

Quest[®] Unified Communications Diagnostics 8.5.1

Release Notes

June 2020

These release notes provide information about the Quest® Unified Communications Diagnostics release.

- About Unified Communications Diagnostics 8.5.1
- If you are upgrading from a previous version
- New features
- Known issues
- · System requirements
- · Product licensing
- Globalization
- Third-party contributions

About Unified Communications Diagnostics 8.5.1

Unified Communications Diagnostics helps administrators detect problems in their messaging environment, accurately locate the root cause, and resolve the problems from a single, easy-to-use interface. It provides a robust and informed troubleshooting solution for Exchange, BlackBerry, Lync, and Skype for Business.

From the Management Console, you can run health tests to verify server functionality. You can also launch the Diagnostic Console for an individual server which shows, in real-time, the actual flow of data within individual servers at increasingly granular levels of detail. This level of detail allows you to pinpoint problems and take preventative action. UC Diagnostics supports the following platforms:

- Exchange 2007/2010/2013/2016
- BlackBerry Enterprise Server and BlackBerry Enterprise Server Express 4.1.2 to 5.0.4 (including 5.0.4 MR4) for Microsoft Exchange
- Office Communications Server 2007 and 2007 R2
- Lync Server 2010, Lync Server 2013, and Skype for Business 2015
- Office 365 (Exchange Online and Skype for Business Online)

UC Diagnostics 8.5.1 is a minor release, with new features and functionality. See New features and Known issues.

New features

The following new features are available in UC Diagnostics 8.5.1:

- Support is added for OAuth 2.0 (modern authentication) using EWS for some Office 365 tests. To use
 OAuth 2.0, you must register the UC Diagnostics application with the Microsoft Azure portal site. For more
 information see section titled "Registering UC Diagnostics with the Microsoft Azure portal" in the UC
 Diagnostics User Guide. Depending on the region from which you are accessing the Microsoft Azure portal
 site, the user interface can differ.
 - New EWS Authentication pages are added when you are configuring the Exchange Online Mailbox Logon Health test and the Exchange Online Message Delivery Health test. You use these pages to specify the Application ID, Tenant ID, and Client Secret that were assigned when you registered the UC Diagnostics application with the with the Microsoft Azure portal.

For upgrade scenarios, the existing health tests will run using basic authentication mode until you reconfigure them.

- New fields are added to the connection page when you are connecting to Office 365. The fields are used to specify the PowerShell Connection URL and the Azure AD Authorization Endpoint URL when you are connecting to one of the Microsoft National clouds. (If you are connecting to the Microsoft Global cloud, the default values can be used and you can leave the fields empty.)
- Support is added up to Exchange 2016 CU 16.
- Support is added up to Exchange 2013 CU 23.

If you are upgrading from a previous version

You can perform a direct upgrade from 8.2 and later. If you are upgrading from 8.1 or earlier, you must first upgrade to 8.4 and then upgrade from 8.4 to 8.5.1.

If you are upgrading from a previous version, IIS services will stop while upgrading the Web Reports components. IIS services will automatically restart once upgrading is complete.

If you are upgrading from version 8.2 or later, you must use the Force Rediscovery option to repopulate the topology view or show service pack information for Exchange. For more information, see Upgrading from version 8.2 or later.

Upgrading a manually installed database

If you manually installed the database, you must manually upgrade the database. For more information, see the *Unified Communications Diagnostics Deployment Guide*.

Known issues

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

Table 1. General known issues

Known issue	Issue ID
Do not install UC Diagnostics on the same machine as Spotlight on Active Directory or as MessageStats.	NA

Table 2. Management console known issues

Known issue	Issue ID
When running the Exchange External Message Delivery Health Test against Exchange 2013 in	452686
which the CAS server is behind a load balancer, the test did not complete and it failed with the error	
"Failed to open the default message store".	

Workaround

Remove the Exchange External Message Delivery Health Test and run the Exchange Modern Message Delivery Health Test instead.

If you are upgrading from 8.2, some health tests will not run immediately for Exchange 2016. You 593819 must edit each test once and click **Finish** to cause the previous test to run and retrieve some of the counter values correctly. The tests that must be edited after upgrade are as follows:

- Exchange Replication Health Test
- · Exchange Server Health Test
- Exchange Storage Health Test
- Exchange Queue Health Test
- Exchange System Health Test

For a Skype for Business/Lync environment, if a DNS Alias record is configured for a front-end pool 325647 or standard edition server rather than a Host A record, UC Diagnostics will fail to discover and run the synthetic transaction health tests with that pool or server. This issue is only found on 32-bit and 64-bit systems of Windows 2008. Newer operating systems do not have this issue.

In Skype for Business or Lync Discovery, the display name of PstnGateway only shows the numbers/characters before the first dot. There is a problem when PstnGateway name is an IP address.

599577

354306

Upgrading from version 8.2 or later

As of UC Diagnostics 8.3, Exchange 2000 and Exchange 2003 are not supported. If you are upgrading from UC Diagnostics 8.2, use the **Force Discovery Now** option to repopulate your topology view. If you are upgrading from 8.3, use this option to ensure Exchange version service pack and CU (cumulative update) information is shown for Exchange servers.

662418

Solution

- 1 After you have upgraded to UC Diagnostics, reconnect to your messaging environment by clicking the menu option "Connect to xxx Environment/Organization".
- 2 Click Force Discovery Now from the menu.

All objects in the treeview and topology and the health tests are now displayed. The service pack and CU information is also displayed for Exchange servers

If the BlackBerry Server Health Test runs on a standby BlackBerry server in a high availability configuration, the test results show errors for BlackBerry services that are not running. However, these services are not required to run in the standby server and no error exists.

161453

Workaround: Perform the BlackBerry server health test on the primary BlackBerry server only, or run a separate BlackBerry server health test on the standby BlackBerry server with the affected service counters set to 'informational'.

Known issue Issue ID

If you are installing Exchange 2013 and have upgraded to the newest version of MAPI & CDO (version 8.3.0.8353.000) to support RPC over HTTP) in a mixed environment, some health tests may not run properly. ESM and MAPI & CDO might not work together.

274631

Workaround: Uninstall ESM. Reinstall the new MAPI & CDO for Exchange: (https://www.microsoft.com/en-us/download/details.aspx?id=42040).

Table 3. Diagnostic console known issues

Known issue Issue ID

UC Diagnostics 8.4.1 was rebranded to the Quest company name and the installation path is now Quest. After you upgrade from 8.2, 8.3 or 8.4 to the current version, the Save As Template and Save As (Drilldown/AlarmLog) dialogs might still point to the previous installation path since Windows saved the path in the registry.

687018

Workaround

You must manually redirect and save to the new default Quest path such as "%current user%\AppData\Roaming\Quest\Shared\Templates".

On a Windows Server 2016, when you launch the Diagnostics Console for the first time, you can see the following error: "There is no default printer currently selected."

652667

Workaround

Open the Devices and Printer page by selecting either:

- Control Panel | All Control Panel Items | Devices and Printers
 -OR-
- Control Panel | Hardware | Devices and Printers

All subsequent launches of the Diagnostic Console will be successful.

If there is no Reverse Lookup Pointer (PTR) created for the target Lync 2013 Server in a different 369446 domain and users connect the server with its NetBIOS name, the Lync 2013 plug-in of the diagnostic console is unable to get values for some components.

Solution

Add a Reverse Lookup Pointer (PTR) for the Lync 2013 Serve in the "Reverse Lookup Zones" of DNS.

In Data Recorder Mode, if you connect to a Lync 2013 or Skype for Business 2015 Server with the 453310 NetBIOS name (such as wm-skp-st), the home page does not display properly. Some components are greyed out in the Diagnostics Console Play Back Mode.

Workaround

Use the server FQDN instead of the NetBIOS name when you connect in Data Recorder Mode.

Table 4. Web reports known issues

Known issue ID

On Windows Server 2016, when you opened Web Reports, the web site would fail if Internet Explorer was not set as the default browser.

652943

Workaround

Set Internet Explorer as the default browser on the computer that is running Windows Server 2016.

Even though the SMTP Server and SMTP From Address were not configured for a subscription, when the user ran the subscription, the result showed Success.

652729

Always ensure that you have configured the SMTP server and SMTP From Address before you run a report subscription.

Known issueIssue IDOn Windows Server 2016, if the account that is running Web Reports is not a domain
administrator, the following issues can occur:651422
652856

- User is unable to open Subscriptions | Configure Subscriptions.
- After a user created a Web Reports custom report/graft/folder/subscription in the Microsoft Management Console (MMC), when the same user account accessed the Web Reports web site using Internet Explorer, the user cannot see the items that were created using MMC.
- Sometimes Web Reports cannot be opened in Internet Explorer and the following error is displayed: "Unable to create copy template files to [My Reports] folders."
- Subscription emails cannot be sent correctly.
- On the Subscriptions page, the checkbox "Show Subscriptions for all users" is not shown in Internet Explorer but can be viewed in MMC.

Workaround

- 1 Disable UAC by changing the registry key "EnableLUA" to value "0"
- Restart the operating system.
 Web Reports will work without error.

On Windows Server 2016, when you are creating a custom report in Web Reports, the Preview option does not work correctly for data for a large number groups.

651425

Workaround

- Do not preview the custom report in the wizard. Click **Finish**. Then click **Preview** on the toolbar.
 - -OR-
- Select Organization, Server Name or Date field to group the data in the report instead of the counter name or counter value.

Web Reports fail to open from the Management Console (MMC snap-in) if Web Reports is using another web site rather than the default web site with 80 port.

386971

Solution

 Click the Web Reports menu in MMC. Click the Select Web Reports Server option and enter the correct server name: http://<WebReportServerName>[:portnumber]

The Web Reports can now be launched successfully.

When UAC is enabled, Web Report pops up an error to say that it has no enough permission to read Web Report related folders, such as, C:\Inetpub\wwwroot\UCDiagnostics\Reports.

385509

Solution

- 1 Disable UAC by changing the registry key "EnableLUA" to value "0"
- 2 Restart the operating system.

The Web Report will work without error.

System requirements

Before installing UC Diagnostics 8.5.1, ensure that your system meets the following minimum hardware and software requirements.

Hardware requirements

Table 5. Hardware requirements

Requirement	Details
Processor	Processor x86 or x64, running at a minimum speed of 2 GHz
Memory	8 GB
Hard disk space	300 MB on system drive for application.
	Historical reporting database requires additional space.
	For more information, see the <i>Unified Communications Diagnostics Deployment Guide</i> .

Software requirements

Local Windows Administrator privileges are required on the computer where the product is installed. For more detailed permissions for operating UC Diagnostics, see the *Unified Communications Diagnostics Deployment Guide*.

Table 6. Management console requirements

Component	Requirement
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 6. Management console requirements

Component	Requirement
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	The following software is required for diagnostic services (health tests) to run on any environment:
	 Microsoft .NET Framework 4.5.1 or later
	 Microsoft Data Access Components (MDAC) 2.8
	NOTE: MDAC 2.8 comes with your operating system. If MDAC is uninstalled, UC Diagnostics will not run.
Diagnostic Services (Health Tests) for Exchange 2007	 Exchange Management Console (EMC) 2007 SP 1 and Update Rollup 1 or later
	If your organization is mixed and contains Exchange 2007 servers, you must install EMC 2007 SP 2 or later.
	The Exchange Management Tools version installed on your UC Diagnostics computer must match the Exchange version installed on your Exchange server. For example, if you have Exchange 2007 SP 2 installed on your Exchange server, Exchange Management Console 2007 SP 2 must be installed on your UC Diagnostics computer.
	 Exchange Server MAPI Client and Collaborative Data Objects (MAPI & CDO) 1.2.1 (Build 8.3.0.8353.000 or later)
	Microsoft Outlook should not be installed on the same computer on which MAPI & CDO is installed.
Diagnostic Services (Health Tests) for	Microsoft PowerShell 2.0 or later
Exchange 2010	 MAPI Client and Collaborative Data Objects (MAPI & CDO) 1.2.1 (version 8.3.0.8353.000.or later).
Diagnostic Services (Health Tests) for	Microsoft PowerShell 2.0 or later
Exchange 2013	 MAPI Client and Collaborative Data Objects (MAPI & CDO) 1.2.1 (version 8.3.0.8353.000. or later)
Diagnostic Services (Health Tests) for Exchange 2016	Microsoft PowerShell 2.0 or later
Diagnostic Services (Health Tests) for BlackBerry	 MAPI Client and Collaborative Data Objects (MAPI & CDO) 1.2.1 (version8.3.0.8353.000 or later)
Diagnostic Services (Health Tests) for Lync	Microsoft PowerShell 2.0 or later

Table 6. Management console requirements

Component	Requirement
Diagnostic Services (Health Tests) for Skype for Business	Microsoft PowerShell 2.0 or later
Diagnostic Services (Health Tests) for Office 365 (Exchange Online and Skype for Business Online)	Windows PowerShell 5.0 or later
	Microsoft Online Service Sign-in Assistant
	Windows Azure Active Directory for Windows PowerShell
	Microsoft Exchange Online PowerShell Module

You can download Microsoft MAPI & CDO from the Microsoft web site here: https://www.microsoft.com/en-us/download/details.aspx?id=42040.

To install the Microsoft Exchange Online PowerShell module, you can use the following procedure:

To install the Exchange Online PowerShell module

Perform the following steps in a browser that supports ClickOnce such as Microsoft Internet Explorer or Edge.

- 1 Open the Exchange admin center (EAC) for your Exchange Online organization.
- 2 In the EAC, go to **Hybrid | Setup** and click the appropriate **Configure** button to download the Exchange Online PowerShell module for multi-factor authentication.
- 3 In the Application Install window, click Install.

Table 7. Diagnostic console requirements

Component	Requirement
Diagnostic Console for all Environments	Microsoft .NET Framework 4.5.1 or later
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

Requirement

Details

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.

For detailed requirements and a list of rights and permissions necessary for product operation, refer to the *Unified Communications Diagnostics Deployment Guide*.

Product licensing

Quest uses the Quest license type (.dlv) and will be emailing your new license file to you.

Existing customers

If you are an existing customer, you might have an .asc license file installed. When you upgrade UC Diagnostics, the legacy .asc license will continue to work.

When you receive the new license, use the following procedure to activate it.

To activate a purchased commercial license

- 1 On home page of the Unified Communications Diagnostics management console, select the Plug-In Information tab.
- 2 Select one plug-in on the list, right-click and select **Update License**.
- 3 Select the purchased commercial license (xxxxxxx.dlv) to activate.

-OR -

- 1 On UC Diagnostics diagnostic console, click **Help** and select **About Spotlight** on the menu.
- 2 Select the Installed Products tab and click View/change product license.

-OR -

- 1 Select the Spotlight Modules tab, select a UC Diagnostics plug-in and click View/change license.
- 2 Click the Update license.
- 3 Select the purchased commercial license (xxxxxxx.dlv) to activate.

Repeat these steps on each computer on which you have the UC Diagnostics console installed.

New customers

Typically, when you download UC Diagnostics, a trial license is automatically downloaded as well. In some cases, you might extend the trial with another trial license (.dlv file). When you later obtain a purchased license, you can install the commercial license (.dlv file) over the trial license. You can install or update a license from either the management console or from the diagnostic console.

To activate a trial license

- 1 On the home page of the Unified Communications Diagnostics management console, select the **Plug-In Information** tab.
- 2 Select the UC Diagnostics plug-in on the list, right-click and select **Update License**.
- 3 Select the new trial license (xxxxxxx.dlv) to activate.
 - OR -
- 1 On UC Diagnostics diagnostic console, click **Help** and select **About Spotlight** on the menu.
- 2 Select the Installed Products tab and click View/change product license.
 - OR -
- 1 Select the Spotlight Modules tab, select the UC Diagnostics plug-in and click View/change license.
- 2 Click Update license.
- 3 Select the new trial license (xxxxxxx.dlv) to activate.

Repeat these steps on each computer on which you have the UC Diagnostics console installed.

To activate a purchased commercial license

- 1 On home page of the Unified Communications Diagnostics management console, select the **Plug-In Information** tab.
- 2 Select one plug-in on the list, right-click and select **Update License**.
- 3 Select the purchased commercial license (xxxxxxx.dlv) to activate.
 - -OR -
- 1 On UC Diagnostics diagnostic console, click **Help** and select **About Spotlight** on the menu.
- 2 Select the Installed Products tab and click View/change product license.
 - -OR -
- 1 Select the **Spotlight Modules** tab, select a UC Diagnostics plug-in and click **View/change license**.
- 2 Click the Update license.
- 3 Select the purchased commercial license (xxxxxxx.dlv) to activate.

Repeat these steps on each computer on which you have the UC Diagnostics console installed.

Getting started with UC Diagnostics 8.5.1

The UC Diagnostics release package contains the following products:

UC Diagnostics application

Product Documentation, including:

- · Evaluator's Guide
- Deployment Guide
- User Guide
- · Data Recorder User Guide
- Online Help

Installation Instructions

See the Unified Communications Diagnostics Deployment Guide for installation instructions.

Globalization

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

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

About us

We are more than just a name

We are on a quest to make your information technology work harder for you. That is why we build community-driven software solutions that help you spend less time on IT administration and more time on business innovation. We help you modernize your data center, get you to the cloud quicker and provide the expertise, security and accessibility you need to grow your data-driven business. Combined with Quest's invitation to the global community to be a part of its innovation, and our firm commitment to ensuring customer satisfaction, we continue to deliver solutions that have a real impact on our customers today and leave a legacy we are proud of. We are challenging the status quo by transforming into a new software company. And as your partner, we work tirelessly to make sure your information technology is designed for you and by you. This is our mission, and we are in this together. Welcome to a new Quest. You are invited to Join the Innovation.

Our brand, our vision. Together.

Our logo reflects our story: innovation, community and support. An important part of this story begins with the letter Q. It is a perfect circle, representing our commitment to technological precision and strength. The space in the Q itself symbolizes our need to add the missing piece—you—to the community, to the new Quest.

Contacting Quest

For sales or other inquiries, visit www.quest.com/contact.

Technical support resources

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

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

- Submit and manage a Service Request.
- View Knowledge Base articles.
- Sign up for product notifications.
- · Download software and technical documentation.
- · View how-to-videos.
- Engage in community discussions.
- Chat with support engineers online.
- · View services to assist you with your product.

Third-party contributions

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

Table 9. List of third-party contributions

Component	License or acknowledgement
Blowfish v2	MIT 1.0
Indy Sockets 9.0.1	Mozilla Public License (MPL) 1.1
SNMP SharpNet 0.7.9	Copyright © 2007 Free Software Foundation, Inc. GNU Lesser General Public License v3
ZipMaster 1.78	GNU Lesser General Public License v2.1
Zlib	zlib 1.2.8

© 2020 Quest Software Inc.

ALL RIGHTS RESERVED.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Quest Software Inc.

The information in this document is provided in connection with Quest Software products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Quest Software products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, QUEST SOFTWARE ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL QUEST SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF QUEST SOFTWARE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Quest Software makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Quest Software does not make any commitment to update the information contained in this document.

If you have any questions regarding your potential use of this material, contact:

Quest Software Inc. Attn: LEGAL Dept. 4 Polaris Way Aliso Viejo, CA 92656

Refer to our website (www.quest.com) for regional and international office information.

Patente

Quest Software is proud of our advanced technology. Patents and pending patents may apply to this product. For the most current information about applicable patents for this product, please visit our website at www.quest.com/legal.

Trademarks

Quest and the Quest logo are trademarks and registered trademarks of Quest Software Inc. in the U.S.A. and other countries. For a complete list of Quest Software trademarks, please visit our website at www.quest.com/legal. Microsoft, Active Directory, SQL Server, Windows, Lync, and Skype are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. BlackBerry is the trademark or registered trademark of BlackBerry Limited, the exclusive rights to which are expressly reserved. All other trademarks, servicemarks, registered trademarks, and registered servicemarks are the property of their respective owners.

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.