Management Guide

NetIQ® AppManager® ResponseTime for Microsoft Active Directory

July 2019

Legal Notice

Contents

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 NetIQ Web site: www.netiq.com/support/am/extended/documentation/default.asp?version=AMDocumentation.

Conventions

The library uses consistent conventions to help you identify items throughout the documentation. The following table summarizes these conventions.

Convention	Use
Bold	◆ Window and menu items ◆ Technical terms, when introduced
Italics	◆ Book and CD-ROM titles ◆ Variable names and values ◆ Emphasized words
`Fixed Font`	◆ File and folder names ◆ Commands and code examples ◆ Text you must type ◆ Text (output) displayed in the command-line interface
Brackets, such as *[value*]	◆ Optional parameters of a command
Braces, such as {*value}*	◆ Required parameters of a command
Logical OR, such as *value1*|*value2*	◆ Exclusive parameters. Choose one parameter.

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Qmunity, 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, Qmunity helps ensure you are mastering the knowledge you need to realize the full potential of IT investments upon which you rely. For more information, please visit http://community.netiq.com.

1 Introduction to AppManager ResponseTime for Microsoft Active Directory

NetIQ AppManager ResponseTime for Microsoft Active Directory provides a set of transactions that can be run from client computers to AppManager servers. These transactions monitor the availability and response time of typical Active Directory operations, such as checking Active Directory domain controller connectivity or service availability. You can deploy these transactions at any site served by an Active Directory or DNS server.

This chapter provides information about AppManager ResponseTime for Active Directory, plus a brief introduction to Active Directory and an overview of important concepts and terminology. It also summarizes the key ways AppManager can help you monitor Active Directory.

1.1 What's New in AppManager ResponseTime for Active Directory 7.0?

This version of AppManager ResponseTime for Active Directory adds the following enhancements and fixes:

- **Ability to select resource object where events appear.**

  You can now select the computer in the console TreeView where events are shown. This feature supports the Service Map Viewer component of Control Center. You can select whether events generated by the ResponseTime for Active Directory managed object appear on the agent, on the server, or both.

- **Backlevel Knowledge Script support discontinued.**

  To support architectural and build enhancements, including a smaller installation profile, all Knowledge Scripts from earlier versions of AppManager ResponseTime for Active Directory are deprecated. These Knowledge Scripts will fail if you try to run them. See Section 2.2, "Upgrade Considerations," on page 18 for more information.

1.2 Why Do I Need to Measure Response Time?

Response time is perhaps the best metric for reporting on the performance of your IT infrastructure. That's because response time is the metric that's most often experienced by and comprehensible to end users, those for whom the infrastructure must perform as well as it possibly can.

Along with measuring response time, the AppManager ResponseTime modules also measure availability, another key metric that really matters to end users.

With the AppManager ResponseTime modules, the response time and availability of key servers, along with that of the network itself, can be measured or tested for different geographies and applications, providing the information you really need for both managing and reporting on network performance.

1.3 The AppManager ResponseTime Modules

The AppManager ResponseTime modules were designed to measure the response time and availability of a client/server transaction from the client's perspective. In that sense, they are different from other AppManager monitoring modules, which run on the server to measure and monitor server activities.

Therefore, ResponseTime modules are normally only installed on client computers (often, on computers actually used by end-users) and not on the application servers themselves. In some cases, their operation therefore requires some pre-requisite client software to be installed and configured, such as Outlook or an Oracle client.

The following discrete modules make up the AppManager ResponseTime family:

Module Name	Knowledge Script Category Name	What Is Monitored
AppManager ResponseTime for Microsoft Active Directory	AD-RT	Microsoft Active Directory and DNS transactions.
AppManager ResponseTime for Microsoft Exchange	Exchange-RT	Microsoft Exchange transactions.
AppManager ResponseTime for Networks	Networks-RT	Simulated transactions for many popular applications to measure network performance.
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	Windows transactions. This module allows you to record and "play back" synthetic transactions from any 32-bit Windows or Citrix client.

1.4 How AppManager ResponseTime for Active Directory 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 the network is performing; you also find out how well Active Directory transactions in particular are performing.

ResponseTime Module Architecture

Most AppManager ResponseTime modules have two parts:

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

  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 2.4, “Permissions for Running Knowledge Scripts,” on page 19for more information.

- The specific **ResponseTime engine process** that handles the actual transaction. Module-specific engines are installed in `%CommonProgramFiles%\Netiq\ResponseTime`.

  These engine processes will run under the user account you specify for the **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 Knowledge Script job, the ResponseTime engine may need to impersonate a user and/or log on to the application server. In some module-specific instances, this engine requires you to supply account and authentication information when you configure the job:

- The values you supply for the **Run As** parameters in a Knowledge Script are used to impersonate a logged-in user and instantiate the application. If required, the ResponseTime engine process will be launched as this user.
- The **values you supply for the Logon** Knowledge Script parameters are used for authenticating the user on the application server, as, for example, with an Active Directory or Oracle user logon.

Sometimes these two options equate to the same information, especially in the case where the logon to the application server is handled via Windows NT authentication (also called NTLM or “Integrated Security”). This is default case with ResponseTime for Exchange and ResponseTime for Active Directory.

Response-Time Test Results

The results you get from response-time testing with one of the AD-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 2 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, some Knowledge Scripts offer an option to create "**Response Time Breakdown**" data streams, individual data points for the different parts of the Knowledge Script transaction that are timed.

Only one of the AD-RT Knowledge Scripts includes Response Time Breakdown options. The Section 3.4, "GetObject," on page 30 Knowledge Script allows you to collect separate data streams for the time taken to:

- Bind to the object
- List containers
- Download objects or containers

All the other transactions performed by the AD-RT Knowledge Scripts consist of a single step, so the overall Response Time data point represents that single transaction step.

1.5 Understanding Active Directory

Microsoft Active Directory includes the following features that AppManager can help you monitor:

- **Domain controllers**. Active Directory divides networks into domains. Each has one or more domain controllers, servers that retain current copies of the directory, control access to network resources, and replicate any changes to all other domain controllers in the **forest** (a set of domains).
- **Objects**. Active Directory objects are the entities that make up a network. Objects include shared resources on the network, such as servers, volumes, printers, and user and computer accounts.
- **Services**. A *service* is an application that makes certain operations available to network users. Active Directory can be used to publish network services rather than computers or servers, allowing administrators to manage and locate the service regardless of which computer is providing it. A directory service entails both the directory information source and the services that make the information available and usable to administrators, users, network services, and applications.
- **The Domain Name System (DNS)**. A distributed, replicated, data query service, DNS is used by Active Directory to locate resources and translate hostnames into Internet Protocol addresses.

Understanding Domain Controllers

Active Directory lets you organize the network into one or more domains, each with one or more *domain controllers*. A domain controller is a server providing access control and directory access. Once a user has logged into his or her authorized domain, the domain controller ensures that he or she has access to all resources in the domain.

You can combine multiple domains into a hierarchical domain "tree," and those trees can in turn be combined into a "forest." Domain controllers also allow for directory replication. Anytime a change is made to the global catalog (a domain controller that stores a copy of all Active Directory objects in a forest), the changes are sent to every domain controller in the forest. Active Directory actually runs only on the domain controllers.

Understanding Objects

Each Active Directory *object* is a distinct, named set of attributes that represents something concrete, such as a user, a printer, or an application.

All objects are instances of classes that are defined in the Active Directory database schema. They are assigned names based on Lightweight Directory Access Protocol (LDAP) conventions because Active Directory objects communicate with domain controllers via LDAP.

When you create an Active Directory object, Active Directory generates values for some of the object's attributes; you provide others. For example, when you create a user object, Active Directory assigns it a globally unique identifier (GUID), and you provide values for such attributes as the user's given name, the logon identifier, and so forth.

Understanding Services

Active Directory helps network users locate network *services* to perform certain operations, such as printing. Because Active Directory can be configured so that it publishes network services rather than computers or servers, administrators can manage and locate a service regardless of which computer is providing it.

A directory service includes both the directory information source and the services that make the information available and usable to administrators, users, network services, and applications. A directory service should make the physical network topology and protocols transparent to users, who can then access any authorized resource without knowing its connection details. The directory service lets other authorized users on the same network access stored directory information about a user account object (information such as an email address, for example).

Directory services support many capabilities. Some directory services are integrated into an operating system, and others are applications, such as email directories. Operating system directory services, such as Active Directory, provide management of users, computers, and shared resources. Directory services that handle email, such as Microsoft Exchange, enable users to look up other users and send email.

1.6 Understanding DNS

Active Directory is fully integrated with the Domain Name System, or DNS. DNS is a distributed, hierarchical data query service used on the Internet for translating resource hostnames into Internet Protocol addresses. DNS is designed to use a sequence of name servers, based on the domains included in the name being queried, until a match is found.

Active Directory requires DNS, which it uses as a locator service. As such, DNS matches Active Directory domain, site, and service names to IP addresses on the network. For example, any client on the network relies on DNS to locate its domain controller.

Active Directory and DNS share the same structure and use the same naming conventions. On a typical Active Directory network, the enterprise DNS namespace (its Internet domain name, such as "netiq.com") is the same as its Active Directory namespace. Active Directory lets you maintain as one or more hierarchical Windows 2000 domains beneath a root domain that is registered as a DNS namespace.

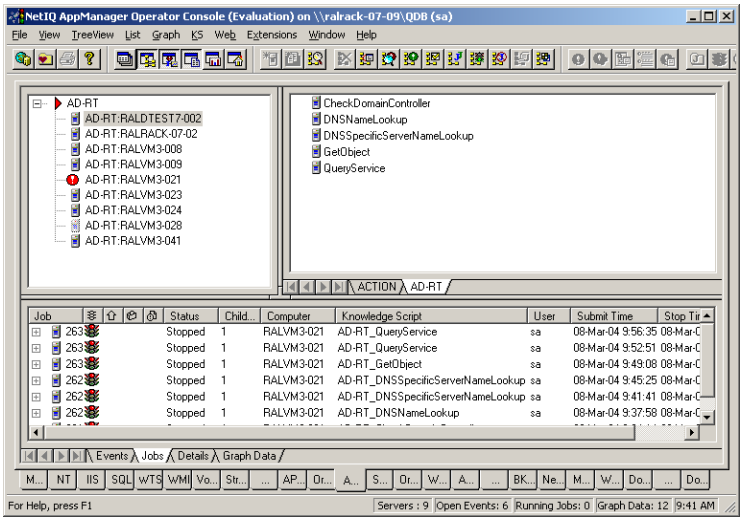
The Knowledge Scripts in the AD-RT category support both System and User DNS.

1.7 Viewing Active Directory in AppManager

AppManager provides a comprehensive solution for monitoring Active Directory server response time from a client perspective. Using AppManager, you can perform the following procedures and find out the response time for each:

- Check your Active Directory domain controller connectivity.
- Retrieve content from the Active Directory server.
- Monitor the availability and status of a service on a computer in the Active Directory domain.
- Check your DNS server's ability to resolve a particular hostname, as well as to resolve a particular hostname on a particular server.

After you install the necessary program elements and discover your Active Directory clients, the AD-RT Knowledge Scripts are visible in the AppManager Operator Console TreeView pane.



2 Installing AppManager ResponseTime for Microsoft Active Directory

This chapter provides installation instructions and describes system requirements for AppManager ResponseTime for Microsoft Active Directory (AD-RT).

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 Microsoft Active Directory has the following system requirements:

Software/Hardware	Version
NetIQ AppManager installed on the AppManager repository (QDB) computers, on the proxy agent computers, and on all console computer	7.0, 8.0.3, 8.2, 9.1, 9.2, 9.5, or later One of the following AppManager agents are required: ◆ AppManager agent 7.x with hotfix 71704 or later ◆ AppManager agent 8.0.3, 8.2, 9.1, 9.2, 9.5 or later
Microsoft Windows operating system on the proxy agent computers	One of the following versions: ◆ Windows Server 2019 ◆ Windows Server 2016 ◆ Windows Server 2012 R2 ◆ Windows Server 2012 ◆ Windows Server 2008 R2 ◆ Windows Server 2008 (32- and 64-bit) ◆ Windows Server 2003 (32-bit) ◆ Windows XP (32-bit)
Active Directory	Active Directory 2000 or later installed on the computers you want to monitor.
Microsoft SQL Server Native Client 11.0 **(for TLS 1.2 support)**	11.3.6538.0 or later **NOTE:** The SQL Server Native client can be installed from this Microsoft download link.

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 the present version of AppManager ResponseTime for Microsoft Active Directory, backlevel AD-RT Knowledge Scripts are no longer supported. Backlevel Knowledge Scripts are defined as Knowledge Scripts from versions earlier than version 6.4. If you have backlevel Knowledge Scripts running in your AppManager management site, you should 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 AD-RT jobs before you try to upgrade the AppManager agent.

Because AppManager ResponseTime for Microsoft Active Directory 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 Microsoft Active Directory will run backlevel versions of the AD-RT Knowledge Scripts, but the reverse is not true: the new AD-RT Knowledge Scripts are *not* supported on backlevel 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.

Once you install the new Knowledge Scripts on the repository and clients, run the Discovery_AD-RT Knowledge Script again. For more information on this Knowledge Script, see Section 3.8, "Discovery_AD-RT," on page 41.

2.3 Where to Install ResponseTime for Active Directory

To ensure the availability and performance of a given network resource from the perspective of an end user, you should install ResponseTime for Active Directory managed objects at carefully selected network locations.

AppManager ResponseTime for Microsoft Active Directory tests Active Directory response time by sending test signals to Domain Controllers. Therefore, installing the managed object on a Domain Controller does not result in accurate or useful test results.

If AppManager agents are distributed geographically and topologically on the network, the ResponseTime for Active Directory managed objects installed on these agents can help you determine whether problems are related to the geographical location of the user, or whether they're 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 help determine how accessible critical servers (particularly DNS servers) are from a range of client connections. For example, you may want to verify a rapid DNS server access time for the slowest connection speed that you expect network users to have. Or you can compile a statistically averaged view of domain controller response times from multiple, distributed agents.

When ResponseTime for Active Directory 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 Permissions for Running Knowledge Scripts

Most AppManager ResponseTime applications (including AppManager ResponseTime for Microsoft Active Directory) require that the AppManager Windows agent—specifically, the `netiqmc` process—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 **Run As Username** 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. (The agent installation uses the Local System option by default.)

When you install AppManager ResponseTime for Microsoft Active Directory 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 so that they're running with the same authority. If you don't update these services to run as Local System, the Discovery_AD-RT Knowledge Script will fail.

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

To update the agent services:

1. On each computer where you're installing the ResponseTime for Active Directory managed object, 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.

2.5 Installing AppManager ResponseTime for Microsoft Active Directory

You can install AppManager ResponseTime for Microsoft Active Directory in one of the following ways:

- Use Control Center to install the module on a remote computer where an AppManager agent is installed.

- Run the AppManager setup program, and install the module when installing AppManager.
- Use the command prompt to install the module silently.

For more information about installing modules, see the AppManager *Installation Guide*. After the installation has completed, you can find a record of problems encountered in the `AD-RT_Install.log` file, located in the `\NetIQ\Temp\NetIQ_Debug` folder. You can also check the ResponseTime log, `RTInstalllog.txt`, which is written to the same folder.

2.6 Upgrading Knowledge Script Jobs

This release of AppManager ResponseTime for Microsoft Active Directory 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.

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. In addition, the repository computer must have hotfix 72040 installed, or the most recent AppManager Repository hotfix. To download the hotfix, see the AppManager Suite Hotfixes Web page.

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.

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. Customized script parameters may have reverted to default parameters during the installation of the module. New parameters may need to be set appropriately for your environment or application.

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 both properties and the script.

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

Propagating Changes to Ad Hoc Jobs

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.

To propagate changes to ad hoc Knowledge Script jobs:

1. In the Knowledge Script view, select the Knowledge Script for which you want to propagate changes.
2. Click **Properties Propagation** > **Ad Hoc Jobs**.
3. Select the components of the Knowledge Script that you want to propagate to associated ad hoc jobs:

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.

Propagating Changes to Knowledge Script Groups

You can propagate the properties and logic (script) 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. For more information, see "Propagating Changes to Ad Hoc Jobs" on page 21.

To propagate Knowledge Script changes to Knowledge Script Groups:

1. In the Knowledge Script view, select the Knowledge Script Group for which you want to propagate changes.
2. On the KS menu, select **Properties propagation** > **Ad Hoc Jobs**.
3. ***If you want to exclude a Knowledge Script member from properties propagation***, deselect that member from the list in the Properties Propagation dialog box.
4. Select the components of the Knowledge Script that you want to propagate to associated Knowledge Script Groups:

Select	To propagate
Script	The logic of the Knowledge Script.
Properties	Values from the Knowledge Script Schedule and Values tabs, including the schedule, actions, and Advanced properties.

5. Click **OK**. Any monitoring jobs started by a Knowledge Script Group member are restarted with the job properties of the Knowledge Script Group member.

2.7 Uninstalling AppManager ResponseTime for Microsoft Active Directory

An uninstallation executable file is installed in the `AppManager\bin` directory when you install this module. Run `Uninstall_AD-RT.exe` to uninstall AppManager ResponseTime for Microsoft Active Directory.

3 AD-RT Knowledge Scripts

The AD-RT category provides a set of Knowledge Scripts for monitoring Active Directory response time with AppManager.

From within the AD-RT view of the Operator Console, you can select a Knowledge Script or report by clicking the **AD-RT** tab of the Knowledge Script pane.

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

- **Availability**

  This data stream returns one of two values (depending on the data stream format you selected):

  - 1 or 100 = transaction was successful
  - 0 = 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 Active Directory Server was established but the test transaction failed to complete, the Availability data point will be 0 (not available, or not successful).

- **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.

  A Response Time data stream is only generated if the entire transaction is successful.

- **Response time breakdown**

  For the GetObject Knowledge Script, you can enable data collection for up to 3 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that can be timed.

Most AD-RT Knowledge Scripts require you to enter username and password information to log into the network domain and separate account and password information to run the application. An exception is the QueryService Knowledge Script, which uses Windows NT authentication (or “integrated security”) and therefore uses the same username and password information to run the application and log into the domain.

Following are the Knowledge Scripts in the AD-RT category:

Knowledge Script	What It Does
CheckDomainController	Checks Active Directory domain controller connectivity.
DNSNameLookup	Checks ability of a DNS server to resolve a particular hostname.
DNSSpecificServerNameLookup	Checks ability of a DNS server to resolve a particular hostname on a specific server.
GetObject	Retrieves content from the Active Directory server.
QueryService	Monitors the availability and status of a service on a computer in the Active Directory domain.
Report_AD-RT	Generates a report on availability and response time.

Knowledge Script	What It Does
Report_AD-RT_DNS	Generates a report on DNS availability and response time.
Discovery_AD-RT	Discovers Active Directory configuration and resources.

3.1 CheckDomainController

Use this Knowledge Script to monitor Active Directory Domain Controllers (DCs). The Knowledge Script checks to see if the DC is running; if it is, the Knowledge Script measures response time information for a performance check.

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

- **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.
- **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.

  A Response Time data stream is only generated if the entire transaction is successful.

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.

An event is raised whenever one of the following occurs:

- A threshold that you have specified as an event parameter is exceeded.
- The AD-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.

Enter the name of the Domain Controller as the server when using this Knowledge Script in a service connection.

Resource Objects

Active Directory response time clients (AD-RT).

Default Schedule

The default interval for this Knowledge Script is **Every 15 minutes**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Availability	
Collect data for availability?	Select the **Yes** check box to collect data for graphs and reports. If enabled, returns: ◆ 1 or 100 -- Transaction completed successfully ◆ 0 -- Transaction did not complete successfully By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream. Previous versions of AppManager ResponseTime used a 0 (“not available”) or 1 (“available”) format to indicate availability. 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 the **Yes** check box to raise an event when the server cannot be contacted. By default, events are enabled.
Event severity when transaction fails	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5. If you disable availability failure events, this value is ignored.
Response Time	
Collect data for response time?	Select the **Yes** check box to collect response time data for graphs and reports. By default, data is collected.
Threshold -- Maximum response time (seconds)	Specify the maximum number of seconds that the transaction can take before an event is raised. The event message contains a breakdown of the total response time. The default is 5 seconds.
Raise event if threshold is exceeded?	Select the **Yes** check box to raise an event when the response time exceeds the threshold. 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.
Domain controller name	Enter the name of the Domain Controller that should receive the response time test flows. If you’re setting the **Event on** parameter (see below), the **Domain Controller name** parameter lets you select the server where the event will appear in your console. Enter the name of the server, or click the browse button ([**...**]) to select from a list of available servers. The Domain Controller you select must already be in the TreeView.

Description	How to Set It
Event on	Select the TreeView location where events should be displayed. Select either: ◆ **Agent** (the client computer in the response-time tests). This is the default. ◆ **Server** (the Domain Controller being tested) ◆ **Both.** The event will be shown in two locations in the TreeView. **Notes** 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 `Agent` when starting jobs in the Operator Web Console. If you select `Server`, no events are generated. If you select `Both`, an event is only shown on the agent.
Logon	
Username	Enter the username to use to log onto the DC.
Password	Enter the password associated with this user.
Domain	Enter the domain name associated with this user.

3.2 DNSNameLookup

Use this Knowledge Script to check the ability of your Domain Name System (DNS) server to resolve a particular hostname. If the hostname is not found, the Knowledge Script generates a success event and continues to run (to indicate that it was able to contact the DNS server).

NOTE: The local hosts file will never be used, even if it is enabled on the client.

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

- **Availability**

  This data stream returns one of two values (depending on the data stream format you selected):
  - 1 or 100 = transaction was successful
  - 0 = transaction was not successful

- **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.

  A Response Time data stream is only generated if the entire transaction is successful.

If this Knowledge Script is able to connect to the specified DNS server, data streams for Availability (showing 100 for available) and response time are created, regardless of whether the hostname you supplied can be resolved or not.

An event is raised whenever one of the following occurs:

- A threshold that you have specified as an event parameter is exceeded.

- The AD-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- The job transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

Resource Objects

Active Directory response time clients (AD-RT).

Default Schedule

The default interval for this Knowledge Script is **Every 15 minutes**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Availability	
Collect data for availability?	Select the **Yes** check box to collect data for graphs and reports. If enabled, returns: ◆ 1 or 100 -- Transaction completed successfully ◆ 0 -- Transaction did not complete successfully By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream. Previous versions of AppManager ResponseTime used a 0 ("not available") or 1 ("available") format to indicate availability. 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 the **Yes** check box to raise an event when the server cannot be contacted. By default, events are enabled.
Event severity when transaction fails	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5. If you disable availability failure events, this value is ignored.
Response Time	
Collect data for response time?	Select the **Yes** check box to collect response time data for graphs and reports. By default, data is collected.
Threshold -- Maximum response time (seconds)	Specify the maximum number of seconds that the transaction can take before an event is raised. The event message contains a breakdown of the total response time. The default is 5 seconds.
Raise event when threshold is exceeded?	Select the **Yes** check box to raise an event when the response time exceeds the threshold. 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.

Description	How to Set It
Hostname to resolve	Enter the name of the host computer to be resolved.

3.3 DNSSpecificServerNameLookup

Use this Knowledge Script to check the ability of your Domain Name System (DNS) server to resolve a particular hostname on a specific server. If the hostname is not found, the Knowledge Script generates a success event and continues to run (indicating that it was able to contact the DNS server).

The value you supply for the **Hostname to resolve** parameter must be a fully-qualified hostname, or the transaction will fail with an execution error.

NOTE: The local hosts file will never be used, even if it is enabled on the client.

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

- **Availability**

  This data stream returns one of two values (depending on the data stream format you selected):

  - 1 or 100 = transaction was successful
  - 0 = transaction was not successful

- **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.

  A Response Time data stream is only generated if the entire transaction is successful.

If this Knowledge Script is able to connect to the specified DNS server, data streams for Availability (showing 100 for available) and response time are created, regardless of whether the hostname you supplied can be resolved or not.

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.

An event is raised whenever one of the following occurs:

- A threshold that you have specified as an event parameter is exceeded.
- The AD-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is *not* generated.
- The job transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, and the value = 0.

Resource Objects

The Active Directory response time clients (AD-RT).

Default Schedule

The default interval for this Knowledge Script is **Every 15 minutes**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Availability	
Collect data for availability?	Select the **Yes** check box 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 AppManager ResponseTime used a 0 (“not available”) or 1 (“available”) format to indicate availability. 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 the **Yes** check box to raise an event when the server cannot be contacted. By default, events are enabled.
Event severity when transaction fails	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5. If you disable availability failure events, this value is ignored.
Response Time	
Collect data for response time?	Select the **Yes** check box to collect response time data for graphs and reports. By default, data is collected.
Threshold -- Maximum response time (seconds)	Specify the maximum number of seconds that the transaction can take before an event is raised. The event message contains a breakdown of the total response time. The default is 5 seconds.
Raise event when threshold is exceeded?	Select the **Yes** check box to raise an event when the response time exceeds the threshold. 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.
DNS server name	Enter the hostname of the DNS server to query, with no spaces. If you’re setting the **Event on** parameter (see below), the **DNS Server name** parameter lets you select the server where the event will appear in your console. Enter the name of the server, or click the browse button ([**...**]) to select from a list of available servers. The server you select must already be in the TreeView.

Description	How to Set It
Event on	Select the TreeView location where events should be displayed. Select either: ◆ **Agent** (the client computer in the response-time tests). This is the default. ◆ **Server** (the DNS server being tested) ◆ **Both.** The event will be shown in two locations in the TreeView. **Notes** 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 `Agent` when starting jobs in the Operator Web Console. If you select `Server`, no events are generated. If you select `Both`, an event is only shown on the agent.
Hostname to resolve	Enter the fully qualified name of the host computer to be resolved.

3.4 GetObject

Use this Knowledge Script to retrieve content from the Active Directory server. Running this Knowledge Script will indicate the response time and availability of this process. The Knowledge Script returns an error if the object path is not found.

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

- **Availability**

  This data stream returns one of two values (depending on the data stream format you selected):
  - 1 or 100 = transaction was successful
  - 0 = transaction was not successful

- **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 3 response-time breakdown data streams. These are individual data points for the different parts of the Knowledge Script transaction that are timed. See “Setting Parameter Values” on page 31 below for more information.

  A Response Time data stream is only generated if the entire transaction is successful.

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.

An event is raised whenever one of the following occurs:

- A threshold that you have specified as an event parameter is exceeded.

- The AD-RT engine can't be initialized. An initialization error is generated, but an Availability or Response Time data stream is not generated.
- The job transaction doesn't complete successfully. A transaction error is generated. Only an Availability data stream is generated, with a value of 0.

Resource Objects

Active Directory response time clients (AD-RT).

Default Schedule

The default interval for this Knowledge Script is **Every 15 minutes**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Availability	
Collect data for availability?	Select the **Yes** check box to collect data for graphs and reports. If enabled, returns: ◆ 1 or 100 -- Transaction completed successfully ◆ 0 -- Transaction did not complete successfully By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream. Previous versions of AppManager ResponseTime used a 0 ("not available") or 1 ("available") format to indicate availability. 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 the **Yes** check box to raise an event when the server cannot be contacted. By default, events are enabled.
Event severity when transaction fails	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5. If you disable availability failure events, this value is ignored.
Response Time	
Collect data for response time?	Select the **Yes** check box to collect response time data for graphs and reports. By default, data is collected.
Threshold -- Maximum response time (seconds)	Specify the maximum number of seconds that the transaction can take before an event is raised. The event message contains a breakdown of the total response time. The default is 5 seconds.
Raise event if threshold is exceeded?	Select the **Yes** check box to raise an event when the response time exceeds the threshold. 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.

Description	How to Set It
Response Time Breakdown	
Collect data for binding object?	Select the **Yes** check box to collect a separate response-time data stream for the time taken to bind to the specified object. By default, separate response-time data streams are not collected.
Collect data for listing containers?	Select the **Yes** check box to collect a separate response-time data stream for the time taken to list the containers in which the object is located. This data stream can only be collected if you enabled the **List container objects?** parameter (see below). By default, separate response-time data streams are not collected.
Collect data for downloading objects or containers?	Select the **Yes** check box to collect a separate response-time data stream for the time taken to download any objects or containers from the domain controller. This data stream can only be collected if you enabled the **Download container objects?** parameter (see below). By default, separate response-time data streams are not collected.
Target computer	Enter the hostname of the domain controller, or click the browse button ([**...**]) to select from a list of available servers. The “target computer” is used to enable retrieval of data streams by AppManager Analysis Center v2.0 and higher. If specified, it will also be used in place of “Default Active Directory Server” in the data stream legend. If you’re setting the **Event on** parameter (see below), the **Target computer** parameter also determines the computer where the event will appear in your console. The computer you select must already be in the TreeView.

Object path	`ADsPath` of object to be processed. This is in the form:
	`<provider name>://<distinguished name>`
	
	where:
	
	◆ `<provider name>` is the name of the AD Service provider you want to use. Typical ones are LDAP and WinNT. This is case-sensitive.
	◆ `<distinguished name>` is a provider-specific path and name that uniquely describe the location of the resource.
	
	For LDAP, a distinguished name might be
	
	`CN=RALD01,ou=Domain Controllers,dc=netiq,dc=local`
	
	For WinNT, it might be
	
	`netiq.local/raldc01/QA`

List container objects?	Select the **Yes** check box to perform the action of listing the resources the object contains. There is a maximum of 1000 objects. You can enable the collection of response time for this action as a separate step (see above).

Description	How to Set It
Download container objects?	Select the **Yes** check box to perform the action of downloading the objects. There is a maximum of 1000 objects. You can enable the collection of response time for this action as a separate step (see above). **NOTE:** If **List container objects** is disabled and **Download container objects** is disabled, *or* if the object is not a container, the system times the action of downloading information about the object itself. (You cannot enable **List container objects** and disable **Download container objects** when the object is a container.)
Maximum number of container objects	Enter a value, from 1 to 1000, that specifies the maximum number of objects in the container. The default is 1000.
Event on	Select the TreeView location where events should be displayed. Select either: ◆ **Agent** (the client computer in the response-time tests). This is the default. ◆ **Server** (the server being tested) ◆ **Both**. The event will be shown in two locations in the TreeView. **Notes** 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 `Agent` when starting jobs in the Operator Web Console. If you select `Server`, no events are generated. If you select `Both`, an event is only shown on the agent.
Logon	
Username	Enter the username to use to log onto the Active Directory server.
Password	Enter the password associated with this user.
Domain	Enter the domain name associated with this user.

3.5 QueryService

Use this Knowledge Script to monitor the availability and status of a service on a computer in the Active Directory domain.

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

- **Availability**

  This data stream returns one of two values (depending on the data stream format you selected):

  - 1 or 100 = transaction was successful
  - 0 = transaction was not successful

- **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.

  A Response Time data stream is only generated if the entire transaction is successful.

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.

An event is raised whenever one of the following occurs:

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

Interactive User

You have the option to run this Knowledge Script as "Interactive User," which requires a user to be physically logged into the computer for the test to run. You might want to do this in environments where a firewall is preventing access to an Active Directory domain controller, or where the test computer is part of a workgroup and not part of a domain. With this feature, the user is not validated, so the test can proceed despite the lack of access to the domain. To run as interactive user, type `Interactive User` for the **Run As Username** parameter, and leave the **Password** and **Domain** parameters blank.

Resource Objects

Active Directory response time clients (AD-RT).

Default Schedule

The default interval for this Knowledge Script is **Every 15 minutes**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Availability	
Collect data for availability?	Select the **Yes** check box to collect data for graphs and reports. If enabled, returns: ◆ 1 or 100 -- Transaction completed successfully ◆ 0 -- Transaction did not complete successfully By default, data is collected.
Data stream format	Select the data stream format for the Availability data stream. Previous versions of AppManager ResponseTime used a 0 ("not available") or 1 ("available") format to indicate availability. You now have the option to use a 0 ("not available") or 100 ("available") format. The default value is 0-100.

Description	How to Set It
Raise event if transaction fails?	Select the **Yes** check box to raise an event when the server cannot be contacted. By default, events are enabled.
Event severity when transaction fails	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 5. If you disable availability failure events, this value is ignored.
Response Time	
Collect data for response time?	Select the **Yes** check box to collect data for graphs and reports. By default, data is collected.
Threshold -- Maximum response time (seconds)	Specify the maximum number of seconds that the transaction can take before an event is raised. The event message contains a breakdown of the total response time. The default is 5 seconds.
Raise event if threshold is exceeded?	Select the **Yes** check box to raise an event when the response time exceeds the threshold. 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.
Host computer	Enter the name of the computer where the service is to be monitored, or click the browse button ([**...**]) to select from a list of available servers. If you're setting the **Event on** parameter (see below), the **Target computer** parameter also determines the computer where the event will appear in your console. The computer you select must already be in the TreeView.
Event on	Select the TreeView location where events should be displayed. Select either: ◆ **Agent** (the client computer in the response-time tests). This is the default. ◆ **Server** (the server being tested) ◆ **Both**. The event will be shown in two locations in the TreeView. **Notes** 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 `Agent` when starting jobs in the Operator Web Console. If you select `Server`, no events are generated. If you select `Both`, an event is only shown on the agent.
Service	
Service name	Enter the internal name of the service to query, with no spaces. To find the service name in Windows 2000 or later, open the Control Panel and select **Administrative Tools > Services**. Right-click a service name and select **Properties** in the pop-up window. The **Service name** field appears at the top of the Properties dialog box.
Verify if service is running?	Select the **Yes** check box to query the state of the specified service name and verify whether it is running. By default, the service state is not verified.
Raise event if service is not running?	Select the **Yes** check box to raise an event if the service is not running. By default, events are not raised.
Event severity when service is not running	Set the event severity level, from 1 to 40, to indicate the importance of the event. The default is 20. If you disable service events, this value is ignored.

Description	How to Set It
Logon and Run As	
Username	Enter the domain username of a user who has Administrator privileges on the host computer. Interactive User is also a possible value. Leave the Password and Domain parameters blank if you specify “Interactive User”.
Password	Enter the password associated with this user. Leave blank to run as “Interactive User.”
Domain	Enter the domain name associated with this user. 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`”.

3.6 Report_AD-RT

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

- CheckDomainController
- GetObject
- QueryService

Resource Objects

AppManager repository.

Default Schedule

The default schedule is **Run once**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Data Source	Use the following parameters to select the data for your report.

Description	How to Set It
KS for report	Select the Knowledge Script on which to report: 1. Click the **...** button to show the Filter KS List dialog box. 2. Select a filter to narrow the list of Knowledge Scripts and click **OK** to display the list of Knowledge Scripts that met the filter specifications. **NOTE:** If you click **Cancel** from the Filter dialog box, all the Knowledge Scripts are displayed. 3. Highlight an AD-RT Knowledge Script from the **Knowledge Script Name** list and click **Finish**.
AD-RT client(s)	Select the AppManager ResponseTime for Microsoft Active Directory client(s). Click the **Browse [...]** button to show the Select View(s) and a filter dialog box. From the **View(s)** list, select from one to 25 views. Your subsequent selections are limited to computers or server groups that are visible in the selected views. Select one of the Filters options: ◆ **View:** Includes all computers in the views you selected. ◆ **Computer:** Select from individual computers in the views you selected. ◆ **Server Group:** Select from server groups in the views you selected. Note Selecting a server group includes all computers in that group.
AD Server or “All”	Type the name of the Active Directory server, or type “`All`” to designate all computers as Active Directory servers. The default is the default Active Directory server.
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 that sets the time range of data to include in the report. The sliding range option is useful for reports running on a regular schedule. It is the default.
Select peak weekday(s)	In the Select Peak Weekday(s) dialog box, while selecting, press **Shift** to select a contiguous day range, or press **Ctrl** 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.
Report Settings	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?	Select the **Yes** check box to display a table of parameters in the report. By default, the table is displayed.
Include Availability Detail table?	Select the **Yes** check box to display the Availability Detail table as part of the report. By default, the table is included.
Include Availability chart?	Select the **Yes** check box to display the Availability chart as part of the report. By default, the chart is included.

Description	How to Set It
Availability data stream format	Specify the data stream format. Options are 0-100 or 0-1. The default format is 0-100.
Threshold on Availability chart	Enter an integer for the percent. The default is 0 (no threshold is displayed).
Include Response Time Detail table?	Select the **Yes** check box to display the Response Time Detail table as part of the report. By default, the table is included.
Include Response Time chart?	Select the **Yes** check box 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. (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. The default is Ribbon.
Select output folder	Select the **...** button to display the Publishing Options dialog box. From this dialog, specify the report filename and the report folder. You can specify a specific folder or have the system generate the folder each time the report runs.
Add job ID to output folder name?	Select the **Yes** check box to add a job ID to the output folder name. By default, the job ID is not added.
Index-Report Title	Select the **...** button to display the Report Properties dialog box. From this dialog, you can configure report title settings and custom fields.
Add timestamp to title?	Specify whether to add a timestamp to the report title.
Event Notification	Use the following parameters to raise events associated with generating the report, and to set severity levels for those events.
Generate event on success?	Select the **Yes** check box to raise an event when a report is generated. By default, events are raised.
Severity level for report success	Set the severity level for a successful report. The default is 35.
Severity level for report with no data	Set the severity level for a report with no data. The default is 25.
Severity level for report failure	Set the severity level for a report with no data. The default is 5.

3.7 Report_AD-RT_DNS

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

- DNSNameLookup
- DNSSpecificServerNameLookup

Resource Objects

AppManager repository.

Default Schedule

The default schedule is **Run once**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Data Source	Use the following parameters to select the data for your report.
KS for report	Select the Knowledge Script on which to report: 1. Click the **...** button to show the Filter KS List dialog box. 2. Select a filter to narrow the list of Knowledge Scripts and click **OK** to display the list of Knowledge Scripts that met the filter specifications. **NOTE:** If you click **Cancel** from the Filter dialog box, all the Knowledge Scripts are displayed. 3. Highlight an AD-RT Knowledge Script from the **Knowledge Script Name** list and click **Finish**.
AD-RT client(s)	Select the AppManager ResponseTime for Microsoft Active Directory client(s). Click the **Browse [...]** button to show the Select View(s) and a filter dialog box. From the **View(s)** list, select from one to 25 views. Your subsequent selections are limited to computers or server groups that are visible in the selected views. Select one of the Filters options: ◆ **View:** Includes all computers in the views you selected. ◆ **Computer:** Select from individual computers in the views you selected. ◆ **Server Group:** Select from server groups in the views you selected. **NOTE:** Selecting a server group includes all computers in that group.
AD Server or “All”	Type the name of the DNS server, or type “`All`” to designate all computers as DNS servers. The default is the default DNS server.
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 that sets the time range of data to include in the report. The sliding range option is useful for reports running on a regular schedule. It is the default.
Select peak weekday(s)	In the Select Peak Weekday(s) dialog box, press **Shift** to select a contiguous day range, or **Ctrl** 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 parameter (**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.

Description	How to Set It
Report Settings	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?	Select the **Yes** check box to display a table of parameters in the report. By default, the table is included.
Include Availability Detail table?	Select the **Yes** check box to display the Availability Detail table as part of the report. By default, the table is included.
Include Availability chart?	Select the **Yes** check box to display the Availability chart as part of the report. By default, the chart is included.
Availability data stream format	Specify the data stream format. Options are 0-100 or 0-1. The default format is 0-100.
Threshold on Availability chart	Enter an integer for the percent. The default is 0 (no threshold is displayed).
Include Response Time Detail table?	Select the **Yes** check box to display the Response Time Detail table as part of the report. By default, the table is included.
Include Response Time chart?	Select the **Yes** check box 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 (no threshold indicator on 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. The default is Ribbon.
Select output folder	Select the **...** button to display the Publishing Options dialog box. From this dialog, specify the report filename and the report folder. You can specify a specific folder or have the system generate the folder each time the report runs.
Add job ID to output folder name?	Select the **Yes** check box to add a job ID to the output folder name. By default, the job ID is not added.
Index-Report Title	In the Report Properties dialog box, configure report title settings.
Add timestamp to title?	Select the **Yes** check box to add a timestamp to the report title.
Event Notification	Use the following parameters to raise events associated with generating the report, and to set severity levels for those events.
Generate event on success?	Select the **Yes** check box to raise an event when a report is generated. By default, events are raised.
Severity level for report success	Set the severity level for a successful report. The default is 35.
Severity level for report with no data	Set the severity level for a report with no data. The default is 25.
Severity level for report failure	Set the severity level for a report with no data. The default is 5.

3.8 Discovery_AD-RT

Use this Knowledge Script to discover whether AppManager ResponseTime for Microsoft Active Directory is installed on a specific managed client. Drop this Knowledge Script on the managed client where you are performing discovery.

After successful discovery, a new thumbnail appears in the TreeView pane with a list of machines that support it. Also, a new AD-RT Knowledge Script pane will appear.

Resource Objects

Windows 2000, Windows XP, Windows Server 2003, Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, or Windows Server 2019.

Default Schedule

The default schedule is **Run once**.

Setting Parameter Values

Set the following parameters as needed:

Description	How to Set It
Raise event if discovery succeeds?	Select the **Yes** check box to raise an event when the job succeeds. This Knowledge Script always raises an event when the job fails for any reason. In addition, you can check the box to raise an event when the job succeeds. By default, events are not raised for successful discovery.
Event severity when discovery...	Set the event severity level, from 1 to 40, to reflect the importance when the job: ◆ **... succeeds**. If you set this Knowledge Script to raise an event when the job succeeds, set the event severity level for a successful discovery. The default is 25. ◆ **... fails**. The default is 5. ◆ **... partially succeeds**. This type of failure usually occurs when the target computer does not have all the prerequisites installed. The default is 10.

4 Troubleshooting AppManager ResponseTime for Microsoft Active Directory

This chapter describes how to troubleshoot AppManager ResponseTime for Microsoft Active Directory.

See the following sections for specific information:

4.1 Problems with Installation

Problem: Component Not Installed

The following message appeared during installation:

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

Solution:

The prerequisites were not met for AppManager ResponseTime for Microsoft Active Directory to be installed.

If this occurs on a computer that is acting as the repository or Operator Console, some files will be installed, but not the managed object. This is fine unless you want to run ResponseTime tests on this computer too.

On the repository, the AD-RT Knowledge Scripts will be checked in, and on the Console the Help files are installed.

The pre-installation check script, which runs just before installation begins, generates a report (which can be viewed in a Web browser) that states which prerequisites weren’t met. Once you’ve resolved this problem, run the installation again on this computer.

4.2 Problems with Discovery

Problem 1: Discovery Failure—Not Supported

These errors are returned from running Discovery:

```
The Active Directory ResponseTime Managed Object returned AD-RT is not supported.
```

or:

```
The Active Directory ResponseTime Managed Object is not installed or not
registered. ActiveX component can't create object
```

Solution:

The ResponseTime for Active Directory managed object is not installed on the computer. Make sure that the prerequisites were met, and try installing again. The pre-installation check script generates a report that can be viewed in a Web browser and that explains which prerequisites weren't met.

Problem 2: Discovery Failure—Not Installed

Discovery failed, with the following error:

```
AD-RT is not installed.
```

Solution:

AppManager ResponseTime for Microsoft Active Directory is not installed. Make sure that the prerequisites were met, and try installing again. The pre-installation check script generates a report that can be viewed in a Web browser and that explains which prerequisites weren't met.

Problem 3: Discovery Failure—Class Not Registered

Discovery failed, with the following error:

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

Solution:

Some ResponseTime shared components are installed, but AppManager ResponseTime for Microsoft Active Directory is not installed. Make sure that the prerequisites were met, and try installing again.

Problem 4: Discovery Failure—Parameter Incorrect

Discovery failed, with the following error:

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

Solution:

The `NetIQmc` agent service is running as a specific user on the computer, and a different user is logged on to the computer. Update `NetIQMC` to run as Local System, which is a requirement for most ResponseTime managed objects. See Section 2.4, “Permissions for Running Knowledge Scripts,” on page 19 for more information.

Problem 5: Discovery Failure—Re-Install Service Monitors

The following error is returned when you run Discovery:

```
Discovery failed:

Unable to execute the transaction. You should install Microsoft Active Directory
Service first, and re-install service monitors.
```

Solution:

Make sure AppManager ResponseTime for Microsoft Active Directory is installed on the computer. Check the `AD-RT_Install.log` in the `\netiq\temp\` directory.

Problem 6: Backlevel Version of AD-RT Installed

Discovery failed with the following message:

```
This is a backlevel version of AppManager ResponseTime for Active Directory. Please
install the latest version of the software.
```

Solution:

Install the latest version of AppManager ResponseTime for Microsoft Active Directory and re-run Discovery.

4.3 Problems Running Knowledge Scripts

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

- Section 4.4, “Networking or Authentication Errors,” on page 45
- Section 4.5, “Transaction or Transaction Initialization Failures,” on page 47

4.4 Networking or Authentication Errors

Problem 1: Unable to Validate Domain User

The Knowledge Script failed, with the following error:

```
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.

Solution:

This error may occur once in awhile during a network outage or system maintenance. It may also occur if the domain controller is shut down or reboots during an AppManager ResponseTime for Microsoft Active Directory operation.

If the problem persists, contact your network administrator.

Problem 2: AD-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: AD-RT cannot be initialized

Error Code: 0x80070057
Error Message: Unable to validate Domain User. The UserName is not a valid user on
the domain.
```

Solution:

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 **Run As** parameters in the Knowledge Script. The transaction was never initialized because the user could not be validated by the domain controller.

Example 2:

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

Solution:

You’ll probably see this error if you are running many simultaneous AD-RT Knowledge Script jobs. However, the real problem isn’t the number of jobs you’re running. If you see this error, upgrade your AppManager agents.

Example 3:

```
Event: Transaction initialization failure
Event Details:
Knowledge Script Error 0x803CF007: AD-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.
```

Solution:

The latest versions of the AD-RT Knowledge Scripts are installed on the repository, but you are attempting to run them on a backlevel version of AppManager ResponseTime for Microsoft Active Directory. 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 Microsoft Active Directory on the client computer, re-run the Discovery Knowledge Script, and then restart this job.

Problem 3: The Knowledge Script's ConfigJob method failed

The Knowledge Script job failed with 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`.

Solution:

You'll probably see this error if you are running many simultaneous AD-RT Knowledge Script jobs. However, the real problem isn't 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.

Problem 4: Connection Was Forcibly Closed

The Knowledge Script failed, with the following error:

```
An existing connection was forcibly closed by the remote host.
```

Solution:

Verify that the name listed in the Knowledge Script parameters for the DNS server is correct. This error indicates that the computer listed is not a DNS server.

4.5 Transaction or Transaction Initialization Failures

With the AD-RT Knowledge Scripts, there are 4 types of Transaction Failure event:

- LDAP Errors
- ADSI Errors
- Winsock Errors
- Execution Errors

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

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 where in the transaction that the failure occurred. For example, the "Job progress" may indicate that the job proceeded no farther than "`Connecting to database server`."

Problem 1: LDAP Error

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

```
LDAP Error 0x80072030: Object does not exist.
Provider: LDAP Provider
Error detail: 0000208D: NameErr: DSID-031001CD, problem 2001 (NO_OBJECT), data 0,
best match of:
  'CN=Sites,CN=Configuration,DC=netiq,DC=dev'
```

Solution:

You probably tried to monitor an invalid Active Directory object. Look down in the "`Transaction Configuration`" section of the event details to make sure you entered a valid option for the **Object Path** Knowledge Script parameter.

Problem 2: ADSI Error

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

```
ADSI Error 0x80005000: An invalid ADSI pathname was passed. Verify that the object
exists on the directory server and check for typographic errors of the path.
```

Solution:

You probably tried to monitor an invalid Active Directory object using the Section 3.4, "GetObject," on page 30 Knowledge Script. Look down in the "`Transaction Configuration`" section of the event details to make sure you entered a valid path for the **Object Path** Knowledge Script parameter.

Problem 3: WinSock Error

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

```
WSA Error 11001: Host not found. No such host is known. The name is not an official
host name or alias, or it cannot be found in the database(s) being queried.
```

Solution:

You were running the Section 3.3, “DNSSpecificServerNameLookup,” on page 28 Knowledge Script. This error appears to have been generated by the DNS server, but it actually indicates that the DNS server you specified for the **DNS server name** Knowledge Script parameter could not be found. Look down in the “`Transaction Configuration`” section of the event details to make sure you entered a valid DNS server name.

Problem 4: Execution Error

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

```
Execution Error 0x803D1003: [hostname] could not be resolved by the specified
server.
```

Solution:

You were running the Section 3.3, “DNSSpecificServerNameLookup,” on page 28 Knowledge Script. This error was generated by the DNS server in response to a hostname that could not be resolved. You probably entered a hostname for the **DNS server name** Knowledge Script parameter that wasn’t fully qualified. could not be found. Look down in the “`Transaction Configuration`” section of the event details to make sure you entered a fully qualified hostname for the DNS server name, and make corrections in the Knowledge Script if necessary.

Problem 5: “AD-RT is not installed”

The Knowledge Script job failed, with the following message:

```
Knowledge Script Error 0x803CF004: AD-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
```

Solution:

The latest versions of the AD-RT Knowledge Scripts are installed on the repository, but you are attempting to run them on a backlevel version of AppManager ResponseTime for Microsoft Active Directory.

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