

---

# Management Guide

## NetIQ® AppManager® ResponseTime for Exchange and Exchange Online

August 2019

## **Legal Notice**

For information about NetIQ legal notices, trademarks, disclaimers, warranties, export and other use restrictions, U.S. Government restricted rights, patent policy, and FIPS compliance, see <https://www.netiq.com/company/legal/>.

**© 2019 NetIQ Corporation. All Rights Reserved.**

---

# Contents

<b>About this Book and the Library</b>	<b>5</b>
<b>About NetIQ Corporation</b>	<b>7</b>
<b>1 Introducing AppManager ResponseTime for Exchange and Exchange Online</b>	<b>9</b>
1.1 Why Measure Response Time? . . . . .	9
1.2 How the AppManager ResponseTime Modules Work . . . . .	9
1.3 How AppManager ResponseTime for Exchange and Exchange Online Works . . . . .	10
1.4 Understanding Microsoft Exchange . . . . .	12
1.5 Understanding Microsoft Exchange Online . . . . .	13
1.6 How AppManager Can Help . . . . .	13
<b>2 Installing AppManager ResponseTime for Exchange and Exchange Online</b>	<b>15</b>
2.1 System Requirements . . . . .	15
2.2 Upgrade Considerations . . . . .	17
2.3 Where to Install ResponseTime for Exchange and Exchange Online . . . . .	18
2.4 Installing the Module . . . . .	18
2.5 Permissions for Running Knowledge Scripts . . . . .	20
2.6 Discovering Exchange-RT Resources . . . . .	21
2.7 Configuring Security Manager to run ExchangeOnline-RT Discovery . . . . .	21
2.8 Discovering ExchangeOnline-RT Resources . . . . .	21
2.9 Upgrading Knowledge Script Jobs . . . . .	22
2.10 Uninstalling AppManager ResponseTime for Exchange and Exchange Online . . . . .	24
<b>3 Exchange-RT Knowledge Scripts</b>	<b>25</b>
3.1 CheckAddressBookEntry . . . . .	26
3.2 OpenFolder . . . . .	32
3.3 OpenFolderAndRead . . . . .	38
3.4 SendAndReceiveMessage . . . . .	44
3.5 SendAndTrackMessage . . . . .	50
3.6 Report_Exchange-RT . . . . .	56
<b>4 ExchangeOnline-RT Knowledge Scripts</b>	<b>59</b>
4.1 OpenFolder . . . . .	60
4.2 SendAndReceiveMessage . . . . .	61
4.3 SendAndTrackMessage . . . . .	63
<b>5 Troubleshooting AppManager ResponseTime for Exchange and Exchange Online</b>	<b>67</b>
5.1 Pre-install Check Failed . . . . .	67
5.2 Must Run as 'Local System' Account . . . . .	67
5.3 Exchange-RT is Not Supported . . . . .	68
5.4 Exchange-RT is Not Installed . . . . .	68
5.5 Class Not Registered . . . . .	68

5.6	The Parameter is Incorrect. ....	68
5.7	Problems Running Knowledge Scripts. ....	69
5.8	Transaction Initialization Failures. ....	73
5.9	Transaction Failures. ....	75

# About this Book and the Library

The NetIQ AppManager product (AppManager) is a comprehensive solution for managing, diagnosing, and analyzing performance, availability, and health for a broad spectrum of operating environments, applications, services, and server hardware.

AppManager provides system administrators with a central, easy-to-use console to view critical server and application resources across the enterprise. With AppManager, administrative staff can monitor computer and application resources, check for potential problems, initiate responsive actions, automate routine tasks, and gather performance data for real-time and historical reporting and analysis.

## Intended Audience

This guide provides information for individuals responsible for installing an AppManager module and monitoring specific applications with AppManager.

## Other Information in the Library

The library provides the following information resources:

### **Installation Guide for AppManager**

Provides complete information about AppManager pre-installation requirements and step-by-step installation procedures for all AppManager components.

### **User Guide for AppManager Control Center**

Provides complete information about managing groups of computers, including running jobs, responding to events, creating reports, and working with Control Center. A separate guide is available for the AppManager Operator Console.

### **Administrator Guide for AppManager**

Provides information about maintaining an AppManager management site, managing security, using scripts to handle AppManager tasks, and leveraging advanced configuration options.

### **Upgrade and Migration Guide for AppManager**

Provides complete information about how to upgrade from a previous version of AppManager.

### **Management guides**

Provide information about installing and monitoring specific applications with AppManager.

### **Help**

Provides context-sensitive information and step-by-step guidance for common tasks, as well as definitions for each field on each window.

The AppManager library is available in Adobe Acrobat (PDF) format from the [AppManager Documentation](#) page of the NetIQ Web site.



# About NetIQ Corporation

We are a global, enterprise software company, with a focus on the three persistent challenges in your environment: Change, complexity and risk—and how we can help you control them.

## Our Viewpoint

### **Adapting to change and managing complexity and risk are nothing new**

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

### **Enabling critical business services, better and faster**

We believe that providing as much control as possible to IT organizations is the only way to enable timelier and cost effective delivery of services. Persistent pressures like change and complexity will only continue to increase as organizations continue to change and the technologies needed to manage them become inherently more complex.

## Our Philosophy

### **Selling intelligent solutions, not just software**

In order to provide reliable control, we first make sure we understand the real-world scenarios in which IT organizations like yours operate — day in and day out. That's the only way we can develop practical, intelligent IT solutions that successfully yield proven, measurable results. And that's so much more rewarding than simply selling software.

### **Driving your success is our passion**

We place your success at the heart of how we do business. From product inception to deployment, we understand that you need IT solutions that work well and integrate seamlessly with your existing investments; you need ongoing support and training post-deployment; and you need someone that is truly easy to work with — for a change. Ultimately, when you succeed, we all succeed.

## Our Solutions

- ◆ Identity & Access Governance
- ◆ Access Management
- ◆ Security Management
- ◆ Systems & Application Management
- ◆ Workload Management
- ◆ Service Management

## Contacting Sales Support

For questions about products, pricing, and capabilities, contact your local partner. If you cannot contact your partner, contact our Sales Support team.

<b>Worldwide:</b>	<a href="http://www.netiq.com/about_netiq/officelocations.asp">www.netiq.com/about_netiq/officelocations.asp</a>
<b>United States and Canada:</b>	1-888-323-6768
<b>Email:</b>	<a href="mailto:info@netiq.com">info@netiq.com</a>
<b>Web Site:</b>	<a href="http://www.netiq.com">www.netiq.com</a>

## Contacting Technical Support

For specific product issues, contact our Technical Support team.

<b>Worldwide:</b>	<a href="http://www.netiq.com/support/contactinfo.asp">www.netiq.com/support/contactinfo.asp</a>
<b>North and South America:</b>	1-713-418-5555
<b>Europe, Middle East, and Africa:</b>	+353 (0) 91-782 677
<b>Email:</b>	<a href="mailto:support@netiq.com">support@netiq.com</a>
<b>Web Site:</b>	<a href="http://www.netiq.com/support">www.netiq.com/support</a>

## Contacting Documentation Support

Our goal is to provide documentation that meets your needs. The documentation for this product is available on the NetIQ Web site in HTML and PDF formats on a page that does not require you to log in. If you have suggestions for documentation improvements, click **comment on this topic** at the bottom of any page in the HTML version of the documentation posted at [www.netiq.com/documentation](http://www.netiq.com/documentation). You can also email [Documentation-Feedback@netiq.com](mailto:Documentation-Feedback@netiq.com). We value your input and look forward to hearing from you.

## Contacting the Online User Community

NetIQ Communities, the NetIQ online community, is a collaborative network connecting you to your peers and NetIQ experts. By providing more immediate information, useful links to helpful resources, and access to NetIQ experts, NetIQ Communities helps ensure you are mastering the knowledge you need to realize the full potential of IT investments upon which you rely. For more information, visit [community.netiq.com](http://community.netiq.com).



# 1 Introducing AppManager ResponseTime for Exchange and Exchange Online

AppManager ResponseTime for Exchange and Exchange Online provides a set of transactions that can be run from client machines to Exchange servers on-premises and Exchange Online. These transactions monitor the availability and response time of typical Exchange operations, such as checking an Exchange Address Book entry; it reports the amount of time this operation took, and any errors that might have occurred. The event details report exactly which part of the transaction experienced the error. You can deploy these simulated transactions at any sites served by an Exchange server and on any client machines that can connect to Exchange Online.

This chapter provides a brief introduction to Exchange and Exchange Online and also an overview of important concepts and terminology.

## 1.1 Why Measure Response Time?

With the AppManager ResponseTime modules, you can measure or test the response time and the availability of key applications and services. You can use this information for managing and reporting on the performance of a particular Windows computer. You can also use this information to identify the most effective configuration settings for a computer and the applications and services running on it.

The results you get from response-time testing with ResponseTime Knowledge Scripts are extremely accurate because AppManager times a transaction that acts just like a real transaction from the monitored computer. You can test your system the way end users use it every day and see the same results and performance that end users see.

## 1.2 How the AppManager ResponseTime Modules Work

The AppManager ResponseTime modules measure the response time and availability of a client/server transaction from the client perspective. Therefore, you typically install ResponseTime modules on client computers and not on application servers.

The following modules make up the ResponseTime family:

Module Name	Knowledge Script Category	What Is Monitored
AppManager ResponseTime for Microsoft Active Directory	AD-RT	Microsoft Active Directory and DNS transactions
AppManager ResponseTime for Exchange and Exchange Online	Exchange-RT and ExchangeOnline-RT	Simulated transactions between mail clients and Exchange Server or Exchange Online
AppManager ResponseTime for Networks	Networks-RT	Simulated transactions for many popular applications to measure network performance

Module Name	Knowledge Script Category	What Is Monitored
AppManager ResponseTime for Oracle Database	Oracle-RT	ODBC and ADO transactions to Oracle Servers
AppManager ResponseTime for Microsoft SQL Server	SQL-RT	ODBC and ADO transactions to Microsoft SQL Server
AppManager ResponseTime for Web	Web-RT	Web, Internet Mail, and News (NNTP) transactions  This module allows you to record a Web-browsing session and “play back” synthetic transactions to measure response time.
AppManager ResponseTime for Windows	Windows-RT	Microsoft Windows transactions  This module allows you to record and “play back” synthetic transactions from any 32-bit Windows or Citrix client.

## 1.3 How AppManager ResponseTime for Exchange and Exchange Online Works

The strategy that the AppManager ResponseTime modules deploy for measuring network and server response time and availability is based on *synthetic network transactions*.

Whenever you run a job using one of the ResponseTime Knowledge Scripts, a software agent performs a transaction involving the real application server you want to test. Transactions performed for response-time testing are “synthetic” only in the sense that no actual user is involved—the transactions are performed purely in order to monitor performance and availability.

The ResponseTime modules all rely on unique technology developed by NetIQ for monitoring system performance at the application layer. So you not only find out how well the system is performing; you also find out how well Exchange Server or Outlook transactions in particular are performing.

### 1.3.1 AppManager ResponseTime for Exchange and Exchange Online Architecture

The module consists of Response Time for Exchange and Exchange Online components.

#### ResponseTime for Exchange components

The ResponseTime for Exchange consists of the following components:

- ♦ A **managed object** component, `QCMA.dll`, installed in `%CommonProgramFiles%\Netiq\ResponseTime`. The managed object handles tasks associated with initializing and spawning the ResponseTime engine process.

---

**NOTE:** This component requires the `netiqmc` agent process to run as Local System, which allows the agent to start the engine processes as different users. See [Section 2.5, “Permissions for Running Knowledge Scripts,”](#) on page 20 for more information.

---

- ♦ A specific **ResponseTime engine process**, `QMAPIRT.exe`, installed in `%CommonProgramFiles%\Netiq\ResponseTime` and it handles the actual transaction for Exchange Servers.

The engine processes will run under the user account you specify for the **Logon and Run As** user parameters in the Knowledge Script. This user account is temporarily added to the local administrators group during the transaction and then removed. (If it exists prior to the transaction, it is not removed.)

Depending on the application transaction to be simulated by the Exchange-RT Knowledge Script job, the ResponseTime engine may need to impersonate a user and/or log on to the application server. This engine requires you to supply account and authentication information when you configure the job. The values you supply for the **Logon and Run As** parameters in a Knowledge Script are used to impersonate a logged-in user and instantiate the application and also used for authenticating the user on the application server. If required, the ResponseTime engine process will be launched as this user.

## ResponseTime for Exchange Online component

The ResponseTime for Exchange Online consists of a managed object, `qExchangeOnlineRT.dll`, installed in `\NetIQ\AppManager\bin` and it handles the actual transactions for Exchange Online.

The managed object runs under the user account you specify in the AppManager Security Manager. For information on configuring the user account in the AppManager Security Manager, see [Section 2.7, “Configuring Security Manager to run ExchangeOnline-RT Discovery,” on page 21](#).

## 1.3.2 Response-Time Test Results

The results you get from response-time testing with one of the Exchange-RT or ExchangeOnline-RT Knowledge Scripts are extremely accurate because the network or server is “seeing,” and AppManager is timing, a transaction that looks just like a real transaction from the monitored server or client. Client-server emulation also lets you test your system the way end-users “test” it every day—and see the same results, and the same performance, that end-users are seeing.

When a response-time transaction runs, the agent measures the time taken to complete the transaction. This value is then returned as the Response Time data point. For most ResponseTime Knowledge Scripts, you have the option to collect two types of data points:

- ♦ **Availability**

The Availability data point is always created if the transaction is initialized and starts, meaning that the ResponseTime engine process is started. If the transaction completes without error, a data point of 1 or 100 (depending on the data stream format) is created. Otherwise, the data point is 0.

If the ResponseTime engine process is not started due to initialization errors, no Availability data point is created, and a Transaction Initialization Error Event is raised.

- ♦ **Response Time**

The Response Time data point is only created if the transaction completes successfully. The value of the data point is the total time required to run the transaction (in seconds).

In addition, you have an option to collect additional **Response Time Breakdown** data streams, individual data points for the different parts of the Knowledge Script transaction that are timed. These are explained in detail in the Help for each Exchange-RT and ExchangeOnline-RT Knowledge Script.

## 1.4 Understanding Microsoft Exchange

Microsoft Exchange allows you to integrate management of your networking and messaging infrastructure by providing real-time access to email and Internet information. Its comprehensive messaging and collaborative computing capabilities allow everyone in your enterprise to keep in contact.

The Exchange messaging system supports mobile- and remote-technology innovations, including the following:

- ♦ **Remote access.** Geographically dispersed corporate sites are commonplace nowadays. Although Exchange fully supports remote user access, accessing Exchange from another network quite often affects the response time of ordinary Exchange operations—particularly if remote offices are connected by low-bandwidth network connections.
- ♦ **Mobile access.** Some users, such as Sales professionals who travel a fair amount, may want to access their email via their mobile devices. Again, such access is supported by the latest versions of Exchange, but it may result in very slow response times.

With Exchange Server 2003, Outlook user accounts can be configured to make secure connections to their Exchange Server over the Internet without the need for a VPN connection. These user accounts can make Remote Procedure Calls (RPC) over HTTP so that users can access their email securely from outside a firewall. This feature is specifically designed for the mobile employee, who may not always be able to establish a connection over a VPN.

---

**NOTE:** RPC over HTTP is not applicable for Outlook 2016 or later.

---

For either of these Exchange deployment situations, AppManager ResponseTime for Exchange and Exchange Online can help. The Knowledge Scripts in the Exchange-RT category can, for example, test the response time needed to read an email message via an RPC over HTTP connection, and even add the SSL security protocol to the test.

To test response time for any environment, you'll need to carefully consider where to install the ResponseTime for Exchange managed objects—the client computers you'll use to test Exchange server response time. Refer to [Section 2.3, "Where to Install ResponseTime for Exchange and Exchange Online,"](#) on page 18 for some advice.

In addition to the support discussed above, Exchange includes many features and services that AppManager can help you monitor. In the case of AppManager ResponseTime for Exchange and Exchange Online, you can monitor users' experience of response times when accessing the following:

- ♦ The **Address Book**, which stores enterprise-wide and external contact information.
- ♦ **Folders**, such as "Inbox," which store appropriate information in logical groups for easy retrieval and can restrict or grant access via "public" and "private" designations.
- ♦ **Email**, which allows online mail communication. **Email tracking** allows notification to a sender when sent email is delivered and read by the recipient.

### 1.4.1 Understanding the Address Book

The Address Book stores contact information, such as a person's name, phone, office location, job title, and more. It allows contacts to be grouped into meaningful groups; for example, it can group all the contacts associated with the Human Resources Department under the name "Human Resources." Contact lists can be divided into useful groups for both corporate and personal use.

## 1.4.2 Understanding Exchange Email

Exchange email allows users to communicate with one another within an enterprise structure, or world-wide. A user can configure Exchange to receive email from different accounts, for example, from the office and from a personal email account. It is also possible to track sent email for notification when that mail is delivered and when the recipient opens that particular email message.

## 1.4.3 Understanding Exchange Folders

Exchange folders group files, email, and other information so that it is available for others' viewing. Folder access can be restricted to certain users or user groups. "Public" folders are designed to help users share information among those with permission to access a particular Exchange server. Usually, they allow everyone on the server to read and write to materials in the folder, but not to delete the folder itself. "Private" folders are user-specific and can't be accessed by other users.

## 1.5 Understanding Microsoft Exchange Online

Exchange Online is the hosted version of Microsoft's messaging platform, Exchange Server. It includes access to emails, calendars, contacts, and tasks for any endpoint device. Because of its hosted nature; services are accessed across the wide area network (WAN) and there are no Exchange Server software packages to deploy and configure. Physical servers are not required for support.

## 1.6 How AppManager Can Help

AppManager ResponseTime for Exchange and Exchange Online provides a comprehensive solution for monitoring Exchange server and Exchange Online response time from a client perspective.

For Exchange servers on-premises, you can use the Knowledge Script to perform the following procedures and find out the response time for each:

- ◆ Check an Address Book entry.
- ◆ Open an Exchange folder.
- ◆ Open an Exchange folder and read the most recent item stored in it.
- ◆ Send an email message from and receive it into a specific user account.
- ◆ Send an email message and return the receipt for that message back to the sender.

For any of these actions, you can mimic the Exchange 2003 feature that enables users to access Exchange accounts securely from outside the enterprise firewall (that is, RPC over HTTP).

---

**NOTE:** RPC over HTTP is not applicable for Outlook 2016 or later.

---

For Exchange Online, you can use the Knowledge Script to perform the following procedures:

- ◆ Opens an Exchange folder of the user that is configured in the Security Manager and reports the amount of time the operation took.

- ◆ Send an email from the user account that is specified in the AppManager Security Manager and receive it back to the sender and report the time required for the operation.
- ◆ Send an email from the user account that is specified in the AppManager Security Manager and return the receipt for that message back to the sender and report the amount of time required for the operation.

Because you can install AppManager ResponseTime for Exchange and Exchange Online on as many as 10 different clients across the network (or more, if you purchase extra licenses), you can monitor the availability and performance of your on-premises Exchange Server infrastructure and Exchange Online services from the perspective of network users. AppManager ResponseTime for Exchange and Exchange Online is therefore an excellent tool for monitoring service-level agreements.

In addition, it's a great tool for network troubleshooting. For Exchange servers, the module pinpoints the performance at specific offices and regions, alerting you as soon as Exchange performance starts to dip—before end users are affected. For Exchange Online, the module pinpoints the connectivity from specific geographic locations, alerting you as soon as as Exchange performance starts to dip—before end users are affected.

The architecture of the AppManager ResponseTime modules differs slightly from that of other modules, such as Microsoft IIS or Oracle, which run on servers. AppManager ResponseTime for Exchange and Exchange Online is designed to run synthetic transactions between *client* computers—where you've installed the AppManager agent and the ResponseTime for Exchange and Exchange Online managed objects—and your Exchange servers or Exchange Online services. You therefore need to think about network topology when you select the computers that will serve as clients for these synthetic transactions. For more information, see [Section 2.3, "Where to Install ResponseTime for Exchange and Exchange Online,"](#) on page 18.

# 2 Installing AppManager ResponseTime for Exchange and Exchange Online

This chapter provides installation instructions and describes system requirements for AppManager ResponseTime for Exchange and Exchange Online.

This chapter assumes you have AppManager installed. For more information about installing AppManager or about AppManager system requirements, see the *Installation Guide for AppManager*, which is available on the [AppManager Documentation](#) page.

## 2.1 System Requirements

For the latest information about supported software versions and the availability of module updates, visit the [AppManager Supported Products](#) page. Unless noted otherwise, this module supports all updates, hotfixes, and service packs for the releases listed below.

**AppManager ResponseTime for Exchange** has the following system requirements:

Software/Hardware	Version
NetIQ AppManager installed on the AppManager repository (QDB) computers, on all console computers, and on the client computers where a version of Microsoft Outlook is installed (from which response time monitoring will take place)	8.0.3, 8.2, 9.1, 9.2, 9.5, or later One of the following AppManager agents are required: <ul style="list-style-type: none"><li>♦ AppManager agent 7.0.4 with hotfix 72616 or later</li><li>♦ AppManager agent 8.0.3, 8.2, 9.1, or later</li></ul>
Microsoft Exchange Server	One of the following versions: <ul style="list-style-type: none"><li>♦ Exchange Server 2019</li><li>♦ Exchange Server 2016</li><li>♦ Exchange Server 2013</li><li>♦ Exchange Server 2010</li></ul> <p><b>NOTE:</b> Use Outlook 2007 or later with Exchange 2013 and Exchange 2010.</p> <ul style="list-style-type: none"><li>♦ Exchange Server 2007</li><li>♦ Exchange Server 2003</li></ul>

Software/Hardware	Version
Microsoft Outlook on the <i>client</i> computer (the computer where you will install the AppManager agent and the ResponseTime for Exchange module)	<p>One of the following versions:</p> <ul style="list-style-type: none"> <li>◆ Outlook 2019 (32-bit or 64-bit)</li> <li>◆ Outlook 2016 (32-bit or 64-bit)</li> <li>◆ Outlook 2013 (32-bit or 64-bit)</li> <li>◆ Outlook 2010 (32-bit or 64-bit)</li> <li>◆ Outlook 2007</li> </ul> <p><b>NOTE:</b> If you are using Outlook 2007 with Service Pack 2, install the Update for Microsoft Office Outlook 2007 (<a href="#">KB972363</a>) on the computer where Outlook 2007 resides.</p> <ul style="list-style-type: none"> <li>◆ Outlook 2003</li> </ul>
Microsoft Windows operating systems on the client computer	<p>One of the following versions:</p> <ul style="list-style-type: none"> <li>◆ Windows Server 2019</li> <li>◆ Windows Server 2016</li> <li>◆ Windows Server 2012 R2</li> <li>◆ Windows Server 2012</li> <li>◆ Windows 10 (64-bit)</li> <li>◆ Windows 8.1 (32-bit or 64-bit)</li> <li>◆ Windows 8 (32-bit or 64-bit)</li> <li>◆ Windows 7 (32-bit or 64-bit)</li> <li>◆ Windows Server 2008 R2</li> <li>◆ Windows Server 2008 (32-bit or 64-bit)</li> <li>◆ Windows Server 2003 R2 (32-bit or 64-bit)</li> <li>◆ Windows XP (32-bit or 64-bit)</li> </ul>
Microsoft SQL Server Native Client 11.0 <b>(for TLS 1.2 support)</b>	<p>11.3.6538.0 or later</p> <p><b>NOTE:</b> The SQL Server Native client can be installed from this <a href="#">Microsoft download link</a>.</p>

**AppManager ResponseTime for Exchange Online** has the following System Requirements:



Software/Hardware	Version
NetIQ AppManager installed on the AppManager repository (QDB) computers, on all console computers, and on the client computers (from which response time monitoring will take place)	8.0.3, 8.2, 9.1, 9.2, 9.5, or later One of the following AppManager agents are required: <ul style="list-style-type: none"> <li>◆ AppManager agent 7.0.4 with hotfix 72616 or later</li> <li>◆ AppManager agent 8.0.3, 8.2, 9.1, or later</li> </ul>
Microsoft Windows operating systems on the client computer	One of the following versions: <ul style="list-style-type: none"> <li>◆ Windows Server 2019</li> <li>◆ Windows Server 2016</li> <li>◆ Windows Server 2012 R2</li> <li>◆ Windows Server 2012</li> </ul>
Microsoft .NET Framework on the client computer	4.5 or later
Microsoft SQL Server Native Client 11.0 <b>(for TLS 1.2 support)</b>	11.3.6538.0 or later <b>NOTE:</b> The SQL Server Native client can be installed from this <a href="#">Microsoft download link</a> .

**NOTE:** If you want TLS 1.2 support and are running AppManager 9.1 or 9.2, then you are required to perform some additional steps. To know about the steps, see the [article](#).

## 2.2 Upgrade Considerations

Starting with AppManager ResponseTime for Exchange and Exchange Online version 7.0, back-level Exchange-RT Knowledge Scripts are no longer supported. Back-level Knowledge Scripts are defined as Knowledge Scripts from versions earlier than version 6.4, which became available in May 2006. If you have back-level Knowledge Scripts running in your AppManager management site, upgrade them to the present version.

In addition, if you have multiple AppManager ResponseTime modules installed on a computer and you upgrade one of them, you will no longer be able to run Knowledge Scripts earlier than version 6.4 for any of them because the AppManager ResponseTime modules share certain files. Therefore, when you upgrade one module, you must upgrade all of them on a given computer.

Be sure to stop all running Exchange-RT jobs before you upgrade the AppManager agent.

Starting with the version 7.3, this module consists of the ResponseTime components for Exchange servers on-premises and Exchange Online. When you upgrade to the version 7.3, the existing Exchange server components will be upgraded and Exchange Online component will be installed on your client machine.

Because AppManager ResponseTime for Exchange and Exchange Online runs out-of-process from the agent (specifically, from the `netiqmc` service), you must ensure that all ResponseTime processes associated with running jobs are also stopped. If not, those processes may not get installed or registered as part of the upgrade installation. The installer doesn't have the privileges necessary to stop these processes.

Upgrade your client computers before upgrading your repository. AppManager ResponseTime for Exchange and Exchange Online will run back-level versions of the Exchange-RT Knowledge Scripts, but the reverse is not true: the new Exchange-RT Knowledge Scripts are *not* supported on back-level versions of the module.

Installation on the repository saves a copy of your existing Knowledge Scripts in the `AppManager\Backup` directory. If you want to keep them, copy them to another location because subsequent installations will delete all files in the `AppManager\Backup` directory.

After you install the new Knowledge Scripts on the repository and clients, re-run the `Discovery_Exchange-RT` Knowledge Script and `Discovery_ExchangeOnline-RT` Knowledge Script.

## 2.3 Where to Install ResponseTime for Exchange and Exchange Online

To ensure the availability and performance of an Exchange server or Exchange Online service from the perspective of an end user, install ResponseTime for Exchange and Exchange Online managed objects at carefully selected network locations.

For Exchange servers on-premise, AppManager ResponseTime for Exchange and Exchange Online tests Exchange response time by sending test signals to Exchange servers. Therefore, installing the managed object on an Exchange Server does not result in accurate or useful test results.

If AppManager agents are distributed geographically and topologically on the network, the ResponseTime for Exchange and Exchange Online managed objects installed on these agents can help you determine whether problems are related to the geographical location of the user, or whether the problem is related to the user's network connection. A WAN link is quite often the source of slower response times and should be included in your planning before you decide where to install the managed objects.

Installing managed objects on computers using connections of different types and speeds, such as DSL or various types of modems, will determine how accessible the Exchange server or Exchange Online service is from a range of client connections. For example, you may want to verify a rapid Exchange folder access time for the slowest connection speed that you expect network users to have. Or you can compile a statistically averaged view of Exchange server response time from multiple, distributed agents.

When ResponseTime for Exchange and Exchange Online managed objects are deployed behind a firewall, they send data and events back to the AppManager management server, which forwards the data to the AppManager repository. The management server can be located behind the firewall, or outside the firewall.

## 2.4 Installing the Module

Run the module installer on the computers you want to monitor (agents) to install the agent components, and run the module installer on all console computers to install the Help and console extensions.

Access the `AM70-Exchange-RT-7.x.x.0.msi` module installer from the `AM70_Exchange-RT_7.x.x.0` self-extracting installation package on the [AppManager Module Upgrades & Trials](#) page.

For Windows environments where User Account Control (UAC) is enabled, install the module using an account with administrative privileges. Use one of the following methods:

- ◆ Log in to the server using the account named Administrator. Then, run the module installer `Exchange-RT.msi` file from a command prompt or by double-clicking it.
- ◆ Log in to the server as a user with administrative privileges and run the module installer `Exchange-RT.msi` file as an administrator from a command prompt. To open a command-prompt window at the administrative level, right-click a command-prompt icon or a Windows menu item and select **Run as administrator**.

You can install the Knowledge Scripts and the Analysis Center reports into local or remote AppManager repositories (QDBs). The module installer installs Knowledge Scripts for each module directly into the QDB instead of installing the scripts in the `\AppManager\qdb\kp` folder as in previous releases of AppManager.

#### To install the module on AppManager:

- 1 Double-click the module installer `.msi` file.
  - 2 Accept the license agreement.
  - 3 Review the results of the pre-installation check. You can expect one of the following three scenarios:
    - ◆ **No AppManager agent is present:** In this scenario, the pre-installation check fails, and the installer does not install agent components.
    - ◆ **An AppManager agent is present, but some other prerequisite fails:** In this scenario, the default is to not install agent components because of one or more missing prerequisites. However, you can override the default by selecting **Install agent component locally**. A missing application server for this particular module often causes this scenario. For example, installing the AppManager for Microsoft SharePoint module requires the presence of a Microsoft SharePoint server on the selected computer.
- 
- IMPORTANT:** If you want to monitor only Exchange Online domains, you can install the module on an agent machine that need not have Outlook installed on it. However the pre-installation check will fail if Outlook is not installed. You can ignore the failure event and proceed with the installation by selecting **Install agent component locally**.
- 
- ◆ **All prerequisites are met:** In this scenario, the installer installs the agent components.
  - 4 To install the Knowledge Scripts into the QDB:
    - 4a Select **Install Knowledge Scripts** to install the repository components, including the Knowledge Scripts, object types, and SQL stored procedures.
    - 4b Specify the SQL Server name of the server hosting the QDB, as well as the case-sensitive QDB name.

**Note** Microsoft .NET Framework 3.5 is required on the computer where you run the installation program for the QDB portion of the module. For computers running more recent versions of Windows operating systems that use a newer version of .NET, install .NET 3.5 with the Add Roles and Features wizard in Windows Server Manager, as described in this [Microsoft article](#).
  - 5 (Conditional) If you use Control Center 7.x, run the module installer for each QDB attached to Control Center.
  - 6 Run the module installer on all console computers to install the Help and console extensions.

- 7 Install the module on the Exchange computer you want to monitor. Use one of the following methods:
  - ♦ Run the module installer `Exchange-RT.msi` file.
  - ♦ Use Control Center to deploy the installation package. Ensure you check in and then configure the installation package, which is the `.XML` file included with the module setup program. For more information about the `.XML` file, see the *AppManager ResponseTime for Exchange and Exchange Online Release Notes*. For more information about deploying modules on agent computers, see the *Control Center User Guide for AppManager*.
- 8 If you have not already discovered Exchange resources or Exchange Online resources, run the `Discovery_Exchange-RT` or `Discovery_ExchangeOnline-RT` Knowledge Script on all agent computers where you installed the module. For more information, see [Section 2.6, “Discovering Exchange-RT Resources,” on page 21](#) and [Section 2.8, “Discovering ExchangeOnline-RT Resources,” on page 21](#).

After the installation has completed, the `Exchange-RT_Install.log` file, located in the `\NetIQ\Temp\NetIQ_Debug\ServerName` folder, lists any problems that occurred.

## 2.5 Permissions for Running Knowledge Scripts

For the Exchange-RT Knowledge Scripts, the AppManager Windows agent—specifically, the `netiqmc` process—must run as Local System. This requirement stems from the fact that AppManager ResponseTime applications run out-of-process from the AppManager agent. The separate process for the managed object is run as the **Logon and Run As** user account specified in each Knowledge Script. The agent must have the authority to start a new process as any user ID specified in a Knowledge Script parameter. Therefore, the agent must run with Local System authority.

When you install AppManager ResponseTime for Exchange and Exchange Online on computers with existing AppManager agents, you'll need to update any agents that aren't running as Local System. Even though the requirement to run with this authority only applies to the `netiqmc` service, it's a good idea to update both agent services (`netiqmc` and `netiqccm`) so that they're running with the same authority. If you don't update these services to run as Local System, the `Discovery_Exchange-RT` Knowledge Script will fail.

---

**NOTE:** The agent is installed to run under the Local System account by default.

---

**IMPORTANT:** If you want to run only the ExchangeOnline-RT Knowledge Scripts, these permissions are not required. The `netiqmc` process can run as any user.

---

### To update the agent services:

- 1 On each computer on which you install the ResponseTime for Exchange module, click **Start > Settings > Control Panel**.
- 2 Click **Administrative Tools > Services**.
- 3 Find the **NetIQ AppManager Client Communication Manager** (`netiqccm`) service in the list of services. Right-click, and select **Properties**.
- 4 In the Properties dialog box, click the **Logon** tab. Click to select Log on as...**Local System account**.
- 5 Take the same steps for the **NetIQ AppManager Client Resource Monitor** (`netiqmc`) service.
- 6 Restart both services.

## 2.6 Discovering Exchange-RT Resources

Use the `Discovery_Exchange-RT Knowledge Script` to discover whether the `ResponseTime` for Exchange managed object is available on a specific managed client.

By default, this script runs only once for each computer.

Set the **Values** tab parameters as needed:

Description	How to Set It
Raise event if discovery succeeds?	This Knowledge Script always raises an event when the job fails for any reason. In addition, you can select the <b>Yes</b> to raise an event when the job succeeds. By default, events are not raised on success.
Event severity when discovery...	Set the event severity level, from 1 to 40, to reflect the importance when the job: <ul style="list-style-type: none"><li>◆ <b>... succeeds</b>. If you set this Knowledge Script to raise an event when the job succeeds, set the event severity level for a successful discovery. Default is 25.</li><li>◆ <b>... fails</b>. Default is 5.</li><li>◆ <b>... partially succeeds</b>. This type of failure usually occurs when the target computer does not have all the prerequisites installed. Default is 10.</li></ul>

## 2.7 Configuring Security Manager to run ExchangeOnline-RT Discovery

Before you can run the `Discovery_ExchangeOnline-RT Knowledge Script` to discover the ExchangeOnline-RT resources, you need to configure the Security Manager:

- 1 Open **Security Manager**.
- 2 Select the agent machine on which you want to run the Knowledge Script.
- 3 On the Custom tab, click **Add**.
- 4 In the **Label** field, type `ExchangeOnline-RT`.
- 5 In the **Sub-Label** field, specify the Exchange Online domain name that you want to add. For example, `abc.onmicrosoft.com`.
- 6 In the **Value 1** field, specify a username.
- 7 In the **Value 2** field, specify a password.
- 8 Leave the **Value 3** field blank.
- 9 Select the **Extended application support** option to encrypt the password when it is stored in the repository.
- 10 Click **OK** and then click **Apply** to save the settings.

## 2.8 Discovering ExchangeOnline-RT Resources

Use the `Discovery_ExchangeOnline-RT Knowledge Script` to discover the endpoint URLs of the Exchange Online domains (tenants).

By default, this script runs only once.

Set the **Values** tab parameters as needed:

Description	How to Set It
Comma separated list of Exchange Online domains to be discovered	Specify the list of Exchange Online domain names that you want to discover. Separate the domain names with a comma. The domain details should be configured in the Security Manager. For more information, see <a href="#">Configuring Security Manager to run ExchangeOnline-RT Discovery</a> .
Raise event if discovery succeeds?	This Knowledge Script always raises an event when the job fails for any reason. In addition, you can select the <b>Yes</b> to raise an event when the job succeeds. By default, events are not raised on success.
Event severity when discovery succeeds	Set the event severity level, from 1 to 40, to indicate the importance of an event in which discovery succeeds. The default is 25.
Event severity when discovery fails	Set the event severity level, from 1 to 40, to indicate the importance of an event in which discovery fails. The default is 5.
Event detail format	Select the format in which you want to display the event detail. You can select from HTML Table or Plain Text. The default is HTML Table.

## 2.9 Upgrading Knowledge Script Jobs

If you are using AppManager 8.x or later, the module upgrade process now *retains* any changes you might have made to the parameter settings for the Knowledge Scripts in the previous version of this module. Before AppManager 8.x, the module upgrade process *overwrote* any settings you might have made, changing the settings back to the module defaults.

As a result, if this module includes any changes to the default values for any Knowledge Script parameter, the module upgrade process ignores those changes and retains all parameter values that you updated. Unless you review the management guide or the online Help for that Knowledge Script, you will not know about any changes to default parameter values that came with this release.

This release of AppManager ResponseTime for Exchange and Exchange Online may contain updated Knowledge Scripts. You can push the changes for updated scripts to running Knowledge Script jobs in one of the following ways:

- ◆ Use the AMAdmin\_UpgradeJobs Knowledge Script.
- ◆ Use the Properties Propagation feature.

### 2.9.1 Running AMAdmin\_UpgradeJobs

The AMAdmin\_UpgradeJobs Knowledge Script can push changes to running Knowledge Script jobs. Your AppManager repository (QDB) must be at version 7.0 or later. Upgrading jobs to use the most recent script version allows the jobs to take advantage of the latest script logic while maintaining existing parameter values for the job.

For more information, see the **Help** for the AMAdmin\_UpgradeJobs Knowledge Script.

## 2.9.2 Propagating Knowledge Script Changes

You can propagate script changes to jobs that are running and to Knowledge Script Groups, including recommended Knowledge Script Groups and renamed Knowledge Scripts.

Before propagating script changes, verify that the script parameters are set to your specifications. You might need to appropriately set new parameters for your environment or application.

If you are not using AppManager 8.x or later, customized script parameters might have reverted to default parameters during the installation of the module.

You can choose to propagate only properties (specified in the **Schedule** and **Values** tabs), only the script (which is the logic of the Knowledge Script), or both. Unless you know specifically that changes affect only the script logic, you should propagate the properties and the script.

For more information about propagating Knowledge Script changes, see the “Running Monitoring Jobs” chapter of the *Control Center User Guide for AppManager*.

## 2.9.3 Propagating Changes to Ad Hoc Jobs or Knowledge Script Groups

You can propagate the properties and the logic (script) of a Knowledge Script to ad hoc jobs started by that Knowledge Script. Corresponding jobs are stopped and restarted with the Knowledge Script changes.

You can also propagate the properties and logic of a Knowledge Script to corresponding Knowledge Script Group members. After you propagate script changes to Knowledge Script Group members, you can propagate the updated Knowledge Script Group members to associated running jobs. Any monitoring jobs started by a Knowledge Script Group member are restarted with the job properties of the Knowledge Script Group member.

### To propagate changes to ad hoc Knowledge Script jobs or Knowledge Script Groups:

- 1 In the Knowledge Script view, select the Knowledge Script or Knowledge Script Group for which you want to propagate changes.
- 2 Right-click the script or group and select **Properties propagation > Ad Hoc Jobs**.
- 3 Select the components of the Knowledge Script that you want to propagate to associated ad hoc jobs or groups and click **OK**:

Select	To propagate
Script	The logic of the Knowledge Script.
Properties	Values from the Knowledge Script Schedule and Values tabs, such as schedule, monitoring values, actions, and advanced options. If you are using AppManager 8.x or later, the module upgrade process now <i>retains</i> any changes you might have made to the parameter settings for the Knowledge Scripts in the previous version of this module.

## 2.10 Uninstalling AppManager ResponseTime for Exchange and Exchange Online

An uninstallation executable file, `Uninstall_Exchange-RT.exe`, is installed in the `AppManager\bin` directory when you install this module. Run this program to uninstall AppManager ResponseTime for Exchange and Exchange Online.



# 3 Exchange-RT Knowledge Scripts

AppManager ResponseTime for Exchange and Exchange Online provides a set of Knowledge Scripts for monitoring the response time of Microsoft Exchange servers on-premises and Exchange Online. This chapter explains the Knowledge Scripts for Exchange-RT.

From within the Exchange-RT view on the Operator Console, you can select a Knowledge Script or report on the EXCHANGE-RT tab of the Knowledge Script pane.

If you choose to collect data, each Knowledge Script generates the following data streams:

- ◆ **Availability**

The Availability data point is always one of the following values:

- ◆ 1 or 100 -- the test was successful
- ◆ 0 -- the test was not successful

The Availability data point indicates whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

- ◆ **Response time**

You have two options for collecting response-time data:

- ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
- ◆ **Response-time Breakdown.** If enabled as separate parameters, you can collect the response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed.

## Interactive User

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as “Interactive User” due to the security requirements of SSL. Running as Interactive User requires a user to be physically logged into the computer for the test to run. To run using SSL, type *Interactive User* for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

## Security

Most other AppManager ResponseTime Knowledge Scripts require you to enter **Logon** username and password information required to run the application as well as **Logon and Run As** information, the credentials needed to impersonate a network domain user. The Exchange-RT Knowledge Scripts require a single username/password combination, so that the network credentials are used to log onto the Exchange Server. These Knowledge Scripts use Windows authentication to authenticate the user being impersonated.

Use these Knowledge Scripts as templates for tailoring your own Knowledge Scripts:

Knowledge Script	What It Does
<a href="#">CheckAddressBookEntry</a>	Checks an Exchange address book entry and reports the amount of time the operation took.
<a href="#">OpenFolder</a>	Opens an Exchange folder and reports the amount of time the operation took.
<a href="#">OpenFolderAndRead</a>	Opens an Exchange folder and reads the last (most recent) item it contains.
<a href="#">SendAndReceiveMessage</a>	Sends email from and receives it back to a specific email user account.
<a href="#">SendAndTrackMessage</a>	Reports the amount of time taken to deliver an email message and return a receipt for it to the sender.
<a href="#">Report_Exchange-RT</a>	Reports on availability and response time for selected Exchange Servers.

## 3.1 CheckAddressBookEntry

Use this Knowledge Script to check an Exchange address book entry and report the amount of time the operation took. If the transaction completes successfully, you'll see a positive result for availability, even if the address book entry is not found.

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "[Interactive User](#)." To run using SSL, type `Interactive User` for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

---

**NOTE:** Unlike other AppManager ResponseTime Knowledge Scripts, which require you to enter username and password information required to log into the network domain, the Exchange-RT Knowledge Scripts all use Windows NT authentication (or "integrated security").

---

### 3.1.1 Helpful Hints

For the **Address book entry** parameter, even if the server cannot find the particular name you've entered, it still scans the address book and returns a valid response time.

If you are using a mailbox that does not have a unique name, you can do either of the following:

- ♦ Use its fully qualified name for the *Mailbox name* parameter.

For example, say you have the following mailboxes defined on your Exchange Server: 'test', 'test 1', 'test 2', 'system test'. If you specify the mail account "test" when creating a connection in the Microsoft Exchange Server settings dialog box on your Exchange test client, you are prompted for the mailbox to use. The fully qualified name for 'test' would be in the format: `/o=Your Corporation/ou=Your City/cn=Recipients/cn=test`. Supply this value for the *Mailbox name* parameter (see below)

To determine the fully qualified mailbox name, click **Check Name** when configuring Exchange Server settings on the test client. A dialog box allows you to specify the account to use. Highlight the desired account and click **Properties**. The value in the **Email address** field is the string to use in the Exchange Service Connection **mailbox** field.

- ◆ Enable the *Resolve and use Exchange distinguished name* parameter.

If the value specified for the *Mailbox name* is ambiguous (say, for example, because the names of multiple mailboxes are very similar), the Exchange Server may not be able to determine which mailbox to use in the response-time test. When you enable the *Resolve and use Exchange distinguished name* parameter, the ResponseTime for Exchange managed object resolves the name in Active Directory to the first match found and uses that value for the transaction.

## 3.1.2 Collecting Data

If you choose to collect data, this Knowledge Script generates the following data streams:

- ◆ **Response time**

- ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
- ◆ **Response-time Breakdown.** If enabled as separate parameters, up to 6 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See [Section 3.1.5, “Setting Parameter Values,” on page 28](#) below for more information.

- ◆ **Availability**--Returns one of the following values:

- ◆ 1 or 100 -- the transaction was successful
- ◆ 0 -- the transaction was not successful

The Availability data point is an indication of whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

An event is raised whenever one of the following occurs:

- ◆ A threshold that you have specified as an event parameter is exceeded.
- ◆ The Exchange-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- ◆ The transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

You can select where some of the possible events are displayed in the Operator Console TreeView or Control Center Console Server view. This event proxying feature is useful in Control Center Service Map views. It is not supported for jobs that are started in the Operator Web Console. See the description of the **Event on** parameter, below.

## 3.1.3 Resource Objects

Exchange response time clients (Exchange-RT)

## 3.1.4 Default Schedule

The default interval for this script is **Every 15 minutes**.

## 3.1.5 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream.  Previous versions of this module used a 0 ("not available") or 1 ("available") format to indicate availability (that is, test success or failure). You now have the option to use a 0 ("not available") or 100 ("available") format.  The default value is 0-100.
Raise event if transaction fails?	Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.
<b>Response Time</b>	
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to resolve distinguished name?	Select <b>Yes</b> to add extra time to resolve the distinguished name of the account. In some cases, resolving distinguished names could affect performance. If you want to collect this data, enable this parameter and the <i>Collect data for resolving distinguished name?</i> parameter. This parameter is disabled by default.
Include time to create profile in response time?	Select <b>Yes</b> to include the time taken to create the Exchange profile in the response-time calculation. The default is No.  If you want to collect this data, select Yes for this parameter and the <i>Collect data for creating Exchange profile?</i> parameter.
Threshold -- Maximum response time (seconds)	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.
<b>Response Time Breakdown</b>	
Collect data for resolving distinguished name?	Select <b>Yes</b> to collect the results of resolving the distinguished name. By default, this information is not collected.
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange server. By default, separate response-time data streams are not collected.

Description	How to Set It
Collect data for creating Exchange profile?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the Exchange profile. The default is No.</p> <p>To create this data stream, do not enter a value for the <i>Name of the existing Exchange profile to use</i> parameter, and select Yes for this parameter and the <i>Create an Exchange profile during each iteration?</i> parameter.</p>
Collect data for logon?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to log on to the Exchange server. By default, separate response-time data streams are not collected.</p>
Collect data for opening Exchange database?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Exchange database. By default, separate response-time data streams are not collected.</p>
Collect data for opening address book?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Outlook address book. By default, separate response-time data streams are not collected.</p>
Collect data for resolving entry?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to resolve the Outlook address book entry. By default, separate response-time data streams are not collected.</p>
Address book entry	<p>Enter the address-book entry to check in the response-time test--the name of a person in the Exchange address book. Use the following syntax (for example):</p> <p>John Doe</p> <p>If you are setting the <i>Event on</i> parameter (see below), the <i>Address book entry</i> parameter lets you select the computer where the event will appear in your console.</p> <p>Enter the name of the server, or click the browse button ([...]) to select from a list of available servers. The computer you select must already be in the TreeView.</p>
Event on	<p>Select the TreeView location where events should be displayed. Select either:</p> <ul style="list-style-type: none"> <li>◆ Agent (the client computer in the response-time tests). This is the default.</li> <li>◆ Server (the Exchange server being tested--see the <i>Exchange server name</i> parameter, below)</li> <li>◆ Both. The event will be shown in two locations in the TreeView.</li> </ul> <p><b>Notes</b> This setting does not apply to events related to the Knowledge Script itself, such as Knowledge Script failure or initialization problems. Such events are always displayed on the computer where the job ran. You must select <i>Agent</i> when starting jobs in the Operator Web Console. If you select <i>Server</i>, no events are generated. If you select <i>Both</i>, an event is only shown on the agent.</p>
<b>Exchange Server Settings</b>	

Description	How to Set It
Create an Exchange profile during each iteration?	<p>Select <b>Yes</b> to create an Exchange profile for each iteration, or select <b>No</b> to create an Exchange profile on just the first iteration. The default is Yes.</p> <p>If you select No, the following parameters will also be disabled: <i>Include time to create profile in response time?</i> and <i>Collect data for creating Exchange profile?</i> Also, if you select No, the Exchange profile created during the first iteration persists even after the job is stopped. You should manually delete the Exchange profile to keep Outlook free of unneeded profiles.</p> <p>To avoid NTLM authentication, select No for this parameter, and then set <i>Profile authentication type</i> to Kerberos.</p>
Name of the existing Exchange profile to use (optional except for Outlook 2003 to Exchange 2010 or later)	<p>Enter the name of the Exchange profile for which you want to measure response time. The default is blank.</p> <p>The user who owns the email account must manually create the profile in Outlook. The profile must be able to connect with Exchange Server, with this security option selected: <i>Encrypt data between Microsoft Office Outlook and Microsoft Exchange server</i>. Also, the server name and mailbox name for the profile should match the <i>Exchange server name</i> and <i>Mailbox name</i> parameters below.</p> <p><b>NOTE:</b> Use this parameter if you need to measure response time between Outlook 2003 clients and Exchange Server 2010 or later servers. This parameter is optional for other configurations of Outlook and Exchange.</p>
Exchange server name	<p>Enter the name of the Exchange server.</p>
Mailbox name (or email address in case of Outlook 2016 or later)	<p>Specify the name of the mailbox, which is usually a username.</p> <p><b>NOTE:</b> In case of Outlook 2016 or later, specify the email address of the user.</p>
Profile authentication type	<p>Select what kind of authentication you want to use with your Exchange profiles. If you want to let the Exchange server and Outlook communicate to finalize the authentication method (NTLM or Kerberos), use the default value of Negotiate Authentication.</p> <p>To avoid NTLM authentication, select Kerberos for this parameter, and then set the <i>Create an Exchange profile during each iteration</i> parameter to No.</p>
Resolve and use Exchange distinguished name?	<p>Select <b>Yes</b> to instruct the ResponseTime for Exchange managed object to resolve the name in Active Directory to the first match found and use that value for the transaction.</p> <p>This option is helpful if the name you supplied for the <i>Mailbox name</i> parameter is ambiguous (if, for example, there are mailboxes with names so similar that the Exchange Server cannot determine which one to use for the test).</p> <p>By default, the DN for the mailbox is not used.</p>
<b>Using RPC over HTTP (not applicable for Outlook 2016 or later)</b>	
Connect to Exchange Server using HTTP?	<p>Select <b>Yes</b> to use the hypertext transfer protocol (HTTP) to make the connection to the server that is acting as the RPC proxy for the Exchange server.</p> <p>If enabled, allows you to test Exchange server response time in a proxy situation by using a remote procedure call (RPC) sent over HTTP.</p> <p>By default, HTTP is not used to connect to the Exchange server.</p>

Description	How to Set It
URL to connect to proxy server for Exchange	<p>Enter the URL of the Exchange Server computer that's configured as an RPC proxy server.</p> <p>The RPC proxy server communicates with clients seeking access to the Exchange server.</p> <p>Use the following format (for example):</p> <p><code>exchproxy01.netiq.com</code></p> <p>Required if RPC over HTTP is used.</p>
<b>SSL Settings</b>	
Connect using SSL only	<p>Select <b>Yes</b> to use the Secure Sockets Layer (SSL) security protocol to secure the HTTP connection to the proxy Exchange Server.</p> <p>If you select to use the SSL option for a test using RPC over the HTTP protocol, you must run the Knowledge Script as "Interactive User" due to the security requirements of SSL. See the <i>Username</i> parameter below for more information.</p> <p>By default, SSL isn't used for the connection.</p>
Mutually authenticate the session when connecting	<p>Select <b>Yes</b> to require the client computer and the Exchange server to perform authentication when the Knowledge Script requests the connection to the Exchange server. By default, authentication is not performed.</p>
Principal name for proxy server	<p>The service principal name of the proxy Exchange server service. This name must be recognized as an entity by the SSL server.</p> <p>The format is <code>msstd:FQDN</code></p> <p>where FQDN is the fully-qualified domain name of the proxy server.</p> <p>Required if the previous parameter (<i>Mutually authenticate...</i>) is enabled.</p>
On fast networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on fast networks, which Outlook defines as faster than 128 kilobits per second (Kbps). By default, this option is disabled on fast networks.</p>
On slow networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on slow networks, which Outlook defines as slower than or equal to 128 kilobits per second (Kbps). By default, this option is enabled on slow networks.</p>
<b>Exchange Logon and Run As</b>	
Username	<p>Enter the name of the person who owns or is authorized to access the mailbox.</p> <p>If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "Interactive User". Running as "Interactive User" requires that a user be physically logged into the managed client.</p> <p>To run using SSL, type <code>Interactive User</code> here. Leave the <i>Password</i> and <i>Domain</i> parameters blank.</p>
Password	<p>Enter the password associated with this user that is required to log on to the network and run the application. Leave blank to run as Interactive User.</p>

Description	How to Set It
Domain	Enter the domain associated with this user--the domain name you are logging onto. Leave blank to run as Interactive User.
Administrators group on managed client	Enter the name of the Administrators Group on the managed client. Typically, this name is "Administrators". The default is "Administrators".
<b>Timeouts</b>	
Job timeout	<p>Set the timeout value, from 1 to 900 seconds, to determine the maximum time allowed to process a job before it's aborted.</p> <p>When an Exchange-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a "Job Timeout" event is raised.</p> <p>The default is 120 seconds.</p>
Queue timeout	<p>Set the timeout value, from 1 to 1200 seconds, to determine how long a job can wait for resources before it's aborted.</p> <p>Multiple simultaneous Exchange-RT Knowledge Script jobs must wait for a token to run. If no token is available for a job you're trying to run, the job is added to the queue and starts a queue timer. When the Queue Timeout for a job expires, the job does not run, a "Queue Timeout" event is raised, and the job is moved to the end of the queue.</p> <p>The default is 300 seconds.</p>

## 3.2 OpenFolder

Use this Knowledge Script to open a specified Exchange folder and report the amount of time the operation took. The selected folder can be either public or private.

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "[Interactive User](#)." To run using SSL, type `Interactive User` for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

### 3.2.1 Helpful Hints

- ♦ If you are using a mailbox that does not have a unique name, you should either enable the *Resolve and use Exchange distinguished name?* parameter or supply the fully qualified name for the mailbox. See the "Helpful Hints" section of the [CheckAddressBookEntry](#) topic for a full discussion.
- ♦ The folder name that you must specify in this Knowledge Script can be for either a private or public folder. The *Folder access* parameter lets you indicate which type you've selected.



## 3.2.2 Collecting Data

If you choose to collect data, this Knowledge Script generates the following data streams:

- ◆ **Response time**
  - ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
  - ◆ **Response-time Breakdown.** If enabled as separate parameters, up to 5 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See [Section 3.2.5, “Setting Parameter Values,” on page 33](#) for more information.
- ◆ **Availability**--Returns one of the following values:
  - ◆ 1 or 100 -- the test was successful
  - ◆ 0 -- the test was not successful

The Availability data point is an indication of whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

An event is raised whenever one of the following occurs:

- ◆ A threshold that you have specified as an event parameter is exceeded.
- ◆ The Exchange-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- ◆ The transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

You can select where some of the possible events are displayed in the Operator Console TreeView or Control Center Console Server view. This event proxying feature is useful in Control Center Service Map views. It is not supported for jobs that are started in the Operator Web Console. See the description of the *Event on* parameter, below.

## 3.2.3 Resource Objects

Exchange response time clients (Exchange-RT)

## 3.2.4 Default Schedule

The default interval for this script is **Every 15 minutes**.

## 3.2.5 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.

Description	How to Set It
Data stream format	<p>Select the data stream format for the Availability data stream.</p> <p>Previous versions of this module used a 0 (“not available”) or 1 (“available”) format to indicate availability (that is, test success or failure). You now have the option to use a 0 (“not available”) or 100 (“available”) format.</p> <p>The default value is 0-100.</p>
Raise event if transaction fails?	<p>Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.</p>
Event severity when transaction fails	<p>If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.</p>
<b>Response Time</b>	
Collect data for response time?	<p>Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.</p>
Include time to resolve distinguished name?	<p>Select <b>Yes</b> to add extra time to resolve the distinguished name of the account. In some cases, resolving distinguished names could affect performance. If you want to collect this data, enable this parameter and the <i>Collect data for resolving distinguished name?</i> parameter. This parameter is disabled by default.</p>
Include time to create profile in response time?	<p>Select <b>Yes</b> to include the time taken to create the Exchange profile in the response-time calculation. The default is No.</p> <p>If you want to collect this data, select Yes for this parameter and the <i>Collect data for creating Exchange profile?</i> parameter.</p>
Threshold -- Maximum response time (seconds)	<p>Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.</p>
Raise event if threshold is exceeded?	<p>Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.</p>
Event severity when threshold is exceeded	<p>Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.</p>
<b>Response Time Breakdown</b>	
Collect data for resolving distinguished name?	<p>Select <b>Yes</b> to collect the results of resolving the distinguished name. By default, this information is not collected.</p>
Collect data for initializing Exchange?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange server. By default, separate response-time data streams are not collected.</p>
Collect data for creating Exchange profile?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the Exchange profile. The default is No.</p> <p>To create this data stream, do not enter a value for the <i>Name of the existing Exchange profile to use</i> parameter, and select Yes for this parameter and the <i>Create an Exchange profile during each iteration?</i> parameter.</p>
Collect data for logon?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to log on to the Exchange server. By default, separate response-time data streams are not collected.</p>

Description	How to Set It
Collect data for opening Exchange database?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Exchange database. By default, separate response-time data streams are not collected.
Collect data for opening folder?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the specified folder. By default, separate response-time data streams are not collected.
Folder name	<p>The name of the Exchange folder to open. The default is <code>Inbox</code>.</p> <p>If you are setting the <i>Event on</i> parameter (see below), the <i>Folder name</i> parameter lets you select the Exchange folder where any events will appear in your console.</p>
Folder access	The security status of the folder. Select either <code>Private</code> or <code>Public</code> . Default is <code>Private</code> .
Event on	<p>Select the TreeView location where events should be displayed. Select either:</p> <ul style="list-style-type: none"> <li>◆ <code>Agent</code> (the client computer in the response-time tests; corresponds to the Exchange folder you selected for the <i>Folder name</i> parameter, above). This is the default.</li> <li>◆ <code>Server</code> (the Exchange server being tested--see the <i>Exchange server name</i> parameter, below).</li> <li>◆ <code>Both</code>. The event will be shown in two locations in the TreeView.</li> </ul> <p><b>Notes</b> This setting does not apply to events related to the Knowledge Script itself, such as Knowledge Script failure or initialization problems. Such events are always displayed on the computer where the job ran.</p> <p>You must select <code>Agent</code> when starting jobs in the Operator Web Console. If you select <code>Server</code>, no events are generated. If you select <code>Both</code>, an event is only shown on the agent.</p>
<b>Exchange Server Settings</b>	
Create an Exchange profile during each iteration?	<p>Select <b>Yes</b> to create an Exchange profile for each iteration, or select <b>No</b> to create an Exchange profile on just the first iteration. The default is <code>Yes</code>.</p> <p>If you select <code>No</code>, the following parameters will also be disabled: <i>Include time to create profile in response time?</i> and <i>Collect data for creating Exchange profile?</i> Also, if you select <code>No</code>, the Exchange profile created during the first iteration persists even after the job is stopped. You should manually delete the Exchange profile to keep Outlook free of unneeded profiles.</p> <p>To avoid NTLM authentication, select <code>No</code> for this parameter, and then set <i>Profile authentication type</i> to <code>Kerberos</code>.</p>

Description	How to Set It
Name of the existing Exchange profile to use (optional except for Outlook 2003 to Exchange 2010 or later)	<p>Enter the name of the Exchange profile for which you want to measure response time. The default is blank.</p> <p>The user who owns the email account must manually create the profile in Outlook. The profile must be able to connect with Exchange Server, with this security option selected: <i>Encrypt data between Microsoft Office Outlook and Microsoft Exchange server</i>. Also, the server name and mailbox name for the profile should match the <i>Exchange server name</i> and <i>Mailbox name</i> parameters below.</p> <p><b>NOTE:</b> Use this parameter if you need to measure response time between Outlook 2003 clients and Exchange Server 2010 or later servers. This parameter is optional for other configurations of Outlook and Exchange.</p>
Exchange server name	Enter the name of the Exchange server.
Mailbox name (or email address in case of Outlook 2016 or later)	<p>Specify the name of the mailbox, which is usually a username.</p> <p><b>NOTE:</b> In case of Outlook 2016 or later, specify the email address of the user.</p>
Profile authentication type	<p>Select what kind of authentication you want to use with your Exchange profiles. If you want to let the Exchange server and Outlook communicate to finalize the authentication method (NTLM or Kerberos), use the default value of Negotiate Authentication.</p> <p>To avoid NTLM authentication, select Kerberos for this parameter, and then set the <i>Create an Exchange profile during each iteration</i> parameter to No.</p>
Resolve and use Exchange distinguished name?	<p>Select <b>Yes</b> to instruct the ResponseTime for Exchange managed object to resolve the name in Active Directory to the first match found and use that value for the transaction.</p> <p>This option is helpful if the name you supplied for the <i>Mailbox name</i> parameter is ambiguous (if, for example, there are mailboxes with names so similar that the Exchange Server cannot determine which one to use for the test).</p> <p>By default, the DN for the mailbox is not used.</p>
<b>Using RPC over HTTP (not applicable for Outlook 2016 or later)</b>	
Connect to Exchange Server using HTTP?	<p>Select <b>Yes</b> to use the hypertext transfer protocol (HTTP) to make the connection to the server that is acting as the RPC proxy for the Exchange server.</p> <p>If enabled, allows you to test Exchange server response time in a proxy situation by using a remote procedure call (RPC) sent over HTTP.</p> <p>By default, HTTP is not used to connect to the Exchange server.</p>
URL to connect to proxy server for Exchange	<p>Enter the URL of the Exchange Server computer that's configured as an RPC proxy server.</p> <p>The RPC proxy server communicates with clients seeking access to the Exchange server.</p> <p>Use the following format (for example):</p> <p>exchproxy01.netiq.com</p> <p>Required if RPC over HTTP is used.</p>

Description	How to Set It
<b>SSL Settings</b>	
Connect using SSL only	<p>Select <b>Yes</b> to use the Secure Sockets Layer (SSL) security protocol to secure the HTTP connection to the proxy Exchange Server.</p> <p>If you select to use the SSL option for a test using RPC over the HTTP protocol, you must run the Knowledge Script as “<a href="#">Interactive User</a>” due to the security requirements of SSL. See the <i>Username</i> parameter below for more information.</p> <p>By default, SSL isn’t used for the connection.</p>
Mutually authenticate the session when connecting	<p>Select <b>Yes</b> to require the client computer and the Exchange server to perform authentication when the Knowledge Script requests the connection to the Exchange server. By default, authentication is not performed.</p>
Principal name for proxy server	<p>The service principal name of the proxy Exchange server service. This name must be recognized as an entity by the SSL server.</p> <p>The format is <code>msstd:FQDN</code></p> <p>where FQDN is the fully-qualified domain name of the proxy server.</p> <p>Required if the previous parameter (<b>Mutually authenticate...</b>) is enabled.</p>
On fast networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on fast networks, which Outlook defines as faster than 128 kilobits per second (Kbps). By default, this option is disabled on fast networks.</p>
On slow networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on slow networks, which Outlook defines as slower than or equal to 128 kilobits per second (Kbps). By default, this option is enabled on slow networks.</p>
<b>Exchange Logon and Run As</b>	
Username	<p>Enter the name of the person who owns or is authorized to access the mailbox.</p> <p>If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as “<a href="#">Interactive User</a>”. Running as “Interactive User” requires that a user be physically logged into the managed client.</p> <p>To run using SSL, type <code>Interactive User</code> here. Leave the <i>Password</i> and <i>Domain</i> parameters blank.</p>
Password	<p>Enter the password associated with this user that is required to log on to the network and run the application. Leave blank to run as Interactive User.</p>
Domain	<p>Enter the domain associated with this user--the domain name you are logging onto. Leave blank to run as Interactive User.</p>
Administrators group on managed client	<p>Enter the name of the Administrators Group on the managed client. Typically, this name is “Administrators”. The default is “Administrators”.</p>
<b>Timeouts</b>	

Description	How to Set It
Job timeout	<p>Set the timeout value, from 1 to 900 seconds, to determine the maximum time allowed to process a job before it's aborted.</p> <p>When an Exchange-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a "Job Timeout" event is raised.</p> <p>The default is 120 seconds.</p>
Queue timeout	<p>Set the timeout value, from 1 to 1200 seconds, to determine how long a job can wait for resources before it's aborted.</p> <p>Multiple simultaneous Exchange-RT Knowledge Script jobs must wait for a token to run. If no token is available for a job you're trying to run, the job is added to the queue and starts a queue timer. When the Queue Timeout for a job expires, the job does not run, a "Queue Timeout" event is raised, and the job is moved to the end of the queue.</p> <p>The default is 300 seconds.</p>

## 3.3 OpenFolderAndRead

Use this Knowledge Script to open an Exchange folder and read the last (most recent) item it contains.

This script won't return an error if the folder is empty, and the job will complete normally.

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "Interactive User." To run using SSL, type `Interactive User` for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

### 3.3.1 Helpful Hints

- ♦ If you are using a mailbox that does not have a unique name, you should either enable the *Resolve and use Exchange distinguished name?* parameter or supply the fully qualified name for the mailbox. See the "Helpful Hints" section of the topic [CheckAddressBookEntry](#) for a full discussion.
- ♦ The folder name that you must specify in this Knowledge Script can be for either a private or public folder. The *Folder access* parameter lets you indicate which type you've selected.

### 3.3.2 Collecting Data

If you choose to collect data, this Knowledge Script generates the following data streams:

- ♦ **Response time**
  - ♦ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
  - ♦ **Response-time Breakdown.** If enabled as separate parameters, up to 6 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See [Section 3.3.5, "Setting Parameter Values,"](#) on page 39 below for more information.

- ♦ **Availability**--Returns one of the following values:
  - ♦ 1 or 100 -- the test was successful
  - ♦ 0 -- the test was not successful

The Availability data point is an indication of whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

An event is raised whenever one of the following occurs:

- ♦ A threshold that you have specified as an event parameter is exceeded.
- ♦ The Exchange-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- ♦ The transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

You can select where some of the possible events are displayed in the Operator Console TreeView or Control Center Console Server view. This event proxying feature is useful in Control Center Service Map views. It is not supported for jobs that are started in the Operator Web Console. See the description of the *Event on* parameter, below.

### 3.3.3 Resource Objects

Exchange response time clients (Exchange-RT).

### 3.3.4 Default Schedule

The default interval for this script is **Every 15 minutes**.

### 3.3.5 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream.  Previous versions of this module used a 0 ("not available") or 1 ("available") format to indicate availability (that is, test success or failure). You now have the option to use a 0 ("not available") or 100 ("available") format.  The default value is 0-100.
Raise event if transaction fails?	Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.
<b>Response Time</b>	

Description	How to Set It
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to resolve distinguished name?	Select <b>Yes</b> to add extra time to resolve the distinguished name of the account. In some cases, resolving distinguished names could affect performance. If you want to collect this data, enable this parameter and the <i>Collect data for resolving distinguished name?</i> parameter. This parameter is disabled by default.
Include time to create profile in response time?	Select <b>Yes</b> to include the time taken to create the Exchange profile in the response-time calculation. The default is No.
Threshold -- Maximum response time (seconds)	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.
<b>Response Time Breakdown</b>	
Collect data for resolving distinguished name?	Select <b>Yes</b> to collect the results of resolving the distinguished name. By default, this information is not collected.
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange server. By default, separate response-time data streams are not collected.
Collect data for creating Exchange profile?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the Exchange profile. The default is No.  To create this data stream, do not enter a value for the <i>Name of the existing Exchange profile to use</i> parameter, and select Yes for this parameter and the <i>Create an Exchange profile during each iteration?</i> parameter.
Collect data for logon?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to log on to the Exchange server. By default, separate response-time data streams are not collected.
Collect data for opening Exchange database?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Exchange database. By default, separate response-time data streams are not collected.
Collect data for opening folder?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the folder. By default, separate response-time data streams are not collected.
Collect data for reading the last folder item?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to read the last item received in the folder. By default, separate response-time data streams are not collected.
Folder name	The name of the Exchange folder to open. The default is <code>Inbox</code> .  If you're setting the <i>Event on</i> parameter (see below), the <i>Folder name</i> parameter lets you select the Exchange folder where any events will appear in your console.



Description	How to Set It
Folder access	The security status of the folder. Select either <code>Private</code> or <code>Public</code> . Default is <code>Private</code> .
Event on	<p>Select the TreeView location where events should be displayed. Select either:</p> <ul style="list-style-type: none"> <li>◆ Agent (the client computer in the response-time tests; corresponds to the Exchange folder you selected for the <i>Folder name</i> parameter, above). This is the default.</li> <li>◆ Server (the Exchange server being tested--see the <i>Exchange server name</i> parameter, below).</li> <li>◆ Both. The event will be shown in two locations in the TreeView.</li> </ul> <p><b>Notes</b> This setting does not apply to events related to the Knowledge Script itself, such as Knowledge Script failure or initialization problems. Such events are always displayed on the computer where the job ran.</p> <p>You must select <code>Agent</code> when starting jobs in the Operator Web Console. If you select <code>Server</code>, no events are generated. If you select <code>Both</code>, an event is only shown on the agent.</p>
<b>Exchange Server Settings</b>	
Create an Exchange profile during each iteration?	<p>Select <b>Yes</b> to create an Exchange profile for each iteration, or select <b>No</b> to create an Exchange profile on just the first iteration. The default is <code>Yes</code>.</p> <p>If you select <code>No</code>, the following parameters will also be disabled: <i>Include time to create profile in response time?</i> and <i>Collect data for creating Exchange profile?</i> Also, if you select <code>No</code>, the Exchange profile created during the first iteration persists even after the job is stopped. You should manually delete the Exchange profile to keep Outlook free of unneeded profiles.</p> <p>To avoid NTLM authentication, select <code>No</code> for this parameter, and then set <i>Profile authentication type</i> to <code>Kerberos</code>.</p>
Name of the existing Exchange profile to use (optional except for Outlook 2003 to Exchange 2010 or later)	<p>Enter the name of the Exchange profile for which you want to measure response time. The default is blank.</p> <p>The user who owns the email account must manually create the profile in Outlook. The profile must be able to connect with Exchange Server, with this security option selected: <i>Encrypt data between Microsoft Office Outlook and Microsoft Exchange server</i>. Also, the server name and mailbox name for the profile should match the <i>Exchange server name</i> and <i>Mailbox name</i> parameters below.</p> <p><b>NOTE:</b> Use this parameter if you need to measure response time between Outlook 2003 clients and Exchange Server 2010 or later servers. This parameter is optional for other configurations of Outlook and Exchange.</p>
Exchange server name	Enter the name of the Exchange server.
Mailbox name (or email address in case of Outlook 2016 or later)	<p>Specify the name of the mailbox, which is usually a username.</p> <p><b>NOTE:</b> In case of Outlook 2016 or later, specify the email address of the user.</p>

Description	How to Set It
Profile authentication type	<p>Select what kind of authentication you want to use with your Exchange profiles. If you want to let the Exchange server and Outlook communicate to finalize the authentication method (NTLM or Kerberos), use the default value of Negotiate Authentication.</p> <p>To avoid NTLM authentication, select Kerberos for this parameter, and then set the <i>Create an Exchange profile during each iteration</i> parameter to No.</p>
Resolve and use Exchange distinguished name?	<p>Select <b>Yes</b> to instruct the ResponseTime for Exchange managed object to resolve the name in Active Directory to the first match found and use that value for the transaction.</p> <p>This option is helpful if the name you supplied for the <i>Mailbox name</i> parameter is ambiguous (if, for example, there are mailboxes with names so similar that the Exchange Server cannot determine which one to use for the test).</p> <p>By default, the DN for the mailbox is not used.</p>
<b>Using RPC over HTTP (not applicable for Outlook 2016 or later)</b>	
Connect to Exchange Server using HTTP?	<p>Select <b>Yes</b> to use the hypertext transfer protocol (HTTP) to make the connection to the server that is acting as the RPC proxy for the Exchange server.</p> <p>If enabled, allows you to test Exchange server response time in a proxy situation by using a remote procedure call (RPC) sent over HTTP.</p> <p>By default, HTTP is not used to connect to the Exchange server.</p>
URL to connect to proxy server for Exchange	<p>Enter the URL of the Exchange Server computer that's configured as an RPC proxy server.</p> <p>The RPC proxy server communicates with clients seeking access to the Exchange server.</p> <p>Use the following format (for example):</p> <pre>exchproxy01.netiq.com</pre> <p>Required if RPC over HTTP is used.</p>
<b>SSL Settings</b>	
Connect using SSL only	<p>Select <b>Yes</b> to use the Secure Sockets Layer (SSL) security protocol to secure the HTTP connection to the proxy Exchange Server.</p> <p>If you select to use the SSL option for a test using RPC over the HTTP protocol, you must run the Knowledge Script as "<a href="#">Interactive User</a>" due to the security requirements of SSL. See the <i>Username</i> parameter below for more information.</p> <p>By default, SSL isn't used for the connection.</p>
Mutually authenticate the session when connecting	<p>Select <b>Yes</b> to require the client computer and the Exchange server to perform authentication when the Knowledge Script requests the connection to the Exchange server. By default, authentication is not performed.</p>

Description	How to Set It
Principal name for proxy server	<p>The service principal name of the proxy Exchange server service. This name must be recognized as an entity by the SSL server.</p> <p>The format is <code>msstd:FQDN</code></p> <p>where FQDN is the fully-qualified domain name of the proxy server.</p> <p>Required if the previous parameter (<i>Mutually authenticate...</i>) is enabled.</p>
On fast networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on fast networks, which Outlook defines as faster than 128 kilobits per second (Kbps). By default, this option is disabled on fast networks.</p>
On slow networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on slow networks, which Outlook defines as slower than or equal to 128 kilobits per second (Kbps). By default, this option is enabled on slow networks.</p>
<b>Exchange Logon and Run As</b>	
Username	<p>Enter the name of the person who owns or is authorized to access the mailbox.</p> <p>If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as “<a href="#">Interactive User</a>”. Running as “Interactive User” requires that a user be physically logged into the managed client.</p> <p>To run using SSL, type <code>Interactive User</code> here. Leave the <i>Password</i> and <i>Domain</i> parameters blank.</p>
Password	<p>Enter the password associated with this user that is required to log on to the network and run the application. Leave blank to run as Interactive User.</p>
Domain	<p>Enter the domain associated with this user--the domain name you are logging onto. Leave blank to run as Interactive User.</p>
Administrators group on managed client	<p>Enter the name of the Administrators Group on the managed client. Typically, this name is “Administrators”. The default is “Administrators”.</p>
<b>Timeouts</b>	
Job timeout	<p>Set the timeout value, from 1 to 900 seconds, to determine the maximum time allowed to process a job before it's aborted.</p> <p>When an Exchange-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a “Job Timeout” event is raised.</p> <p>The default is 120 seconds.</p>

Description	How to Set It
Queue timeout	<p>Set the timeout value, from 1 to 1200 seconds, to determine how long a job can wait for resources before it's aborted.</p> <p>Multiple simultaneous Exchange-RT Knowledge Script jobs must wait for a token to run. If no token is available for a job you're trying to run, the job is added to the queue and starts a queue timer. When the Queue Timeout for a job expires, the job does not run, a "Queue Timeout" event is raised, and the job is moved to the end of the queue.</p> <p>The default is 300 seconds.</p>

## 3.4 SendAndReceiveMessage

Use this Knowledge Script to send email from and receive it back to a specific email user account. (For testing purposes, the server is sending a message to itself.) It reports the operation time.

The incoming message header contains a unique identifier that tracks and identifies the message. If the message is received that matches the sent message within the timeout time, the message is then deleted. If the timeout occurs before the message is received, the message displays in the Outlook Inbox.

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "Interactive User." To run using SSL, type `Interactive User` for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

---

**TIP:** If you are using a mailbox that does not have a unique name, you should either enable the *Resolve and use Exchange distinguished name?* parameter or supply the fully qualified name for the mailbox. See the "Helpful Hints" section of the topic [CheckAddressBookEntry](#) for a full discussion.

---

### 3.4.1 Collecting Data

If you choose to collect data, this Knowledge Script generates the following data streams:

- ◆ **Response time.**
  - ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
  - ◆ **Response-time Breakdown.** If enabled as separate parameters, up to 11 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See [Section 3.4.4, "Setting Parameter Values," on page 45](#)
- ◆ **Availability**--Returns one of the following values:
  - ◆ 1 or 100 -- the test was successful
  - ◆ 0 -- the test was not successful

The Availability data point is an indication of whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

An event is raised whenever one of the following occurs:

- ♦ A threshold that you have specified as an event parameter is exceeded.
- ♦ The Exchange-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- ♦ The transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

You can select where some of the possible events are displayed in the Operator Console TreeView or Control Center Console Server view. This event proxying feature is useful in Control Center Service Map views. It is not supported for jobs that are started in the Operator Web Console. See the description of the *Event on* parameter, below.

## 3.4.2 Resource Objects

Exchange response time clients (Exchange-RT)

## 3.4.3 Default Schedule

The default interval for this script is **Every 15 minutes**.

## 3.4.4 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream.  Previous versions of this module used a 0 ("not available") or 1 ("available") format to indicate availability (that is, test success or failure). You now have the option to use a 0 ("not available") or 100 ("available") format.  The default value is 0-100.
Raise event when transaction fails?	Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.
<b>Response Time</b>	
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to resolve distinguished name?	Select <b>Yes</b> to add extra time to resolve the distinguished name of the account. In some cases, resolving distinguished names could affect performance. If you want to collect this data, enable this parameter and the <i>Collect data for resolving distinguished name?</i> parameter. This parameter is disabled by default.

Description	How to Set It
Include time to create profile in response time?	Select <b>Yes</b> to include the time taken to create the Exchange profile in the response-time calculation. The default is No.
Threshold -- Maximum response time (seconds)	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.
<b>Response Time Breakdown</b>	
Collect data for resolving distinguished name?	Select <b>Yes</b> to collect the results of resolving the distinguished name. By default, this information is not collected.
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange server. By default, separate response-time data streams are not collected.
Collect data for creating Exchange profile?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the Exchange profile. The default is No.</p> <p>To create this data stream, do not enter a value for the <i>Name of the existing Exchange profile to use</i> parameter, and select Yes for this parameter and the <i>Create an Exchange profile during each iteration?</i> parameter.</p>
Collect data for logon?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to log on to the Exchange server. By default, separate response-time data streams are not collected.
Collect data for opening Exchange database?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Exchange database. By default, separate response-time data streams are not collected.
Collect data for opening address book?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Outlook address book. By default, separate response-time data streams are not collected.
Collect data for opening Inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Inbox. By default, separate response-time data streams are not collected.
Collect data for opening Outbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Outbox. By default, separate response-time data streams are not collected.
Collect data for creating message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the test email message. By default, separate response-time data streams are not collected.
Collect data for resolving recipient name?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to resolve the name of the recipient of the test email message (see the <i>Mailbox name</i> parameter, below). By default, separate response-time data streams are not collected.

Description	How to Set It
Collect data for sending message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to actually send the test email message. By default, separate response-time data streams are not collected.
Collect data for waiting until message shows up in Inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken for the test message to show up in the recipient's mailbox. By default, separate response-time data streams are not collected.
Message size	Enter the size of the message in bytes. Default is 100.
Event on	<p>Select the TreeView location where events should be displayed. Select either:</p> <ul style="list-style-type: none"> <li>◆ Agent (the client computer in the response-time tests). This is the default.</li> <li>◆ Server (the Exchange server being tested--see the <i>Exchange server name</i> parameter, below).</li> <li>◆ Both. The event will be shown in two locations in the TreeView.</li> </ul> <p><b>Notes</b> This setting does not apply to events related to the Knowledge Script itself, such as Knowledge Script failure or initialization problems. Such events are always displayed on the computer where the job ran.</p> <p>You must select <i>Agent</i> when starting jobs in the Operator Web Console. If you select <i>Server</i>, no events are generated. If you select <i>Both</i>, an event is only shown on the agent.</p>
<b>Exchange Server Settings</b>	
Create an Exchange profile during each iteration?	<p>Select <b>Yes</b> to create an Exchange profile for each iteration, or select <b>No</b> to create an Exchange profile on just the first iteration. The default is Yes.</p> <p>If you select No, the following parameters will also be disabled: <i>Include time to create profile in response time?</i> and <i>Collect data for creating Exchange profile?</i> Also, if you select No, the Exchange profile created during the first iteration persists even after the job is stopped. You should manually delete the Exchange profile to keep Outlook free of unneeded profiles.</p> <p>To avoid NTLM authentication, select No for this parameter, and then set <i>Profile authentication type</i> to Kerberos.</p>
Name of the existing Exchange profile to use (optional except for Outlook 2003 to Exchange 2010 or later)	<p>Enter the name of the Exchange profile for which you want to measure response time. The default is blank.</p> <p>The user who owns the email account must manually create the profile in Outlook. The profile must be able to connect with Exchange Server, with this security option selected: <i>Encrypt data between Microsoft Office Outlook and Microsoft Exchange server</i>. Also, the server name and mailbox name for the profile should match the <i>Exchange server name</i> and <i>Mailbox name</i> parameters below.</p> <p><b>NOTE:</b> Use this parameter if you need to measure response time between Outlook 2003 clients and Exchange Server 2010 or later servers. This parameter is optional for other configurations of Outlook and Exchange.</p>
Exchange server name	Enter the name of the Exchange server.

Description	How to Set It
Mailbox name (or email address in case of Outlook 2016 or later)	<p>Specify the name of the mailbox, which is usually a username.</p> <p><b>NOTE:</b> In case of Outlook 2016 or later, specify the email address of the user.</p>
Profile authentication type	<p>Select what kind of authentication you want to use with your Exchange profiles. If you want to let the Exchange server and Outlook communicate to finalize the authentication method (NTLM or Kerberos), use the default value of Negotiate Authentication.</p> <p>To avoid NTLM authentication, select Kerberos for this parameter, and then set the <i>Create an Exchange profile during each iteration</i> parameter to No.</p>
Resolve and use Exchange distinguished name?	<p>Select <b>Yes</b> to instruct the ResponseTime for Exchange managed object to resolve the name in Active Directory to the first match found and use that value for the transaction.</p> <p>This option is helpful if the name you supplied for the <i>Mailbox name</i> parameter is ambiguous (if, for example, there are mailboxes with names so similar that the Exchange Server cannot determine which one to use for the test).</p> <p>By default, the DN for the mailbox is not used.</p>
<b>Using RPC over HTTP (not applicable for Outlook 2016 or later)</b>	
Connect to Exchange Server using HTTP?	<p>Select <b>Yes</b> to use the hypertext transfer protocol (HTTP) to make the connection to the server that is acting as the RPC proxy for the Exchange server.</p> <p>If enabled, allows you to test Exchange server response time in a proxy situation by using a remote procedure call (RPC) sent over HTTP.</p> <p>By default, HTTP is not used to connect to the Exchange server.</p>
URL to connect to proxy server for Exchange	<p>Enter the URL of the Exchange Server computer that's configured as an RPC proxy server.</p> <p>The RPC proxy server communicates with clients seeking access to the Exchange server.</p> <p>Use the following format (for example):</p> <p><code>exchproxy01.netiq.com</code></p> <p>Required if RPC over HTTP is used.</p>
<b>SSL Settings</b>	
Connect using SSL only	<p>Select <b>Yes</b> to use the Secure Sockets Layer (SSL) security protocol to secure the HTTP connection to the proxy Exchange Server.</p> <p>If you select to use the SSL option for a test using RPC over the HTTP protocol, you must run the Knowledge Script as "<a href="#">Interactive User</a>" due to the security requirements of SSL. See the <i>Username</i> parameter below for more information.</p> <p>By default, SSL isn't used for the connection.</p>
Mutually authenticate the session when connecting	<p>Select <b>Yes</b> to require the client computer and the Exchange server to perform authentication when the Knowledge Script requests the connection to the Exchange server. By default, authentication is not performed.</p>



Description	How to Set It
Principal name for proxy server	<p>The service principal name of the proxy Exchange server service. This name must be recognized as an entity by the SSL server.</p> <p>The format is <code>msstd:FQDN</code></p> <p>where FQDN is the fully-qualified domain name of the proxy server.</p> <p>Required if the previous parameter (<i>Mutually authenticate...</i>) is enabled.</p>
On fast networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on fast networks, which Outlook defines as faster than 128 kilobits per second (Kbps). By default, this option is disabled on fast networks.</p>
On slow networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on slow networks, which Outlook defines as slower than or equal to 128 kilobits per second (Kbps). By default, this option is enabled on slow networks.</p>
<b>Logon and Run As</b>	
Username	<p>Enter the name of the person who owns or is authorized to access the mailbox.</p> <p>If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as “<a href="#">Interactive User</a>”. Running as “Interactive User” requires that a user be physically logged into the managed client.</p> <p>To run using SSL, type <code>Interactive User</code> here. Leave the <i>Password</i> and <i>Domain</i> parameters blank.</p>
Password	<p>Enter the password associated with this user that is required to log on to the network and run the application. Leave blank to run as Interactive User.</p>
Domain	<p>Enter the domain associated with this user--the domain name you are logging onto. Leave blank to run as Interactive User.</p>
Administrators group on managed client	<p>Enter the name of the Administrators Group on the managed client. Typically, this name is “Administrators”. The default is “Administrators”.</p>
<b>Timeouts</b>	
Message delivery timeout	<p>Enter the time, in seconds, for the job to wait for the tracking message to show up in the mailbox before the job is aborted. Enter a value from 1 to 600 seconds.</p> <p>The default is 75 seconds.</p>
Job timeout	<p>Set the timeout value, from 1 to 900 seconds, to determine the maximum time allowed to process a job before it's aborted.</p> <p>When an Exchange-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a “Job Timeout” event is raised.</p> <p>The default is 90 seconds.</p>

Description	How to Set It
Queue timeout	<p data-bbox="634 218 1430 275">Set the timeout value, from 1 to 1200 seconds, to determine how long a job can wait for resources before it's aborted.</p> <p data-bbox="634 300 1430 441">Multiple simultaneous Exchange-RT Knowledge Script jobs must wait for a token to run. If no token is available for a job you're trying to run, the job is added to the queue and starts a queue timer. When the Queue Timeout for a job expires, the job does not run, a "Queue Timeout" event is raised, and the job is moved to the end of the queue.</p> <p data-bbox="634 466 927 485">The default is 120 seconds.</p>

## 3.5 SendAndTrackMessage

An Outlook user sending an email message can track the delivery time by requesting a message delivery receipt. Use this Knowledge Script to find out the time required to send an email message and to return a receipt for that email message back to the sender.

---

**NOTE:** The recipient email address must reside on an Exchange server. If the server is not an Exchange server, a delivery receipt is not delivered and a timeout occurs.

---

This Knowledge Script sends the message with a delivery notification flag to a selected mailbox. The message that was sent remains in the Inbox of the recipient. Although this Knowledge Script cannot delete the test messages from the recipient's Inbox, AppManager ResponseTime for Exchange and Exchange Online removes the delivery notification that appears in the sender's Inbox if the test message is delivered, and if the notification is received, before the configured **Job timeout** expires. To retrieve the test message, the script looks at the subject for a unique identifier that matches one applied to the sent message.

The receiving user will have test email messages in his or her Inbox that cannot be deleted by this Knowledge Script. We suggest that you create a rule in Microsoft Exchange to delete those test messages periodically.

If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "[Interactive User](#)." To run using SSL, type `Interactive User` for the *Exchange Logon and Run As Username* parameter, and leave the *Password* and *Domain* parameters blank.

---

**TIP:** If you are using a mailbox that does not have a unique name, you should either enable the `Resolve and use Exchange distinguished name?` parameter or supply the fully qualified name for the mailbox. See the "Helpful Hints" section of the topic [CheckAddressBookEntry](#) for a full discussion.

---

## 3.5.1 Collecting Data

If you choose to collect data, this Knowledge Script generates the following data streams:

- ◆ **Response time.**
  - ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
  - ◆ **Response-time Breakdown.** If enabled as separate parameters, up to 11 response-time breakdown data streams can be collected. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See [Section 3.5.4, “Setting Parameter Values,”](#) on page 51 for more information.
- ◆ **Availability**--Returns one of two values:
  - ◆ 1 -- the test was successful
  - ◆ 0 -- the test was not successful

The Availability data point is an indication of whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

An event is raised whenever one of the following occurs:

- ◆ A threshold that you have specified as an event parameter is exceeded.
- ◆ The Exchange-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- ◆ The transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

You can select where some of the possible events are displayed in the Operator Console TreeView or Control Center Console Server view. This event proxying feature is useful in Control Center Service Map views. It is not supported for jobs that are started in the Operator Web Console. See the description of the *Event on* parameter, below.

## 3.5.2 Resource Objects

Exchange response time clients (Exchange-RT).

## 3.5.3 Default Schedule

The default interval for this script is **Every 15 minutes**.

## 3.5.4 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.

Description	How to Set It
Data stream format	<p>Select the data stream format for the Availability data stream.</p> <p>Previous versions of this module used a 0 ("not available") or 1 ("available") format to indicate availability (that is, test success or failure). You now have the option to use a 0 ("not available") or 100 ("available") format.</p> <p>The default value is 0-100.</p>
Raise event if transaction fails?	<p>Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.</p>
Event severity when transaction fails	<p>If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.</p>
<b>Response Time</b>	
Collect data for response time?	<p>Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.</p>
Include time to resolve distinguished name?	<p>Select <b>Yes</b> to add extra time to resolve the distinguished name of the account. In some cases, resolving distinguished names could affect performance. If you want to collect this data, enable this parameter and the <i>Collect data for resolving distinguished name?</i> parameter. This parameter is disabled by default.</p>
Include time to create profile in response time?	<p>Select <b>Yes</b> to include the time taken to create the Exchange profile in the response-time calculation. The default is No.</p> <p>If you want to collect this data, select Yes for this parameter and the <i>Collect data for creating Exchange profile?</i> parameter.</p>
Threshold -- Maximum response time (seconds)	<p>Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.</p>
Raise event if threshold is exceeded?	<p>Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.</p>
Event severity when threshold is exceeded	<p>Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.</p>
<b>Response Time Breakdown</b>	
Collect data for resolving distinguished name?	<p>Select <b>Yes</b> to collect the results of resolving the distinguished name. By default, this information is not collected.</p>
Collect data for initializing Exchange?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange server. By default, separate response-time data streams are not collected.</p>
Collect data for creating Exchange profile?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the Exchange profile. The default is No.</p> <p>To create this data stream, do not enter a value for the <i>Name of the existing Exchange profile to use</i> parameter, and select Yes for this parameter and the <i>Create an Exchange profile during each iteration?</i> parameter.</p>
Collect data for logon?	<p>Select <b>Yes</b> to collect a separate response-time data stream for the time taken to log on to the Exchange server. By default, separate response-time data streams are not collected.</p>

Description	How to Set It
Collect data for opening Exchange database?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Exchange database. By default, separate response-time data streams are not collected.
Collect data for opening address book?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Outlook address book. By default, separate response-time data streams are not collected.
Collect data for opening Inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Inbox. By default, separate response-time data streams are not collected.
Collect data for opening Outbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the Outbox. By default, separate response-time data streams are not collected.
Collect data for creating message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the test email message. By default, separate response-time data streams are not collected.
Collect data for resolving recipient name?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to resolve the name of the recipient of the test email message (see the <i>Mailbox name</i> parameter, below). By default, separate response-time data streams are not collected.
Collect data for sending message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to actually send the test email message. By default, separate response-time data streams are not collected.
Collect data for waiting until tracking message shows up in Inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken for the delivery receipt to show up in the sender's mailbox. By default, separate response-time data streams are not collected.
Email address	Enter the address the message is being sent to on an Exchange server.
Message size	Enter the size of the message in bytes. Default is 100.
Event on	<p>Select the TreeView location where events should be displayed. Select either:</p> <ul style="list-style-type: none"> <li>◆ Agent (the client computer in the response-time tests). This is the default.</li> <li>◆ Server (the Exchange server being tested--see the <i>Exchange server name</i> parameter, below).</li> <li>◆ Both. The event will be shown in two locations in the TreeView.</li> </ul>
	<p><b>Notes</b> This setting does not apply to events related to the Knowledge Script itself, such as Knowledge Script failure or initialization problems. Such events are always displayed on the computer where the job ran.</p>
	<p>You must select <i>Agent</i> when starting jobs in the Operator Web Console. If you select <i>Server</i>, no events are generated. If you select <i>Both</i>, an event is only shown on the agent.</p>
<b>Exchange Server Settings</b>	

Description	How to Set It
Create an Exchange profile during each iteration?	<p>Select <b>Yes</b> to create an Exchange profile for each iteration, or select <b>No</b> to create an Exchange profile on just the first iteration. The default is Yes.</p> <p>If you select No, the following parameters will also be disabled: <i>Include time to create profile in response time?</i> and <i>Collect data for creating Exchange profile?</i> Also, if you select No, the Exchange profile created during the first iteration persists even after the job is stopped. You should manually delete the Exchange profile to keep Outlook free of unneeded profiles.</p> <p>To avoid NTLM authentication, select No for this parameter, and then set <i>Profile authentication type</i> to Kerberos.</p>
Name of the existing Exchange profile to use (optional except for Outlook 2003 to Exchange 2010 or later)	<p>Enter the name of the Exchange profile for which you want to measure response time. The default is blank.</p> <p>The user who owns the email account must manually create the profile in Outlook. The profile must be able to connect with Exchange Server, with this security option selected: <i>Encrypt data between Microsoft Office Outlook and Microsoft Exchange server</i>. Also, the server name and mailbox name for the profile should match the <i>Exchange server name</i> and <i>Mailbox name</i> parameters below.</p> <p><b>NOTE:</b> Use this parameter if you need to measure response time between Outlook 2003 clients and Exchange Server 2010 or later servers. This parameter is optional for other configurations of Outlook and Exchange.</p>
Exchange server name	<p>Enter the name of the Exchange server.</p>
Mailbox name (or email address in case of Outlook 2016 or later)	<p>Specify the name of the mailbox, which is usually a username.</p> <p><b>NOTE:</b> In case of Outlook 2016 or later, specify the email address of the user.</p>
Profile authentication type	<p>Select what kind of authentication you want to use with your Exchange profiles. If you want to let the Exchange server and Outlook communicate to finalize the authentication method (NTLM or Kerberos), use the default value of Negotiate Authentication.</p> <p>To avoid NTLM authentication, select Kerberos for this parameter, and then set the <i>Create an Exchange profile during each iteration</i> parameter to No.</p>
Resolve and use Exchange distinguished name?	<p>Select <b>Yes</b> to instruct the ResponseTime for Exchange managed object to resolve the name in Active Directory to the first match found and use that value for the transaction.</p> <p>This option is helpful if the name you supplied for the <i>Mailbox name</i> parameter is ambiguous (if, for example, there are mailboxes with names so similar that the Exchange Server cannot determine which one to use for the test).</p> <p>By default, the DN for the mailbox is not used.</p>
<b>Using RPC over HTTP (not applicable for Outlook 2016 or later)</b>	
Connect to Exchange Server using HTTP?	<p>Select <b>Yes</b> to use the hypertext transfer protocol (HTTP) to make the connection to the server that is acting as the RPC proxy for the Exchange server.</p> <p>If enabled, allows you to test Exchange server response time in a proxy situation by using a remote procedure call (RPC) sent over HTTP.</p> <p>By default, HTTP is not used to connect to the Exchange server.</p>

Description	How to Set It
URL to connect to proxy server for Exchange	<p>Enter the URL of the Exchange Server computer that's configured as an RPC proxy server.</p> <p>The RPC proxy server communicates with clients seeking access to the Exchange server.</p> <p>Use the following format (for example):</p> <p><code>exchproxy01.netiq.com</code></p> <p>Required if RPC over HTTP is used.</p>
<b>SSL Settings</b>	
Connect using SSL only	<p>Select <b>Yes</b> to use the Secure Sockets Layer (SSL) security protocol to secure the HTTP connection to the proxy Exchange Server.</p> <p>If you select to use the SSL option for a test using RPC over the HTTP protocol, you must run the Knowledge Script as "<a href="#">Interactive User</a>" due to the security requirements of SSL. See the <i>Username</i> parameter below for more information.</p> <p>By default, SSL isn't used for the connection.</p>
Mutually authenticate the session when connecting	<p>Select <b>Yes</b> to require the client computer and the Exchange server to perform authentication when the Knowledge Script requests the connection to the Exchange server. By default, authentication is not performed.</p>
Principal name for proxy server	<p>The service principal name of the proxy Exchange server service. This name must be recognized as an entity by the SSL server.</p> <p>The format is <code>msstd:FQDN</code></p> <p>where FQDN is the fully-qualified domain name of the proxy server.</p> <p>Required if the previous parameter (<i>Mutually authenticate...</i>) is enabled.</p>
On fast networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on fast networks, which Outlook defines as faster than 128 kilobits per second (Kbps). By default, this option is disabled on fast networks.</p>
On slow networks, connect using HTTP first, then connect using TCP/IP	<p>Select <b>Yes</b> to attempt the connection to the proxy Exchange Server using the HTTP protocol first, and then, if the connection attempt fails, to use TCP/IP for the connection. This setting affects connection response times on slow networks, which Outlook defines as slower than or equal to 128 kilobits per second (Kbps). By default, this option is enabled on slow networks.</p>
<b>Exchange Logon and Run As</b>	
Username	<p>Enter the name of the person who owns or is authorized to access the mailbox.</p> <p>If you select to use the SSL option for a test using RPC over HTTP, you must run the Knowledge Script as "<a href="#">Interactive User</a>". Running as "Interactive User" requires that a user be physically logged into the managed client.</p> <p>To run using SSL, type <code>Interactive User</code> here. Leave the <i>Password</i> and <i>Domain</i> parameters blank.</p>
Password	<p>Enter the password associated with this user that is required to log on to the network and run the application. Leave blank to run as Interactive User.</p>

Description	How to Set It
Domain	Enter the domain associated with this user--the domain name you are logging onto. Leave blank to run as Interactive User.
Administrators group on managed client	Enter the name of the Administrators Group on the managed client. Typically, this name is "Administrators". The default is "Administrators".
<b>Timeouts</b>	
Message delivery timeout	<p>Enter the time, in seconds, for the job to wait for the tracking message to show up in the mailbox before the job is aborted. Enter a value from 1 to 600 seconds.</p> <p>The default is 75 seconds.</p>
Job timeout	<p>Set the timeout value, from 1 to 900 seconds, to determine the maximum time allowed to process a job before it's aborted.</p> <p>When an Exchange-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a "Job Timeout" event is raised.</p> <p>The default is 120 seconds.</p>
Queue timeout	<p>Set the timeout value, from 1 to 1200 seconds, to determine how long a job can wait for resources before it's aborted.</p> <p>Multiple simultaneous Exchange-RT Knowledge Script jobs must wait for a token to run. If no token is available for a job you're trying to run, the job is added to the queue and starts a queue timer. When the Queue Timeout for a job expires, the job does not run, a "Queue Timeout" event is raised, and the job is moved to the end of the queue.</p> <p>The default is 300 seconds.</p>

## 3.6 Report\_Exchange-RT

Use this Report Knowledge Script to generate a report detailing availability and response time for the following Exchange-RT Knowledge Scripts:

- ♦ [CheckAddressBookEntry](#)
- ♦ [OpenFolder](#)
- ♦ [OpenFolderAndRead](#)
- ♦ [SendAndReceiveMessage](#)
- ♦ [SendAndTrackMessage](#)

### 3.6.1 Resource Object

AppManager repository.

### 3.6.2 Default Schedule

The default schedule is **Run once**



### 3.6.3 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>Data source</b>	Use the following parameters to select the data for your report.
KS for report	Select the Knowledge Script to report on. Highlight an Exchange-RT script from the <b>Knowledge Script Name</b> list and click <b>Finish</b> to select it.
Exchange-RT client(s)	Select the Exchange-RT client(s). From the View(s) list, select from one to twenty-five views.  Your subsequent selections are limited to computers or server groups that are visible in the selected views.  Select one of the Filters options: <ul style="list-style-type: none"> <li>◆ <b>View:</b> Includes all computers in the views you selected.</li> <li>◆ <b>Computer:</b> Select from individual computers in the views you selected.</li> <li>◆ <b>Server Group:</b> Select from server groups in the views you selected. Selecting a server group includes all computers in that group.</li> </ul>
Exchange Server or "All"	Type the name of the Exchange server or type "All" to designate all computers as Exchange servers. Default is "All".
Select time range	In the Select Date/Time Range dialog box, set specific start and end report information dates (good for historical or ad hoc reports), or a sliding range (the default) that sets the time range of data to include in the report. This option is useful for reports running on a regular schedule and is the default.
Select peak weekday(s)	In the Select Peak Weekday(s) dialog box, press <b>Shift</b> to select a contiguous day range, or <b>Ctrl</b> to select non-contiguous days.
Aggregation by	Select the time unit by which to aggregate data. The default is Hour. This works in conjunction with the next field (Aggregation interval), which determines the number of units for one interval of data aggregation.
Aggregation interval	Select the interval units in which to aggregate data. The default is 1. For example, if you aggregate by the Hour and select 1 here, data is aggregated once every hour.
<b>Report settings</b>	Use the following parameters to define the graphical presentation of data, the folder where the report is generated, and properties that identify the report.
Include parameter card?	Specify whether to display a table of parameter settings in the report.
Include Availability detail table?	Specify whether to display the Availability detail table as part of the report. By default, the table is included.
Availability data stream format	Specify the data stream format. Options are 0-100 or 0-1.  The default format is 0-100.
Include Availability chart?	Specify whether to display the Availability chart as part of the report. By default, the chart is included.
Threshold on Availability chart	Enter an integer for the percent. Default is 0 (no threshold is displayed).
Include Response Time detail table?	Specify whether to display the Response Time detail table as part of the report. By default, the table is included.

<b>Description</b>	<b>How to Set It</b>
Include Response Time chart?	Specify whether to display the Response Time chart as part of the report. By default, the chart is included.
Units for Response Time report	Select the response time unit of msec (the default) or sec.
Threshold on Response Time chart (selected units)	Enter the units in seconds > 0, or use the default of 0.0. (Zero suppresses the threshold indicator in the chart.)
Select chart style	Options in the Chart Settings dialog box set the appearance of the chart. The same parameters are used in both the availability and response time charts, if both are produced. Default is Ribbon.
Select output folder	In the Specify report folder/filename dialog box, enter an output filename and fill in the remote folder fields.
Add job ID to output folder name?	Specify whether to add a job ID to the output folder name.
Index-Report Title	In the Report Properties dialog box, configure report title settings.
Add time stamp to title	Specify whether to add a time stamp to the report title.
<b>Event notification</b>	Use the following parameters to raise events associated with generating the report, and to set severity levels for those events.
Generate event on success?	Specify whether an event is raised when a report is generated. By default, an event is raised.
Severity level for report success	Set the severity level for a successful report. Default is 35.
Severity level for report with no data	Set the severity level for a report with no data. Default is 25.
Severity level for report failure	Set the severity level for a report with no data. Default is 5.

# 4

## ExchangeOnline-RT Knowledge Scripts

AppManager ResponseTime for Exchange and Exchange Online provides a set of Knowledge Scripts for monitoring the response time of Microsoft Exchange servers on-premises and Exchange Online. This chapter explains the Knowledge Scripts for ExchangeOnline-RT.

If you choose to collect data, each Knowledge Script generates the following data streams:

- ◆ **Availability**

The Availability data point is always one of the following values:

- ◆ 1 or 100 -- the test was successful
- ◆ 0 -- the test was not successful

The Availability data point indicates whether the test succeeded or failed. If, for example, a connection to the Exchange Server was established but the mailbox failed to open, the Availability data point will be 0 (not available, or not successful).

- ◆ **Response time**

You have two options for collecting response-time data:

- ◆ **Overall response time.** The information returned by this data stream is also saved with the data point, and can be viewed by double-clicking the data point in the Graph Pane or Chart Console.
- ◆ **Response-time Breakdown.** If enabled as separate parameters, you can collect the response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed.

From the Knowledge Script view of Control Center, you can access more information about any NetIQ-supported Knowledge Script by selecting it and clicking **Help**. In the Operator Console, click any Knowledge Script in the Knowledge Script pane and press **F1**.

Knowledge Script	What It Does
<a href="#">OpenFolder</a>	Opens an Exchange folder of the user that is configured in the Security Manager and reports the amount of time the operation took.
<a href="#">SendAndReceiveMessage</a>	Sends email from the user account that is configured in the Security Manager and receives the email back to the same user account. It also reports the amount of time required for the operation.
<a href="#">SendAndTrackMessage</a>	Reports the amount of time taken to deliver an email and return a delivery receipt for the email to the sender, which is configured in the Security Manager.

## 4.1 OpenFolder

Use this Knowledge Script to open a specified Exchange folder of the user that is configured in the AppManager Security Manager and report the amount of time the Knowledge Script took to open the folder. The folder access can be either public or user's mailbox.

For information on configuring a user account in Security Manager, see [Section 2.7, "Configuring Security Manager to run ExchangeOnline-RT Discovery," on page 21.](#)

### 4.1.1 Resource Objects

Exchange Online response time clients (ExchangeOnline-RT)

### 4.1.2 Default Schedule

The default interval for this script is **Every 15 minutes**.

### 4.1.3 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>General Settings</b>	
Folder name	The name of the Exchange folder to open. The default is <code>Inbox</code> .
Folder access	The security status of the folder. Select either <code>Mailbox Folder</code> or <code>Public</code> . The default is <code>Mailbox Folder</code> .
Event detail format	Select the format in which you want to display the event detail. You can select from <code>HTML Table</code> or <code>Plain Text</code> . The default is <code>HTML Table</code> .
Job timeout	Set the timeout value, from 1 to 1200 seconds, to determine the maximum time allowed to process a job before it's aborted.  When an ExchangeOnline-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a "Job Timeout" event is raised.  The default is 120 seconds.
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream. You can select either "0-1" or "0-100" format. The default is 0-100.  "0" indicates that the data stream is not available and "100" indicates that the data stream is available.
Raise event if transaction fails?	Select <b>Yes</b> to raise an event when the Exchange Online endpoint cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5.

Description	How to Set It
<b>Response Time</b>	
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to initialize Exchange Web Services	Select <b>Yes</b> to include the time taken to initialize the connection to the Exchange Web Services in calculating the total response time. The default is No.
Threshold- Maximum response time	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 15.
<b>Response Time Breakdown</b>	
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange Web Services. By default, separate response-time data streams are not collected.
Collect data for opening folder?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to open the specified folder. By default, separate response-time data streams are not collected.

## 4.2 SendAndReceiveMessage

Use this Knowledge Script to send an email from the user account that is configured in the AppManager Security Manager and receive the email back to the same user account. It reports the operation time.

For information on configuring a user account in Security Manager, see [Section 2.7, “Configuring Security Manager to run ExchangeOnline-RT Discovery,” on page 21](#).

The incoming message header contains a unique identifier that tracks and identifies the message. If the message is received that matches the sent message within the timeout time, the message is then deleted. If the timeout occurs before the message is received, the message is displayed in the Inbox.

### 4.2.1 Resource Objects

Exchange Online response time clients (ExchangeOnline-RT)

### 4.2.2 Default Schedule

The default interval for this script is **Every 15 minutes**.

### 4.2.3 Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
<b>General Settings</b>	
Message size	Specify the size of the message in bytes. The default is 100 bytes.
Event detail format	Select the format in which you want to display the event detail. You can select from HTML Table or Plain Text. The default is HTML Table.
Job timeout	<p>Set the timeout value, from 60 to 1200 seconds, to determine the maximum time allowed to process a job before it is aborted.</p> <p>When an ExchangeOnline-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a “Job Timeout” event is raised.</p> <p>The default is 120 seconds.</p>
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	<p>Select the data stream format for the Availability data stream. You can select either “0-1” or “0-100” format. The default is 0-100.</p> <p>“0” indicates that the data stream is not available and “100” indicates that the data stream is available.</p>
Raise event if transaction fails?	Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5.
<b>Response Time</b>	
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to initialize Exchange Web Services?	Select <b>Yes</b> to include the time taken to initialize the connection to the Exchange Web Service in calculating the total response time. The default is No.
Threshold-Maximum response time	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 15.
<b>Response Time Break down</b>	
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange Web Service. By default, separate response-time data streams are not collected.
Collect data for creating message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the test email message. By default, separate response-time data streams are not collected.

Description	How to Set It
Collect data for sending message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to actually send the test email message. By default, separate response-time data streams are not collected.
Collect data for waiting until message shows up in inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken for the test message to show up in the sender's mailbox. By default, separate response-time data streams are not collected.

## 4.3 SendAndTrackMessage

Use this Knowledge Script to find out the time required to send an email and to get a delivery receipt for the email back to the sender. The email is sent from the user account that is specified in the AppManager Security Manager. The recipient's email address is specified in the *Recipient Email address* parameter of the Knowledge Script.

For information on configuring a user account in Security Manager, see [Section 2.7, "Configuring Security Manager to run ExchangeOnline-RT Discovery," on page 21](#).

---

**IMPORTANT:** The Knowledge Script does not support sending a mail to the email address from which the mail is being sent, that is, the user account specified in the AppManager Security Manager. The sender and the receiver email addresses must be different.

---

This Knowledge Script sends the message with a delivery notification flag to a selected mailbox. The message that was sent remains in the Inbox of the recipient. Although this Knowledge Script cannot delete the test messages from the recipient's Inbox, AppManager ResponseTime for Exchange and Exchange Online removes the delivery notification that appears in the sender's Inbox if the test message is delivered, and if the notification is received, before the configured Job timeout expires. To retrieve the test message, the script looks at the subject for a unique identifier that matches one applied to the sent message.

The receiving user will have test email messages in his or her Inbox that cannot be deleted by this Knowledge Script. We suggest that you create a rule in Microsoft Exchange to delete those test messages periodically.

### 4.3.1 Resource Objects

Exchange Online response time clients (ExchangeOnline-RT)

### 4.3.2 Default Schedule

The default interval for this script is **Every 15 minutes**.

### 4.3.3 Setting Parameter Values

Set the following parameters as needed:

---

Description	How to Set It
<b>General Settings</b>	

---

Description	How to Set It
Message size	Specify the size of the message in bytes. The default is 100 bytes.
Event detail format	Select the format in which you want to display the event detail. You can select from HTML Table or Plain Text. The default is HTML Table.
Job timeout	<p>Set the timeout value, from 60 to 1200 seconds, to determine the maximum time allowed to process a job before it is aborted.</p> <p>When an ExchangeOnline-RT Knowledge Script job runs, a job timer is started. If the transaction takes longer than the Job timeout, the transaction is stopped and a "Job Timeout" event is raised.</p> <p>The default is 120 seconds.</p>
Recipient Email address	<p>Specify the email address of the receiver to whom the mail need to be sent.</p> <p><b>NOTE:</b> The Knowledge Script does not support sending a mail to the same email address from which the mail is being sent. The sender and the receiver email addresses must be different.</p>
<b>Availability</b>	
Collect data for availability?	Select <b>Yes</b> to collect availability data for graphs and reports. By default, data is collected.
Data stream format	<p>Select the data stream format for the Availability data stream. You can select either "0-1" or "0-100" format. The default is 0-100.</p> <p>"0" indicates that the data stream is not available and "100" indicates that the data stream is available.</p>
Raise event if transaction fails?	Select <b>Yes</b> to raise an event when the server cannot be contacted. By default, an event is raised.
Event severity when transaction fails	If events are enabled, set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 5.
<b>Response Time</b>	
Collect data for response time?	Select <b>Yes</b> to collect response-time data for graphs and reports. By default, data is collected.
Include time to initialize Exchange Web Services?	Select <b>Yes</b> to include the time taken to initialize the connection to the Exchange Web Service in calculating the total response time. The default is No.
Threshold- Maximum response time	Specify the maximum response time in seconds. When response time exceeds this value, an event is raised. The event message contains a breakdown of the total response time. The default is 15 seconds.
Raise event if threshold is exceeded?	Select <b>Yes</b> to raise an event when the response-time threshold is exceeded. By default, events are raised.
Event severity when threshold is exceeded	Set the event severity level, from 1 to 40, to indicate the importance of the event. Default is 15.
<b>Response Time Break down</b>	
Collect data for initializing Exchange?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to initialize the connection to the Exchange Web Service. By default, separate response-time data streams are not collected.



---

Description	How to Set It
Collect data for creating message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to create the test email message. By default, separate response-time data streams are not collected.
Collect data for sending message?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken to actually send the test email message. By default, separate response-time data streams are not collected.
Collect data for waiting until tracking notification appears in inbox?	Select <b>Yes</b> to collect a separate response-time data stream for the time taken for the delivery receipt to show up in the sender's mailbox. By default, separate response-time data streams are not collected.

---



# 5 Troubleshooting AppManager ResponseTime for Exchange and Exchange Online

This chapter describes how to troubleshoot AppManager ResponseTime for Exchange and Exchange Online.

## 5.1 Pre-install Check Failed

During installation, you see the following message:

```
WARNING: The pre-install check failed for the MO component. This component will not be installed.
```

The prerequisites are not met for AppManager ResponseTime for Exchange and Exchange Online to be installed on this computer.

If this occurs on a computer that acts as the repository or Operator Console, some files will be installed, but not the ResponseTime for Exchange managed object. This is fine unless you want to run Knowledge Script jobs on this computer as well.

On the repository, the Exchange-RT Knowledge Scripts will still be checked in, and on the Operator Console, the Help files will be installed.

Run the pre-installation check script to find out which prerequisites were not met. This script generates a report, which you can read in a Web browser, that lists the missing components. Then try the installation again.

## 5.2 Must Run as 'Local System' Account

Discovery fails with the following message:

```
The "NetIQ AppManager Client Resource Monitor" service (netiqmc.exe) user account is currently set as "xxxx". It must run as "Local System" account in order to use this ResponseTime module.
```

Most ResponseTime jobs cannot run unless the AppManager agent (`netiqmc`) is set to run as Local System. In this case, the agent is running under another account.

Most AppManager ResponseTime applications (including AppManager ResponseTime for Exchange and Exchange Online) run out-of-process from the AppManager agent. The separate process for the managed object is run as the user ID specified in each Knowledge Script. The agent must have the authority to start a new process as any user ID specified in a Knowledge Script parameter. Therefore, the agent must run with Local System authority.

You must update the agent so that it runs as Local System. Refer to [Section 2.5, "Permissions for Running Knowledge Scripts," on page 20](#) for instructions.

## 5.3 Exchange-RT is Not Supported

These errors are returned from running Discovery:

- ♦ The Exchange ResponseTime Managed Object returned Exchange-RT is not supported.
- ♦ The Exchange ResponseTime Managed Object is not installed or not registered. ActiveX component can't create object.

The ResponseTime for Exchange managed object is not installed on the computer where the Discovery Knowledge Script ran. Make sure that the system prerequisites are met, and try installing again.

## 5.4 Exchange-RT is Not Installed

Discovery failed with the following message:

```
Exchange-RT is not installed.
```

AppManager ResponseTime for Exchange and Exchange Online is not installed. Make sure that the system prerequisites are met, and try installing again.

## 5.5 Class Not Registered

Discovery failed with the following message:

```
Exchange-RT cannot work properly. Class not registered.
```

Some shared components are installed, but AppManager ResponseTime for Exchange and Exchange Online is not installed. Make sure that the system prerequisites are met, and try installing again.

## 5.6 The Parameter is Incorrect

Discovery failed with the following message:

```
Exchange-RT cannot work properly. The parameter is incorrect.
```

The AppManager agent service `NetIQmc` is running as a specific user on the computer; however, a different user is logged on to the computer. Change `NetIQmc` to run as Local System, which is a requirement for ResponseTime for Exchange managed objects. For more information, see [Section 2.5, "Permissions for Running Knowledge Scripts," on page 20](#).

### 5.6.1 Outlook 2000 is Missing

Discovery failed with the following message:

```
Microsoft Outlook 2000 or higher is missing or not installed properly. Exchange-RT is not supported.
```

Be sure Outlook 2000 or later is installed.

## 5.6.2 Unable to Resolve the File Path

Discovery failed with the following message:

```
Unable to resolve the file path for version verification.
```

The Discovery Knowledge Script that you tried to run was from a more recent version of AppManager than the agent on the managed client. Discovery\_Exchange-RT Knowledge Script cannot run on back-level managed objects because the script was designed to fail if it finds Outlook for Windows XP with Service Pack 2 without the required Microsoft hotfix.

To run discovery, you must upgrade the agent to the most recent version or install the latest version of AppManager ResponseTime for Exchange and Exchange Online.

## 5.7 Problems Running Knowledge Scripts

You may experience difficulties when running the Exchange-RT Knowledge Scripts. This section covers the following types of AppManager error messages.

### 5.7.1 Unable to initialize MAPI

A transaction fails with this error:

```
Unable to initialize MAPI. There may be a security problem. Please be sure the user ID is part of the Local Administrators Group.
```

Make sure Outlook has been completely installed and initialized for a user on the computer. Also verify that the specified mailbox is owned by the user ID you supplied for the *Exchange Logon and Run As Username* Knowledge Script parameter.

### 5.7.2 Information Store Could Not Be Opened

You received the following error message:

```
The Information Store could not be opened. Exchange cannot resolve the mailbox name.
```

This most likely means that you entered the wrong name for the *Mailbox name* Knowledge Script parameter. Check the following:

- ◆ Verify that you have specified the correct name for the Exchange server.
- ◆ Verify that Outlook has been set up for the user listed for the **Logon username and domain** parameter in the Knowledge Script.

Go to a computer, log on as the user ID specified for the **Logon username and domain** Knowledge Script parameter, and start up Outlook. Verify that you can access the mailbox, and that no pop-ups occur requiring you to specify a username and password.

- ◆ Verify that Exchange can resolve the mailbox name.

If you are using a mailbox that does not have a unique name, you need to use the fully qualified name (see below for directions) for the Knowledge Script to work properly.

Here is an example. If you have the following mailboxes defined on your Exchange Server: 'test', 'test 1', 'test 2', 'system test', and you specify 'test' for the Mailbox name parameter, you will be prompted for the mailbox to use because Exchange can't determine which one to use. Therefore, you must use the fully qualified name, in this format:

```
/o=Your Corporation/ou=Your City/cn=Recipients/cn=test
```

This is the information you'll need to paste into the **Values** column for the Mailbox name parameter.

To find the fully qualified name:

- 1 Open the Control Panel.
- 2 Double-click the **Mail** icon.
- 3 Click **Show Profiles**, then click **Add**.
- 4 Select **Microsoft Exchange** and click **Next**.
- 5 Leave the **Profile Name** field as is and click **Next**.
- 6 Specify the Exchange server and mailbox you are looking for and click **Next**.
- 7 For the **Travel** option, specify **No** and click **Next**.
- 8 Click **Finish**.
- 9 In the Mail dialog box, select the new profile and click **Properties**.
- 10 Select **Microsoft Exchange Server** and click **Properties**.
- 11 Enter the mailbox name you are looking for in the mailbox field and click **Check Name**.
- 12 If more than one mailbox by this name exists, a dialog box appears. On the **Change to** list, choose the name you are looking for and click **Properties**.
- 13 The name you need appears in the **Email address** field. Copy it and paste it into the **Values** column for the **Mailbox name** parameter.

Finally, try the Knowledge Script job again. When you are finished testing the response time, you may want to remove the new profile from the list.

### 5.7.3 Must Run as 'Local System' Account

The RunTransaction method of the ResponseTime for Exchange managed object returned the following message:

```
The "NetIQ AppManager Client Resource Monitor" service (netiqmc.exe) user account is currently set as "xyz". It must run as "Local System" account in order to use this ResponseTime module.
```

Set the "NetIQ AppManager Client Resource Monitor" service to run as Local System. This is required for most ResponseTime modules. To do so, follow the instructions provided in [Section 2.5, "Permissions for Running Knowledge Scripts," on page 20](#).

Then try running the job again.

### 5.7.4 Could Not Find the Domain Controller

The RunTransaction method of the ResponseTime for Exchange managed object returned the following message:

```
Could not find the Domain Controller for the domain.
```

One potential cause of this problem is that the value entered for the **Domain** Knowledge Script parameter is misspelled or does not exist.

ResponseTime managed objects validate the **Logon and Run As Username/Domain** Knowledge Script parameters and start the ResponseTime managed object process as that user. If the client cannot access the Domain Controller for the domain listed for the **Domain** parameter, the process cannot be started, and the transaction fails.

Make sure the value you entered for **Domain** is valid and is typed properly. Verify that the Domain Controller is active and that there are no network problems between the client and the Domain Controller. If the problem persists, contact the domain administrator

## 5.7.5 Unable to Validate Local Group Member

The following error occurred while a Knowledge Script was running:

```
Unable to validate the local group member. Problems with operating system.
```

---

**NOTE:** It is normal to see this error during network maintenance.

---

The message means that the operating system cannot provide information about a local group at that moment. This may occur once in a while during network outage or system maintenance.

If the problem persists, contact your network administrator.

## 5.7.6 Unable to Validate Domain User

The following error occurred while a Knowledge Script was running:

```
Unable to validate domain user. Problems contacting the domain controller while validating domain name and user account.
```

---

**NOTE:** It is normal to see this error during network maintenance.

---

This error may occur once in awhile during a network outage or during system maintenance. It may also occur if the Domain Controller is shut down or reboots during an AppManager ResponseTime for Exchange and Exchange Online operation.

If the problem persists, contact your network administrator.

## 5.7.7 Member Does Not Exist

The RunTransaction method of the ResponseTime for Exchange managed object returned the following message:

```
A member could not be added to or removed from the local group because the member does not exist.
```

The computer is not part of a domain (for example, it is in a workgroup instead of a domain), or it is not part of the domain (or a trusted domain) specified for the **Domain** parameter in the Knowledge Script.

## 5.7.8 RPC Over HTTP Polling Interval

When you are using the Exchange-RT Knowledge Scripts [SendAndReceiveMessage](#) and [SendAndTrackMessage](#) and have them configured to test RPC over HTTP, the time it takes for the message or return receipt to appear in the outbox depends on an Exchange Server setting, RPC over HTTP polling.

Outlook clients using RPC over HTTP use a polling mechanism to check for new messages. While polling is initiated by Outlook, the polling interval is set in the Exchange server. Polling is not new to Outlook 2003; Outlook 2002 automatically begins polling if a UDP notification is not received. However, Exchange 2003 offers the ability to configure a polling interval for RPC over HTTP clients.

By default, Outlook 2003 polls every 60 seconds. You can change the polling frequency by adding the following registry entry to the Exchange Server that contains the user's mailbox:

**Location:** HKLM\System\CurrentControlSet\Services\MSExchangeIS\ParametersSystem

**Key:** Maximum Polling Frequency

**Type:** REG\_DWORD

**Value:** *N* (in milliseconds)

The value, *N*, is the number of milliseconds between polling intervals. If Maximum Polling Frequency is not present, a default value of 60 seconds (60000 when set in milliseconds) is used. This value is the minimum number of milliseconds between polling intervals, which means that polling does not take place every 60 seconds. Instead, polling will occur any time between the polling frequency interval and twice that interval. For example, if you set the Maximum Polling Frequency to 90 seconds, polling will take place between 90 and 180 seconds after the last poll.

When setting this value, keep in mind that Microsoft does not recommend lowering this value because of the expected degradation of Exchange, Outlook, and network performance. Therefore, you should not use a polling frequency of less than 60 seconds.

## 5.7.9 Event or data collection stops after some time

When you run the Exchange-RT Knowledge Scripts, event or data collection might stop after some time.

To resolve the issue, do the following:

- 1 Open **Run** and type `regedit` to open the Registry Editor.
- 2 Go to the `\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\MSExchangeIS\ParametersSystem\ location`.
- 3 Increase the value of `Maximum Allowed Sessions Per User` as per your requirement.
- 4 Close the Registry Editor.
- 5 Open **Run** and type `services.msc`.
- 6 Locate the `Microsoft Exchange Information Store Service` and restart the service.



## 5.8 Transaction Initialization Failures

Transaction initialization failures indicate that a failure occurred in the network authentication procedure.

The ResponseTime for Exchange managed object validates the values you enter for the **Exchange Logon and Run As User ID/Domain** Knowledge Script parameters. (AppManager ResponseTime for Exchange and Exchange Online is the only AppManager ResponseTime module to use Windows NT authentication—or “integrated security”—to actually access the network itself. Other ResponseTime modules require you to enter authentication information for the **Logon** parameters.) The managed object then connects to the Exchange Server to run the test as that “run as” user. If the client cannot access the Exchange Server using the information provided, the process cannot be started, and the transaction fails. Depending on precisely why the failure occurred, the event details are slightly different.

### 5.8.1 Exchange-RT Cannot be Initialized

The job fails with a Transaction Initialization Failure. The following are examples of what the event details might include:

#### Example 1:

```
Knowledge Script Error 0x803CF007: Exchange-RT cannot be initialized
Error Code: 0x80070057
Error Message: Unable to validate Domain User. The UserName is not a valid user on
the domain.
```

This error was a “transaction initialization failure” because the transaction itself was never performed. As you can see from the event details, an invalid username, domain, or password was supplied for one of the **Logon and Run As** parameters in the Knowledge Script. The transaction was never initialized because the user could not be validated by the domain controller.

If you were running the job as “Interactive User,” make sure a user was logged onto the computer.

#### Example 2:

```
Knowledge Script Error 0x803CF007: Exchange-RT cannot be initialized
Error Code: 0x80080005
Error Message: Server execution failed
```

You will probably see this error if you are running many simultaneous Exchange-RT Knowledge Script jobs. However, the real problem is not the number of jobs you’re running. If you see this error, you need to upgrade your AppManager agents to one of the following levels:

- ♦ AppManager v5.0.1 with Service Pack 2 and the Patch named AM501CE0089
- ♦ AppManager v6.0.2.

### Example 3:

Transaction initialization failure

Event Details:

Knowledge Script Error 0x803CF007: Exchange-RT cannot be initialized

Error Code: 0x803CF004

Error Message: The module requested has been uninstalled or is outdated. Please install the latest version of the module.

The latest versions of the Exchange-RT Knowledge Scripts are installed on the repository, but you are attempting to run them on a back-level version of AppManager ResponseTime for Exchange and Exchange Online. You may have installed the most recent version of another AppManager ResponseTime module, but you are missing the latest engines needed to run this Knowledge Script job.

Install the latest version of AppManager ResponseTime for Exchange and Exchange Online on the client computer, re-run the Discovery Knowledge Script, and then restart this job.

## 5.8.2 Exchange-RT is Not Installed

The Knowledge Script job failed, with the following message:

Knowledge Script Error 0x803CF004: Exchange-RT module has been uninstalled or is outdated. Please install the latest version of the module.

Error Code: 0x1AD

Error Message: ActiveX component can't create object

The latest versions of the Exchange-RT Knowledge Scripts are installed on the repository, but you are attempting to run them on a back-level version of AppManager ResponseTime for Exchange and Exchange Online.

Install the latest version of AppManager ResponseTime for Exchange and Exchange Online on the client computer, re-run the Discovery Knowledge Script, and then restart this job.

## 5.8.3 The Knowledge Script's ConfigJob method failed

The Knowledge Script job failed, and I saw the following error message:

The Knowledge Script's ConfigJob method failed

Knowledge Script Error 0x803CF003: ConfigJob failed unexpectedly. The Knowledge Script may have been modified manually.

Error Message: The remote server machine does not exist or is unavailable.

The error code you see associated with this failure is one of the following: 0x1CE, 0x800706BE, or 0x800706BF.

You will probably see this error if you are running many simultaneous Exchange-RT Knowledge Script jobs. However, the real problem is not the number of jobs you are running. If you see this error, you need to upgrade your AppManager agents to one of the following levels:

- ♦ AppManager v5.0.1 with Service Pack 2 and the Patch named AM501CE0089
- ♦ AppManager v6.0.2.

## 5.8.4 The Configured Identity is Incorrect

When I tried to run a Knowledge Script job, I received the following error message:

```
Error Code: 0x8000401A
Error Message: The server process could not be started because the configured
identity is incorrect. Check the username and password.
```

This error indicates that you most likely entered incorrect security credentials for the Knowledge Script parameters.

Check the values you entered for the **Logon and Run As Username**, **Password**, and **Domain** parameters. One of them is probably invalid or mistyped.

## 5.9 Transaction Failures

With the Exchange-RT Knowledge Scripts, there are the following types of Transaction Failure events:

- ◆ Microsoft MAPI Errors
- ◆ Microsoft Exchange Errors
- ◆ Execution Errors
- ◆ Queue Timeouts
- ◆ Job Timeouts

First, we discuss general tips for dealing with an Exchange-RT transaction failure. Then, we discuss some of the specific errors in the above list.

### 5.9.1 Advice for Dealing with Any Transaction Failure

With any Transaction Failure event, the event details include information to help you understand why the failure occurred. Use this information to isolate the problem. The event details will point toward one of the following:

- ◆ errors returned by the driver.
- ◆ values you entered in the Knowledge Script.

Or you may want to look more closely at the “Job progress” section of the event detail message, which denotes the place in the transaction where the failure occurred. For example, the “Job progress” may indicate that the job proceeded no farther than “Connecting to database server.”

The following table contains a summary of transaction failures, with some advice for resolving them:

Error Message Text	Likely Cause	Steps to Take
Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed. Error Code: 0x80040111 Source: MAPI 1.0 Error Message: The information store could not be opened.	Invalid Exchange Server. You probably entered the wrong server hostname or IP address for the <b>Exchange server name</b> parameter.	Check the spelling of the server hostname you entered for the <b>Exchange server name</b> Knowledge Script parameter. Or check the server hostname or IP address by pinging the server on the network.

Error Message Text	Likely Cause	Steps to Take
<p>Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed.</p> <p>Error Code: 0x8004011D</p> <p>Source: Microsoft Exchange Server Information Store</p> <p>Error Message: The Microsoft Exchange Server computer is not available. Either there are network problems or the Microsoft Exchange Server computer is down for maintenance.</p>	<p>The Exchange Server is unavailable. The Information Store service is stopped.</p> <p>The Exchange Server whose name you entered for the <b>Exchange server name</b> Knowledge Script parameter is down, or else network connectivity to it is down.</p>	<p>Check the Exchange Server or the network connection to the Exchange server.</p> <p>Try to ping the server.</p> <p>Or try to run the Knowledge Script again using a different Exchange server.</p>
<p>Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed.</p> <p>Error Code: 0x80040111</p> <p>Source: MAPI 1.0</p> <p>Error Message: The information store could not be opened.</p>	<p>The mailbox you tried to test is invalid.</p>	<p>Check the mailbox name you entered for the <b>Mailbox name</b> Knowledge Script parameter.</p> <p>Try to run the Knowledge Script again using a different mailbox name.</p>
<p>Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed.</p> <p>Error Code: 0x8004011D</p> <p>Source: Microsoft Exchange Server Information Store</p> <p>Error Message: You do not have permission to log on.</p>	<p>The username you entered for the Logon and Run As Username parameter does not have permission to access the mailbox you tried to test.</p>	<p>Check the information you entered for the Knowledge Script security settings (the <b>Logon name</b> and <b>Logon password</b> parameters). Make sure you entered it correctly.</p>

Error Message Text	Likely Cause	Steps to Take
Exchange Error 0x803A1001: Unable to create Exchange Profile. Unable to configure the Exchange message service.	<p>This issue can occur for the following reasons:</p> <ul style="list-style-type: none"> <li>◆ <b>Cause 1:</b> With Windows XP, the credentials you specified in the <i>Exchange Logon And Run As</i> parameters for the Exchange R-T Knowledge Script may not have sufficient permissions to create a profile for the given mailbox name.</li> <li>◆ <b>Cause 2:</b> When you select the Create an Exchange profile during each iteration? parameter in any Exchange-RT Knowledge Script and run the Knowledge Script on an agent in which either Outlook 2010 or Outlook 2013 is installed.</li> </ul>	<ul style="list-style-type: none"> <li>◆ <b>Solution for Cause 1:</b> Create an Exchange profile with the relevant mailbox user name and password. Select <b>Remember my password</b> and save the information. This is a one-time process for any user name. In the <i>Exchange Logon And Run As</i> parameters of the Exchange-RT Knowledge Script, specify the credentials of the user who has the user session.</li> <li>◆ <b>Solution for Cause 2:</b> In the Registry Editor, go to the HKEY_CURRENT_USER\Software\Microsoft\Exchange\Exchange Provider location. Click <b>Edit &gt; New &gt; String Value</b>. Modify the following values in the String Value (REG_SZ) that you have just added: Value name: DS Server, Value data: FQDN of the global catalog server. Close the Registry Editor.</li> </ul>
<p>Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed.</p> <p>Error Code: 0x8004011C</p> <p>Source: Microsoft Exchange Information Store</p> <p>Error Message: Your profile is not configured.</p>	<p>This issue can occur with Windows XP for the following reasons:</p> <ul style="list-style-type: none"> <li>◆ The credentials you specified in the <i>Exchange Logon And Run As</i> parameters for the Exchange R-T Knowledge Script may not have sufficient permissions to create a profile for the given mailbox name.</li> <li>◆ The Exchange-RT script is trying to use a profile that does not exist.</li> </ul>	<p>Create an Exchange profile with the relevant mailbox user name and password. Select <b>Remember my password</b> and save the information. This is a one-time process for any user name. In the <i>Exchange Logon And Run As</i> parameters of the Exchange-RT Knowledge Script, specify the credentials of the user who has the user session.</p>

## 5.9.2 Microsoft MAPI Errors

The job fails with a Transaction Failure. The event details include the following information:

```
MAPI Error 0x803A1003: Unable to open Exchange database. OpenMsgStore failed.  
Error Code: 0x80040111  
Source: MAPI 1.0  
Error Message: The information store could not be opened.
```

This error message indicates that the MAPI Information Store couldn't be opened, perhaps because you entered an invalid server name for the **Exchange Server Knowledge Script** parameter.

## 5.9.3 Microsoft Exchange Error

The job fails with a Transaction Failure. The Event details include the following information:

```
Exchange Error 0x803A1001: Unable to open Exchange database. OpenMsgStore failed.  
Error Code: 0x8004011D  
Source: Microsoft Exchange Server Information Store  
Error Message: You do not have permission to log on.
```

This error message indicates that the Exchange Server Information Store couldn't be accessed, perhaps because you entered an invalid name for the **Mailbox name** parameter.

## 5.9.4 Execution Error

The job fails with a Transaction Failure. The event details refer to an "Execution Error."

Execution errors belong to a category of errors that will have different event titles, such as "Folder not Found". These types of error occur when application-specific values specified in the Knowledge Script for the transaction are incorrect, preventing the transaction from completing. In the example below, the folder specified for the **Folder name** parameter does not exist:

```
Event: Folder not found  
Execution Error 0x803A0005: Unable to complete OpenFolder. The "XXX" folder was not found.
```

## 5.9.5 Queue Timeout

The job fails with a Transaction Failure. The event details include the following:

```
Error 0x803C0106: The job was aborted because it failed to obtain Microsoft Outlook resources before timing out.
```

To avoid this problem, take one or more of the following steps:

- ◆ Increase the Queue Timeout value
- ◆ Increase the schedule interval for the Knowledge Script
- ◆ Reduce the number of Exchange-RT jobs on the client computer.

## 5.9.6 Job Timeout

The job fails with a Transaction Failure. The event details include the following:

```
Error 0x803C0104: The job was aborted because it had been using Microsoft Outlook resources for too long.
```

To avoid this problem, take one or more of the following steps:

- ◆ Check the Exchange server to make sure it is available.
- ◆ Increase the Job Timeout value. Open the Knowledge Script Properties dialog box and find the **Job Timeout** parameter near the bottom of the listed parameters. Increase the value by 15 seconds or so. Then try to run the job again.
- ◆ Increase the schedule interval for the Knowledge Script
- ◆ Reduce the number of Exchange-RT jobs on the client computer.

