wide Web Services or Web Server (IIS) Application Development Features: ASP, ASP.NET, Server-Side Includes Security: Windows Authentication - OR - • IIS 8.0 or later with the following enabled: World Wide Web Services or Web Server (IIS) Application Development Features: ASP, ASP.NET 3.5, Server-Side Includes Security: Windows Authentication For viewing Web Reports, you need: • Internet Explorer 9.0 or later Requirements for specific operating systems: • If you are using Windows 7, you must enable Static Content and Default Documents in IIS to view Web Reports. • If you are installing Web Reports on a remote computer, you must use SQL Authentication.
Rights and Privileges	Local Windows Administrator privileges are required on the computer on which UC Diagnostics is installed.

SQL Server installation prerequisites

If you are installing the SQL database on the same computer as other UC Diagnostics components or if you are installing the SQL database remotely, the following permissions are required:

Table 3. Required permissions if SQL server is on the same computer or is remote.

User Account	Permissions
Installer user	dbcreator and db_owner roles
	Using the installer
	If you install the Spotlight Management Framework database using the Installation wizard, the installer user account must have a SQL Server login with the dbcreator server role.
	During installation, the installer automatically grants the db_owner database role to the installer user for the Spotlight Management Framework database.
	NOTE: If you are using SQL Server Always On, you must have configured an availability group listener that connects to the primary replica.
	Manually installing the database
	If you manually install the Spotlight Management Framework database using the scripts, you must have a SQL Server login for the installer user account. You must grant the db_owner database role to the account for Spotlight Management Framework database.
	For more information to manually install Spotlight Management Framework database, see Manually installing the Management Console database on page 16.
Service account	Server roles/database roles required for the UC Diagnostics service account at installation time are as follows:
	Using the installer
	If you install Spotlight Management Framework database using Installation wizard, you must have a SQL Server login for the UC Diagnostics service account. During installation, the Installer automatically grants the db_owner database role to the service account for the Spotlight Management Framework database.
	Manually installing the database
	If you manually install the Spotlight Management Framework database using the scripts, you must have a SQL Server login for the service account and grant the db_owner database role to the account for the Spotlight Management Framework database.
	For more information to manually install Spotlight Management Framework database, see Manually installing the Management Console database on page 16.

SQL database operating prerequisites

After the UC Diagnostics SQL database is installed, the following operating permissions are required:

Table 4. Operating permissions required for the SQL database.

User Account	Permissions
Management Console user	db_Owner for Spotlight Management Framework database
Service Account	db_Owner for Spotlight Management Framework database

i | **IMPORTANT:** If you are using SQL Server Always On, you must grant db_Owner permissions to the Spotlight Management Framework database on **all** the availability replicas.

Diagnostic Console operating recommendations

The Diagnostic Console is not intended to be operated continuously for long periods of time. The console frequently retrieves a large amount of data from a server. This places excessive stress on a server, affecting its performance. It also consumes critical system resources, which can affect the stability of UC Diagnostics over a long time period.

Consider the following recommendations:

*   Allow the Diagnostic Console to view a maximum number of 10 servers at any one time.

*   If you install the Diagnostic Console on a computer containing Spotlight products and you want to launch the Diagnostic Console from the UC Diagnostics Management Console, you must install the Diagnostic Console and the Spotlight products on C: drive. Otherwise, the Diagnostic Console fails to launch from the Management Console. As a workaround, create a shortcut on your desktop to C:\Program Files\Quest\Spotlight\Console\Spotlight.exe to manually open connections.

Deployment recommendations for the Management Console

Consider the following recommendations before you install the Management Console, depending on the number of Exchange or Skype for Business/Lync servers you have.

Table 5. Deployment recommendations based on number of servers monitored.

If You are Monitoring	RecommendationS
1 - 50 Exchange servers	• All components can be installed on a single dedicated computer • Console can be installed with the other components or on your desktop computer • Any of supported databases should be sufficient
50 - 100 Exchange servers	• Diagnostic Services should be installed on a dedicated computer • Database should be installed on a separate computer from the Diagnostic Services • SQL Express Edition is not recommended • If Web Reports is frequently used or test monitoring intervals are less than 30 minutes, Web Reports should be installed separately from the Diagnostic Services • Console can be installed with the Diagnostic Services or on your desktop computer
100 or more Exchange servers	• Diagnostic Services should be installed on a dedicated computer • Database should be installed on a separate computer from the Diagnostic Services • SQL Express Edition is not recommended • If Web Reports is moderately or frequently used or test monitoring intervals are less than 30 minutes, Web Reports should be installed separately from the Diagnostic Services • Console should be installed separately from the Diagnostic Services
1 - 50 Skype/Lync/OCS servers	• All components can be installed on a single dedicated computer • Console can be installed with the other components or on your desktop computer

Table 5. Deployment recommendations based on number of servers monitored.

If You are Monitoring	RecommendationS
50 or more Skype/Lync/OCS servers	• Diagnostic Services should be installed on a dedicated computer • Database should be installed on a separate computer from the Diagnostic Services • If Web Reports is frequently used or test monitoring intervals are less than 30 minutes, Web Reports should be installed separately from the Diagnostic Services • Console can be installed with the Diagnostic Services or on your desktop computer

If you are monitoring more than 100 servers or operating in a mixed environment, you might need a more distributed installation or additional UC Diagnostics installations. Please contact Support for advice.
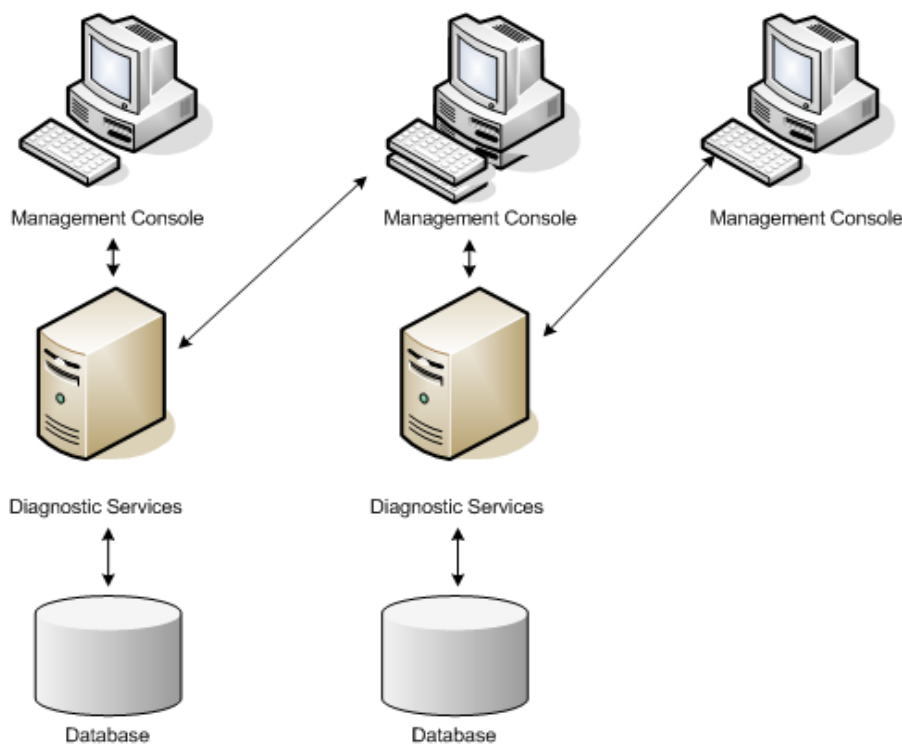
Factors to consider during deployment

When deploying UC Diagnostics, consider the following factors:

• Multiple diagnostic consoles can be connected to the same Diagnostic Services simultaneously, and have full read/write access to all UC Diagnostics functionality.

• The Diagnostic Services, database, and the Web Report components must be deployed 1-for-1. The database can only support one instance of Diagnostic Services.

• The Diagnostic Services and Management Console components can be deployed 1-to-many (or many-to-many). So one Diagnostic Services computer can support multiple Management Consoles computers (connected at the same time), and one Management Console computer could connect to multiple Diagnostic Services computers (using separate instances of the MMC snap-in).

- The Diagnostic Console is completely independent from the Management Console, and can be deployed however you want.

if you access the same Diagnostic Services server from multiple consoles, consider these additional factors:

- Different users can manage or edit the same tests at the same time. If different users edit the same test, the user who saves the changes last has the settings preserved.

- Information such as discovery, tests, credentials, test settings, custom groups, and global settings are shared amongst the Management Consoles

- Global filters, Topology layout, and Group By settings are not shared amongst the Management Consoles

Different Management Consoles can be connected to different organizations. For example, one Management Console can be connected to an Exchange organization, while another is connected to a Skype for Business environment.

Generally, due to the few BlackBerry servers most users have, your BlackBerry configuration is unlikely to put a significant load on your deployment. Use the performance guidelines for the other environments to determine how best to deploy your Management Console.

About cluster support

UC Diagnostics supports running health tests on servers in a clustered environment. However, UC Diagnostics only monitors virtual nodes; it does not detect failover. Windows clusters are not supported as a separate plug-in.

While you can run all health tests on clusters, the Exchange Replication Health test explicitly reports on clusters in Exchange 2007 and later organizations.

Table 6. Types of clusters that are supported for different servers.

Server type	Type of cluster supported
Exchange 2007	• Local Continuous Replication (LCR) • Cluster Continuous Replication (CCR) • Standby Continuous Replication (SCR) • Single Copy Cluster (SCC)
Exchange 2010/2013/2016	• Database Availability Group (DAG)
BlackBerry	• High Availability (HA) architecture
OCS/Lync/Skype for Business	• Network Load Balancing (NLB) • Component Load Balancing (CLB)

Installing components on multiple computers

You can install the Management Console components on separate computers if you have a large organization. For information on installing the components on a single computer, see the *Unified Communications Diagnostics Evaluator Guide*.

Limitations and recommendations

You cannot install UC Diagnostics on a domain controller.

If you are using anti-virus software, you must exclude the UC Diagnostics directories from the anti-virus software.

If you are installing for the first time or upgrading each component on its own computer, install the components in the following order:

1 Database

2 Diagnostic Services

3 Web Reports

4 Console

If you are upgrading, you must perform the upgrade on each computer in the specified order where you have each component installed.

If your Diagnostic Services, Web Reports, or database components are deployed across multiple computers and you must upgrade them individually, manually stop the IIS services, the Spotlight Distributed Collector services, and the Spotlight Diagnostic Test Engine. If you installed the Diagnostic Services and Database on a single computer, or if you installed your database on a remote computer, you do not have to stop these services.

You can install the Diagnostic Console at any time.

To install components on multiple computers

1 Log on to your computer using an account that has local administrative privileges.

2 Download UC Diagnostics, and click **Autorun.exe** in the root directory.

3 Click the **Install** tab.

4 Click the **Unified Communications Diagnostics** link.

5 If you are installing UC Diagnostics for the first time, click **Next** in the **Welcome to Unified Communications Diagnostics Setup Wizard** dialog box, read and accept the license agreement, then click **Next**.

   If you are upgrading from a previous version of UC Diagnostics, you do not need to uninstall the previous versions. When you install UC Diagnostics, click **Next** in the **Welcome to the Unified Communications Diagnostics Upgrade Wizard** dialog box, read and accept the license agreement, then click **Next**.

6 Indicate the features you want to install on the local hard drive, and click **Next**.

   The following table identifies the different configuration pages that appear, depending on the features that you have selected for the local computer:

Table 7. Configuration pages for each component.

Component	Configuration Pages Displayed
Console	• None
Diagnostic Services	• SQL Server to allow you to specify the location of your SQL Server database.
	• Server Account Setup to allow you to enter the credentials under which discovery and test all run by default. This must be a local administrator.
	The database can be installed before or at the same time you install the Diagnostic Services.

Table 7. Configuration pages for each component.

Component	Configuration Pages Displayed
Database	• SQL Server to allow you to specify the server where the database instance should be installed. If you are installing the database on a remote computer, ensure remote connections are enabled on the SQL Server, and you have sufficient rights to create/modify the database. If you are using SQL Server Always On, you must specify an availability group listener that connects to the primary replica. **NOTE:** If you are upgrading from a previous version to version 8.5.2, click Yes to use the existing database. If you are installing UC Diagnostics 8.5.2 for the first time, you do not see this dialog box. For more information on upgrading your database, For more information, see Manually upgrading the Management Console database on page 17.
Web Reports	• SQL Server to allow you to specify the location of your SQL Server database. • Select Web Site to allow you to select the default Web Site or another Web Site where Web Reports will be installed. • Web Reports Optional Settings to allow you to set criteria for subscriptions, such as SMTP server and sender email address. Subscriptions allow you to schedule when you want specific reports to run. The database can be installed before or at the same time you install Web Reports. **NOTE:** If you are installing Web Reports on a remote computer, you must use SQL Authentication.

7 Click **Install** to begin the installation.

Manually installing the Management Console database

You can manually install your database using the Install Scripts from the Install tab of the Autorun dialog box.

To manually install your database

1 Open Microsoft SQL Server Management Studio (or similar application to open SQL scripts).

2 Click **File | Open | File**.

3 Open **CreateDatabase.sql**.

4 Select **Query | Execute**.

5 Repeat steps 3 and 4 to install the following SQL script files in the following order:

  ▪ UserFunctions.sql

  ▪ DatabaseSchema.sql

  ▪ ImportData.sql

Manually upgrading the Management Console database

If you installed the database manually, you must upgrade it manually incrementally per minor release. For example, if you are upgrading from version 7.0, you must first upgrade from 7.0 to 7.1, then from 7.1 to 7.2, and so on.

You can manually upgrade your database using the Upgrade Scripts from the Install tab of the Autorun dialog box.

To manually upgrade your database

1   Stop your Diagnostic Services.

2   Open Microsoft SQL Server Management Studio (or similar application to open SQL scripts).

3   Click **File | Open | File**.

4   Depending on the version from which you are upgrading, install the two or more of the following scripts in the following order:

- UpgradeSchema1.sql

- UpgradeSchema2.sql

- UpgradeData.sql

- UpgradeData2.sql

5   Select **Query | Execute**.

The Diagnostic Services restart once the upgrade of the Diagnostic Services is complete.

Configuring existing UC Diagnostics to work with SQL Always On

If you recently configured SQL Server Always On and have an existing UC Diagnostics deployment, you must make some changes in SQL and in UC Diagnostics to support the new configuration.

- In SQL server, you must create an availability group listener that connects to the primary replica. Suppose that you have created a listener called UCDAGListener.

- For the UC Diagnostics Management Console, you must change the SQL server name used for the SQL server connection to use the availability group listener name by editing the registry.

- For Web Reports, you must edit the WebReports.udl file used to connect to Web Reports to the SQL server and modify the SQL server name to the availability group listener name.

To edit the registry for the Management Console

1   Stop the Diagnostic Services.

2   From the Registry Editor, go to HKEY_LOCAL_MACHINE | SOFTWARE | Quest | Spotlight Management Framework | Diagnostic Services.

3   Double-click **DatabaseConnectionString**.

4   Modify the Data Source to specify the availability group listener name that you created in SQL, such as tcp: UCDAGListener.

5   Modify the SqlServer to use the availability group listener name that you created in SQL.

6   Click **OK**.

7   Restart the Diagnostic Services.

To modify the UDL (Universal Data Link) file for Web Reports

1   Locate and open the WebReports.udl file (…\Quest\UC Diagnostics\Web Reports).

The file is located where you have Web Reports installed. Once open, the Data Link Properties dialog box is displayed.

2   Click the **Connection** tab.

3   Modify the SQL server name to be the availability group listener name such as tcp: UCDAGListener.

4   Enter the account and password that must be used for SQL authentication.

> **i** | **NOTE:** SQL authentication must be used for Web Reports if you have implemented SQL Always On.

5   Select the **Allow saving password** check box and click **OK**.

Backing up and restoring UC Diagnostics

Use the following sections to back up and to restore the database and information settings for the Management Console and for the Diagnostic Console.

Backing up and restoring the settings and database for the Management Console

To back up the settings and database for the Management Console

1   Backup your SQL database using Microsoft's best practices.

2   To back up your topology and MMC customizations, back up the UC Diagnostics.msc file.

The .msc file is located at %userprofile%\Application Data\Microsoft\MMC.

You can also export your topology layout to a file to backup your topology settings.

To restore the settings and database for the Management Console

1   Restore the SQL database.

2   Install UC Diagnostics.

3   At the SQL Server dialog box during installation, click **Yes** to use the existing database.

4   Add the UC Diagnostics.msc file back to %userprofile%\Application Data\Microsoft\MMC.

If you have exported your topology layout, re-import it.

Backing up and restoring the Diagnostic Console information

To back up the connection, configuration, and template information

•   Save each connection as a template file.

To restore the connection, configuration, and template information

1   Install UC Diagnostics.

2   Create a connection using the backed up template files.

Moving UC Diagnostics to a another server

To move UC Diagnostics to another server

1   Follow the steps for Backing up and restoring the settings and database for the Management Console on page 18.

2   Copy the MMC settings to the new server.

     All the Management Console settings are stored in the .msc file. If you are using the default shortcut, that file is cached to %userprofile%\Application Data\Microsoft\MMC.

3   Follow the steps for Backing up and restoring the Diagnostic Console information on page 18.

Technical Information for UC Diagnostics for Exchange

About the Management Console for Exchange

You can use UC Diagnostics to monitor the health and performance of individual servers or your entire Exchange organization. Health tests detect problems by collecting and analyzing data or simulating user interaction with the Exchange servers at regular intervals.

Review this section to determine the prerequisites that must be met for each of the Exchange health tests. For information about creating test mailboxes and configuring the different health tests, see the *Unified Communications Diagnostics User Guide*.

Discovering the Exchange organization

When you connect to an Exchange organization, the Management Console discovers and displays your entire Exchange organization. Discovery is initially configured to run automatically once a day to detect changes to your environment. See the following table for the permissions needed by the diagnostics services account.

Table 1. Permissions required for the diagnostic services account.

Exchange Version	Permissions required for diagnostic services account
All	• Member of Local Administrators group on each Exchange server to retrieve the site and domain information for servers. For additional required permissions, see the individual test prerequisites.
Exchange 2007	• Member of View-Only Exchange Administrators group to enumerate Exchange objects in Active Directory and to enumerate computer, site, and domain objects in the domain partitions.
Exchange 2010, 2013, and 2016	• Member of View-Only Organization Management group to enumerate Exchange objects in Active Directory and to enumerate computer, site, and domain objects in the domain partitions.

About the Exchange Health Tests

UC Diagnostics contains the following health tests that each monitor one aspect of your Exchange servers:

- Exchange Server Health Test
- Exchange Internal Server Delivery Health Test
- Exchange Internal Mailbox Delivery Health Test
- Exchange External Message Delivery Health Test
- Exchange Modern Message Delivery Health Test
- Exchange Storage Health Test
- Exchange Queue Health Test
- Internal Outlook Web Access (OWA) Availability Health Test
- External Outlook Web Access (OWA) Availability Health Test
- Exchange Replication Health Test
- Exchange System Health Test
- Active Directory Account Lockout Health Test
- Web Reports security recommendations

This section describes the different Exchange health tests and provides information about the test targets, software and permissions prerequisites, and required configuration for each test.

By default, you should run these tests every 30 minutes, except for the Server health test. You can configure two server health tests - one test without monitoring event logs with an interval of 30 minutes and the second test for monitoring event logs that run only once a day. For more information on test settings, see the *Unified Communications Diagnostics User Guide*.

Edge server support for Exchange 2007 and later

By default, any Edge servers that are not in the same forest as your Exchange organization cannot be fully discovered or monitored by health tests. The credentials under which discovery and the health tests run do not have permissions to access the Edge server.

Microsoft does provide a workaround to allow access to servers outside of the forest. If you create a local user on the Edge server, with the same name and password as the credentials under which discovery or the health tests run, UC Diagnostics can access the server.

If you use the Microsoft workaround, you can run only the Server Health test.

Exchange Server Health Test

The Exchange Server health test allows you to monitor the basic health of your Exchange servers. This test allows you to monitor the following types of information:

- Network availability (such as ping time)
- Operating system disk space usage
- Any Performance Counter
- Any Windows service
- Any Event Log entry

You can run the server health test against any version of Exchange.

Test prerequisites

See the following tables for the required configuration, and the required permissions for this test.

The Exchange server must be configured as follows:

Table 2. Exchange server health test configuration.

Exchange server version	Required Configuration
All	Enable WMI on each Exchange server **NOTE:** WMI is required to support retrieving accurate disk space information when using mount points. If you do not use mount points, you can disable the requirement for WMI by clicking the Data Collection options link in the Server Health test wizard.

The test credentials must have the following permissions.

Table 3. Exchange server health test permissions.

Exchange server version	Permissions Required for Test Credentials
All	Member of Local Administrators group on each Exchange server. This is required for: • Read access to system drive to retrieve disk space • Read access to Windows system directory to access Event Logs • Read access to Service Control Manager • Read access to Registry to access Performance Counters and Event Logs

About the Exchange Delivery Health Tests

The Exchange delivery health tests allow you to monitor the ability of your servers to deliver email traffic. The Exchange delivery health tests include the following tests:

- Exchange Internal Server Delivery Health Test
- Exchange Internal Mailbox Delivery Health Test
- Exchange External Message Delivery Health Test
- Exchange Modern Message Delivery Health Test

You must meet the following software prerequisites to run the Exchange delivery health tests:

Table 4. Software required for the Exchange delivery health tests.

Exchange Version	Required Software
Exchange 2007/2010/2013	• Install MAPI & CDO version 8.3.0.8353.000 or later). You can download MAPI & CDO here: https://www.microsoft.com/download/details.aspx?id=42040
Exchange 2010 and later	• PowerShell 2.0 or later

Exchange Internal Server Delivery Health Test

The Exchange Internal Server Delivery health test monitors the ability to deliver email within your organization. This test sends a test message from each target server in the test to every other target server.
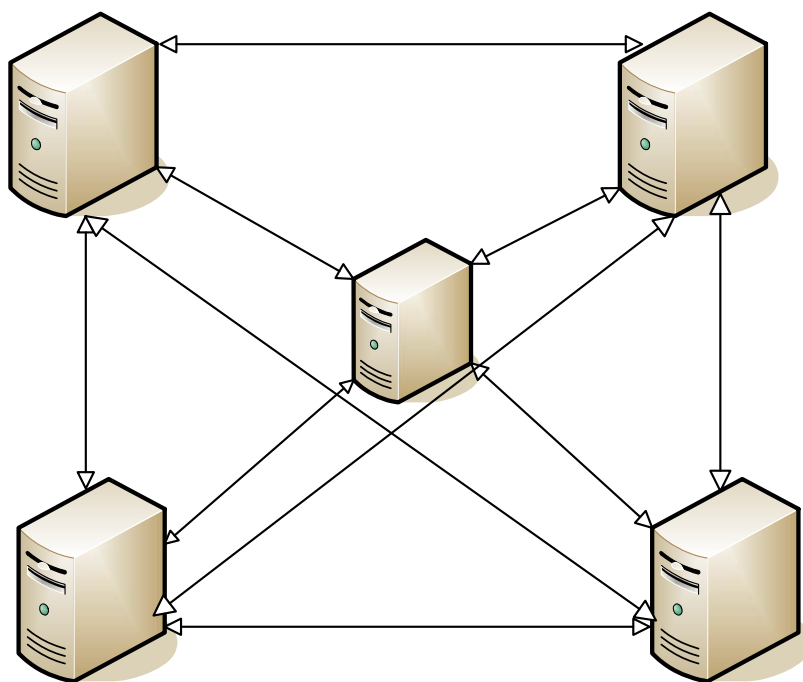
Figure 1. A test message is sent from each server to every other server.

For example, if you select an Exchange organization as the test target and the organization has five mailbox servers, the test sends 20 test messages (5 source servers x 4 destination servers) at each monitoring interval.

You must manually create test mailboxes and match the name to the mailbox mask specified in the test configuration. For information about creating test mailboxes, see the *Unified Communications Diagnostics User Guide.*

When the test runs on Exchange 2007 and earlier servers, the test looks for a test mailbox on each server. The test mailbox can be on any store on that server. If there are multiple test mailboxes on each server, the test uses the first one it finds. By default, the test mailbox creation scripts create one test mailbox per store.

This health test is not supported for Exchange 2013 and later. This test is also not useful for Exchange 2010 organizations that have implemented Database Availability Groups (DAGs) since mailboxes in a DAG are not linked to a specific server.

For Exchange 2007, you can use the Internal Mailbox Delivery Health test to monitor the sending and receiving of messages between mailboxes. For Exchange 2010 and later, you can use the Exchange Modern Message Delivery Health test.

Recommendations for Performance Optimization

For large organizations, select a subset of the servers to reduce the amount of traffic generated. For example, select one server per geographical region. You can also decrease the monitoring frequency.

While the test is running, storage groups and stores are enumerated in alphabetical order. If the test takes a long time to complete, you can create a test mailbox in the first storage group in the first store (in alphabetical order) on every server to speed up the query.

For example, you have a server called AMER-MBX-01 with the following stores:

- First-Mailbox-Store (in storage group First-Storage-Group)
- Second-Mailbox-Store (in storage group First-Storage-Group)
- Third-Mailbox-Store (in storage group Second-Storage-Group)

If the mailbox mask specified in the test is the default mask (SOM_<ServerName>_<StorageGroupName>_<StoreName>, then the test looks for the following mailboxes for AMER-MBX-01 until it finds one that is accessible:

- SOM_AMER-MBX-01_First-Storage-Group_First-Mailbox-Store
- SOM_AMER-MBX-01_First-Storage-Group_Second-Mailbox-Store
- SOM_AMER-MBX-01_Second-Storage-Group_Third-Mailbox-Store

On Exchange 2010 servers, when the test runs, it looks for a test mailbox on each server. The test mailbox is in a mailbox database. If there are multiple test mailbox boxes on each server, the test uses the first one it finds. By default, the test mailbox creation scripts create one test mailbox per mailbox database.

For example, you have a server called AMER-MBX-01 containing Database1 and Database2. If the mailbox mask specified in the test is the default mask (SOM_<ServerName>_<DatabaseName>, then the test looks for the following mailboxes for AMER-MBX-01 until it finds one that is accessible:

- SOM_AMER-MBX-01_Database1
- SOM_AMER-MBX-01_Database2

    <DatabaseName> token is optional.

All test messages sent are automatically deleted from the internal test mailboxes. But other mail, such as NDR messages, is not automatically deleted. You must manually clean out your test mailboxes periodically.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test. The Exchange Internal Server Delivery health test does not support Exchange 2013 or later.

You can run the test against the following target servers.

Table 5. Internal server delivery health test targets.

Exchange server version	Target type
Exchange 2007/2010	Mailbox role

The Exchange server must be configured as follows:

Table 6. Internal server delivery health test configuration.

Exchange server version	Configuration required
All	• Create test mailboxes on each server that match the mailbox mask specified in the test configuration. For information about how to create test mailboxes, see the *Unified Communications Diagnostics User Guide*. • To track test messages, enable Tracking Logs on each Exchange server through which the test message passes.

The test credentials must have the following permissions.

Table 7. Internal server delivery health test permissions.

Exchange version	Permissions required for test credentials
Exchange 2007/2010	• Full access permissions to each test mailbox to access the mailbox inbox to send and receive test messages • Member of Local Administrators group on each Exchange server through which the message passes
Exchange 2007	• Must be a member of View-Only Exchange Administrators group
Exchange 2010	• Must be a member of View-Only Organization Management group

Exchange Internal Mailbox Delivery Health Test

You can use the Exchange Internal Mailbox Delivery health test to monitor the sending and receipt of messages between mailboxes in an Exchange organization. This test supports DAG.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 8. Internal mailbox delivery health test targets.

Exchange Server version	Target type
Exchange 2007/2010/2013	Mailbox role

> **i** | **TIP:** For Exchange 2010 and later, it is recommended that you run the Exchange Modern Message Delivery Health Test instead, especially in scenarios in which the CAS server is behind a load balancer

The Exchange server must be configured as follows:

Table 9. Internal mailbox delivery health test configuration.

Exchange Server version	Configuration required
All	Create user mailboxes or dedicated test mailboxes for source and target mailbox pairs. For more information, see Historical Reporting Database Usage Estimates on page 35.

The test credentials must have the following permissions.

Table 10. Internal mailbox delivery health test permissions needed by test credentials.

Exchange Version	In an organization without Exchange 2013	In an organization with Exchange 2013
All Exchange versions	• Member of the Local Administrators group on each Exchange server through which the message passes • Full access permissions to each test mailbox to access the mailbox inbox to send and receive test messages	• Member of the Local Administrators group on each Exchange server through which the message passes • Full access permissions to each test mailbox to access the mailbox inbox to send and receive test messages
Additional for Exchange 2007	• Member of the Exchange View-Only Administrators group	• Member of the Exchange View-Only Administrators group • Send on Behalf permission to each test mailbox to allow to send email on behalf of the mailbox

Table 10. Internal mailbox delivery health test permissions needed by test credentials.

Exchange Version	In an organization without Exchange 2013	In an organization with Exchange 2013
Additional for Exchange 2010	• Member of View-Only Organization Management group • Member of Public Folder Management group	• Member of View-Only Organization Management group • Member of Public Folder Management group • Send on Behalf permission to each test mailbox to allow to send email on behalf of the mailbox
Additional for Exchange 2013	Not applicable	• Member of View-Only Organization Management group • Member of Public Folder Management group • All extended rights permission to each test mailbox in Active Directory.

Exchange External Message Delivery Health Test

The Exchange External Message Delivery health test allows you to monitor the ability to send and receive email from sources outside your Exchange organization.

To monitor round-trip messages, the external mailbox must be configured to automatically bounce the message back to the original mailbox, then enable the Round-Trip Delivery counter in the test.

All test messages sent are automatically deleted from the external test mailbox. But any other mail, like NDR messages, is not automatically deleted. You may need to periodically clean out your test mailboxes.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 11. External message delivery health test targets.

Exchange version	Target type
Exchange 2007/2010/2013	Exchange organization

> **i** | **TIP:** For Exchange 2010 and later, it is recommended that you run the Exchange Modern Message Delivery Health Test instead, especially in scenarios in which the CAS server is behind a load balancer

The Exchange server must be configured as follows:

Table 12. External message delivery health test configuration

Exchange mailbox version	Configuration required
All	• Create a source test mailbox.For information about creating test mailboxes, see the *Unified Communications Diagnostics User Guide*. • For Organization Exit counters, enable Tracking Logs on each Exchange server through which the test message passes.

The test credentials must have the following permissions.

Table 13. External message delivery health test required permissions for test credentials.

Exchange version	In an organization without Exchange 2013	In an organization with Exchange 2013
All Exchange versions	• Member of the Local Administrators group on each Exchange server through which the message passes s • Full access permissions to each test mailbox to access the mailbox inbox to send and receive test messages	• Member of the Local Administrators group on each Exchange server through which the message passes • Full access permissions to each test mailbox to access the mailbox inbox to send and receive test messages
Additional for Exchange 2007	• Member of View-Only Organization Management group • Member of Public Folder Management group	• Member of View-Only Organization Management group • Member of Public Folder Management group • Send on Behalf permission to each test mailbox to allow to send email on behalf of the mailbox
Additional for Exchange 2010	• Member of View-Only Organization Management group • Member of Public Folder Management group	• Member of View-Only Organization Management group • Member of Public Folder Management group • Send on Behalf permission to each test mailbox to allow to send email on behalf of the mailbox
Additional for Exchange 2013	Not applicable	• Member of View-Only Organization Management group • Member of Public Folder Management group • All extended rights permission to each test mailbox in Active Directory.

Exchange Modern Message Delivery Health Test

The Exchange Modern Message Delivery Health test monitors overall message delivery health for Exchange 2010, Exchange 2013, and Exchange 2016. The test provides information about both internal and external message delivery.

Depending on how you configure the test, it sends a test email to a target email address or tracks the time it takes an email to leave the Exchange organization. By default, the organization exit counters are enabled and the round trip counters are disabled.

The Modern Exchange Message Delivery Health test uses Exchange Web Services (EWS) for internal and external message delivery tests, and also uses the Exchange message tracking logs for internal and external message delivery tests. The prerequisites for the modern message delivery health test are as follows.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

Table 14. Exchange modern message delivery health test targets

Exchange version	Target type
Exchange 2010/2013/2016	Exchange organization

Table 15. Exchange modern message delivery health test general (internal and external message delivery) configuration.

Exchange version	Required configuration
Exchange 2010/2013/2016	• Create an Exchange 2010 or later mailbox for the test credentials. You must enable MAPI for the mailbox.

For the modern internal message delivery test, the Exchange servers must be configured as follows:

Table 16. Exchange modern internal message delivery health test configuration.

Exchange version	Required configuration
Exchange 2010/2013/2016	• Create user mailboxes or dedicated test mailboxes for source and target mailbox pairs. For information about how to create test mailboxes, see the *Unified Communications Diagnostics User Guide.*

For the modern external message delivery test, the Exchange servers must be configured as follows:

Table 17. Exchange modern external message delivery health test configuration.

Exchange version	Required configuration
Exchange 2010/2013/2016	• Create a source test mailbox and create an external test mailbox. For information about how to create test mailboxes, see the *Unified Communications Diagnostics User Guide.* • For Organization Exit counters, enable the message tracking logs on each Exchange server through which the test message passes.

The test credentials must have the following permissions.

Table 18. Modern message delivery health test permissions needed by test credentials.

Exchange version	Required permissions
Exchange 2010/2013/2016	• Member of View-Only Organization Management group • Member of the Local Administrators group on each Exchange server • Credentials used to access the test mailboxes require Exchange impersonation access. For information about configuring Exchange impersonation, see the *Unified Communications Diagnostics User Guide*.

Additional Exchange Health Tests for Monitoring

Other Exchange health tests allow you to monitor your Exchange storage subsystems, message queues, transaction log replication, and to verify whether mailboxes can be successfully accessed using Outlook Web Access (OWA).

The following sections provide the test prerequisites for the following Exchange health tests:

- Exchange Storage Health Test

- Exchange Queue Health Test
- Internal Outlook Web Access (OWA) Availability Health Test
- External Outlook Web Access (OWA) Availability Health Test
- Exchange Replication Health Test
- Exchange System Health Test

Exchange Storage Health Test

The Exchange Storage health test allows you to monitor the overall health of your Exchange storage subsystems. This test allows you to ensure the following:

- All of your stores or databases are mounted or healthy
- There is sufficient disk space on your Exchange system drive
- There is sufficient disk space for your transaction logs
- There is sufficient disk space for your mailbox database and public folder

Stores in that are in recovery storage groups have the following special behavior:

- For Exchange 2010/2013/2016 servers, all the recovery database copies are not monitored.
- For Exchange 2007 servers, the store status counter is reported, but the error or warning condition is ignored. For example, if the counter is configured to alarm when the store is offline, no alarm or notification is generated, and the result for the counter is reported as "Informational".

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 19. Exchange storage health test targets.

Exchange version	Target type
Exchange 2007/2010/2013/2016	Mailbox role

You must meet the following software prerequisites to run the Exchange storage health tests:

Table 20. Exchange storage health test software prerequisites.

Exchange version	Software required on UC Diagnostics computer
Exchange 2010/2013/2016	PowerShell 2.0 or later
Exchange 2007	EMC SP 1 Rollup 1 or later

The Exchange server must be configured as follows:

Table 21. Exchange storage health test configuration.

Exchange version	Configuration required
All	Enable WMI
	NOTE: WMI is required to support retrieving accurate disk space information when using mount points. If you do not use mount points, you can disable the requirement for WMI by clicking the Data Collection options link in the Storage Health test wizard.

The test credentials must have the following permissions.

Table 22. Exchange storage health test permissions.

Exchange Version	Permissions required for test credentials
All	• Member of Local Administrators group to retrieve disk space
Exchange 2007	• Member of View-Only Exchange Administrators group to collect store status
Exchange 2010, 2013 and 2016	• Member of View-Only Organization Management group to collect store status

Exchange Queue Health Test

The Exchange Queue health test allows you to monitor the health of your Exchange message queues. This test allows you to ensure the following:

- Messages are not backing up (that is, messages are being delivered in a timely manner)
- Large number of queues are not being created (for example in virus outbreaks)

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 23. Exchange queue health test targets.

Exchange server version	Target type
Exchange 2013/2016	Mailbox role
Exchange 2007/2010	Hub role

You must meet the following software prerequisites to run the Exchange queue health tests:

Table 24. Exchange queue health test software prerequisites.

Exchange server version	Software required on UC Diagnostics computer
Exchange 2010/2013/2016	PowerShell 2.0 or later
Exchange 2007	Exchange Management Console (EMC) SP 1 Rollup 1 or later

The test credentials must have the following permissions.

Table 25. Exchange queue health test permissions.

Exchange version	Permissions Required for Test Credentials
All	• Member of Local Administrators group
Exchange 2007	• Member of View-Only Exchange Administrators group
Exchange 2010/2013/2016	• Member of View-Only Organization Management group **NOTE:** To run the Exchange Queue Health Test against Exchange 2010 SP3 RU 6, you must add the test credentials to the Organization Management group.

Internal Outlook Web Access (OWA) Availability Health Test

The Exchange Internal Outlook Web Access Availability Health test verifies that a user can log on to a mailbox through Outlook Web Access (OWA) from inside your organization. This test uses internal server URL names only. It does not test external availability or OWA using your public URL.

This test does not run on Exchange 2013 or later because the Microsoft Exchange Management Shell does not support OWA Connectivity testing for these versions. For Exchange 2013 or Exchange 2016, you can use the Exchange System Health test to monitor OWA health.

The Exchange Internal Outlook Web Access Availability Health test monitors all sites configured within a CAS server. You cannot monitor one site at a time.

This test allows you to ensure the following:

- Mailbox is accessible
- Mailbox logon latency is within expected threshold

About the Internal OWA Availability Health Test for Exchange 2007/2010

For Exchange 2010 Client Access (CAS) servers, UC Diagnostics attempts to log on to Exchange 2010 mailbox in the same site, if one exists. For Exchange 2007 Client Access (CAS) servers, UC Diagnostics attempts to log on to either:

- an Exchange 2007 mailbox if there are Exchange 2007 mailbox servers in the same site. If logon fails or no mailbox servers are found, UC Diagnostics logs on to any Exchange 2007 mailbox server in the organization.

The Internal OWA Availability health test for Exchange 2010 requires that at least one Exchange 2007 mailbox server exists within your organization.

The Internal OWA Availability health test for Exchange 2010 requires that at least one Exchange 2010 mailbox server exists in the same site.

The Internal OWA Availability health test for Exchange 2007/2010 does not use specified alternate credentials. Before you run this test, use the Exchange PowerShell script (provided by Microsoft) to create test mailboxes. This test automatically manages mailbox credentials while it logs onto the mailboxes. For more information, see the *Unified Communications Diagnostics User Guide.*

For Exchange 2007/2010, you must specify a logon method and timeout to signify the maximum amount to time to wait between logon attempts.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 26. Internal OWA availability health test targets.

Exchange server version	Target type
Exchange 2007/2010	Client Access role

You must meet the following software prerequisites to run the Internal OWA availability health tests:

Table 27. Internal OWA availability health test required software.

Exchange server version	Software required on UC Diagnostics computer
Exchange 2010	PowerShell 2.0 or later
Exchange 2007	Exchange Management Console (EMC) SP 1 Rollup 1 or later

The Exchange server must be configured as follows:

Table 28. Internal OWA availability health test configuration.

Exchange server version	Configuration required
Exchange 2007/2010	Create at least one test mailbox. For more information, For information about creating test mailboxes, see the *Unified Communications Diagnostics User Guide*.

The test credentials must have the following permissions.

Table 29. Internal OWA availability health test permissions.

Exchange server version	Permissions required for test credentials
All	• Receive As permission to the test mailbox to be able to log on

External Outlook Web Access (OWA) Availability Health Test

The External OWA Availability health test monitors the availability of OWA functionality in your organization through an external URL. This test uses an external or an internal URL. This test verifies that the users associated with the alternate credentials can logon to their mailboxes through an external OWA URL. If an external URL is specified, ensure that the DNS server can resolve this URL.

This test allows you to ensure the following:

- Mailbox is accessible
- Mailbox logon latency is within expected threshold.

This test is only applicable to organizations with at least one Exchange 2007 or Exchange 2010 server. This test does not run on Exchange 2013 or later because the Microsoft Exchange Management Shell does not support OWA Connectivity testing for these versions. For Exchange 2013 or Exchange 2016, you can use the Exchange System Health test to monitor OWA health.

This test uses mailboxes associated with alternate credentials. You must explicitly choose the alternate credentials on the Test Settings page when you create this test. You cannot configure test if you have selected the **Use Diagnostic Services Credentials** option.

For an Exchange 2010 mailbox, a PowerShell 2.0 cmdlet is run on each Exchange 2010 CAS server in the organization until the mailbox logon attempt is successful.

For an Exchange 2007 mailbox, logons to the mailbox are attempted using a local Exchange 2007 Management Shell cmdlet.

Recommendation

If you want to test External OWA functionality using both types of mailboxes, you must configure two tests - one using credentials of the user who has 2007 mailbox, and the second using credentials of the user with 2010 mailbox.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 30. External OWA availability health test targets.

Exchange server version	Target type
All	Exchange organization

You must meet the following software prerequisites to run the external OWA availability health tests:

Table 31. External OWA availability health test required software.

Exchange mailbox version	Software required on UC Diagnostics computer
Exchange 2010	PowerShell 2.0 or later
Exchange 2007	Exchange 2007 Management Console (EMC) SP 1 Rollup 1 or later

The Exchange server must be configured as follows:

Table 32. External OWA availability health test configuration.

Exchange mailbox version	Configuration required
Exchange 2010	Account specified in the alternative credentials for the test must have mailbox on the Exchange 2010 server.
Exchange 2007	Account specified in the alternative credentials for the test must have mailbox on the Exchange 2007 server.

The test credentials must have the following permissions.

Table 33. External OWA availability health test permissions.

Exchange version	Permissions required for test credentials
Exchange 2007/2010	• Account specified in alternate credentials must have an Exchange 2007/2010 mailbox, and sufficient rights to browse the Exchange container in Active Directory.
Exchange 2007	• Diagnostic services account must have sufficient rights to run Exchange 2007 Management Shell SP 1.0 cmdlets on the server where UC Diagnostics is installed.
Exchange 2010	• Diagnostic services account must have sufficient rights to run Exchange cmdlets using PowerShell 2.0 on the Exchange 2010 CAS server in the Exchange organization.

Exchange Replication Health Test

The Exchange Replication health test allows you to monitor the overall health of your transaction log replication on your Exchange 2007, Exchange 2010, Exchange 2013, and Exchange 2016 mailbox servers.

Test prerequisites

See the following tables for the test targets and the required permissions for this test.

You can run the test against the following target servers.

Table 34. Exchange replication health test targets.

Exchange server version	Target type
Exchange 2007/2010/2013/2016	Mailbox role

You must meet the following software prerequisites to run the Exchange replication health tests:

Table 35. Exchange replication health test required software.

Exchange server version	Software required on UC Diagnostics computer
Exchange 2010/2013/2016	PowerShell 2.0 or later
Exchange 2007	Exchange Management Console (EMC) SP 1 Rollup 1 or later

The test credentials must have the following permissions.

Table 36. Exchange replication health test permissions.

Exchange version	Permissions required for test credentials
Exchange 2007	• Member of View-only Exchange Administrators group to enumerate storage groups and replication configurations in Active Directory
Exchange 2010, 2013, and 2016	• Member of View-only Organization Management group to enumerate storage groups and replication configurations in Active Directory using PowerShell

Exchange System Health Test

The Exchange System Health Test monitors health sets (groups of monitors) and health information on your Exchange 2013/2016 server, verifying the state of each health set's monitors. Monitors that are similar or are related to a component's architecture are grouped to form a health set. Health sets provide the health information for applications and services such as Outlook Web App, Exchange ActiveSync, the Information Store service, content indexing, and transport services on your Exchange 2013 and Exchange 2016 servers.

This test allows you to ensure the health state of health set (whether health or unhealthy).

You can run the system health test against Exchange 2013 and later.

Test prerequisites

See the following tables for the test targets and the required permissions for this test.

You can run the test against the following target servers.

Table 37. Exchange system health test targets.

Exchange server version	Target type
Exchange 2013	Client Access Server (CAS) role
	Mailbox role
Exchange 2016	Mailbox role

You must meet the following software prerequisites to run the Exchange system health tests:

Table 38. Exchange system health test required software.

Exchange server version	Software required on UC Diagnostics computer
Exchange 2013/2016	PowerShell 2.0 or later

The test credentials must have the following permissions.

Table 39. Exchange system health test permissions.

Exchange server version	Permissions Required for Test Credentials
All	• Member of View-only Organization Management

Active Directory Account Lockout Health Test

The Active Directory Account Lockout Health test provides information about how many and which Active Directory accounts are currently locked out. The test shows accounts that are locked out due to invalid passwords being submitted and accounts that are locked because the password has expired.

Test prerequisites

The following tables show the test targets for the test and the permissions required by the test credentials.

Table 40. Active Directory Account Lockout Health test targets.

Platform Versions	Target Type
Exchange 2007/2010/2013/2016	Organization
Lync 2010/2013 and Skype for Business 2015	Environment

The test credentials must have read permission on User objects in Active Directory.

Table 41. Active Directory Account Lockout Health test credential required permissions.

Platform	Permissions Required for Test Credentials
Exchange	• Member of View-Only Exchange Administrators group or View-Only Organization Management group.
Lync/Skype for Business	• Member of CSHelpDesk, CSServerAdministrator, or CSViewOnlyAdministrator group

Historical Reporting Database Usage Estimates

The following table lists the approximate amount of space required for each test each monitoring interval when running Web Reports and when storing test history:

Exchange 2013/2016 space usage

Table 42. Space required for web reports and test history - Exchange 2013/2016.

Health Test	Total Space Required per Server per Monitoring Interval (Web Reports)	Total Space Required per Server per Monitoring Interval (Test History)
Server Health	1.2 KB	242 KB
Internal Mailbox Delivery Health	0.1 KB (per source/destination delivery pair)	75 KB (for a test with 50 pairs)
External Message Delivery Health	0.1 KB	37 KB

Table 42. Space required for web reports and test history - Exchange 2013/2016.

Health Test	Total Space Required per Server per Monitoring Interval (Web Reports)	Total Space Required per Server per Monitoring Interval (Test History)
Storage Health	0.3 KB (per store and per storage group)	52 KB
Queue Health	0.2 KB (per queue)	41 KB (per queue)
Replication Health	0.3 KB (per storage group)	35 KB

Exchange 2007/2010 space usage

Table 43. Space required for web reports and test history - Exchange 2007/2010.

Health Test	Total Space Required per Server per Monitoring Interval (Web Reports)	Total Space Required per Server per Monitoring Interval (Test History)
Server Health	1.2 KB	242 KB
Internal Server Delivery Health	0.1 KB (per target server)	36 KB
Internal Mailbox Delivery Health	0.1 KB (per source/destination delivery pair)	75 KB (for a test with 50 pairs)
External Message Delivery Health	0.1 KB	37 KB
Storage Health	0.3 KB (per store and per storage group)	52 KB
Queue Health	0.2 KB (per queue)	41 KB (per queue)
Internal OWA Health	0.1 KB	37 KB
External OWA Health	0.1 KB	37 KB
Replication Health	0.3 KB (per storage group)	35 KB

For example, to run Exchange 2007 Server Health on one server, the maximum space required (with default parameters) would be:

• Raw data: 1.2 KB x 1 day x 48 bi-hourly values= 58 KB

• Hourly data: 1.2 KB x 7 days x 24 hourly values = 202 KB

• Daily data: 1.2 KB x 30 days x 1 daily value = 36 KB

For example, you have a medium-sized environment with the following characteristics:

• Monitoring 50 Exchange servers

• Each Exchange server has an average of 5 stores

• Each Exchange server has an average of 10 queues

• Running one of each test using the default counters

• Using default monitoring of 30 minutes for all tests

• Using default data retention of 7 days for hourly aggregation data

• Using default data retention of 30 days for daily aggregation data

• Running Internal Server Delivery Health fully meshed with all servers

The approximate space required for historical data would be:

Table 44. Estimated space requirements for specific tests.

Health Test	Total Space Required
Server Health	9.3 MB

Table 44. Estimated space requirements for specific tests.

Health Test	Total Space Required
Internal Server Delivery Health	15.3 MB
External Message Delivery Health	0.6 MB
Storage Health	6.2 MB
Queue Health	9.3 MB
Internal OWA Health	0.6 MB
External OWA Health	0.6 MB
Replication Health	2.3 MB
Total	41 MB

Exchange Diagnostic Console Technical Information

The Exchange Diagnostic Console provides you with a real-time representation of the messaging system processes and components within Exchange.

You can diagnose and resolve issues using the Exchange Diagnostic Console.

Prerequisite software

The following software must be installed on the UC Diagnostics computer to run the diagnostic console.

Table 45. Exchange diagnostic console required software.

Exchange server version	Software required on UC Diagnostics computer
Exchange 2010/2013/2016	PowerShell 2.0 or later
Exchange 2007	Exchange Management Console (EMC) SP 1 or later

Required configuration

The following configuration is required on the Exchange server.

Table 46. Exchange diagnostic console configuration.

Exchange server version	Configuration required
All	Enable WMI

Required permissions for Exchange

The following permissions are required on the Exchange servers.

Table 47. Exchange diagnostic console permissions.

Exchange server version	Permissions required to access Exchange server
Exchange 2010/2013/2016	• Member of Local Administrators group to have: Read access to operating system drive to retrieve disk information Read access to Service Control Manager Read access to WMI to retrieve disk information Read access to Registry to access Performance Counters, DNS settings, and Exchange information Read access to PowerShell cmdlets for queue and mailbox database information • Member of View-Only Exchange Administrator or the View-Only Organization Management group to have: Read access to PowerShell cmdlets for queue and mailbox database information
Exchange 2007	• Member of Local Administrators group to have: Read access to operating system drive to retrieve disk information Read access to Service Control Manager Read access to WMI to retrieve disk information Read access to Registry to access Performance Counters, DNS settings, and Exchange information Read access to PowerShell cmdlets for queue, storage group, store, and mailbox information • Member of View-Only Exchange Administrator to have: Read access to PowerShell cmdlets for queue, storage group, store, and mailbox information

Web Reports Technical Information

UC Diagnostics has a separate web-based reporting component called UC Diagnostics Web Reports.

UC Diagnostics Web Reports provides a collection of reports called Preconfigured Reports. Preconfigured Reports allow report consumers to view data across multiple subsections of your organization. You can change relevant report parameters immediately using Quick Filters. Web Reports also provides a Web Report Wizard, which allows you to create customized reports based on any data available in your Web Reports database.

Web Reports security recommendations

UC Diagnostics Web Reports supports both Windows Authentication and SQL Server Authentication for Exchange. When you select SQL Server Authentication, the installer creates a Universal Data Link (UDL) file to store your SQL credentials.

If you would like to protect your credentials to your UC Diagnostics database, you can do the following depending if you have installed Web Reports on the same computer as SQL database, or if you have Web Reports installed on a separate computer.

Table 48. Security considerations for the web reports.

If	Then
Web Reports are installed on the same machine as your SQL database	Change authentication from SQL Server Authentication to Windows Authentication.
Web Reports are installed on a separate computer than your SQL database	Protect the UDL file using New Technologies File System (NTFS) file permissions to guard against connection information being exposed or modified. Then restrict the SQL account to have read-only rights to your database.

Security settings

Web Reports includes a flexible solution for report security which allows you to assign certain permissions to users, and enable different views of the reporting tree depending on user needs and security requirements.

Web Reports supports two types of security:

- Role-based Security which is inherent in Web Reports.
- File-System Based Security which requires NTFS manipulation of your network.

For more information on security settings, see the Web Reports Online Help.

Technical Information for Office 365

- About the Management Console for Office 365
- Discovering the Office 365 environment
- About the Office 365 health tests

About the Management Console for Office 365

You can use UC Diagnostics to monitor the health and performance of your Office 365 environment, to verify network connectivity, and review licensing plan status.

Review this section to determine the prerequisites that must be met for each of the Office 365, Exchange Online, and Skype for Business Online health tests.

For information about configuring the different health tests, see the *Unified Communications Diagnostics User Guide*.

Discovering the Office 365 environment

When you connect to a native Office 365 tenant, the Management Console discovers and displays nodes for Exchange Online and Skype for Business Online are displayed if your Office 365 licensing plan has these services enabled.

Discovery is initially configured to run automatically once a day to detect changes to your environment. You must connect using valid Office 365 credentials for the Office 365 tenant.

Connecting to hybrid Office 365

If you have a hybrid environment, you can connect to Exchange Online or Skype for Business Online when you create or edit your UC Diagnostics connection to your on-premise Exchange or Skype for Business environment. There is an option on the connection page, and on the connection properties page, to select either Exchange Online or Skype for Business Online.

About the Office 365 health tests

UC Diagnostics contains the following health tests that each monitor one aspect of your Office 365 deployment:

- Exchange Online Connectivity Health Test
- Exchange Online Mailbox Logon Health Test

- Exchange Online Message Delivery Health Test

- Office 365 Subscription Health Test

- Skype for Business Online DNS Connectivity Health Test

Exchange Online Connectivity Health Test

The Exchange Online Connectivity Health test allows you to determine network quality and identify issues that can affect network performance between your client computers and Exchange Online.

You can view the time (in milliseconds) a round trip takes from your computer to Exchange Online (Office 365). You can also view any warnings and errors for the different ports used to access Exchange Online services.

Test prerequisites

See the following tables for the test targets and required software for this test.

Table 1. Exchange Online connectivity health test targets.

Platform	Target Type
Office 365	Exchange Online

Table 2. Exchange Online connectivity health test required software.

Platform	Software required on the UC Diagnostics computer
Office 365	• Windows PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module

Exchange Online Mailbox Logon Health Test

The Exchange Online Mailbox Logon Health test verifies mailbox accessibility by logging on to Exchange Online. The test uses the Office 365 credential that you specified for either a hybrid Exchange Online connection or for a native Office 365 connection. The credential must have an associated Exchange Online mailbox.

If you are using OAuth 2.0 to connect to Office 365, you must provide Application ID, Tenant ID, and Client Secret that were assigned when the UC Diagnostics application was registered with the Microsoft Azure portal. For more information, see the section titled "Registering UC Diagnostics with the Microsoft Azure portal" in the *UC Diagnostics User Guide*.

Test prerequisites

See the following tables for the test targets, required software, and the required permissions for this test.

Table 3. Exchange Online mailbox logon health test targets.

Platform	Target Type
Office 365	Exchange Online

Table 4. Exchange Online mailbox logon health test required software.

Platform	Software required on the UC Diagnostics computer
Office 365	• Windows PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module

Table 5. Exchange Online mailbox logon health test credential required permissions.

Platform	Permissions Required for Test Credentials
Office 365	• Be a valid Office 365 credential that is assigned the Exchange Online service with an active mailbox

If you are using OAuth 2.0 authentication for the test, the required API permissions are:

Table 6. Exchange Online mailbox logon health test required API permissions.

Platform	Required API Permissions for OAuth 2.0 authentication
Office 365	• EWS.AccessAsUser.All • full_access_as_app

If the password of the Office 365 credential is changed, you must also change the credential password on either the native Office 365 or hybrid Exchange connection properties.

Exchange Online Message Delivery Health Test

The Exchange Online Message Delivery Health test monitors overall message delivery health for both hybrid and native Exchange Online, including test messages sent internally and externally.

- Internal message delivery can be between Exchange on-premise mailboxes and Exchange Online mailboxes, or between mailboxes within Exchange Online.

- External message delivery detects message delivery between Exchange Online and the internet.

If you are using OAuth 2.0 to connect to Office 365, you must provide Application ID, Tenant ID, and Client Secret that were assigned when the UC Diagnostics application was registered with the Microsoft Azure portal. For more information, see the section titled "Registering UC Diagnostics with the Microsoft Azure portal" in the *UC Diagnostics User Guide*.

> **i** | **NOTE:** This test does not support Exchange 2007

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

Table 7. Exchange Online message delivery health test targets

Platform	Target Type
Exchange Online hybrid	Exchange organization
Exchange Online native	Office 365 tenant

For the internal message delivery test, Exchange Online must be configured as follows:

Table 8. Exchange Online internal message delivery health test configuration.

Platform	Required Configuration
Exchange Online (native and hybrid)	• Create user mailboxes or dedicated test mailboxes for source and target mailbox pairs.

For the external message delivery test, Exchange Online must be configured as follows:

Table 9. Exchange Online external message delivery health test configuration.

Platform	Required Configuration
Exchange Online (native and hybrid)	• Create a source test mailbox. • Create an external test mailbox.

The following software is required.

Table 10. Exchange Online message delivery health test required software.

Platform	Software Required on the UC Diagnostics computer
Office 365	• Windows PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module

The test credentials must have the following permissions.

Table 11. Exchange Online message delivery health test permissions needed by test credentials.

Platform	Permissions required by test credential
Office 365	• Must be granted impersonation rights on the internal test mailboxes. The test credential is the credential used to connect to Office 365.

If you are using OAuth 2.0 authentication for the test, the required API permissions are:

Table 12. Exchange Online message delivery health test required API permissions.

Platform	Required API Permissions for OAuth 2.0 authentication
Office 365	• EWS.AccessAsUser.All • full_access_as_app

Office 365 Subscription Health Test

The Office 365 Subscription Health test provides an overview of your Office 365 licensing plans. Licensing plans define the Office 365 services that are available to users. The test shows license activity such as the number of licenses that are currently assigned to users (used) and how many licenses are due for renewal.

Test prerequisites

See the following tables for the test targets and the required permissions for this test.

Table 13. Office 365 subscription health test targets.

Platform	Target Type
Office 365	All services

The following software is required.

Table 14. Office 365 subscription health test required software.

Platform	Software Required on the UC Diagnostics computer
Office 365	• Windows PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module

Table 15. Office 365 subscription health test credential required permissions.

Platform	Permissions Required for Test Credentials
Office 365	Valid Office 365 credential that was used to connect to Office 365.

If the password of the Office 365 credential is changed, you must change the password on Office 365 connection properties.

Skype for Business Online DNS Connectivity Health Test

The Skype for Business Online DNS Connectivity Health test helps you verify the correctness of your DNS configuration and identify any issues. Skype for Business Online requires four DNS records. The domain name is the name of the Session Initiation Protocol (SIP) of your organization.

Test prerequisites

See the following tables for the test targets and the required permissions for this test.

Table 16. Skype for Business Online DNS connectivity health test targets.

Platform	Target Type
Office 365	Skype for Business Online

Table 17. Skype for Business Online DNS connectivity health test required software.

Platform	Software Required on the UC Diagnostics computer
Office 365	• Windows PowerShell 5.0 or later • Microsoft Online Service Sign-in Assistant • Windows Azure Active Directory for Windows PowerShell • Microsoft Exchange Online PowerShell Module

Technical Information for UC Diagnostics for BlackBerry

- About the Management Console for BlackBerry
- Discovering your BlackBerry environment
- BlackBerry Server Health Test
- BlackBerry Message Delivery Health Test
- Historical reporting database usage estimates
- BlackBerry Diagnostic Console prerequisites
- BlackBerry Diagnostic Console Technical Information
- Web Reports Technical Information

About the Management Console for BlackBerry

You can use UC Diagnostics to monitor the health and performance of individual servers or your entire BlackBerry environment. This, in turn, tells you the health of your whole organization. Health tests detect problems by collecting and analyzing data or simulating user interaction with the BlackBerry server at regular intervals.

Discovering your BlackBerry environment

When you connect to an organization, the Management Console discovers and displays your entire BlackBerry environment. Discovery is initially configured to run automatically once a day to detect changes to your environment.

Permissions required

The following permissions are required to run the management console for BlackBerry.

Table 1. BlackBerry management console required permissions.

User Account	Permissions
Diagnostic Services	• Read access to database (unless SQL authentication is used) • Local administrator on BlackBerry Exchange Server database and BlackBerry Exchange servers for retrieving domain/site information for each server **NOTE:** If the account does not have local administrator privileges, a warning appears upon discovery.
Management Console	Read access to database, unless SQL authentication is used.

BlackBerry Health Tests

UC Diagnostics contains the following health tests that each monitor one part of your BlackBerry server:

- BlackBerry Server Health Test
- BlackBerry Message Delivery Health Test

By default, we recommend running these tests every 30 minutes, except for the Server health test. We recommend configuring two server health tests - one without monitoring event logs with an interval of 30 minutes and the second for monitoring event logs that run only once a day. For more information on test settings, see the *Unified Communications Diagnostics User Guide.*

BlackBerry Server Health Test

The BlackBerry Server health test allows you to monitor the basic health of all your BlackBerry servers. This test allows you to monitor the following types of information:

- Network availability
- Operating system disk space usage
- Any Performance Counter
- Any Windows service
- Any Event Log entry

The BlackBerry Server health test monitors BlackBerry 4 Enterprise, BlackBerry 4 Configuration, BlackBerry 5 Enterprise, and BlackBerry 5 Configuration servers.

All SQL-related performance counters for BlackBerry Configuration Database servers target the SQL Server Enterprise version of SQL (unnamed instance). The test results show a grey icon for the BlackBerry Configuration Database servers installed on the named instance of the SQL server. Error details specify that the object is unavailable - the performance counter is either uninstalled or disabled.

For monitoring BlackBerry Configuration Database servers installed on a named instance of SQL server, you must replace the SQL-related performance counters with corresponding performance counters for the named instance. For more information, see Troubleshooting on page 62.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 2. BlackBerry server health test targets.

BlackBerry Server Version	Server Type
4.1.2 - 5.0.4 (including 5.0.4 MR4)	BlackBerry servers and BlackBerry Enterprise Database servers **NOTE:** For information about SQL server prerequisites, see SQL database operating prerequisites on page 11.

The BlackBerry server must be configured as follows:

Table 3. BlackBerry server health test configuration.

BlackBerry Server Version	Configuration required
4.1.2 - 5.0.4 (including 5.0.4 MR4)	Enable WMI on each BlackBerry server **NOTE:** WMI is required to support retrieving accurate disk space information when using mount points. If you do not use mounts, you can disable the requirement for WMI by clicking the Data Collection options link in the Server Health Test wizard. Enable public or private SNMP access on BlackBerry Enterprise Server **NOTE:** For more information on configuring SNMP, see the BlackBerry knowledge base.

The test credentials must have the following permissions:

Table 4. BlackBerry server health test required permissions.

BlackBerry Server Version	Permissions Required for Test Credentials

4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Member of Local Administrators group on each BlackBerry server to have:
	    Read access to operating system drive to retrieve disk space
	    Read access to WMI to retrieve disk information
	    Read access to Service Control Manager
	    Read access to registry to access Performance Counters, DNS settings, Event Logs, and BlackBerry information
	• Read access to BlackBerry Configuration Database

BlackBerry Message Delivery Health Test

The BlackBerry Message Delivery health test allows you to monitor the ability to deliver email within your BlackBerry environment. This test sends a test message from a source mailbox to one or more target BlackBerry devices or BlackBerry simulators.

You must manually create test mailboxes required for this test. Test mailboxes created for UC Diagnostics health tests can be reused as the source mailbox.

You can use BlackBerry Device Simulator software instead of a real BlackBerry device for testing message delivery health.

If the test source mailbox is hosted on an Exchange 2010 or later mailbox database, the Exchange organization must have, at least, one available Exchange 2010 or 2013 CAS server or one Exchange 2016 Mailbox server that exists on the same site as the server that hosts the active mailbox database copy.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 5. BlackBerry message delivery health test targets.

BlackBerry Server Version	Target Type
4.1.2 - 5.0.4 (including 5.0.4 MR4)	BlackBerry server

The following software must be installed on the UC Diagnostics computer.

Table 6. BlackBerry message delivery health test required software.

BlackBerry server version	Software required on UC Diagnostics computer
4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Exchange System Manager (ESM) SP 1 or later - OR - • MAPI & CDO version 8.3.0.8353.000 or later) **NOTE:** ESM cannot be installed on 64-bit computers.

The BlackBerry server must be configured as follows:

Table 7. BlackBerry message delivery health test configuration.

BlackBerry server version	Configuration required
4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Create test mailboxes. • To track test messages, enable Tracking Logs on each Exchange server through which the test message passes.

The test credentials must have the following permissions:

Table 8. BlackBerry message delivery health permissions.

BlackBerry server version	Permissions required for test credentials

4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Access to registry on BlackBerry Enterprise Server and BlackBerry logs directory
	• To track test messages, be a member of Local Administrators group on each Exchange server that the message passes through to have:
	  Read access to tracking logs
	• Full access permissions to each test mailbox to have:
	  Access to mailbox to send and receive test messages
	• Read access for BlackBerry Configuration Database (only if you are connected to a BlackBerry server using Windows Authentication. If you used SQL Authentication, read access is not required.)

Historical reporting database usage estimates

The following table lists the approximate amount of space required for each test each monitoring interval when running Web Reports and when storing test history:

Table 9. BlackBerry health test database usage per monitoring interval.

Health Test	Total space required per server per monitoring interval (Web Reports)	Total space required per server per monitoring interval (Test History)
Server Health	0.5 KB	• 464 KB (Configuration Database Server) • 307 KB (BlackBerry Enterprise Server)
Message Delivery Health	0.1 KB (per target mailbox)	72 KB

For example, to run a BlackBerry Server health test on one server, the maximum space required (with default parameters) would be:

- Raw data: 0.5 KB x 1 day x 48 bi-hourly values= 25 KB

- Hourly data: 0.5 KB x 7 days x 24 hourly values = 89 KB

- Daily data: 0.5 KB x 30 days x 1 daily value = 16 KB

For example, you have a medium-sized environment with the following characteristics:

- Monitoring 10 BlackBerry Enterprise servers and 1 BlackBerry Configuration Database

- Running one of each test using the default counters

- Using default monitoring of 30 minutes for all tests

- Using default data retention of 7 days for hourly aggregation data

- Using default data retention of 30 days for daily aggregation data

- Running Message Delivery Health with 1 test mailbox

The approximate space required for historical data would be:

Table 10. BlackBerry health test database usage for historical data.

Health Test	Total Space required
Server Health	1.1 MB
Message Delivery Health	0.6 MB
Total	1.7 MB

BlackBerry Diagnostic Console Technical Information

The BlackBerry Diagnostic Console provides you with a real-time representation of the messaging system processes and components within your BlackBerry server.

You can diagnose and resolve issues using the BlackBerry Diagnostic Console.

BlackBerry Diagnostic Console prerequisites

The following tables provide information about the required configuration and permissions needed to run the diagnostic console for BlackBerry.

Table 11. BlackBerry configuration required for the diagnostic console.

BlackBerry Server Version	Configuration required
4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Enable WMI on BlackBerry Enterprise Server • Enable public or private SNMP access on BlackBerry Enterprise Server For more information on configuring SNMP, see For more information on configuring SNMP, see the BlackBerry knowledge base.

Table 12. BlackBerry diagnostic console permissions required by the console credentials.

BlackBerry Server Version	Permissions required to access the BlackBerry server
4.1.2 - 5.0.4 (including 5.0.4 MR4)	• Member of Local Administrators group to have: Read access to operating system drive to retrieve disk information Read access to Service Control Manager Read access to WMI to retrieve disk information Read access to Registry to access Performance Counters, DNS settings, Event Logs, and BlackBerry information • Read access to BlackBerry Configuration Database

Web Reports Technical Information

UC Diagnostics has a separate web-based reporting component called UC Diagnostics Web Reports.

For security recommendations for Web Reports, see .

Technical Information for UC Diagnostics for OCS

- About the Management Console for OCS
- Discovering your OCS environment
- OCS Health Tests
- Diagnostic Console software prerequisites
- Required permissions on OCS servers
- OCS Diagnostic Console Technical Information
- Web Reports Technical Information

About the Management Console for OCS

You can use UC Diagnostics to monitor the health and performance of an individual OCS (Office Communications Server) or your entire OCS 2007 or OCS 2007 R2 environment. Health tests detect problems by collecting and analyzing data or simulating user interaction with the OCS server at regular intervals.

Discovering your OCS environment

When you connect to an environment, the Management Console discovers and displays your entire OCS 2007 or OCS 2007 R2 environment. Discovery is initially configured to run automatically once a day to detect changes to your environment.

Test prerequisites

The following permissions are needed to run the management console for OCS. The required permissions apply to both OCS 2007 and OCS 2007 R2 servers.

Table 1. Permissions required for OCS health tests.

Scope	Permissions required for diagnostic services account
Domain	• Member of RTCUniversalServerAdmins
Database Server (Back-End, Archiving, Quality of Experience Monitoring Server)	Ensure database is remotely accessible **NOTE:** Use Surface Area Configurator to enable TCP/IP and named pipe access.
Edge Servers	Add a user account with the same login credentials as the service account. Make the account a local administrator on the Edge Server.

OCS Health Tests

UC Diagnostics contains the following health tests that each monitor one part of your OCS 2007 or OCS 2007 R2 servers:

To monitor a mixed Lync/Skype and OCS environment, you must establish two connections to the same environment - one as a Lync/Skype connection and the other as a OCS connection.

- OCS Server Health Test

OCS Server Health Test

The OCS Server health test allows you to monitor the basic health of all your OCS servers. It is recommended that you configure two server health tests - one test without monitoring event logs set with an interval of 30 minutes and a second test for monitoring event logs that runs only once a day. For more information on test settings, see the *Unified Communications Diagnostics User Guide*.

This test allows you to monitor the following types of information:

- Network availability
- Operating system disk space usage
- Any Performance Counter
- Any Windows service
- Any Event Log entry

The required configurations and permissions also apply to OCS 2007 R2 servers.

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 2. OCS server health test targets.

OCS server version	Server type
All	All servers
	NOTE: OCS Server Health test does not monitor federated partners.

The following configuration is required on each OCS server.

Table 3. OCS server health test configuration.

OCS server version	Configuration required
All	- Enable WMI on each OCS server - Enable remote access to any back-end databases **NOTE:** For information about SQL server prerequisites, see SQL database operating prerequisites on page 11.

The following permissions are required on the OCS servers.

Table 4. OCS server health test permissions.

OCS server version	Permissions required for test credentials

All	• Member of Local Administrators group on each OCS server to have:
	  Read access to operating system drive to retrieve disk space
	  Read access to Windows system directory to access Event Logs
	  Read access to Service Control Manager
	  Read access to Registry to access Performance Counters and Event Logs
	  Read access to Back-End database tables (rtc and rtcdyn)
	  Read access to Back-End stored procedures (rtc and rtcconfig)
	• db_datareader rights to any Back-End databases

You can become a member of RTCUniversalServerAdmin to update the Back-End databases to give the db_datareader user role for the rtc, rtcconfig, and rtcdyn tables.

NOTE: For information about SQL server prerequisites, see SQL database operating prerequisites on page 11.

As an alternative, you can:

1 Create a new Security Group (OCS Diagnostic Users).

2 Map OCS Diagnostic Users into the Back-End Database and provide a User Mapping to the rtc, rtcconfig, and rtcdyn databases with the public and db_datareader role.

3 Add OCS Diagnostic Users to the RTCUniversalReadOnlyAdmins group.

4 Add OCS Diagnostic Users to the Power Users and Performance Monitor Users security group on each OCS server through a GPO or some other mechanism.

OCS Diagnostic Console Technical Information

The Diagnostic Console provides you with a real-time representation of the messaging system processes and components within OCS 2007 or OCS 2007 R2. You can diagnose and resolve issues using the Diagnostic Console.

The Diagnostic Console can perform real-time monitoring on Front-End and Conferencing servers only.

Diagnostic Console software prerequisites

The following software must be installed on the UC Diagnostics computer.

Table 5. OCS diagnostic console software prerequisites.

OCS server version	Software required on UC Diagnostics computer
All	Microsoft .NET Framework 4.5.1 or later

Required permissions on OCS servers

The following configuration is required on each OCS server.

Table 6. OCS diagnostic console permissions.

OCS role	Permissions required on OCS servers
All	• Member of Local Administrators group on each OCS server
	• Member of RTCUniversalServerAdmins

The required software and permissions apply to both OCS 2007 and OCS 2007 R2 servers.

Web Reports Technical Information

UC Diagnostics has a separate web-based reporting component called UC Diagnostics Web Reports.

For security recommendations for Web Reports, For more information, see Web Reports security recommendations on page 38.

Technical Information for UC Diagnostics for Lync/Skype for Business

- About the Management Console for Lync/Skype for Business Server
- Discovering your Lync/Skype environment
- About the Lync/Skype Health Tests
- Lync/Skype Synthetic Transaction Health Tests
- Active Directory Account Lockout Health Test
- Lync/Skype for Business Diagnostic Console Technical Information
- Web Reports Technical Information

About the Management Console for Lync/Skype for Business Server

You can use UC Diagnostics to monitor the health and performance of individual servers or your entire Microsoft Lync or Skype for Business Server environment. Health tests detect problems by collecting and analyzing data or simulating user interaction with Lync/Skype servers at regular intervals.

Discovering your Lync/Skype environment

When you connect to a Lync or a Skype for Business environment, the Management Console discovers and displays the pools and servers in your environment. Discovery is initially configured to run automatically once a day to detect changes to your environment.

To monitor a mixed Lync or Skype and an OCS environment, you must establish two connections to the same environment - one as a Lync or Skype connection and the other as an OCS connection.

Diagnostic Services account prerequisites

The following permissions are required for the diagnostics services account.

Table 1. Diagnostic services account requirements.

Scope	Permissions required for diagnostic services account
Domain	Member of at least one of the following security groups: • CSHelpDesk • CSServerAdministrator • CSViewOnlyAdministrator

To run the Lync/Skype health tests, you must create a test user. For more information on creating a user for the health tests, see the *Unified Communications Diagnostics User Guide.*

About the Lync/Skype Health Tests

UC Diagnostics contains the following tests that monitor your Lync 2010 and Lync 2013/Skype for Business 2015 servers and pools.

The Lync/Skype server health test lest you monitor basic server health.

- Lync/Skype Server Health Test

Lync/Skype server synthetic transaction health tests let you monitor the server activities and functionality:

- Instant Messaging Health Test

- Instant Messaging Conference Health Test

- Peer to Peer Audio/Video Call Health Test

- Audio/Video Conferencing Health Test

- Presence Status Health Test

- Log On Registration Health Test

- Address Book Service Health Test

- Persistent Chat Message Health Test

Several of the Lync/Skype synthetic transaction health tests require test users. These test users are created using a Microsoft PowerShell cmdlet called `New-CsHealthMonitoringConfiguration`. Scripts have been provided to help you create test users. For more information about creating Lync/Skype test users, see the *Unified Communications Diagnostics User Guide.*

Lync/Skype Server Health Test

This test allows you to monitor the basic health of all your Lync/Skype servers. This test allows you to monitor the following types of information:

- Network availability

- Operating system disk space usage

- Any Performance Counter

- Any Windows service

- Any Event Log entry

It is recommended that you configure two server health tests - one without monitoring event logs with an interval of 30 minutes and the second for monitoring event logs that run only once a day.

For more information on test settings, see the *Unified Communications Diagnostics User Guide.*

Test prerequisites

See the following tables for the test targets, required configuration, and the required permissions for this test.

You can run the test against the following target servers.

Table 2. Supported test targets for Lync/Skype server health test.

Server Version	Server Type
All	• All Lync 2010, Lync 2013, and Skype for Business 2015 servers

The Lync/Skype server must be configured as follows:

Table 3. Configuration required for Lync /Skype server health test.

Server Version	Configuration required
All	• Enable WMI on each Lync/Skype server • Enable remote access to any database

The test credentials must have the following permissions.

Table 4. Permissions required for Lync /Skype server health test credentials.

Server Version	Permissions Required for Test Credentials
All	• Member of Local Administrators group on each Lync/Skype server to have the following access: Read access to operating system drive to retrieve disk space Read access to Windows system directory to access Event Logs Read access to Service Control Manager Read access to Registry to access Performance Counters and Event Logs

Lync/Skype Synthetic Transaction Health Tests

In addition to the basic server health test, you can use additional Lync/Skype health tests to monitor activities on your Lync 2010, Lync 2013, and Skype for Business 2015 servers such as instant messaging, conferences, peer-to-peer audio/video calls, logon registration, and address book service.

The test targets for these health tests are Lync 2010, Lync 2013, and Skype for Business 2015 pools.

You must create test users for the synthetic transaction health tests. For information about creating Lync/Skype test users and any additional configuration required for the tests, see the *Unified Communications Diagnostics User Guide.*

Software prerequisites

To run the Lync/Skype health tests, ensure the following software prerequisites are met:

- You must have PowerShell 2.0 or later installed on the UC Diagnostics computer.
- You must enable Remote PowerShell on each Lync/Skype server.

Permissions required for test credentials

The test credentials that are used to run the health tests on the Lync 2010, Lync 2013, and Skype for Business 2015 servers must have the following permissions:

- Member of Local Administrators group -
  required to permit PowerShell cmdlets to access Lync/Skype server

- Member of one of: CsHelpDesk, CSAdministrator or CSServerAdministrator security groups -
  required to permit PowerShell cmdlets to run the discovery and pool tests.

Instant Messaging Health Test

This test allows you to monitor the operation of instant messaging between two test users in a pool. The following functions are tested:

- Sign on to the Lync/Skype Server
- Instant messaging session initiation and acceptance
- Message exchange
- Session termination
- Log out

Instant Messaging Conference Health Test

This test allows you to monitor the operation of instant messaging conferencing between two test users in a pool. The following functions are tested:

- Sign on to the Lync/Skype Server
- Conference initiation
- Conference invitation and joining
- Message exchange through the conference
- Conference disconnect and termination
- Log out

Peer to Peer Audio/Video Call Health Test

This test allows you to monitor the operation of peer-to-peer audio/video conversation between two test users in a pool. The following functions are tested:

- Sign on to the Lync/Skype Server
- Invitation and acceptance to conduct an audio/video call
- Connection test
- Call termination
- Log out

Audio/Video Conferencing Health Test

This test allows you to monitor the operation of audio/video conferencing between two test users in a pool. The following functions are tested:

- Sign on to the Lync/Skype Server
- Invitation and acceptance to conduct an audio/video call
- Conference creation and joining
- Exchange of data
- Conference termination
- Log out

Presence Status Health Test

This test allows you to monitor the exchange of presence information between two test users in a pool. The following functions are tested:

- Sign on to the Lync/Skype Server
- Request for presence information
- Publishing of presence information
- Receipt of presence information
- Log out

Log On Registration Health Test

This test allows you to monitor the operation of log on registration to a pool. The successful registration of a test user is followed immediately by a disconnection, with no impact on any real users.

Address Book Service Health Test

This test allows you to monitor the ability to connect to an Address Book Download Web Service from a pool. If the Address Book Download Web service is able to supply the requested location of the Address Book files, the test is considered successful.

Persistent Chat Message Health Test

This test verifies whether two users can exchange messages using the Persistent Chat service. The test logs two users on to Lync Server 2013 or Skype for Business 2015, connects the users to a persistent chat room, exchanges a pair of messages, then exits the chat room and logs off the two users.

This test will fail if you have not created a chat room or if the two test users have not been assigned a Persistent Chat policy that provides access to the Persistent Chat service. If you are running the test against more than one registrar pool, you must create same test users for each pool.

This test is not available for Lync 2010.

Active Directory Account Lockout Health Test

The Active Directory Account Lockout Health test provides information about how many and which Active Directory accounts are currently locked out. The test shows accounts that are locked out due to invalid passwords being submitted and accounts that are locked because the password has expired.

The following tables show the test targets for the test and the permissions required by the test credentials.

Table 5. Active Directory Account Lockout Health test targets.

Platform Versions	Target Type
Exchange 2007/2010/2013/2016	Organization
Lync 2010/2013 and Skype for Business 2015	Environment

The test credentials must have read permission on User objects in Active Directory.

Table 6. Active Directory Account Lockout Health test credential required permissions.

Platform	Permissions Required for Test Credentials
Exchange	• Member of View-Only Exchange Administrators group or View-Only Organization Management group.
Lync/Skype for Business	• Member of CSHelpDesk, CSServerAdministrator, or CSViewOnlyAdministrator group

Lync/Skype for Business Diagnostic Console Technical Information

The UC Diagnostics console allows you to monitor your Lync 2013 or Skype for Business 2015 servers. You can diagnose and resolve issues using the Diagnostic Console. You must meet the following prerequisites

Diagnostic Console software prerequisites

The following software must be installed on the UC Diagnostics computer.

Table 7. Lync/Skype diagnostic console software prerequisites.

Server version	Software required on UC Diagnostics computer
Lync 2013	Microsoft .NET Framework 4.5.1 or later
Skype for Business 2015	PowerShell 2.0 or later

Required configuration

The following configuration is required on each Lync/Skype server.

Table 8. Lync/Skype diagnostic console configuration.

Exchange server version	Configuration required
Lync 2013	Enable WMI
Skype for Business 2015	Enable Remote Powershell.

Required permissions on Lync/Skype servers

The following permissions are required on each server.

Table 9. Lync/Skype diagnostic console permissions.

Lync/Skype role	Permissions required on Lync/Skype servers
All	Member of Local Administrators group
	Member of at least one of the following security groups
	• CSHelpDesk
	• CSServerAdministrator
	• CSViewOnlyAdministrator

Web Reports Technical Information

UC Diagnostics has a separate web-based reporting component called UC Diagnostics Web Reports.

For security recommendations for Web Reports, For more information, see Web Reports Technical Information on page 38.

Troubleshooting

- Installation Prerequisite Issues
- SQL Database Issues
- Other Installation Issues
- Management Console Issues
- Health Test Issues
- Diagnostic Console Issues
- Web Reports Issues

Installation Prerequisite Issues

The following questions and answers provide information about common prerequisite issues you might encounter.

What can I do if I am missing certain prerequisites?

Mandatory prerequisites must be installed before UC Diagnostics can be installed. Either exit from the installer and install the prerequisites, or deselect the component for which the prerequisite is required.

Optional prerequisites are only necessary for certain functionality to work. An error message is displayed whenever you encounter functionality that is disabled because a prerequisite is not installed.

Why does my prerequisite check for EMC fail even though I have EMC installed?

Ensure that you have Exchange Server 2007 SP 1 Rollup 1 or later installed. You can download the latest service pack from Microsoft.

Why do my prerequisites check fail for MAPI & CDO even though I have MAPI & CDO installed?

Microsoft periodically updates MAPI & CDO but does not change the version number. Ensure you download the latest version from Microsoft.

Why does the installer report that required prerequisites are not met for Web Reports when all required components are installed in my machine?

This can happen if you install the product by running the UCDiagnostic.msi file directly on Windows Server 2008, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows 7, Windows 8 or Windows 8.1.

To resolve this issue, install UC Diagnostics using autorun.exe.

I don't have all the prerequisites installed right now. Can I install UC Diagnostics now and install the prerequisites later?

You can choose to bypass the prerequisite check by running the installer with the IGNOREPREREQUISITES=1 command line argument.

SQL Database Issues

The following questions and answers provide information about database installation and other database issues.

I am using SQL Server Express, but I get an error message that UC Diagnostics cannot connect to the database. Why?

If you are using SQL Server Express, you must enter the database instance name along with the server name. For example DATABASE_SERVER_NAME\SQLEXPRESS.

I am using SQL Server Express which is installed on a remote machine, but I get an error message that UC Diagnostics cannot connect to the database. Why?

By default, remote connections are disabled for SQL Server Express. To enable a remote connection, use the SQL Server Configuration Manager to enable TCP/IP for the database instance.

How do I specify a port number for an SQL Server?

If you need to specify the port number for the SQL Server configuration, use the following syntax:
<Server Name>/<Server Instance>,<port number>

I want to move my database. What do I do?

Use the following instructions to move your database.

1 Stop the Diagnostic Services.

2 Move the database to the new location.

3 Now you must configure UC Diagnostics to use the new location.

    a From the Registry Editor, go to **HKEY_LOCAL_MACHINE | SOFTWARE | Quest | Spotlight Management Framework | Diagnostic Services**.

    b Double-click **DatabaseConnectionString**.

    c In the Edit String dialog box, enter the new location of your database in the Data Source field.

    d Click **OK**.

    e Locate and open the Web Reports.udl file.

       The file is located where you have Web Reports installed. Once open, the Data Link Properties dialog box opens.

    f Select or enter the new location of your database, and click **OK**.

4 Restart the Diagnostic Services.

Other Installation Issues

The following questions and answers provide information about common installation issues.

How do I add or remove components after initial installation?

UC Diagnostics does not support repairing, adding, or removing components after the initial installation. You must uninstall and reinstall UC Diagnostics to perform these tasks.

When you reinstall, the installer asks if you want to keep your existing database, or to overwrite it. If you choose to keep your existing database, all of your Global Settings and Health Test configuration are retained. Console customizations, like Topology Layout, are also retained because they are cached by MMC in %USERPROFILE%\Application Data\Microsoft\MMC directory.

How can I launch the 32-bit version of Microsoft Management Console (MMC) on a 64-bit operating system?

On a 64-bit operating system, there are two versions of MMC, a 32-bit and a 64-bit. The 32-bit version can run 32-bit snap-ins only and the 64-bit version can run 64-bit snap-ins only.

UC Diagnostics ships with a 32-bit snap-in of MMC (UC Diagnostics Management Console). On a 64-bit operating system, when you launch MMC, it launches the 64-bit version, so the snap-in does not appear in the Add/Remove Snap-in dialog box. To launch the UC Diagnostics Management Console MMC snap-in on a 64-bit operating system, run **MMC.exe /32**.

Why does the installer restart after I have upgraded from a previous version of UC Diagnostics on Windows 2008 computers?

After you upgrade from a previous version of UC Diagnostics on Windows 2008, the installer reboots. Once the reboot is complete, the installer may restart when you first try to access the UC Diagnostics Management Console. This is caused by a known issue in Windows installer when performing a major upgrade involving installing assemblies in side-by-side folders (\Windows\WinSxS).

As a result, the Visual C++ Runtime Libraries version 9 are removed from the computer during reboot. The installer that is launched when you first access UC Diagnostics puts the missing files back in place. For more information, see http://support.microsoft.com/kb/905238.

After upgrading in a mixed Lync/Skype and OCS environment, why are the Lync/Skype servers appear greyed in the OCS view?

Lync/Skype and OCS environments are viewed separately. All the Lync/Skype servers that appear greyed in the OCS view will appear when you connect to a Lync/Skype environment. When you have verified this, delete the Lync/Skype objects from the OCS environment.

Management Console Issues

The following questions and answers provide information about common management console issues.

Why do I get an error when I try to connect to a Diagnostic Test Engine that is installed on a separate computer?

The Console and the Diagnostic Test Engine communicate over port 9615. You may need to open this port in your firewall.

Why do my health tests or my Diagnostic Services stop running when I change my password?

If you change the password for the account assigned to the Diagnostic Services, you must update the password for the Spotlight Diagnostic Test Engine and Spotlight Distributed Collector services in the Windows Service Control Manager.

If you change the password for the alternate credentials assigned to a test, you must update the password in the Alternate Credentials page under the Global Settings node.

What do I do if my OCS Edge servers are load balanced?

If the OCS Edge servers are behind a load balancer, automatic discovery cannot occur because the individual Edge servers are not registered with OCS.

To register your Edge servers

1   Find the location of the Diagnostic Services host computer.

2   Go to **Start | Programs | Quest | UC Diagnostics | Tools | OCS Edge Server Configuration**.

3   If applicable, enter a fully qualified domain name (FQDN) for the internal load balancer that is registered as an edge server in OCS.

For example, enter InternalAccessEdge.mycompany.corp.

4   Enter the appropriate FQDN for the external load balancer.

5   Enter the FQDN for the Edge server behind the load balancers.

6   Click **Add Server**.

7   If necessary, repeat the previous steps to add more Edge servers.

8   When completed, click **Add/Update Group**.

9   If necessary, repeat steps 1 through 8 to add more Edge server groups,

10 Click **Save**, then **Close**.

Why are connector links between OCS environments shown in the topology view not visible?

Ensure the service account has access to WMI.

Why are OCS Federated Partners not showing?

You may not have access to Access Edge Servers. Ensure the service account can log into Access Edge Servers.

Why are the OCS servers that communicate with the standard edition front-end servers not visible?

By default, the back-end database does not allow remote connections. You must enable external access.

Why are the OCS Archiving or Quality of Experience (QoE) properties not showing?

If the OCS Archiving or QoE database is collocated on a server, it may not allow remote connections. Ensure external access is enabled.

When I right-click an OCS environment and select Properties, I get an error that says I do not have rights to connect to the target computer or that the target computer is unavailable. Why?

Properties for the servers are collected directly from the Management Console host. The user account used to run the Management Console must have the appropriate rights to collect data from the target computer. The target computer must also be reachable from the Management Console host.

To immediately update the extended properties for Lync/Skype

1   Right-click the Lync/Skype environment.

2   Click **Force Discovery Now** from the menu.

To update the extended properties for Lync/Skype through the discovery schedule

1   Right-click the Lync/Skype environment.

2   Click **Properties** from the menu.

The discovery schedule is shown under the Discovery Settings.

3   Modify the schedule if required.

Why can I not connect to a BlackBerry database that is installed on a named SQL instance?

If you are using a BlackBerry database that is installed on a named SQL instance, you must specify the instance name, such as MyServer/MySQLInstance, in the BlackBerry Configuration Database Server field.

If the SQL instance hosting the BlackBerry database is configured to use a non-default port, you would specify the port number in the Configuration Database Server field separated by comma, such as: MyServer/MySqlInstance,1345 where 1345 is the port number.

You do not have to specify a port number if your alias is configured for the SQL named instance hosting BlackBerry database on the SQL server, or the SQL Server Browser service is installed and running on a SQL server.

Health Test Issues

The following questions and answers provide information about common health test issues.

Why do some tests, such as the Exchange Internal Server Delivery and the Exchange External Message Delivery test, not work on certain operating system versions?

For the MAPI-based tests to work on Windows Server 2008, Windows 8, Windows 8.1, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016 you must turn off User Account Controls (UAC) on the computer on which the Diagnostic Services component runs.

Why do Exchange Internal Server Delivery tests show results such as Not Complete or Complete with a Timeout Failure message?

If your environment contains Exchange 2010 (SP1 or later) servers on which Throttling Security Policy is turned on, the default throttling policy limits the number of concurrent connections a user can have to an Exchange 2010 server.

The number of MAPI calls performed during a MAPI-based Delivery test can exceed this limit, causing the Exchange Client Access Server to start rejecting calls.

To resolve this problem, create a new throttling policy that has no limit for simultaneous MAPI calls to Exchange servers. Assign this policy to the user account that is used for to run tests. This account is either the Distributed Collector service account (if default credentials are specified for the test) or a user account associated with alternative credentials specified for the test.

To create a new throttling policy and assign it to a user account, logon to the Exchange 2010 Server, open the Exchange Management Shell, and type the following commands:

```
New-ThrottlingPolicy SOMPolicy

Set-ThrottlingPolicy SOMPolicy -RCAMaxConcurrency $null -RCAPercentTimeInAD
$null -RCAPercentTimeInCAS $null -RCAPercentTimeInMailboxRPC $null

Set-Mailbox <user account> -ThrottlingPolicy SOMPolicy
```

Some health tests failed because Exchange Management Console (EMC) 2007 SP 1 and Update Rollup 1 was not installed. I have installed it now but my test still does not work. Why?

Ensure that you reboot the UC Diagnostics computer or restart the Spotlight Diagnostic Test Engine and Spotlight Distributed Collector services after you install EMC updates.

Why does my Exchange OWA Availability test fail?

Ensure that the test mailbox is accessible from the UC Diagnostics computer.

For Exchange 2007, try running the following PowerShell cmdlet from the Exchange Management Shell:

> Test-OwaConnectivity -clientAccessServer "<server name>"

One common problem is that Internet proxy settings can interfere with DNS resolution.

Why would the Exchange OWA Availability Health test fail on the first attempt on an Exchange 2007 server?

For Exchange 2007 servers, the OWA Availability health test fails to connect on the first attempt. You see the following error message: "Failed to retrieve Outlook Web Access connectivity data from Exchange PowerShell. Mailbox logon statistics are not available."

This error is caused by a bug in the PowerShell cmdlet. The test does connect on the second attempt.

Why does the Exchange Internal OWA test fail due to failed mailbox logon attempts? The test was running normally until recently.

The password may have expired for a test mailbox used in this test. The user account assigned to the test may not have sufficient permissions to change the password of the test mailbox user account.

Short term solutions (which last until the mailbox password expires again):

▪ Run the OWA test using the domain admin account

- OR -

▪ Recreate the test mailboxes.

Long term solution:

▪ Change the setting of accounts created for the OWA test to "password never expires".

I am monitoring an Exchange 2007 organization using UC Diagnostics that is hosted on a computer in a different forest. Why does only some functionality work?

Microsoft does not support accessing Exchange 2007 servers through PowerShell from different forests. See the Heath Tests section for more information about which functionality requires PowerShell.

When I attempt to create OWA test mailboxes for Exchange 2010, why do I get the following error message?

```
CreateTestUser: Mailbox could not be created. Verify that OU 'Users' exists and
that password meets complexity required.
```

The script "new-testcasconnectivityuser.ps1" that ships with Exchange 2010 tries to create the user accounts in the built-in 'Users' container. (The variable is defined in the script as "$OrganizationalUnit = "Users".)

If there is another organizational unit named 'Users' anywhere in the Active Directory structure (e.g. domain.com\branchoffices\users), this error is generated because the Name "Users" would no longer be unique.

To specify the organizational unit in which to create the test users, include the '-ou' parameter when running the script. For example:

get-mailboxserver | .\new-TestCasConnectivityUser.ps1 -ou "cn=users,dc=domain,dc=com"

Why do my Exchange Message Delivery Health tests give an error that the test mailbox cannot be found, even after I have run the mailbox creation scripts?

Active Directory replication must occur before all the mailbox information is propagated to the global catalog to which UC Diagnostics is connected.

Why do my Exchange Message Delivery Health tests give an error that the test mailbox is not accessible, even after I have run the mailbox creation scripts?

Ensure that the credentials under which the test is running are the same as the ones specified in the mailbox creation script.

Also, sometimes Windows caches credentials lookups, which can cause access to be denied after permissions are changed. Try restarting the Spotlight Diagnostic Test Engine and Distributed Collector services.

Why do I occasionally get duplicate notifications?

If you have configured a secondary SMTP server and the primary server fails to send some notifications, all notifications are resent via the secondary server. Occasionally, the primary SMTP server tries to send the original notification later. If this occurs, you receive notifications from both servers.

How do I exclude certain event IDs?

1 Create or edit a health test.

2   Select a server and double-click **<Add Event Log Entries>**.

3   Select an event log type and enter a source name.

4   Enter the event IDs you would like to monitor, leaving out the event IDs you want to exclude. For example, if you want to exclude event ID 100, you would enter 0-99,101-90000.

I am connected to a second Exchange organization but discovery failed. Why?

Your service credentials may not have sufficient rights to discover the second Exchange organization. You can:

1   Stop your services.

2   Set the services log on account to another account which would have permissions to access that organization.

3   Restart your services, then connect to the organization using the new account.

4   After discovery is successful, right-click the Exchange root note and select **Properties**.

5   Clear **Schedule Discovery to run automatically**.

6   Set the services log on account to your original account, then restart your services.

7   Reconnect to both Exchange organizations.

Why does the BlackBerry Server Health test show incomplete when run against a BlackBerry Configuration database server?

All SQL-related performance counters for BlackBerry configuration database servers target SQL Server Enterprise version of SQL (unnamed instance).

The test results show a grey icon for the BlackBerry configuration database servers installed on the named instance of the SQL server. Error details specify that the object is unavailable - the performance counter is either uninstalled or disabled.

To monitor BlackBerry configuration database servers that are installed on a named instance of SQL server, change the SQL-related performance counters with corresponding performance counters for the named instance. For example, change the counter SQLServer:Access Methods\Full Scans/sec to MSSQL$MySQLInstance:Access Methods\Full Scans/sec, where MySQLInstance is the name of SQL instance.

If your BlackBerry database name is not the default (BESMgmt), change the instance name of the perfmon counter SQLServer:Databases/Percent Log Used(BesMgmt).

When running the BlackBerry Server Health test against BlackBerry servers installed on 64-bit operating systems, why are BlackBerry Server performance counters reported as not available?

If you are using a BlackBerry Enterprise Server version earlier than 5.0.3, RIM does not support a 64-bit performance provider.

If you are using BlackBerry Enterprise Server version 5.0.3 or later, RIM supports performance counters through a WMI-based provider. Currently, UC Diagnostics supports registry-based performance providers only.

Why do the Message Delivery health test and Queue health test occasionally fail?

Exchange Server MAPI Client and Collaborative Data Objects (MAPI & CDO) can become unstable, causing the Exchange Internal Server Delivery, Exchange External Message Delivery, and BlackBerry Message Delivery Health tests to fail occasionally. The tests appear to be timed-out. If any of these tests fail, the test runs normally on the next attempt.

In some circumstances, the test can finish normally, instead of timing out. However, applications errors maybe reported in the Event log for SpotlightDiagnosticTest.exe application.

There could be as many as one error for each target in the test.

Why do I receive the following error against Exchange 2007 or 2010 mailbox servers?

```
<Status ServerAddress="127.0.0.1" ErrorMessage="Error code = 0&#xA; Error
message = Incorrect function.&#xA; Error source = msxml6.dll&#xA; Error
description = Not enough storage is available to complete this
operation.&#xA;&#xA;" ManagedObjectId="148" StartDateTime="40365.2604976852"/>
```

This error is caused by excessive log messages that are generated when detailed logging is turned on in an Exchange Server (usually Exchange 2010, Mailbox role). To eliminate this problem, identify and exclude the informational events that occur often during a monitoring interval.

Perform the following steps:

1   In UC Diagnostics, open the Event Viewer on the Exchange server that reports the error and locate high-frequency informational events that can be filtered out.

2   Right-click the server icon and select **Detect/Exchange Server Health**.

3   Select either Exchange 2010 or Exchange 2007.

4   In the list, under Event Log, locate the appropriate event sources:

 ▫   "Application\MSExchange*" (for Exchange 2010)

 ▫   "Application\MSExchangeIS*" (for Exchange 2007).

5   Record the field values, such as Thresholds and Overrides.

6   Right-click on this item and select **Delete**.

7   To replace the deleted item, select "**<Add Event Log Entries...>"** located under the Event Log heading.

8   Leave Event Log = Application.

9   Enter "MSExchange*" or "MSExchangeIS*" in the Source field.

10 Enter the range of Event IDs, excluding those you identified in step 5, and click **OK**.

 For example, to exclude event 1029, enter "0-1028, 1030-999999".

11 Update any field values, such as Thresholds and Overrides, needed to align with the values you recorded in step 3. and click **Finish**.

Why do my Exchange Server Health tests exclude results for some perfmon or service counters? I am running Exchange 2010 SP1 without SP2.

In UC Diagnostics, counters in the Exchange Server Health test for Exchange 2010 have been updated to align with Exchange 2010 SP2. Some counter names are no longer supported.

If you do not plan to upgrade to Exchange 2010 SP2 in the near future, see the following tables, which show the names of the counters in Exchange 2010 SP1 that are no longer supported in SP2. You can add these counters back into your tests.

Why do my Exchange Server Health tests report incomplete results for some perfmon or service counters? I recently applied SP2 to Exchange 2010 SP1.

Exchange Server Health tests created prior to upgrading to Exchange 2010 SP2 contain counters that are no longer supported in SP2. You can delete existing tests and create new ones. However, you lose all customizations of these tests.

The alternative is to modify the existing Exchange Server Health tests. Delete the counters that are no longer supported as shown in the following tables.

Table 1. Perfmon counters no longer supported in Exchange 2010 SP2

PerfMon Counter Name - Exchange 2010 SP1	PerfMon Counter Name - Exchange 2010 SP2
MSExchangeAvailability\Queue OCS User Event Notifications	not supported
Process\%Processor Time (SpeechService)	not supported

Table 2. Service counters no longer supported in Exchange 2010 SP2

Service Counter Name - Exchange 2010 SP1	Service Counter Name - Exchange 2010 SP2
Service: Microsoft Exchange Speech Engine service (MSSpeechService)	not supported

Why are my test results very slow to load when I am switching between servers?

This can happen if you have test results history data retention set to a number higher than 7 days in the Global Settings. Decrease the data retention settings number.

My Internal Server Delivery Health test returns an incomplete result for Exchange servers that host only recovery databases?

When setting up an Internal Delivery Health test against a whole organization, exclude Exchange servers that are hosting only recovery databases from the test targets.

Why do some tests, such as the Exchange Internal Server Delivery, Exchange External Message Delivery, and Blackberry Message Delivery tests, not work in my Exchange 2007 and later environment with no public folders configured?

If you do not have a public folder configured in your Exchange 2007/2010 environment, all MAPI-based tests may fail to complete. The following may be displayed in the test results:

Summary:

Failed to execute the MAPI request on the requested Exchange server. Test results are not available.

Details:

The following error occurred while trying to logon to a mailbox on server <SERVERNAME>: Failed to open the default message store.

Make sure the account used for the test execution has rights to access the source mailbox on the Exchange server.

As a workaround, create a registry key on the computer on which your Diagnostic Service is located:

To create a MAPI settings registry key

1   Open registry editor and create the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Quest\UC Diagnostics\MapiSettings (on 32-bit computer)

    - OR -

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Quest\UC Diagnostics\MapiSettings (on 64-bit computer)

2   Add a new DWORD value named **IgnoreNoPublicFoldersError** under the created key. You do not have to provide a value.

Diagnostic Console Issues

The following questions and answers provide information about common diagnostic console issues.

Why do some of my data sources stop working after my Exchange cluster failed?

Some of the data sources may not reconnect properly on the new active node. Close and reopen the Diagnostic Console to force the data sources to reconnect properly.

Windows clusters are not supported as a separate plug-in.

Why does Last AB Update show "Data Not Available"?

If the target server is a standard edition server, the Address Book Share UNC path is not accessible externally, and the console cannot retrieve the file list to determine when the address book files were last updated.

What does it mean when my certificate reads RemoteCertificateChainErrors?

If your certificate reads RemoteCertificateChainErrors, the computer on which the console is running does not trust the Certificate Authority that was used for this server.

Why is the database information not available for my OCS connection?

The console attempts to gather data directly from the Back-End database. The user account used to run the Diagnostic Console must have rights on the Database server to gather perfmon information.

Why are Connected Endpoints failing to retrieve data?

The Connected Endpoints feature requires the ability to run SQL queries against the Back-End database. You must be a member of RTCUniversalServerAdmins to have the necessary rights.

When I go into the Archiving or Database drilldown, some tables read "No Data". Why?

This happens if information has to be gathered from a computer beyond the initial target computer. If the Console cannot connect to the additional computer, an error message is not displayed. Instead the tables display a "No Data" message. This situation can occur if you have no rights, cannot resolve the NetBIOS name, or if the databases being queried do not allow external connections to the Backend database, Archiving server, or Archiving Database server.

Why are certificates not validating in the OCS and OCS R2 Diagnostic Console?

Certificates may not validate if you have proxy authentication configured but you have not yet entered the credentials for the proxy. To do so, go to Internet Explorer and enter your proxy credentials. For more information on proxy authentication, go to Microsoft's web site.

Why does the Diagnostic Console fail to launch sometimes?

The installer does not respect non-default configuration directories for the Diagnostic Console. You must uninstall and re-install the Diagnostic Console to resolve the issue.

On the Exchange 2007 Diagnostic Console, if you re-order the columns or hide the columns in the Storage Group drilldown, an error message appears. How do I resolve the error?

Right-click the column header and select **Restore Default Settings**.

Web Reports Issues

The following questions and answers provide information about common issues with the UC Diagnostics reports web site.

I am using Microsoft Windows 7. Why do the reports not display?

In Microsoft Windows 7, you must enable Default Document and Static Content in IIS.

To enable Default Document and Static Content

1 Select **Start | Control Panel | Programs and Features | Turn Windows features on or off**.

2 Double-click **Internet Information Services | World Wide Web Services | Common HTTP Features**.

3 Select the **Common HTTP Features** check box.
   Default Document and Static Content should be automatically selected. If not, select their check boxes.

Why does the Storage Group Disk Utilization Web Report not display data when using Exchange 2010 or later servers?

For Exchange 2010 and later, the Exchange servers use DAGs instead of Storage Groups. Only Exchange 2007 servers show data for this report.

Why am I unable to browse to Web Reports using Internet Explorer?

User Account Controls (UAC) must be turned off on the Windows Server computer on which the Web Reports component is running. This affects the following operating systems: Windows Server 2008, Windows Server 2008 R2, Windows 7, Windows 8, Windows 8.1, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016 computers.

Why do the Web Reports not display information properly?

Your Web Reports may not display information properly for the following reasons:

- If .NET is not configured properly
- You have more than one version of .NET installed

If .NET is not configured properly

In some Microsoft environments, you may encounter a configuration issue with Microsoft .NET which results in the Web Reports not working properly. The error indicates that Microsoft .NET Framework version 2.0 must be installed on the IIS server that hosts Web Reports, and that Microsoft ASP.NET must be enabled on the virtual directory that contains the Web Reports. However, if you are sure that the Microsoft .NET Framework version 2.0 and ASP.NET are installed, you may need to repair the IIS mappings for ASP.NET.

If you encounter this issue, the following procedure explains how to properly configure Microsoft ASP.NET. To fix configuration mappings for ASP.NET.

1 Run the Aspnet_regiis.exe utility:

   a Click **Start** and click **Run**.

   b In the Open text box, type **cmd**, then click **OK**.

   c At the command prompt, type the following:
      "%windir%\Microsoft.NET\Framework\v2.0.50727\aspnet_regiis.exe" -i

   d Click **OK**.

2 Register the Aspnet_ispi.dll:

   a Click **Start** and click **Run**.

   b In the Open text box, type the following:
      regsvr32 "%windir%\Microsoft.NET\Framework\v2.0.50727\aspnet_isapi.dll"
      Regsvr32 returns the results of the registration.

   c Click **OK**.

3 Restart the IIS Service:

a   Click **Start** and click **Run**.

b   In the Open text box, type **iisreset**.

c   Click **OK**.

If Repairing the IIS Mappings for ASP.NET Fails

If you follow the procedure to repair the IIS mappings and you still see the error, the cause might be that the Network Service is not granted the correct permission to write to the IIS metabase.

To grant permissions to the Network Service to write to the IIS metabase

1   Click **Start** and select **Run**.

2   In the Open text box, type **cmd** and click **OK**.

3   Navigate to the .NET Framework directory. (%windir%\Microsoft.NET\Framework*version*\)

In this path, the version represents the .NET Framework directory version that is installed on the server. Replace the placeholder in the example with an actual version number.

For example, at the command prompt, type the following:

CD /D "%windir%\Microsoft.NET\Framework\v2.0.50727"

4   Type the following command:

aspnet_regiis.exe -ga "nt authority\network service"

The "-ga" option grants the specified user or group access to the IIS metabase and other directories that are used by ASP.NET.

You have more than one version of .NET installed

If you have more than one version of Microsoft .NET Framework installed on your local computer, Internet Information Server (IIS) automatically uses the most recent .NET version. Currently, UC Diagnostics only supports Microsoft .NET 2.0, so you may need to change the version used by IIS.

To change the Microsoft .NET Framework version used by IIS

1   Click **Start | Control Panel** and select **Administrative Tools**.

2   Select the **Internet Information Services (IIS) Manager**.

3   Expand the **Local computer | Web Sites | Default Web Site**.

4   Right-click on the UCDiagnostics web application and click **Properties**.

5   Select the **ASP.NET** tab, and select **.NET 2.0.50727** from the ASP.NET Version box.

6   Click **OK**.

About us

Quest provides software solutions for the rapidly-changing world of enterprise IT. We help simplify the challenges caused by data explosion, cloud expansion, hybrid datacenters, security threats, and regulatory requirements. We are a global provider to 130,000 companies across 100 countries, including 95% of the Fortune 500 and 90% of the Global 1000. Since 1987, we have built a portfolio of solutions that now includes database management, data protection, identity and access management, Microsoft platform management, and unified endpoint management. With Quest, organizations spend less time on IT administration and more time on business innovation. 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.