



Quest Management Xtensions **2.2**

CONFIGURATION MANAGER 2007 EDITION

Administrator's Guide



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QMX - Configuration Manager 2007 Administrator's Guide
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About this Guide

- Overview
- Conventions
- About Quest System Center Solutions Group
- About Quest Software, Inc.
- Contacting Quest Support
- Join the Community

Overview

IT professionals can now leverage their preferred tool for managing configuration changes and system updates for Windows and non-Windows systems alike. Quest® Management Xtensions - Configuration Manager 2007 Edition (*QMX - Configuration Manager 2007*) extends the power of Microsoft System Center Configuration Manager 2007 (*System Center Configuration Manager 2007*) to Unix, Linux, Mac OSX and VMware ESX systems. Thus, Quest enables *System Center Configuration Manager 2007* to be the single, end-to-end platform for managing desktops, servers, and devices in both physical and virtual environments.

This guide is intended for Windows and UNIX system administrators, network administrators, consultants, analysts, and any other IT professionals who will be using *QMX - Configuration Manager 2007* for the first time. By following the instructions presented in this guide, a system administrator will be able to learn how to manage Unix, Linux, and Mac OS systems from within the Configuration Management console.



To access the *QMX - Configuration Manager 2007 Installation Guide*, navigate to the `docs\` directory of the distribution media. By following the instructions presented in that guide, a system administrator will be able to install and configure new or existing Unix, Linux, and Mac OS systems from within the Configuration Manager Console.

Conventions

Quest Software, Inc. products support a number of different implementations of UNIX-like operating systems that include Solaris, HP-UX, UNIX, Linux, Mac OS X, and AIX. To refer to all of these platforms, the term "Unix" will be used for conciseness and consistency.

About Quest System Center Solutions Group

With a comprehensive set of solutions that extend the powerful capabilities of the Microsoft System Center family to heterogeneous environments, Quest Software enables IT professionals to leverage System Center as the single, end-to-end platform for managing physical and virtual IT environments across data centers, desktops and devices. For more information on the Quest System Center Solutions group, please visit

<http://www.quest.com/system-center/change-configuration.aspx>.

About Quest Software, Inc.

Quest Software, Inc., a leading enterprise systems management vendor, delivers innovative products that help organizations get more performance and productivity from their applications, databases, Windows infrastructure and virtual environments. Quest also provides customers with client management through its ScriptLogic subsidiary and server virtualization management through its Vizioncore subsidiary. Through a deep expertise in IT operations and a continued focus on what works best, Quest helps more than 100,000 customers worldwide meet higher expectations for enterprise IT. Quest's System Center solutions enable the Microsoft System Center platform to serve as the comprehensive systems management platform for organizations managing heterogeneous environments. Together, an integrated platform improves IT productivity, increases return on IT investments, and ensures compliance and service levels to help drive business profitability. Now more than ever, organizations need to work smart and improve efficiency. Quest Software creates and supports systems management products-helping our customers solve everyday IT challenges faster and easier. Visit Quest's System Center solutions at www.quest.com/system-center. Quest Software can be found in offices around the globe and at www.quest.com.

Contacting Quest Support

Quest Support is available to customers who have a trial version of a Quest product or who have purchased a commercial version and have a valid maintenance contract. Quest Support provides around the clock coverage with SupportLink, our web self-service.

SupportLink www.quest.com/support

Email at support@quest.com

From SupportLink, you can do the following:

- Quickly find thousands of solutions (Knowledgebase articles/documents).
- Access FAQs
- Download patches and upgrades
- Seek help from a Support engineer
- Update or view support requests

View the *Global Support Guide* for a detailed explanation of support programs, online services, contact information, and policy and procedures. The guide is available at http://support.quest.com/pdfs/Global_Support_Guide.pdf.

When you contact Support please include the following information:

1. The software you are working with.
2. The versions you have installed.
3. The Windows versions you have installed: 2000, XP, 2003 Server, 2003 Server R2.
4. The name of your Microsoft System Center Configuration Manager 2007 Contact.
5. How many non-Windows clients you have in your environment.
6. The port number that System Center Configuration Manager 2007 uses to handle requests and the port the QMX - Configuration Manager 2007 Agent uses for communications.
7. The following Log files:
 - C:\Program Files\Quest Software\QMX for ConfigMgr\push_install.log
 - /var/opt/quest/qmxcm/logs/qmxcmd.log
 - /var/opt/quest/qmxcm/owlogs/qmx_status.log
 - /var/opt/quest/qmxcm/owlogs/qmxlog.txt
 - /var/opt/quest/qmxcm/owlogs/qmxlog.xml
8. The system information output from the client using an `uname -a` command.
9. Any information you feel is appropriate about your System Center Configuration Manager 2007 environment or test lab setup.

Join the Community

Get the latest product information, find helpful resources, and join a discussion with the QMX - Configuration Manager 2007 team and other community members at: <http://vintela.inside.quest.com/category.jspa?categoryID=34>

1

Introduction

- System Center Configuration Manager 2007
- QMX - Configuration Manager 2007
- Security Features

System Center Configuration Manager 2007

Microsoft System Center Configuration Manager 2007 (*System Center Configuration Manager 2007*) provides a comprehensive solution for addressing and resolving your change and configuration needs. You can manage change and configuration for your servers, desktops, applications, and devices across your whole enterprise with System Center Configuration Manager 2007.

Its functionality generally breaks down into these categories:

- **Discovery:**
 - Discovering system resources, user and group accounts, typically in an Active Directory environment
- **Inventory:**
 - **Hardware Inventory:** comprehensive inventory data including installed programs
 - **Software Inventory:** comprehensive inventory of files and/or file types
- **Software Distribution:** enterprise-level solution for deploying applications, but can be extended to uninstalling applications and running commands
- **Patch management:** enterprise-level solution for managing patches and updates in the Windows environment
- **Remote tools:** delivers the ability to run remote tools on a client computer from the Configuration Manager Console
- **Software Metering:** provides usage data for installed software

QMX - Configuration Manager 2007

Enterprise-wide change and configuration management of resources on both Windows and non-Windows platforms can be problematic. System Center Configuration Manager 2007 provides excellent Windows resource management, but without Quest® Management Xtensions - Configuration Manager 2007 Edition (*QMX - Configuration Manager 2007*) it cannot provide these same capabilities to non-Windows resources. In a heterogeneous environment, administrators had to rely on tools other than System Center Configuration Manager 2007 for change and configuration management of non-Windows systems even though the administrative tasks are essentially the same.

QMX - Configuration Manager 2007 eliminates this problem and enables System Center Configuration Manager 2007 to become the single integrated tool for managing all computer resources in your enterprise, Windows and non-Windows alike. All key QMX - Configuration Manager 2007 features including System Discovery, Hardware/Software Inventory, Software and Patch Distribution, Software Metering (for software license compliance tracking), and Remote Tools are seamlessly integrated into the Configuration Manager Console.

QMX - Configuration Manager 2007 provides a Configuration Manager Console extension and an Agent that gives IT administrators the ability to manage non-Windows systems from within the Configuration Manager Console. By natively integrating into the System Center Configuration Manager 2007 infrastructure, QMX - Configuration Manager 2007 solves the problem of administering a heterogeneous environment by seamlessly extending the change and configuration management support of System Center Configuration Manager 2007 to non-Windows systems. QMX - Configuration Manager 2007 enables the Configuration Manager Console to become a single integrated tool for managing all computer resources in your enterprise, Windows and non-Windows alike.

Core Design

The core design objective for QMX - Configuration Manager 2007 is to seamlessly provide non-Windows systems management capability through the Configuration Manager Console. Seamless means that in all possible situations, QMX - Configuration Manager 2007 is designed to look, feel, and act as if it were written by the Microsoft System Center Configuration Manager 2007 development team. QMX - Configuration Manager 2007 even uses the same database and tables so all System Center Configuration Manager 2007 features work as expected, even while managing non-Windows resources.



QMX - Configuration Manager 2007 does not make any changes to the System Center site database; it stores client data and tables in the existing database just like Windows clients.

It is vital to understand that managing non-Windows systems with QMX - Configuration Manager 2007 is the same as managing Windows systems with the Configuration Manager Console. Discovery, Hardware and Software Inventory, and Software Distribution all function the same as they do in System Center Configuration Manager 2007. QMX - Configuration Manager 2007 does not just use System Center Configuration Manager 2007 data, nor does it replace the standard Configuration Manager Console and other standard tools. QMX - Configuration Manager 2007 seamlessly integrates non-Windows systems management into System Center Configuration Manager 2007 by extending

existing functionality and by adding non-Windows-specific functionality that acts the way you would expect System Center Configuration Manager 2007 to act. QMX - Configuration Manager 2007 also adds the ability to launch non-Windows configuration and management tools from the Configuration Manager Console.

User Interface Design

In order to achieve seamless integration with the System Center Configuration Manager 2007 user interface, the QMX - Configuration Manager 2007 interface is written as a Configuration Manager Console extension. It is specifically designed to transparently plug into the Configuration Manager Console shortcut menu items, wizards, property pages, and other components necessary to provide non-Windows management through the Configuration Manager Console by using the existing menus and property sheets.

The Configuration Manager Console is based on the Microsoft Management Console (MMC), as are many of the Windows management tools. Examples include the Event Viewer, Performance Monitor, Active Directory management, etc.

MMC is designed to be extensible. Snap-ins can be combined together in the MMC workspace to provide greater tool integration and flexibility for the administrator. There are many other benefits of using MMC which will not be covered here.

Agent Technology

System Center Configuration Manager 2007 utilizes the Windows Management Instrumentation (WMI), the Microsoft WBEM implementation for Windows. QMX - Configuration Manager 2007 uses OpenWBEM and Providers that give non-Windows resources equivalent functionality.

WBEM is an industry initiative to provide management of systems, networks, users and applications across multiple vendor environments. WBEM simplifies system management by providing better access to both software and hardware data that is readable by WBEM-compliant applications.

QMX - Configuration Manager 2007 uses the same CIM Schema as Microsoft WMI (and so by extension uses the same CIM schema as System Center Configuration Manager 2007). Managed object data is presented in the Resource Explorer, is used to define collections and queries, and is used in reports. QMX - Configuration Manager 2007 over time will add schema extensions specific to non-Windows properties. Even though these extensions are Unix, Linux or Mac OS X specific, they will integrate seamlessly into System Center Configuration Manager 2007.

“The CIM is a hierarchical, object oriented architecture that makes it comparatively straightforward to track and depict the often complex interdependencies and associations among different managed objects. Such interdependencies may include those between logical network connections and underlying physical devices, or those of an e-commerce transaction and the web and database servers on which it depends.” (CIM Tutorial, CIM Overview, DMTF and WBEM Solutions)

For more information refer to:

<http://www.quest.com/system-center/change-configuration.aspx>

Integration with VAS

QMX - Configuration Manager 2007 integrates with Quest Vintela Authentication Services (VAS) technology so that System Center Configuration Manager 2007 can work with the non-Windows systems that have been joined to Active Directory domains. The integration of VAS with QMX - Configuration Manager 2007 provides the following benefits:

- **Enhanced Security.** If the system is joined to Active Directory, and System Center Configuration Manager 2007 is configured to publish data into Active Directory, then security will be enhanced because the Management Point certificates will be obtained from Active Directory instead of HTTP.
- **Software Metering.** Software Metering allows you to determine how your organization uses software programs and helps ensure software license compliance. QMX - Configuration Manager 2007, with VAS installed, lets the QMX - Configuration Manager 2007 Agent determine if the user running the metered program is a VAS-enabled user and, if so, reports the user's domain.
- **Remote Tools.** The QMX - Configuration Manager 2007 Agent, with VAS and OpenSSH installed, will not require non-Windows users to enter their passwords when launching Remote Tools.



If you purchase and install the full version of VAS, then any programs run by VAS-enabled users have the complete DOMAIN/username.

For customers that do not have a licensed version of VAS already installed, QMX - Configuration Manager 2007 installs a VAS client agent. However, without purchasing and installing the license for VAS, QMX - Configuration Manager 2007 only enables the VAS features that are directly relevant to Active Directory domain joins and some additional security benefits.

QMX - Configuration Manager 2007 can then use the Active Directory identity for the non-Windows systems and the VAS LDAP capabilities to query Active Directory for information relating to the non-Windows systems. For the user and group management features of VAS, you must purchase and install the license. (See [Integration with VAS](#).) For more information on VAS and other Quest Integration Architecture components, please visit http://www.quest.com/unix_linux/.

Security Features

While System Center Configuration Manager 2007 has two security modes, QMX - Configuration Manager 2007 2.0 only runs in "mixed" mode. For more information about System Center Configuration Manager 2007 Security features, refer to <http://technet.microsoft.com/en-us/library/bb693811.aspx>.

QMX - Configuration Manager 2007 Agents installed with the QMX - Configuration Manager 2007 Agent Installation Wizard automatically receive the Trusted Root Key (TRK) and require no additional action for security. You can also supply the TRK as a parameter to the install script when doing a manual install.

The TRK enables the QMX - Configuration Manager 2007 Agent to communicate securely with authorized management points. The QMX - Configuration Manager 2007 Agent is able to verify the digital signature on communications received from the management points, reducing the possibility of attackers hijacking clients through unauthorized management points. (In the absence of a TRK, a QMX - Configuration Manager 2007 Agent might be misdirected to an attacker's management point where it would receive policy.) In addition, the QMX - Configuration Manager 2007 Agent encrypts inventory messages.

What is a Trusted Root Key?

System Center Configuration Manager 2007 uses public key encryption/signatures. Inside System Center Configuration Manager 2007 there is a single private key. This key is used to sign the certificate information for every management point. To verify the signatures of the management points, QMX - Configuration Manager 2007 uses the public key version. Whenever a management point is created (or reinstalled), it creates a signature so that the QMX - Configuration Manager 2007 Agent can know that the new certificate information is safe. Without this signing process, someone could spoof a management point and use it to gain control of the clients (both Windows and

QMX - Configuration Manager 2007 Agent clients). Until the QMX - Configuration Manager 2007 Agent has the TRK, it will trust anyone that claims to be the management point specified at install time. As such, it is more secure to supply the TRK at install time.

Privilege Monitor Module

QMX - Configuration Manager 2007 limits unauthorized privilege escalation by running all possible processes as a non-privileged user. The Privilege Monitor ensures that providers only execute the pre-configured list of commands (stored in a secure directory) with elevated privileges. You must never modify this list of commands.

Hardware and Software Inventory

- About Hardware and Software Inventory
- Starting the Resource Explorer
- Hardware
- Hardware History
- Software
- Configuring Software Inventory

About Hardware and Software Inventory

Many companies are tasked with the requirement to comply with Sarbanes-Oxley, HIPPA or other governance entities. Or, you may need to internally track your assets to plan for purchases, track leases, group computers to target management tasks, or provide information for help desk troubleshooting. You also may need to export data to your Asset Management System. Quest® Management Xtensions - Configuration Manager 2007 Edition (*QMX - Configuration Manager 2007*) extends the Microsoft System Center Configuration Manager 2007 change and configuration management capabilities to non-Windows systems so you can get an enterprise view of your Windows and non-Windows systems.

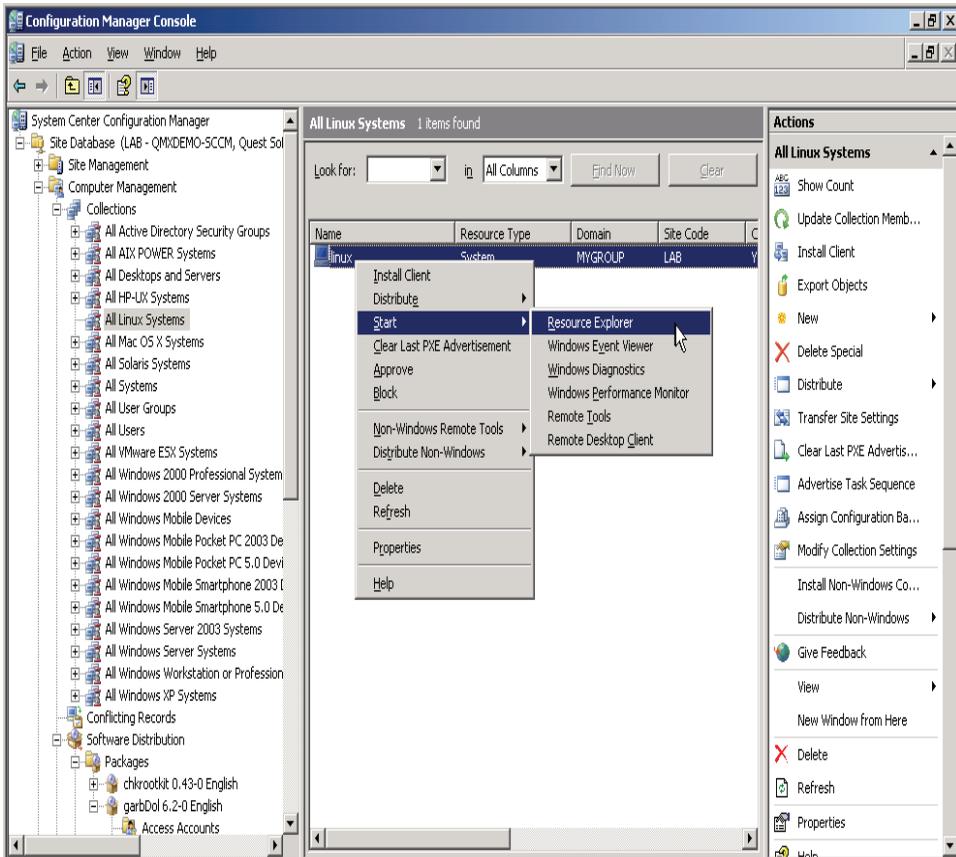
- QMX - Configuration Manager 2007 enables system administrators to transparently access hardware and software inventory for non-Windows systems within the Configuration Manager Console Resource Explorer.
- QMX - Configuration Manager 2007 allows administrators to use the same flexible and extensible Web reporting engine to gather information on non-Windows systems. System Center Configuration Manager 2007 supports more than 120 default reports. No additional customization is required to gather information about non-Windows systems. You can use one of the default reports or create your own.
- QMX - Configuration Manager 2007 also transparently integrates software inventory for non-Windows systems within System Center Configuration Manager 2007 including files, file details, and product details collections. Non-Windows systems software packages appear automatically within Add/Remove Programs.
- QMX - Configuration Manager 2007 on Mac OS X platforms collects data for Add/Remove Programs about any application file (.app) that exists in the `/Applications` or `/System/Library` folders and any package installed with the installer. It also searches for package receipts in `/Library/Receipts` for Mac OS X 10.3 and 10.4. (Receipts are not captured on Mac OS X 10.5.) If you have Mac OS X 10.4 or newer, it will also use a Spotlight search to find any application on any mounted volume indexed by Spotlight.

Starting the Resource Explorer

QMX - Configuration Manager 2007 displays hardware and software inventory information within the standard Resource Explorer for non-Windows systems with no modification required. Resource Explorer is a tool in the Configuration Manager Console that displays the collected inventory data. When you start the Resource Explorer, it opens a window that displays the information collected by hardware and software inventory.

To start the Resource Explorer

1. Navigate to a collection containing QMX - Configuration Manager 2007 Agent clients.
2. In the results pane, right-click the client whose information you want to view.



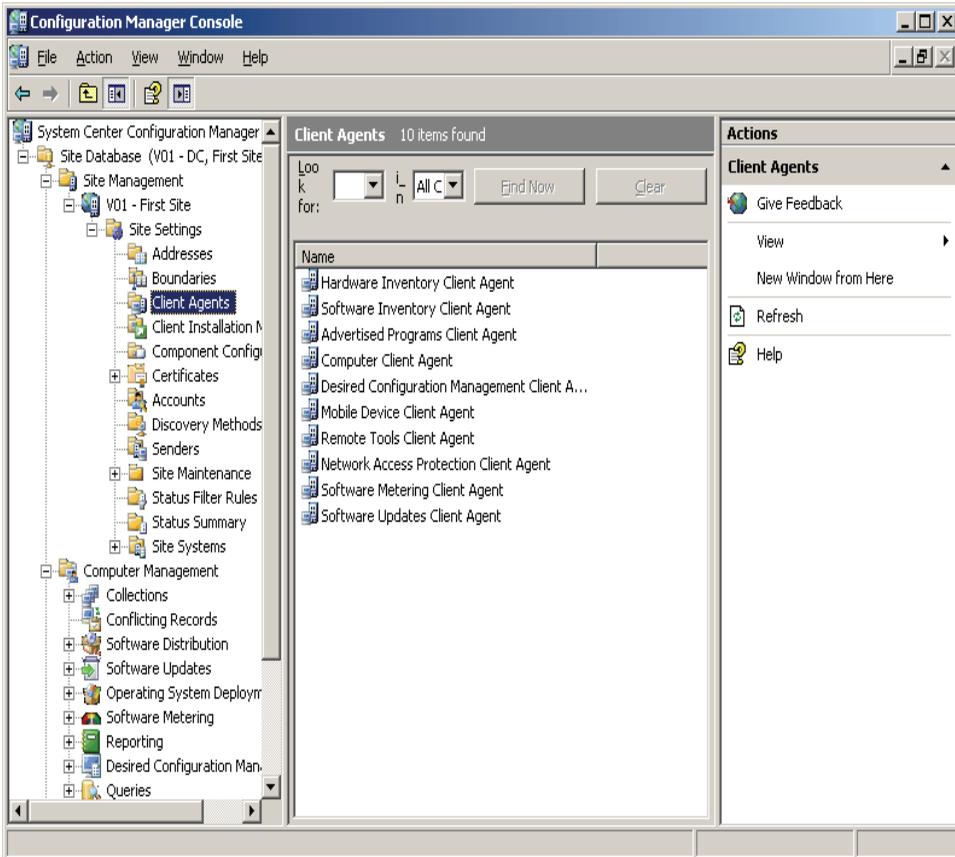
3. Choose **Start | Resource Explorer**.

Hardware

Hardware inventory is the process of gathering hardware-related information from current clients in a System Center Configuration Manager 2007 site. The information gathered includes processor type, network card, amount of memory, and disk information. With the QMX - Configuration Manager 2007 Agent, you do not have to make any modifications to your queries. QMX - Configuration Manager 2007 uses the same hardware classes, database, infrastructure, and interface that System Center Configuration Manager 2007 utilizes for managing Windows-based systems. You can schedule how often you want the inventory to run.

In addition, the Hardware Inventory Client Agent honors the policy settings in much the same fashion that the System Center Configuration Manager 2007 Client does. The following similarities are notable:

1. Hardware inventory collection honors the **Client Agents** settings.



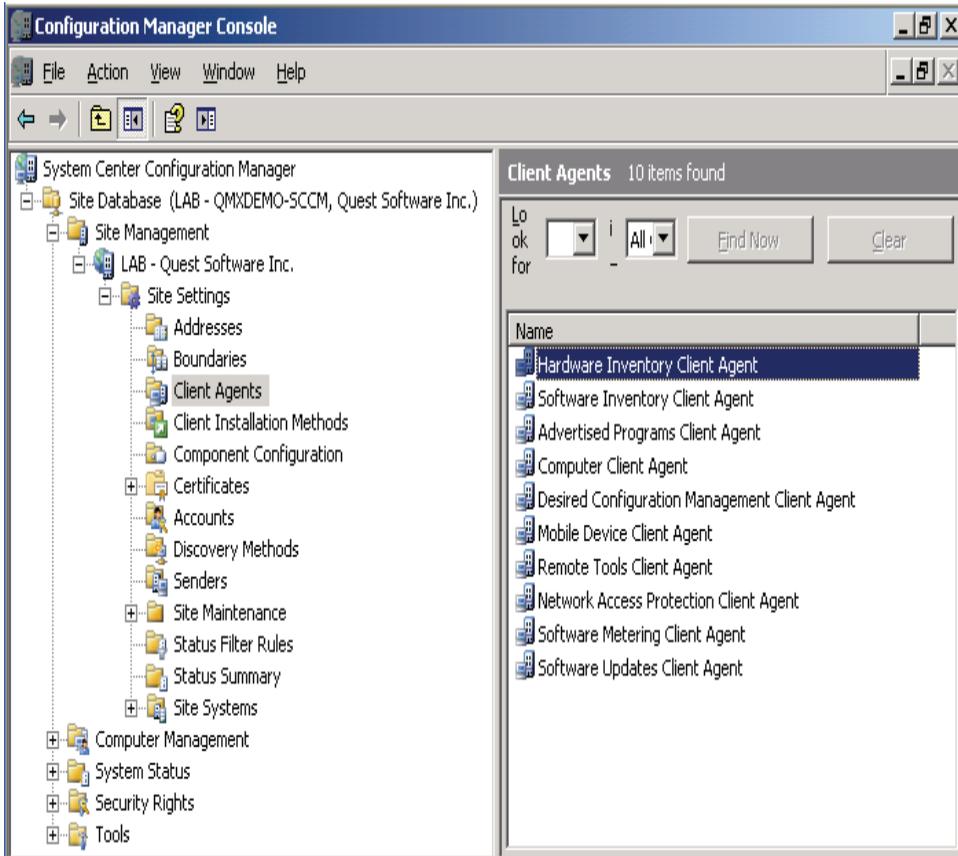
2. The hardware agent honors the same collection schedule.
3. The hardware agent uses the same `sms_def.mof` file as its class and settings resource.

Note • The Managed Object Format (MOF) syntax is a way to describe object definitions. The MOF file is basically made up of a series of class and instance declarations.

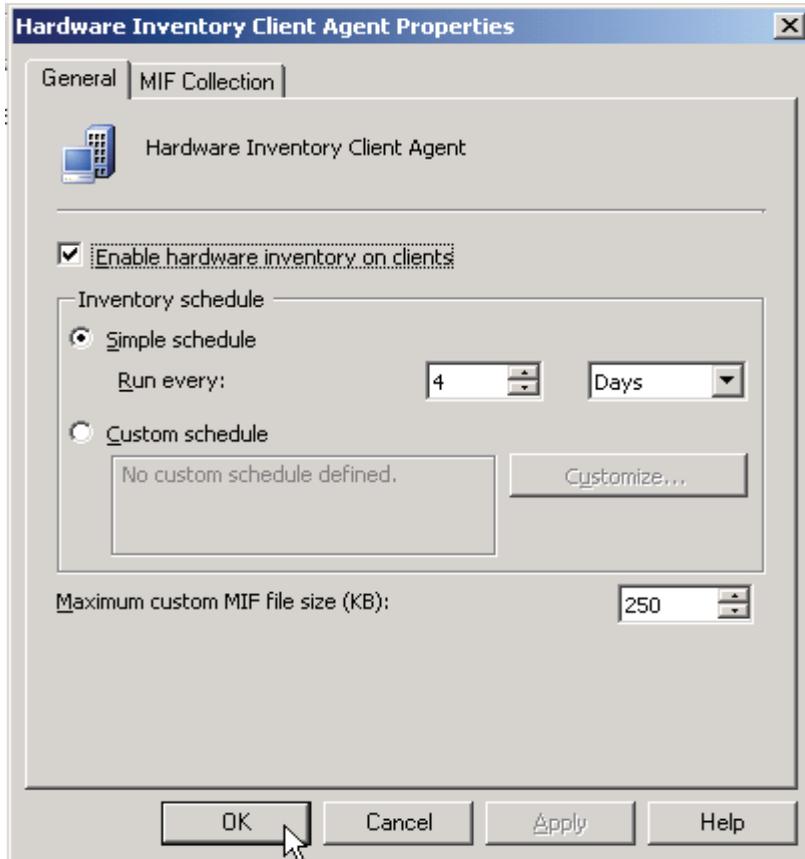
Configuring the Hardware Inventory Client Agent

To configure the Hardware Inventory Client Agent

1. Navigate to **Site Management | Site Settings | Client Agent**.



2. Double click Hardware Inventory Client Agent to open its Properties window.

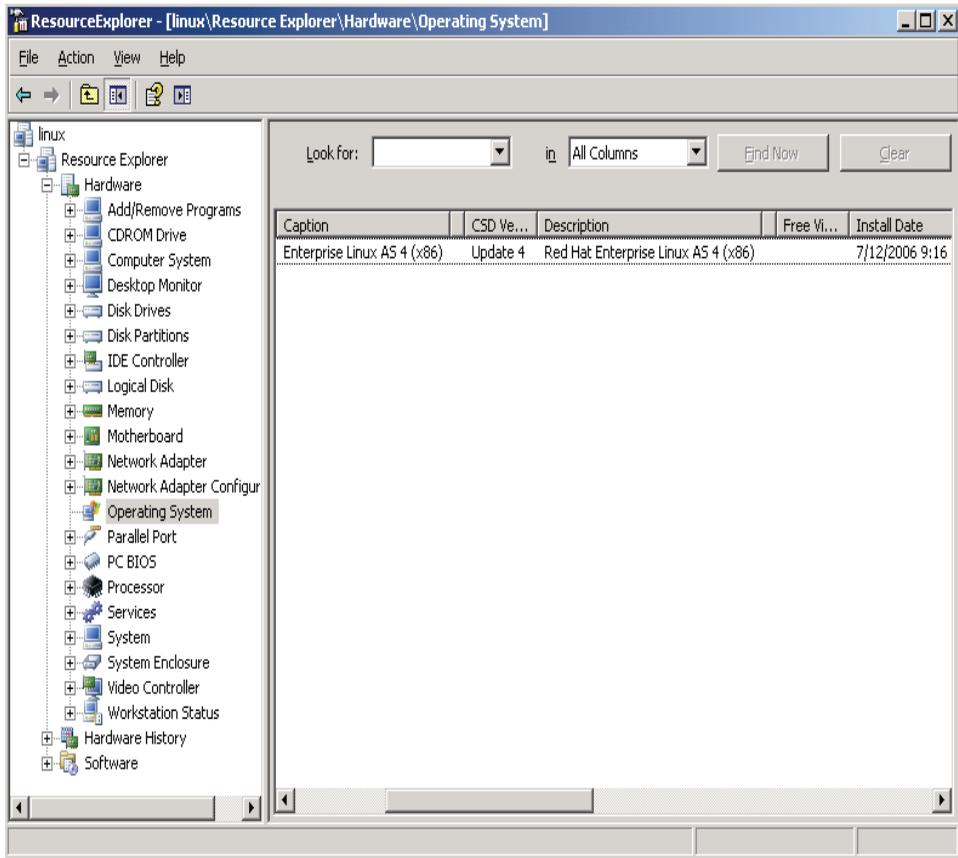


3. Select **Enable hardware inventory on clients**.
4. Set the schedule.

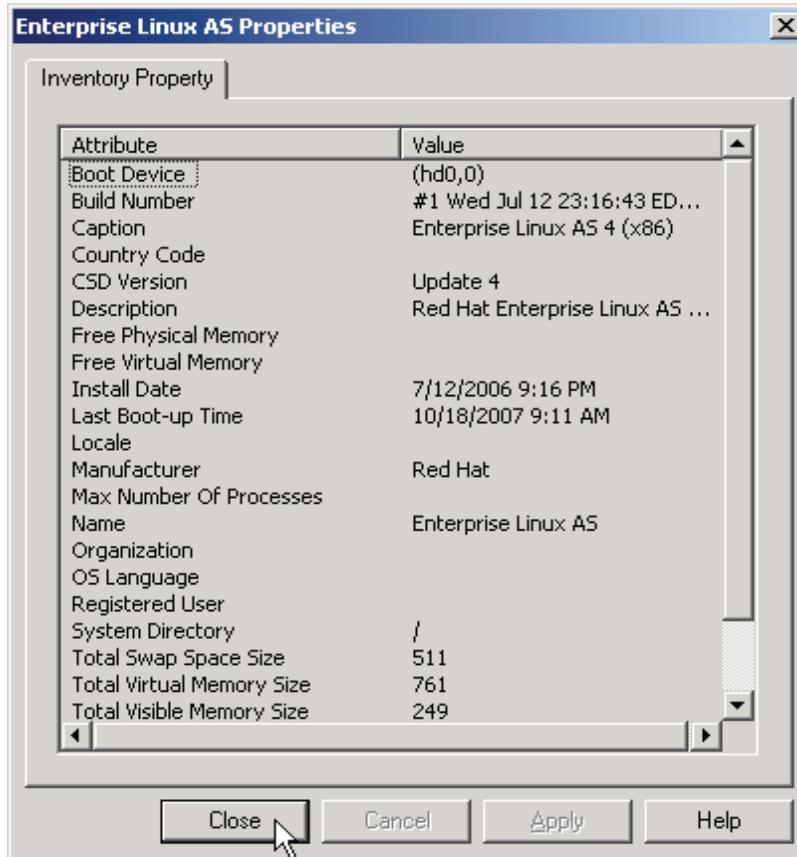
Note • QMX - Configuration Manager 2007 uses the System Center Configuration Manager 2007 policy that is already built. QMX pulls it down to the non-Windows client agents.

To view hardware inventory information

1. Start the Resource Explorer (See [Starting the Resource Explorer.](#))
2. Expand the **Hardware** group.
3. Click **Operating System** to display the operating system information:



4. Double-click the operating system listed in the results pane to open the *Properties* dialog for this resource:



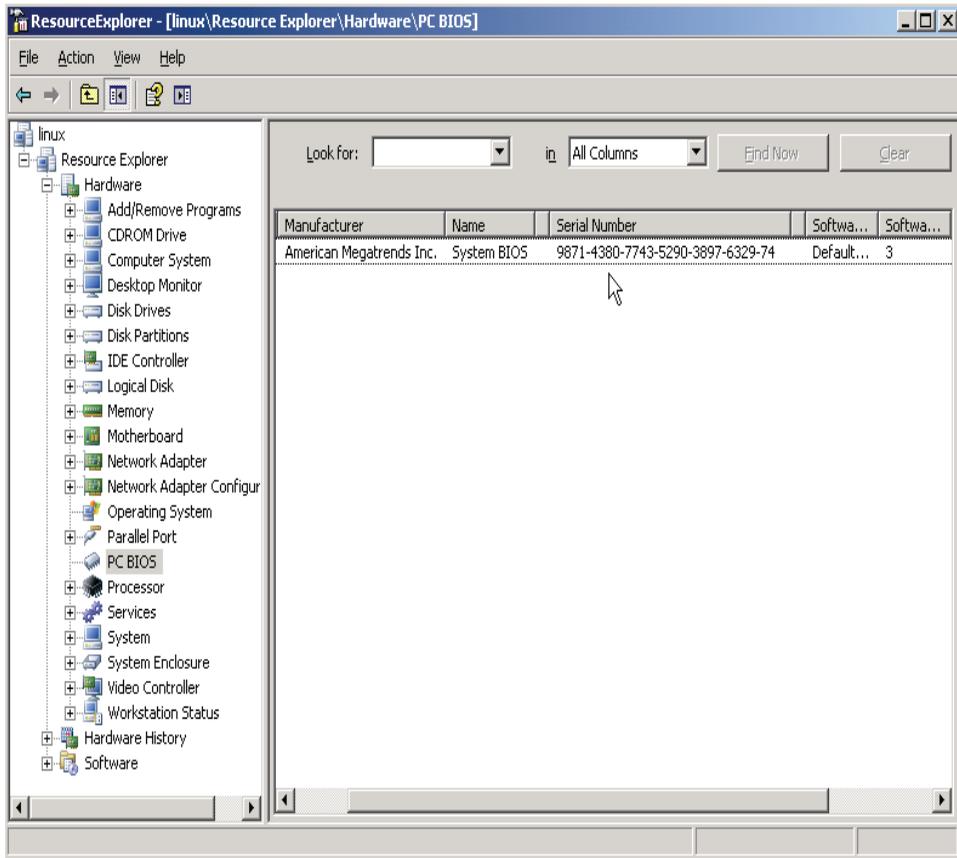
- Repeat steps 4 through 6 to view the information in other hardware inventory categories, such as **Services**, **Disk Drives**, **Logical Disk**, and so forth.



QMX - Configuration Manager 2007 does not collect everything that System Center Configuration Manager 2007 collects. For example, the Logical Disk Volume Name is not reported on a Mac OS X 10.5. For a complete list of devices supported by QMX - Configuration Manager 2007, go to <http://www.quest.com/device-support-database/full-matrix.aspx>

To collect the serial numbers of your managed hosts

- Start the Resource Explorer from a specific managed host. (See [Starting the Resource Explorer.](#))
- Expand the **Hardware** group.
- Select **PC BIOS**.



You can use this data for advanced collections. (See [Custom Inventory Collection](#).)

To view software programs installed on your non-Windows clients

1. Start the Resource Explorer from a specific managed host. (See [Starting the Resource Explorer](#).)
2. Expand the **Hardware** group.
3. Select **Add/Remove Programs**.

The screenshot shows a Windows Resource Explorer window titled "Resource Explorer - [linux\Resource Explorer\Hardware\Add/Remove Programs]". The left pane shows a tree view with "Add/Remove Programs" selected under the "Hardware" group. The right pane displays a table of installed software packages.

Display Name	Install Date	Product ID	Publisher	Version
4Suite	Tue Oct 16 15:05:40 2007	4Suite-1.0-3	Red Hat, Inc.	1.0
a2ps	Tue Oct 16 15:06:52 2007	a2ps-4.13b-41	Red Hat, Inc.	4.13b
ad	Tue Oct 16 15:02:58 2007	ad-2.2.23-5	Red Hat, Inc.	2.2.23
acpid	Tue Oct 16 15:04:13 2007	acpid-1.0.3-2	Red Hat, Inc.	1.0.3
alchemist	Tue Oct 16 15:05:15 2007	alchemist-1.0.34-1	Red Hat, Inc.	1.0.34
alsa-lib	Tue Oct 16 15:05:04 2007	alsa-lib-1.0.6-5.RHEL4	Red Hat, Inc.	1.0.6
alsa-utils	Tue Oct 16 15:08:11 2007	alsa-utils-1.0.6-5	Red Hat, Inc.	1.0.6
anacron	Tue Oct 16 15:03:00 2007	anacron-2.3-32	Red Hat, Inc.	2.3
apmd	Tue Oct 16 15:04:13 2007	apmd-3.0.2-24	Red Hat, Inc.	3.0.2
apr	Tue Oct 16 15:05:03 2007	apr-0.9.4-24.5	Red Hat, Inc.	0.9.4
arpables_if	Tue Oct 16 16:07:36 2007	arpables_if-0.0.8-2	Red Hat, Inc.	0.0.8
arts	Tue Oct 16 15:10:29 2007	arts-1.3.1-2	Red Hat, Inc.	1.3.1
ash	Tue Oct 16 15:01:17 2007	ash-0.3.8-20	Red Hat, Inc.	0.3.8
aspell	Tue Oct 16 15:03:04 2007	aspell-0.50.5-3.fc3	Red Hat, Inc.	0.50.5
aspell-en	Tue Oct 16 15:03:06 2007	aspell-en-0.51-11	Red Hat, Inc.	0.51
at	Tue Oct 16 15:04:12 2007	at-3.1.8-80_EL4	Red Hat, Inc.	3.1.8
atk	Tue Oct 16 15:05:03 2007	atk-1.8.0-2	Red Hat, Inc.	1.8.0
at-spi	Tue Oct 16 15:26:45 2007	at-spi-1.6.0-3	Red Hat, Inc.	1.6.0
attr	Tue Oct 16 15:02:58 2007	attr-2.4.16-3	Red Hat, Inc.	2.4.16
audiofile	Tue Oct 16 15:05:07 2007	audiofile-0.2.6-1.el4.1	Red Hat, Inc.	0.2.6
audit	Tue Oct 16 15:00:08 2007	audit-1.0.14-1.EL4	Red Hat, Inc.	1.0.14
audit-libs	Tue Oct 16 14:59:57 2007	audit-libs-1.0.14-1.EL4	Red Hat, Inc.	1.0.14



With QMX - Configuration Manager 2007, Add/Remove Programs gives you information about the software applications that are installed on QMX - Configuration Manager 2007 Agent-based resources. Thus, existing native packages for operating systems such as RPM for Linux show up under Add/Remove Programs in the Hardware group of the Resource Explorer.

Hardware Inventory in a VMware Environment

When you run QMX - Configuration Manager 2007 on a virtual host there are some important considerations regarding Hardware Inventory. The QMX - Configuration Manager 2007 Agent collects Hardware inventory data (such as CPU Load and Memory usage) from the operating system platform on which it is installed. QMX - Configuration Manager 2007 does NOT "see through" the virtual host to the physical host machine.

On a virtual host, if you want Hardware Inventory data about the physical host, it would be best to install the QMX - Configuration Manager 2007 Agent on the physical host and collect that data directly from it.

You can use Custom Inventory Collection to extend Hardware Inventory to collect additional data. (See [Associating Virtual Machines with Physical Hosts.](#))

Hardware History

The Hardware History group contains information ranging from specifics about the manufacturer and type of hardware internals to the free space available on each disk. You can use this information to determine which targets to use for a software distribution, when to perform remote troubleshooting, or when to identify hardware available in a specific site.

To view Hardware History information

1. Start the Resource Explorer from a specific managed host. (See [Starting the Resource Explorer.](#))
2. Expand the **Hardware History** group in the Resource Explorer.
3. Select **Logical Disk History**.
4. Double click a time and view the columns.

Availability	Compressed	Description	Device ID	Drive Type	File System	Free Space (M)
3	0	Journaling Extended Filesystem (ext3) mounted on /	/	3	ext3	7,102
3	0	System Data (proc) mounted on /proc	/proc	6	proc	0
3	0	System Interface (sysfs) mounted on /sys	/sys	6	sysfs	0
3	0	Virtual Terminal (devpts) mounted on /dev/pts	/dev/pts	6	devpts	0
3	0	Journaling Extended Filesystem (ext3) mounted on /boot	/boot	3	ext3	84
3	0	Dynamic Ramdisk mounted on /dev/shm	/dev/shm	6	tmpfs	124
3	0	BINFMT_MISC filesystem mounted on /proc/sys/fs/binfmt_misc	/proc/sys/fs/binfmt_misc	3	binfmt_misc	0
3	0	RPC_PIPEFS filesystem mounted on /var/lib/inf/rpc_pipefs	/var/lib/inf/rpc_pipefs	3	rpc_pipefs	0
3	0	ISO9660 filesystem mounted on /media/cdrom	/media/cdrom	5	iso9660	0

Software



System Center Configuration Manager 2007 lists the software applications installed on the clients in the Hardware group of the Resource Explorer in Add/Remove Programs as explained in [Hardware](#)

Software Inventory is the process of gathering software information from current site clients in a System Center Configuration Manager 2007 site. The information gathered can include installed programs and any files. With QMX - Configuration Manager 2007, Add/Remove Programs software inventory

information for non-Windows resources is found in the same place as it is for Windows resources. Thus, existing native packages for operating systems such as RPM for Linux show up under Add/Remove Programs in the Resource Explorer.



It is common for a much larger number of software objects to display from non-Windows system than from Windows systems.

To view software file and inventory details

1. Start the Resource Explorer (See [Starting the Resource Explorer.](#))
2. Expand the **Software** group.
3. Click on each of the following groups to view file and inventory collection details:
 - **Collected Files:** Information about the files that are collected from clients.
 - **File Details:** Detailed information about inventoried files.
 - **Last Software Scan:** Information about the last software inventory cycle.
 - **Product Details:** Information about products that were inventoried on the client, grouped by software manufacturer names.

Note • You must pre-configure software inventory for a site before any data will display.

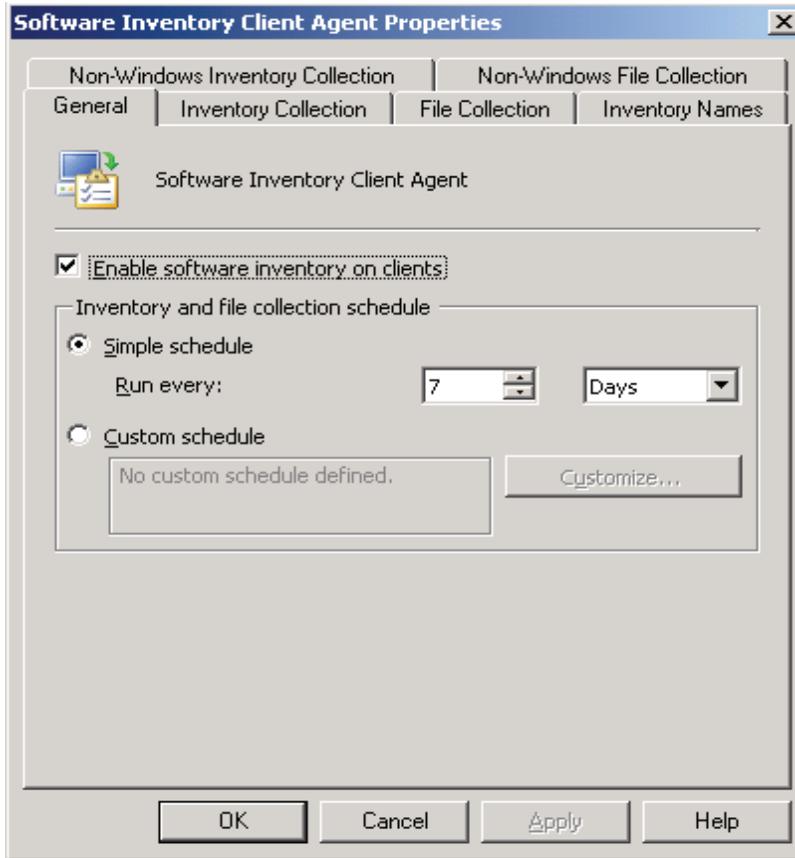
You can disable Spotlight search with the `qmxcm.osx.use_spotlight_search` configuration file option.

Configuring Software Inventory

In QMX - Configuration Manager 2007, File and Inventory Collections work just like they do in System Center Configuration Manager 2007, with a few additional features.

To configure Non-Windows Inventory Collection or File Collection

1. From the Systems Management Server, navigate to **Site Database | Site Management | <site code> - <site name> | Site Settings | Client Agents**.
2. In the detail pane, double-click **Software Inventory Client Agent:**



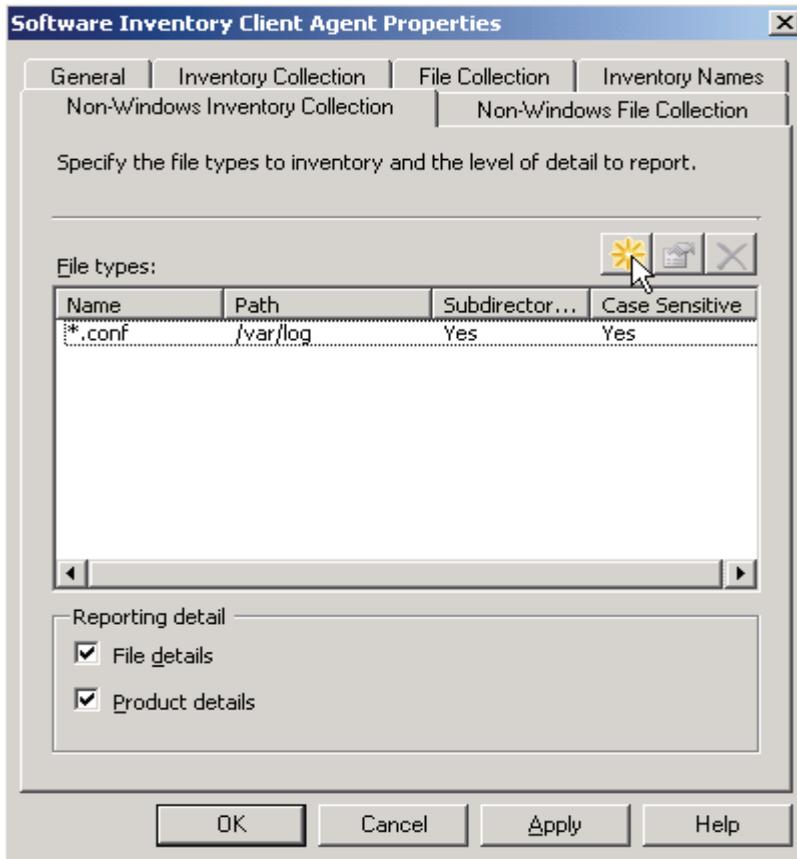
3. Select **Enable software inventory on clients**.
4. Set the schedule.

Non-Windows Inventory Collection

When you enable software inventory for a site, use the *Non-Windows Inventory Collection* tab to specify the file types to inventory and how to report the inventory in the Resource Explorer.

To create an Inventory Collection rule

1. Select the **Non-Windows Inventory Collection** tab:



This is where you define the rules that specify the file types you want to inventory and the level of detail you want it to capture.

Note • See how Unix-like file paths are.

2. Click the **Create New Entry** button (the “starburst” icon) to open the *Inventoried File Properties* dialog where you can specify a new file type to inventory.



You can only add up to 64 rules to the *Files types* list. Once you meet this limit, QMX - Configuration Manager 2007 disables the *Create New Entry* button.

3. Enter a file name in the *Name* box, or if you are on Mac OS X systems, you can enter a directory name, such as **iTunes.app**.

Note • You can enter exact file names, or you can use wildcards such as ***.conf**. You may not use any of the following special characters: / : \ < > |
4. Click the **Set** button to indicate a particular folder or folder tree you want QMX - Configuration Manager 2007 to search.
 - a) Select **All client hard disks** to scan all hard disks on the System Center Configuration Manager 2007 clients for the files to collect.
 - b) Select **Variable or path name** to specify a single folder or folder tree. For example the `secure` files are in the `/var/log` path.
 - c) Select **Search subdirectories** to indicate that you want to search sub folders.
 - d) Click **OK** to close the *Path Properties* dialog.
5. Select **Case sensitive file matching**, if desired.

Note • Unless you select this option, System Center Configuration Manager 2007 treats files with the same name but different cases as the same file. For example, it sees no difference between `testcase.txt` and `TestCase.txt`.

6. Click **OK** to return to the Software Inventory Client Agent Properties dialog.
7. Select **File details** to display all scanned files in the Resource Explorer under **File Details**.
8. Select **Product details** to list software product manufacturer information in the Resource Explorer when it is available.



If you want Product Details for Mac OS X, you must not only select **Product details**, you must also edit the configuration file. On the command line of each client, go to: `/etc/opt/quest/qmxcn` and edit the `qmxcn.conf` file. Change the line that says: `"qmxcn.package_cache=disabled"` to `"qmxcn.package_cache=enabled."` This variable is "disabled" by default because it uses a lot of system resources.

9. Click **OK**.

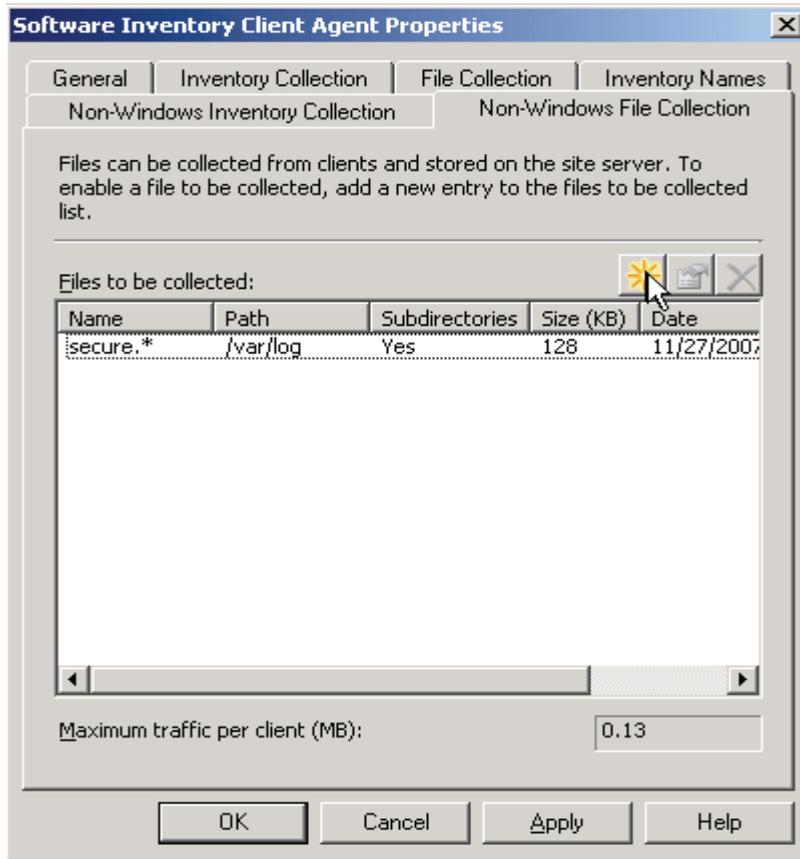
Note • Next time the inventory cycles you can view the results with the Resource Explorer under **Software | File Details** or **Product Details**. (See also: [To force policy update and file collection.](#))

Non-Windows File Collection

Like System Center Configuration Manager 2007, QMX - Configuration Manager 2007 can put whole files into the System Center site database for viewing. You use software inventory to collect files from non-Windows clients and store them at the primary site server to which the clients are assigned. After you create the file collection rule and propagate it to the clients, the files are collected each time software inventory runs. You must specify the files you want to collect. When you do, you can use wildcard characters or specify multiple variations of a file, such as `Status*.doc`.

To create a File Collection rule

1. From the Configuration Manager Console, navigate to **Site Database | Site Management | <site code> - <site name> | Site Settings | Client Agents**.
2. Double-click **Software Inventory Client Agent**.
3. Select the **Non-Windows File Collection** tab:



This is where you define the rules that specify which files you want to collect from the clients. These files are copied into the SQL Database. For example, you may want to examine a .bat, .log, or .conf file.

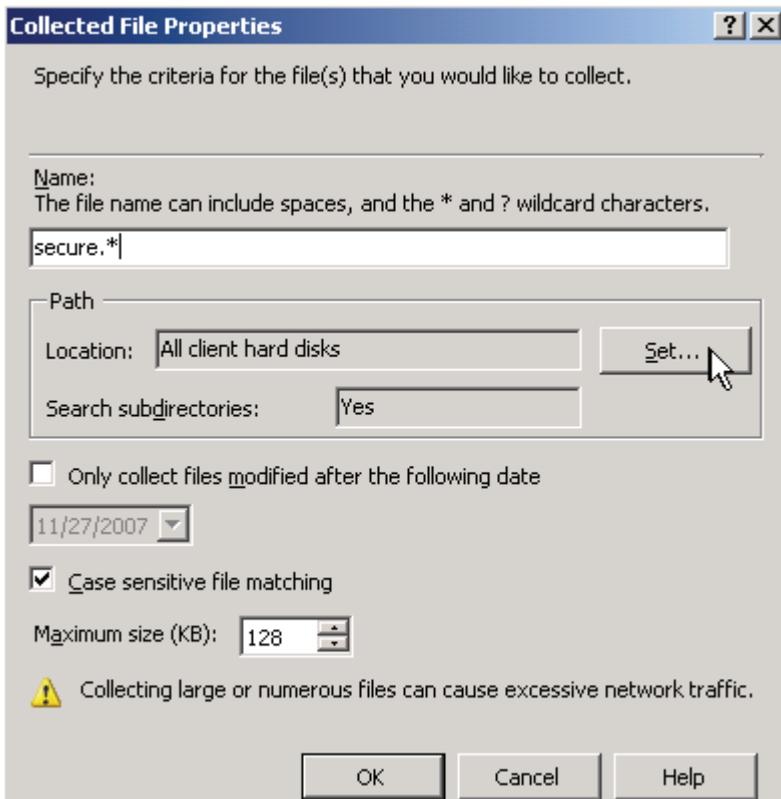
Note: You can limit the size of the files so that you don't fill up the database.

To create a new inventory collection rule

1. Click the **Create New Entry** button (the "starburst" icon) to open the *Collected File Properties* dialog where you can add a new entry to the *Files to be collected* list:



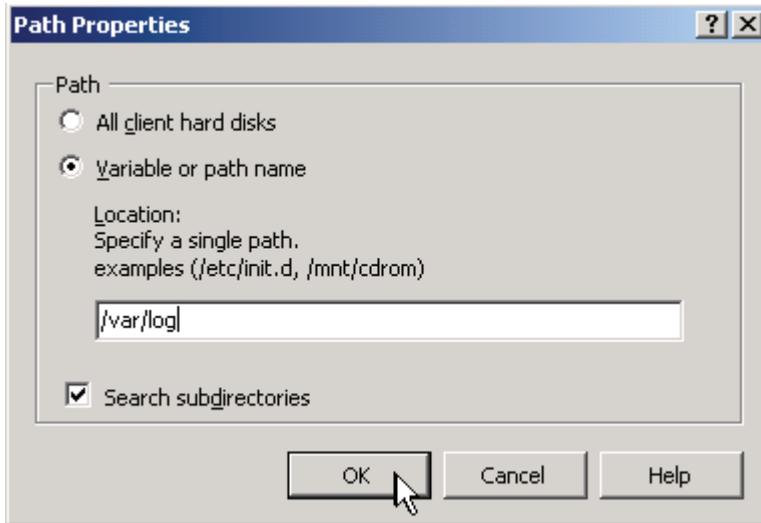
You can only add up to 64 rules to the *Files to be collected* list. Once you meet this limit, QMX - Configuration Manager 2007 disables the *Create New Entry* button.



2. Enter the name of a file or file type you want to collect from the clients. For example, if you want to collect security file logs from the clients, enter **secure**.

Note • You can enter exact file names, or you can use wildcards. For example if you want to collect `secure.1`, `secure.2`, and `secure.3`, enter **secure.***. You may not use any of the following special characters: / : \ < >

- Click the **Set** button to display the *Path Properties* dialog where you can select a full file path to search:



By default, all hard disks on the System Center Configuration Manager 2007 clients are scanned for files to collect. If you want to scan a particular folder or folder tree, click the **Set** button to change the default.

Note • When System Center Configuration Manager 2007 sends a large volume of collected files across the network, network performance can suffer. To minimize this problem, you can restrict the path so that you collect only copies of the files from the desired folder tree, or schedule software inventory when network traffic is lightest.

- Select **All client hard disks** to scan all hard disks on the System Center Configuration Manager 2007 clients for the files to collect.
- Select **Variable or path name** to specify a single folder or folder tree. For example the `secure` files are in the `/var/log` path.
- Select **Search subdirectories** to indicate that you want to search sub folders. If you enable this option, QMX - Configuration Manager 2007 will not search Network file systems mounted on subdirectories. You can also create a file named `skpswi.dat` and

place it in a directory that you want excluded from the search.
(See [Excluding Files From File Collection Scan.](#))



The QMX - Configuration Manager 2007 Agent uses CPU while scanning the hard drive for files that match the rules' pattern. The more directories that need to be scanned, the longer it will take. If you wish to reduce the amount of CPU usage, you can make fewer rules or make rules more specific by not specifying the search subdirectories option or specifying a deeper subdirectory so the Agent will not have to scan as many directories.

d) Click **OK** to close the *Path Properties* dialog.

4. Select **Only collect files modified after the following date** and enter a date in the field provided if you desire to limit the number of files you collect. (This is a way to restrict the number of files collected.)
5. Select **Case sensitive file matching**, if you desire.

Note • In File Collection, System Center Configuration Manager 2007 treats files with the same name but different cases as different files.

6. Select an amount in the *Maximum size (KB)* box for the combined size of the files matching the rule you want to collect. This is the maximum size allowed for all files matching the rule, in kilobytes (KB), that you want System Center Configuration Manager 2007 to collect from a client during a software inventory cycle. If the combined size of the files matching the rule exceeds the *Maximum size* level, System Center Configuration Manager 2007 collects no files.

Collected files from each client in a site hierarchy can generate quite a bit of network traffic and require extensive storage space, especially if you choose a larger value for the combined size of the files. Test the traffic that would be generated on your network before you enable a larger combined file size.

7. Click **OK**.

Note • Next time the inventory cycles you can view the results with the Resource Explorer under **Software | Collected Files**. (See [Starting the Resource Explorer](#) for instructions on how to launch the Resource Explorer.)

Excluding Files From File Collection Scan

Inventorying files can take considerable resources on a server and generate considerable network traffic and workload. To avoid the overhead of running software inventory on large file systems, you can create a file named `skpswi.dat` and place it in the root folder of each file system that you want excluded from software inventory. Software inventory does not scan these drives unless the `skpswi.dat` file is removed.

You can also place a `skpswi.dat` file in a folder that is at the top of the path of a software inventory collection rule to prevent Software Inventory and File Collection from scanning that folder.

Scanning Non-Local Mounts

By default QMX - Configuration Manager 2007 does not collect files from non-local mounts (including network file systems like: SMB, NFS and Andrew FS) if a parent directory above the mount point or all client hard disks are specified in the inventory rule. If you want QMX - Configuration Manager 2007 to search a remote file system, you have to explicitly specify the path you want searched. This prevents QMX - Configuration Manager 2007 from generating excessive network traffic by searching only the network file systems you specify.

For example, to enable QMX - Configuration Manager 2007 to inventory or collect files from a remote network file system, such as NFS, that is mounted at `/mnt/nfsmount`, you can create a rule with a path starting at the `/mnt/nfsmount` directory. Then QMX - Configuration Manager 2007 will search the non-local file system and successfully collect the files in that directory.

Using the clienttool to Force Inventory Collection

System Center Configuration Manager 2007 collects Hardware and software Inventory data according to a schedule set in System Center Configuration Manager 2007. Therefore, there may be a delay before the QMX - Configuration Manager 2007 Agent runs the inventory. If you don't want to wait for the inventory collection to occur, you can force inventory from the command line of the QMX - Configuration Manager 2007 Agent client using the `clienttool` command. It is a good idea to run a Policy update before forcing a Hardware Inventory cycle, particularly if new classes have been added to the `sms_def.mof` file.

To force policy update and file collection

1. Enter the following at the command line:

```
# /opt/quest/qmxcm/bin/clienttool --run-policy-update
```

```
# /opt/quest/qmxcm/bin/clienttool --run-file-collection full
```

2. For more information about using the `clienttool`, see [Using the Client Tool](#).

Software Inventory Reports

All **Software - Companies and Products** reports contain **Product Details** for all *Add/Remove Programs* data reported during Hardware Inventory. For example the *Count all inventoried products and versions* report displays a list of the inventoried software products and versions, as well as the number of computers each is installed on.

To run a report

1. In the Configuration Manager Console, expand **Reporting**.
2. Click **Reports**.
3. Locate, then right-click the ***Count all inventoried products and versions*** report name in the report list.
4. Choose **Run**.
5. Click the **Values** button and choose a Collection ID, such as All Non-Windows Systems.
6. Click **Display**.

Copy || Export || Print || Add to Favorites || E-mail

Report Name: Count all inventoried products and versions

Category: Software - Companies and Products

Comment: Displays a list of the inventoried software products and versions, and the number of computers each is installed on

Parameters:

7/8/2009 11:41:06 AM (Number of Records: 1036)

Product ID	Product Name	Product Version	Count
1856	a2ps	4.13b	1
394	aaa_base	9	1
377	aaa_base	10	3
391	aaa_base	2003.3.27	1
2397	ad	2.2.39	1
1849	acpid	1.0.4	1
561	Activity Monitor	10.5	1
521	Address Book	4.1.1	1
1336	AirPort Utility	5.3.2	1
1895	alacarte	0.10.0	1
2521	alsa-lib	1.0.12	1
2070	alsa-lib-devel	1.0.12	1
2526	alsa-utils	1.0.12	1
2248	amtu	1.0.4	1
2184	anacron	2.3	1
1763	antlr	2.7.6	1
2542	apmd	3.2.2	1
378	apparmor-profiles	2.0	3
522	AppleScript Utility	1.1	1

Custom Inventory Collection

- Extending Hardware Inventory
- Defining New Hardware Inventory Class Definitions
- Using .MOF Files to Extend Hardware Inventory
- Using Scripts to Extend Hardware Inventory
- Associating Virtual Machines with Physical Hosts
- Extending Software Inventory with Scripts

Extending Hardware Inventory

You can extend system-specific hardware inventory to meet additional requirements. QMX - Configuration Manager 2007 provides two ways to extend hardware inventory:

- [Using .MOF Files to Extend Hardware Inventory](#)
- [Using Scripts to Extend Hardware Inventory](#)

Either way you must first define new hardware inventory class definitions in the `sms_def.mof` file on the site server.



If you upgrade QMX - Configuration Manager 2007, you will overwrite any modification you may have made to the `sms_def.mof` file.

Defining New Hardware Inventory Class Definitions

The classic example of non-hardware and software related data associated with a system involves user data such as employee number, name, department, and cube number. Such data are valuable when running reports, but are not readily available to the QMX - Configuration Manager 2007 Agent. However, this data can be supplied to the Agent using files containing Management Object Format (MOF) formatted text. (See also [Extending Software Inventory with Scripts](#).)

For the purposes of this demonstration, we will add new class and properties reporting settings to the `sms_def.mof` file on the site server.



Do not make these changes to `sms_def.mof` while the Configuration Manager Console is running.

To define new hardware inventory classes

1. On the Site server, navigate to `C:\Program Files\Microsoft Configuration Manager\inbox\clifiles.src\hin.v`.
2. Open **sms_def.mof** for editing.
3. Append the file with the following new class and property reporting settings:

```
[SMS_Report (TRUE),
```

```
SMS_Group_Name ("UserInfo"),
SMS_Class_ID ("MICROSOFT|UserInfo|1.0") ]

class SMS_UserInfo : SMS_Class_Template
{
    [SMS_Report (TRUE), key]
        string User;

    [SMS_Report (TRUE), key]
        uint16 UID;

    [SMS_Report (TRUE), key]
        uint16 GID;

    [SMS_Report (TRUE) ]
        string Gecos;

    [SMS_Report (TRUE) ]
        string Home;

};
```

4. Save and close the `sms_def.mof` file.



It is not necessary to compile the `.mof` file (as with the Windows client). The QMX - Configuration Manager 2007 Agent Hardware Inventory Provider can use the text file.

Using .MOF Files to Extend Hardware Inventory

QMX - Configuration Manager 2007 supports the `.mof` files for additional, custom hardware classes, and script-based extensions for the Add/Remove Programs hardware inventory class. Please refer to <http://technet.microsoft.com/en-us/library/bb632437.aspx> for more information about Inventory in Configuration Manager.

There are two ways to create custom hardware inventory: (1) You can create `.mof` files on each client from which you want to gather information; or (2) you can create `.mof` files on the Site server and distribute them to a collection of clients using the QMX - Configuration Manager 2007 Software Distribution Wizard.

- [Create a .mof File on the Agent](#)
- [Create .mof Files on the Server](#)

Create a .mof File on the Agent

Create a `.mof` file containing the class data that is specific to that machine on the QMX Agent in the `/var/opt/quest/qmxcn/noidmofs` directory (you may need to create the directory).

To create a .mof file on the Agent

1. If you do not already have a **noidmofs** directory on the Agent client, enter the following to create this directory:

```
# mkdir /var/opt/quest/qmxcn/noidmofs
```

2. Change to that directory by entering:

```
# cd /var/opt/quest/qmxcn/noidmofs
```

3. Create a new file called **UserInfo.mof** by entering:

```
# vi UserInfo.mof
```

This opens the new file in **vi**, a standard Unix editor.

4. Type the **"i"** key to get into INSERT mode and enter the following into the file (note the quotation marks surrounding the string data):

```
instance of SMS_UserInfo
{
    User = "gwashtington";
    UID = 100;
    GID = 001;
    Gecos = "George Washington, President";
    Home = "/home/gwashing";
};
```

```
instance of SMS_UserInfo
```

```
{  
    User = "hhamlin";  
    UID = 101;  
    GID = 002;  
    Gecos = "Hannibal Hamlin, Vice President";  
    Home = "/home/hhamlin";  
};
```

5. Save `UserInfo.mof` with these changes.
 - a) Click the **Esc** (Escape) key to get out of INSERT mode.
 - b) Type **:wq** (write, quit).
 - c) Click the **Enter** key.

This data will be fully available from Configuration Manager Console for the host system after the next policy and hardware inventory cycles complete.

To expedite these cycles, you can use the `clienttool` to force these cycles to run.

6. From the client command line, enter the following:

```
# /opt/quest/qmxcn/bin/clienttool --run-policy-update
```

```
# /opt/quest/qmxcm/bin/clienttool --run-hardware-inventory
```

```
Hardware Inventory successful in 22 seconds.

685 hardware devices reported.
Reported class: CCM_LogicalMemoryConfiguration 1 time.
Reported class: CCM_System 1 time.
Reported class: SMS_LogicalDisk 9 times.
Reported class: SMS_Processor 1 time.
Reported class: SMS_UserInfo 2 times.
Reported class: Win32Reg_AddRemovePrograms 617 times.
Reported class: Win32_BIOS 1 time.
Reported class: Win32_CDROMDrive 1 time.
Reported class: Win32_ComputerSystem 1 time.
Reported class: Win32_DesktopMonitor 1 time.
Reported class: Win32_DiskDrive 1 time.
Reported class: Win32_DiskPartition 2 times.
Reported class: Win32_IDEController 2 times.
Reported class: Win32_MotherboardDevice 1 time.
Reported class: Win32_NetworkAdapter 2 times.
Reported class: Win32_NetworkAdapterConfiguration 2 times.
Reported class: Win32_OperatingSystem 1 time.
Reported class: Win32_ParallelPort 1 time.
Reported class: Win32_Service 36 times.
Reported class: Win32_SystemEnclosure 1 time.
Reported class: Win32_VideoController 1 time.
[root@linux noidmofs]#
```

7. Validate the SMS_UserInfo reported 2 instances of hardware data:
Reported class: SMS_UserInfo 2 times.

Note • The 2 instances are from UserInfo.mof file on the Agent.

Create .mof Files on the Server

To demonstrate how you can distribute .mof files from the Site server to a collection of clients using the QMX Software Distribution Wizard, we need to create some more .mof files.

To create a MOF Files directory

1. Create a directory on the desktop called "**MOF Files**".

- Using the new class and property reporting settings you defined in the `sms_def.mof` file in [Defining New Hardware Inventory Class Definitions](#), create another new `.mof` file named **MoreUserInfo.mof** that contains the following and save it in the new MOF Files directory:

```
instance of SMS_UserInfo
{
    User = "jadams";
    UID = 102;
    GID = 003;
    Gecos = "John Adams, President";
    Home = "/home/jadams";
};

instance of SMS_UserInfo
{
    User = "tjefferson";
    UID = 103;
    GID = 004;
    Gecos = "Thomas Jefferson, Vice President";
    Home = "/home/tjeffers";
};
```

- Save that file and then clone it.

To clone the .mof file

- Copy the **MoreUserInfo.mof** file and save it as **EvenMoreUserInfo.mof**.
- Modify the data as follows:

```
instance of SMS_UserInfo
{
    User = "tjefferson";
    UID = 104;
    GID = 005;
```

```
Gecos = "Thomas Jefferson, President";
Home = "/home/tjeffers";
};

instance of SMS_UserInfo
{
    User = "aburr";
    UID = 105;
    GID = 006;
    Gecos = "Aaron Bur, Vice President";
    Home = "/home/abur";
};
```

3. Save and close the file.

Installing .mof files

The best way to install .mof files is create a script and distribute it to the QMX - Configuration Manager 2007 Agent using the Software Distribution Wizard's *Script or Custom Command* software distribution Package Type.

To create a script to install MOF files

1. On the Site Server, create a shell script file in the MOF Files directory called **DistributeMofs.sh** containing the following:

```
#!/bin/sh
umask 022
mkdir -p /var/opt/quest/qmxcn/noidmofs
cp ./*.mof /var/opt/quest/qmxcn/noidmofs
```

To distribute the .mof files

1. In the Configuration Manager Console, navigate to and right-click **All Linux Systems** collections.
2. Choose **Distribute Non-Windows | Software** to start the QMX - Configuration Manager 2007 Software Distribution Wizard.
 - a) At the *Source Directory* page, **Browse** to select the MOF Files directory on the desktop.

- b) At the *Package Identification* page, enter **MOF Files** in the *Name* box.
- c) At the *Distribution Points* page, click **Next**.
- d) At the *Program Properties* page, enter **MOF Files** in the *Name* box.
- e) At the *Package Type* page, select the **Script or Custom Command** package type.
- f) At the *Script or Custom Command* page, **Browse** to select the **DistributeMofs.sh** script file.
- g) At the *Advertisement Name* page, click **Next** to continue.
- h) At the *Advertise to Subcollections* page, click **Next** to continue.
- i) At the *Assign Program* page, select **Ignore maintenance windows when running program** and click **Next** to continue.

Note • You have to select this if you don't have a Maintenance Window defined.

- j) At the *Summary* page, click **Next** to continue.
- k) At the *Wizard Completed* page, click **Close**.

All of the `.mof` files contained in the package directory will be added to the custom inventory directory and collected with the next hardware inventory.

To expedite these cycles, you can use the `clienttool`.

3. From the Linux console and enter the following command to update policy:

```
# /opt/quest/qmxcn/bin/clienttool --run-policy-update
```

Note • The policy update is needed to get the new `sms_def.mof` settings.

Forcing Software Distribution

You can either wait for the normal software distribution cycle or force the distribution manually.

To manually force the software distribution

1. Enter the following command to see the program:

```
/opt/quest/qmxcm/bin/clienttool --list-available-software
```

```
[root@linux noidmofs]# /opt/quest/qmxcm/bin/clienttool --run-policy-update
Request submitted to Management Point: QMXDEMO-SCCM.example.com:80 for Site Code
: LAB
Policy Update successful in 4 seconds.

Downloaded 2 new, 0 updated, 0 deleted, and 132 unchanged policies.

Scheduling and Other policies had 1 new, 0 updated, 0 deleted, and 53 unchanged.
Hardware Inventory policies had 0 new, 0 updated, 0 deleted, and 50 unchanged.
File Collection policies had 0 new, 0 updated, 0 deleted, and 3 unchanged.
Software Inventory policies had 0 new, 0 updated, 0 deleted, and 3 unchanged.
Software Distribution policies had 1 new, 0 updated, 0 deleted, and 0 unchanged.
Discovery Related policies had 0 new, 0 updated, 0 deleted, and 16 unchanged.
Software Metering policies had 0 new, 0 updated, 0 deleted, and 7 unchanged.
[root@linux noidmofs]# /opt/quest/qmxcm/bin/clienttool --list-available-software
Available Software:
Advertisement ID Package ID Program ID
LAB20000 LAB00003 Mof Files
[root@linux noidmofs]#
```

Note • The `--list-available-software` option shows you the strings you need for the next command.

2. Enter the following command to force the software distribution:

```
/opt/quest/qmxcm/bin/clienttool
--run-software-distribution LAB20000 LAB00003 "MOF Files"
```

Note • You must put "MOF Files" in quotes because of the space in the Program ID name.

To run the Hardware Inventory cycle

1. Force hardware inventory so your new program will appear in System Center Configuration Manager 2007 without waiting for the next inventory cycle:

```
/opt/quest/qmxcm/bin/clienttool --run-hardware-inventory
```

```
Hardware Inventory successful in 21 seconds.

689 hardware devices reported.
Reported class: CCM_LogicalMemoryConfiguration 1 time.
Reported class: CCM_System 1 time.
Reported class: SMS_LogicalDisk 9 times.
Reported class: SMS_Processor 1 time.
Reported class: SMS_UserInfo 6 times.
Reported class: Win32Reg_AddRemovePrograms 617 times.
Reported class: Win32_BIOS 1 time.
Reported class: Win32_CDROMDrive 1 time.
Reported class: Win32_ComputerSystem 1 time.
Reported class: Win32_DesktopMonitor 1 time.
Reported class: Win32_DiskDrive 1 time.
Reported class: Win32_DiskPartition 2 times.
Reported class: Win32_IDEController 2 times.
Reported class: Win32_MotherboardDevice 1 time.
Reported class: Win32_NetworkAdapter 2 times.
Reported class: Win32_NetworkAdapterConfiguration 2 times.
Reported class: Win32_OperatingSystem 1 time.
Reported class: Win32_ParallelPort 1 time.
Reported class: Win32_Service 36 times.
Reported class: Win32_SystemEnclosure 1 time.
Reported class: Win32_VideoController 1 time.
[root@linux noidmofs]#
```

2. Validate the SMS_UserInfo reported 6 instances of hardware data:

Reported class: SMS_UserInfo 6 times.

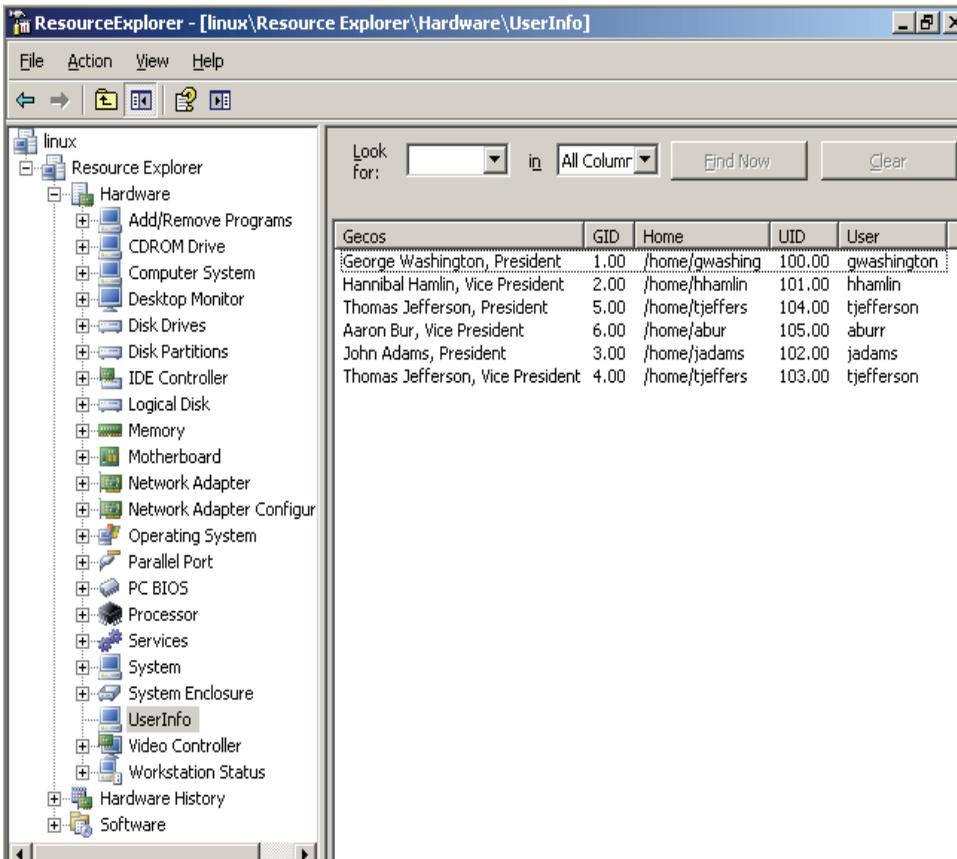
Note • The 6 instances are from the three .mof files in the **noidmofs** directory each of which contained information about two users.

Verifying MOF-based Extended Hardware Inventory

The additional hardware data shows up in the QMX - Configuration Manager 2007 Agent's Resource Explorer in the same fashion as traditional hardware data after the next policy / hardware cycle completes.

To start the Resource Explorer

1. Navigate to the **All Linux Systems** collection.
2. In the results pane, right-click the **linux** client.
3. Choose **Start | Resource Explorer**.
4. Select the **Hardware** node and see that you now have a new folder for **"UserInfo"** that contains the data from all of the .mof files.



Using Scripts to Extend Hardware Inventory

QMX - Configuration Manager 2007 2.2 also allows you to use scripts to collect hardware inventory information. QMX executes all scripts that reside in the `noidmof` directory with a script extension (`.sh`, `.py`, `.pl`) and marked as executable. The output (if the script is successful) is exactly the same as if you extended the hardware inventory with Management Object Format (MOF) files as explained in [Using .MOF Files to Extend Hardware Inventory](#).



The following example will not work without extending the `sms_def.mof` file as explained [Defining New Hardware Inventory Class Definitions](#).

The following procedure demonstrates how to create a script called `UserInfo.sh` in the `/var/opt/quest/qmxcm/noidmofs/` directory that will generate dynamic `SMS_UserInfo` instances based on the contents of `/etc/passwd`.

To create a script that generates dynamic SMS_UserInfo instances

1. From the client command line, enter the following:
2. Create a new file called **UserInfo.sh** by entering:

```
# cd /var/opt/quest/qmxcm/noidmofs
#vi UserInfo.sh
```



Rather than using **vi**, you can write the script using Notepad on your Windows desktop and then distribute it to the Linux client using the QMX Software Distribution Wizard, as described in [Installing .mof files](#).

3. Type **"i"** to get into INSERT mode and enter the following into the file:

```
#!/bin/sh
while read line; do
    user_name=`echo "${line}" | cut -f1 -d':'`
    user_uid=`echo "${line}" | cut -f3 -d':'`
    user_gid=`echo "${line}" | cut -f4 -d':'`
    user_gecos=`echo "${line}" | cut -f5 -d':'`
    user_Home=`echo "${line}" | cut -f6 -d':'`
```

```
# Skip privileged users.
if [ ${user_uid} -lt 100 ]; then
continue
fi

if [ x${real_name:+set} != xset ]; then
real_name="unnamed user ${user_name}"
fi

echo "instance of SMS_UserInfo"
echo "{"
echo "  User = \"${user_name}\";"
echo "  UID = ${user_uid};"
echo "  GID = ${user_gid};"
echo "  Gecos = \"${user_gecos}\";"
echo "  Home = \"${user_Home}\";"
echo "};"

done < /etc/passwd
```

4. Save `UserInfo.sh` with these changes.
 - a) Click the **Esc** (Escape) key to get out of INSERT mode.
 - b) Type **:wq** (write, quit).
 - c) Click the **Enter** key.
5. Give the `UserInfo.sh` file "execute" permissions, by entering:

```
# chmod +x UserInfo.sh
```

6. Run this script from the command line:

```
# ./UserInfo.sh
```

It shows you a list of `SMS_UserInfo` instances based on the contents of `/etc/passwd/`



By default, Hardware Inventory stops a custom hardware inventory NOIDMOF script from running after 60 seconds. If your script takes longer than that, you can use the `clienttool --set-custom-inventory-timeout <arg>` option to extend the runtime.

7. Force hardware inventory so you don't have to wait for the next inventory cycle by entering:


```
# /opt/quest/qmxcn/bin/clienttool --run-hardware-inventory
```
8. Validate the `SMS_UserInfo` reported additional instances of hardware data (depending on how many users are in the `passwd` file):


```
Reported class: SMS_UserInfo 11 times.
```

Note • Six from the three `.moF` files and the others from the `passwd` file.

9. In the Configuration Manager console, navigate to **System Center Configuration Manager | Site Database | Computer Management | Collections | All Linux Systems**.
10. In the results pane, right-click the **linux** client.
11. Choose **Start | Resource Explorer**.
12. Select the **Hardware** node and see that you now have additional users in the `UserInfo` folder.

It lists all the users from the three `.moF` files and the users from the `passwd` file.

Associating Virtual Machines with Physical Hosts

The QMX - Configuration Manager 2007 Agent collects data either from the virtual host or physical host depending upon where the QMX - Configuration Manager 2007 Agent is installed. If it is installed on the physical host it collects data from the physical machine and if it is installed on the virtual host it collects data from the virtual machine.

However, you might want a report that shows what virtual machines run on each physical host. In this case you need some information in the System Center site database that connects (joins or associates) each virtual machine with the physical host on which it is running.

To collect physical host data from within the virtual host environment (or the other way around), you need to use a .mof file to create this additional data. For example, by using a .mof file you can add the physical host ID to the virtual machine inventory record.

The QMX - Configuration Manager 2007 Agent on the virtual host collects data from within the .mof file on the virtual machine and writes it to the System Center site database. In this way, you tie the physical host inventory and virtual host inventory data together using System Center Configuration Manager 2007 queries.

These changes only associate Hardware Inventory collected from virtual machines with Hardware Inventory collected from the physical machine; it does not enable the QMX - Configuration Manager 2007 Agent installed on a virtual machine to collect any information directly from the physical host. This association is created in the System Center site database and viewable in reports. When the Hardware association is created, it is displayed as a new *Virtual Machine* node in the Resource Explorer.

You can also use the Custom Inventory Collection concepts to associate physical host inventory data, such as Serial Number, to a virtual machine. In order to do this you must put the physical host data in a .mof file on the virtual machine.

The steps below explain how to associate a virtual machine to a physical machine with Hardware Inventory.

To create a Virtual Machine folder in the Resource Explorer of the physical host, you must turn on reporting for the Win32Reg_SMSGuestVirtualMachine, as follows:

To create a Virtual Machine node in the Resource Explorer

1. In the sms_def.mof file find the

```
#pragma namespace ("\\\\.\\root\\cimv2\\sms")
[ SMS_Report      (FALSE),
  SMS_Group_Name ("Virtual Machine"),
  SMS_Class_ID    ("MICROSOFT|VIRTUAL_MACHINE|1.0") ]
class Win32Reg_SMSGuestVirtualMachine :
  SMS_Class_Template ...
```

2. Replace:

```
[ SMS_Report      (FALSE),
```

with:

```
[ SMS_Report      (TRUE) ,
```

3. On the virtual machine, create a `/var/opt/quest/qmxcn/noidmofs` directory, if it does not already exist, and set its user and group ownership to `owprovdr:owprovdr`.
4. In the `noidmofs` directory, create a file with a `.mof` extension, such as, `guest-virtual-machine.mof`, and set its user and group ownership to: `owprovdr:owprovdr`.
5. Put the following in the file you create: (your property names may have different values):

```
instance of Win32Reg_SMSGuestVirtualMachine {
    InstanceKey = "sles10.vml-css";
    PhysicalHostName = "css";
    PhysicalHostNameFullyQualified = "css.qmx.a"; };
```

Note • You can specify anything you want in the `.mof` file and this information will be reported in the Resource Explorer.

Next time Hardware Inventory is gathered from your non-Windows host, the Virtual Machine node will appear in Resource Explorer.

To find all guest machines for a physical host named "css"

1. Create and execute this query:

```
select SMS_G_System_VIRTUAL_MACHINE.InstanceKey from
SMS_R_System inner join SMS_G_System_VIRTUAL_MACHINE on
SMS_G_System_VIRTUAL_MACHINE.ResourceID =
SMS_R_System.ResourceId and
SMS_G_System_VIRTUAL_MACHINE.PhysicalHostNameFullyQualified =
"css.qmx.a"
```

This example demonstrates how to create a query that returns a list of virtual machines associated with a physical host named `css.qmx.a`. The association is done by setting a unique value in the `.mof` file for all virtual machines hosted on `css.qmx.a`. We use the `PhysicalHostNameFullyQualified` field in the example query to get a list of all virtual machines.

Extending Software Inventory with Scripts

If you install a software program that is not registered with the system's packaging facility you can write a script to search for it and report it to System Center Configuration Manager 2007. Most non-packaged software programs are shipped as tarballs instead of the native package format.

Script-based software inventory uses a user-supplied shell script to add software inventory data into the System Center site database. The data provided by the script displays in the Configuration Manager Console Resource Explorer under the Add/Remove Programs class.



By default, scripted software Inventory stops running after 60 seconds. If your script takes longer than that, you can use the `clienttool --set-custom-inventory-timeout <arg>` option to extend the maximum runtime.

To integrate the script output into the QMX - Configuration Manager 2007 Agent Software Inventory Provider

1. Create a shell script using your preferred editor.

```
#!/bin/sh
echo "DisplayName|InstallDate|ProductID|Publisher|Version"
```

Note • Enter appropriate information for each of the variables in the line, for example:

```
#!/bin/sh
echo "MyNewApp|01/01/06|Widget_Application|ACME_Vendor|1.0"
```

Note • The Product ID must be unique.

2. Create the `sinv_scripts` directory, if it does not exist:

```
mkdir -p /var/opt/quest/qmxcm/sinv_scripts
```

Note • You must have root access to create a directory.

3. Set the permissions so that it can be read:

```
chmod a+rx /var/opt/quest/qmxcm/sinv_scripts
```

4. Place the shell script (or scripts) in the following directory:

```
/var/opt/quest/qmxcm/sinv_scripts
```

As part of the inventory process, the QMX - Configuration Manager 2007 Agent will run any scripts in this directory and parse the output into instances of the AddRemovePrograms class which it will include in its report to System Center Configuration Manager 2007.

5. Give the user "read" and "execute" rights for this script, if necessary:

```
chmod a+rx AddProgram.sh
```

6. Test the shell script to ensure that it runs and produces the correct output:

```
./AddProgram.sh
```

where AddProgram.sh is the name of the shell script.

7. Force hardware inventory so your new program will appear in System Center Configuration Manager 2007 without waiting for the next inventory cycle:

```
/opt/quest/qmxcn/bin/clienttool --run-hardware-inventory
```

Note • For more information about the clienttool, see [Using the Client Tool](#).

8. Now when you open the Resource Explorer from the Configuration Manager Console, MyNewApp will be listed in Add/Remove Programs:

Note • To Start the Resource Explorer, see [Starting the Resource Explorer](#).

Distributing Scripts or Custom Commands

The best way to install script-based inventory is to distribute it to the QMX - Configuration Manager 2007 Agent using the Software Distribution Wizard's *Script or Custom Command* Package Type.

To write a script on the Windows system

1. Create a shell script similar to the following:

```
#!/bin/sh
umask 022
mkdir -p /var/opt/quest/qmxcn/sinv_scripts
ls -l *.sh | grep -v NAME_OF_THIS_SCRIPT | while read
filename; do
    # This strips Windows line endings and installs the script.
    sed 's/\r//g' < ${filename}
```

```
# This strips Windows line endings and installs the script.
>/var/opt/quest/qmxcm/sinv_scripts/${filename}
# This makes the script executable
  chmod a+rx /var/opt/quest/qmxcm/sinv_scripts/${filename}
done
```

Note • This script assumes that you are running on Linux.

For other platforms, you can use `sed 's/.$//' < ${filename}` to remove the `\r` part of the Windows newline if it is the last character, not including the `\n`. Make sure the script has a newline after every line for this to work correctly.

Or, you can use `sed 's/^M//' < ${filename}` to remove the `\r` from the script, however `^M` must be one character. This is usually accomplished by typing **<ctrl-v> <ctrl-m>**. This does not work in all cases such as in Emacs.

2. Add the script to the script directory.
3. Distribute the script directory to a collection using the Software Distribution Wizard's *Script or Custom Command* Package Type.

Script Output Defaults

The QMX - Configuration Manager 2007 Agent Inventory Provider expects a specific field order with pipe ('|') delimited output, as follows:

```
DisplayName|InstallDate|ProdID|Publisher|Version
```

If a field's data is not available, a delimiter value is still required in the output. For example, if the `DisplayName`, `ProdID`, `Publisher`, and `Version` are known, but the `InstallDate` is not, the output should look like this:

```
Vim - Vi iMproved||Vim-sparc|Bram Moolenaar|6.3.
```



The delimiter count remains at 4.

The `ProdID` field is the key attribute in the `AddRemoveSoftware` CIM Class. It is required. A record reflecting the software package will not appear without it. Ensure that the `ProdID` value is unique for each system, perhaps by combining `uname` output with program name data.

You can configure the QMX - Configuration Manager 2007 Agent to accept different delimiter(s), or a different field order and count by editing the `qmxcm.conf` file found in `/etc/opt/quest/qmxcm/qmxcm.conf`.

- To change the default "pipe" delimiter to a comma, for example, add or edit the following line in the `qmxcm.conf` file:

```
qmxcm.software_script_delim=,
```

- To change the field order the QMX - Configuration Manager 2007 Agent expects to receive from the script, add or edit the following line in the `qmxcm.conf` file:

```
qmxcm.software_script_fields=ProdID,InstallDate,Publisher  
,DisplayName,Version
```

- To leave a field out of the list, simply omit it, as shown in the following example (the `ProdID` field cannot be omitted):

```
DisplayName,ProdID,Publisher,Version
```


4

Collections and Queries

- About Collections
- About Queries

About Collections

System Center Configuration Manager 2007 allows you to manage resources by organizing them into collections that reflect the structure of your organization. For example, if you gather your resources into logical, manageable groups such as user groups, clients, and routers, you use these collections to help you manage the non-Windows resources on your System Center Configuration Manager 2007 site. For example, System Center Configuration Manager 2007 uses collections as targets during software distribution to clients.

Some of the most common systems management tasks include:

- Change and Configuration Management
- Software and Patch Delivery
- Software License Compliance

QMX - Configuration Manager 2007 provides a number of pre-defined collections representing the non-Windows resources that QMX - Configuration Manager 2007 supports. You can also create additional collections to gather information and generate reports on your non-Windows resources. Using native System Center Configuration Manager 2007 functionality you can create custom collections to help you manage your assets. For example you can create a collection based on hardware or software components or attributes by using a query. This enables you to determine:

- if you must deploy software updates or patches
- if you need more or fewer licenses based on real installations and usage
- if you have outdated Hardware or software
- if your components are too small and in need of more memory or hard disk space
- if your systems are in compliance with Sarbanes-Oxley or HIPPA Regulations.

Maintenance Windows

Maintenance Windows is a new System Center Configuration Manager 2007 feature which allows you to define a window in which to perform software distributions and software updates. The window uses an estimated time (defined in the software distribution wizard) to complete the entire installation of the software distribution or update.

QMX - Configuration Manager 2007 has designed the Agent to support Maintenance Windows. You define maintenance windows by collection with an effective start date, start and end times, and a set recurrence pattern.



To take advantage of this new feature, you must edit packages and advertisements that existed before upgrading to version 2.1. (See “Upgrade Packages and Advertisements After an Upgrade” in Chapter 9 of the Installation guide for more information.)

To define a maintenance window

1. In the Configuration Manager console, navigate to **System Center Configuration Manager | Site Database | Computer Management | Collections**.
2. Right-click the collection for which you want to set a maintenance window, and then click **Modify Collection Settings**.
3. On the *Maintenance Windows* tab, click the **New** icon.

<new> Schedule

Name: MW-All Linux Systems

Time

Effective date: 8/28/2008

Start: 1:00:00 AM End: 4:00:00 AM

Duration: 3 Hour(s) 0 Minute(s)

UTC

Recurrence pattern

None

Weekly

Monthly

Daily

Recur every 1 weeks on:

Sunday

Thursday

Friday

Saturday

Wednesday

This schedule applies only to operating system deployment task sequences

OK Cancel Help

4. In the *Name* box, type a name for this maintenance window.
5. In the *Time* area, select an effective date for the window, as well as a start and end time for the window. The duration of the maintenance window is shown below the selected start and end times.

Note • Do not set the duration of the maintenance window for longer than 24 hours. If a longer maintenance window is required, use multiple windows.

Note • Do not select the *UTC* check box; QMX - Configuration Manager 2007 does not support UTC.

6. Select a *Recurrence pattern* for the maintenance window, if desired.

Note • Do not select the *This schedule applies only to Operating System tasks* option as QMX - Configuration Manager 2007 does not support this option.

7. Click **OK**.

You specify a software distribution to run within a maintenance window using the QMX Software Distribution Wizard. You specify the *Maximum run time (in minutes)* that you expect the program to run on the client computer on the *Program Properties* page of the Software Distribution Wizard (see [Program Identification](#)). If you have not defined any Maintenance Windows, you must specify that you want to *Ignore maintenance windows when running the program* (See [Assign Program](#).)

About Queries

Similar to Collections, QMX - Configuration Manager 2007 also extends non-Windows support to Queries within Configuration Manager Console. QMX - Configuration Manager 2007 provides a number of pre-defined queries representing the non-Windows resources that QMX - Configuration Manager 2007 supports. If you have query needs that are beyond what QMX - Configuration Manager 2007 provides out-of-the-box, simply use the existing System Center Configuration Manager 2007 query language to define additional queries as necessary.

You can create and run queries to locate objects in an System Center Configuration Manager 2007 site that match your query criteria. For example, to find out the amount of hard disk space that is available on all Unix computers in an System Center Configuration Manager 2007 site, you can create a query to search the System Resource object type and search for available hard disk space. When a query is run, System Center Configuration Manager 2007 searches the site database for objects that match the query criteria.

After you create a query, you can use it to define a collection. Those resources that meet the query criteria that you specify are included in the collection.

Software Distribution

- About Software and Patch Distribution
- Important Software Distribution Considerations
- Distributing Software Using the Wizard
- Setting the Maximum Allowed Run Time
- Forcing Software Distribution
- Distributing Software Manually
- Verifying Software Distribution

About Software and Patch Distribution

QMX - Configuration Manager 2007 offers the ability to provide "full-coverage" software distribution, as well as patch distribution, to non-Windows systems that may otherwise go without critical updates. Administrators can also create single system collections "on the fly" and distribute software to sub-collections.

Important Software Distribution Considerations

QMX - Configuration Manager 2007 software distribution to a managed non-Windows resource works just like the Windows Software Distribution with the following exceptions:

- **Wizard Intelligence and Functionality**

QMX - Configuration Manager 2007 2.2 adds intelligence to the wizard.

- The Wizard checks for errors before you click **Next**. If it detects an error on the page, it displays an error icon and disables the **Next** button.
- The Wizard allows you to install multiple packages in a program.
- The installation fails if you attempt to install any version of a package that is already installed.
- When you click **Previous** to go to the preceding page of the wizard, the contents of the page will not change unless your selection on the previous page dictates that you must re-enter new data.

- **Use of Quotes**

If you select a file name containing spaces, you must put it in quotes. For example if you are distributing a command with the Software Distribution Wizard, it should look something like this:

```
"/script name.sh" arg1 arg2 arg3.
```

You must also put quotes around script arguments which contain spaces if you want them interpreted as a single argument. For example: `/bin/sh foo_script.sh "arg one"`.

- **Set Permissions**

If you write a script to install files which are downloaded by the QMX - Configuration Manager 2007 Agent as part of software distribution, you should explicitly set the permissions on any file and not rely on the permissions that the QMX - Configuration Manager 2007 Agent sets on the files.

- **Enable BITS**

Please see the *QMX - Configuration Manager 2007 Installation Guide* Planning and Deployment Guidelines for more information about BITS.

- **New security schema of IIS version 6.0**

Software Distribution may fail if the distribution point is installed on Windows Server 2003 R2 due to the new security schema of IIS version 6.0. Please refer to the *Post Installation Checklist* chapter in the *QMX - Configuration Manager 2007 Installation Guide* for instructions on how to verify the Distribution Point configuration.

Distributing Software Using the Wizard

QMX - Configuration Manager 2007 adds a software distribution wizard to the Configuration Manager Console. It provides software distribution parameters that support the necessary software delivery mechanisms provided natively on Solaris, HP-UX, AIX, Linux, and Mac OS X platforms as well as custom distribution capabilities.

Use the QMX - Configuration Manager 2007 Software Distribution Wizard to configure the necessary settings for software distribution. It works just like the System Center Configuration Manager 2007 Distribute Software Wizard and is launched from the same places.

The Wizard steps you through the process of creating software distribution packages, programs, and advertisements. Each step mirrors the System Center Configuration Manager 2007 Distribute Software Wizard. Only when configuring non-Windows-specific distribution parameters, does the process differ.

The Wizard enables you to specify the following software distribution parameters:

1. [Source Directory](#)
2. [Package Identification](#)
3. [Distribution Points](#)

4. Program Identification
5. Package Type
6. Advertisement Target Collection
7. Advertisement Name
8. Advertise to Subcollections
9. Assign Program

Accessing the Software Distribution Wizard

The QMX - Configuration Manager 2007 Software Distribution Wizard has various flows. You can start the Wizard from the Site Database node, Collections node, a specific collection, a specific managed client, Packages node, Advertisements node, as well as from an object in the Queries results pane. The Wizard may take a different path through the various pages, depending upon where you launch it. For example:

- By starting the wizard from a specific managed client, the Advertisement Target System page gives you the option to create a new collection containing the selected system. (See [Advertisement Target Collection](#).) This makes it possible for you to advertise this program to a specific client system.
 - You can choose **Create Non-Windows Package and Program** to start the QMX - Configuration Manager 2007 Software Distribution Wizard from **Software Distribution | Packages** or from **Site Database**. By starting the Wizard this way, it will create a Package and a Program, select a Distribution Point, but skip the Advertisement pages. Thus, if you have a role in your company for someone who is only responsible for setting up the Advertisement, he or she can do that separately by using the regular System Center Configuration Manager 2007 functionality for Creating a New Advertisement.
- Note** • Like other QMX - Configuration Manager 2007 menu options, Remote Tools and Distribute Non-Windows menu options are only available for supported non-Windows platforms or for collections with all non-Windows member systems; these

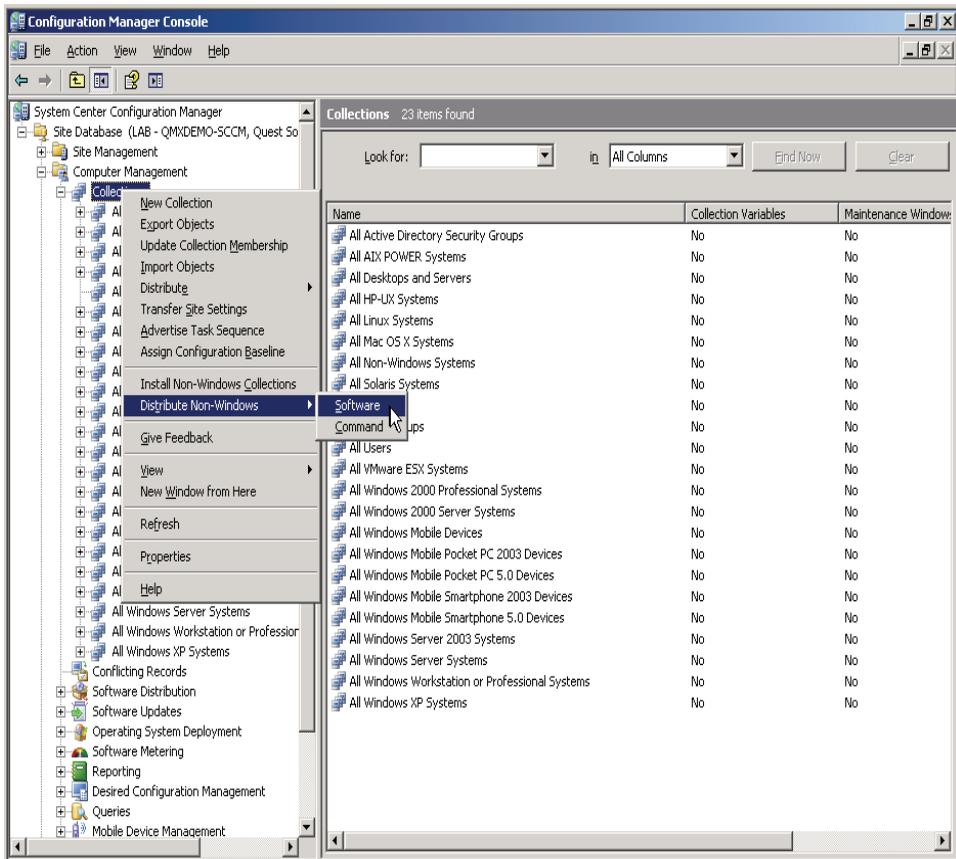
options are not available for Windows systems and collections.



If you choose to create packages, programs, and advertisements without using the QMX - Configuration Manager 2007 Software Distribution Wizard (that is, by using regular System Center Configuration Manager 2007 functionality) there is an important caveat to remember: On the *General* tab of the System Center Configuration Manager 2007 New Program Wizard, you must prefix the command you enter in the *Command line* box with "**qmx:**".

To start the QMX - Configuration Manager 2007 Software Distribution Wizard

1. In the Configuration Manager Console, navigate to and right-click **Collections**.

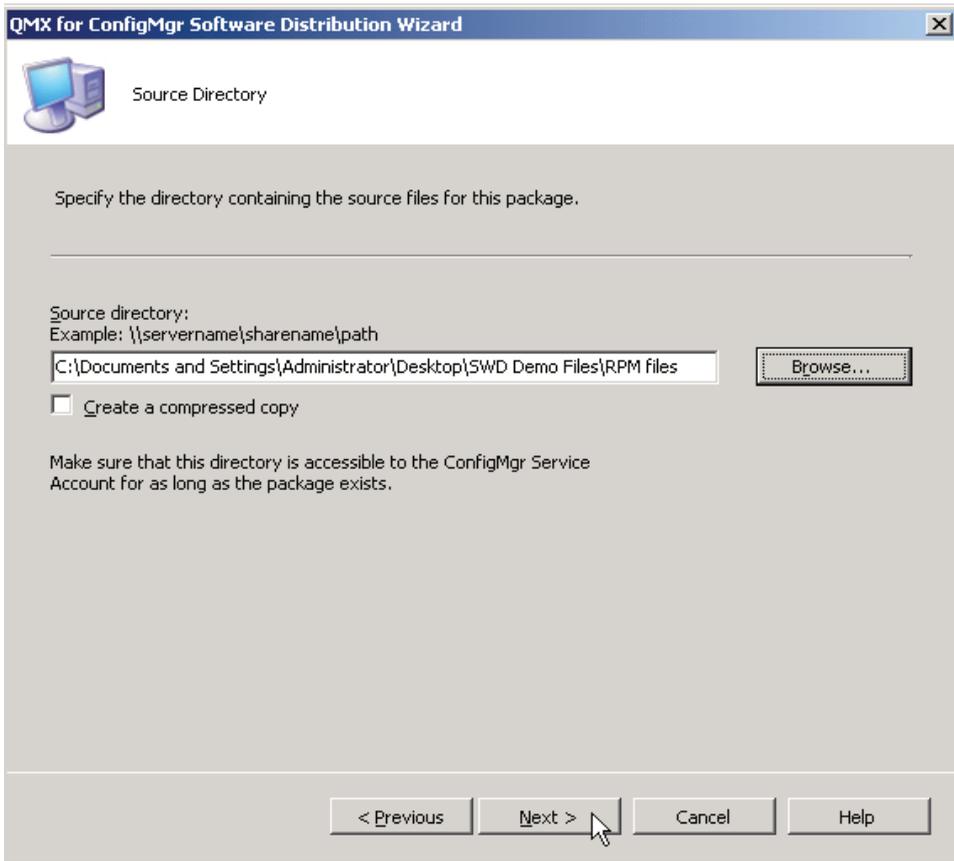


2. Choose **Distribute Non-Windows | Software** to start the QMX - Configuration Manager 2007 Software Distribution Wizard.

- Note** • Choose **Command** if you want to run a Unix command on any supported platform. In this case, the Wizard does not create a script containing the command as it usually does; instead it creates a package containing the command in the form: `qmx:command <option>` as in: `qmx:touch /tmp`. The *Command* option creates a package, program, and an advertisement, but no other associated files. (See the note in [To identify the program.](#))
3. Click **Next** at the QMX - Configuration Manager 2007 Software Distribution Wizard *Welcome* page to open the [Source Directory](#) dialog.

Source Directory

Specify the directory containing the source files for this package and whether you want System Center Configuration Manager 2007 to make a compressed copy of the source directory contents:





You must have write access to the Source Directory. The QMX - Configuration Manager 2007 Software Distribution Wizard generates a shell script and thus requires a writable Source Directory. The Wizard produces a shell script for this software distribution based on user input about the program. Since the command could exceed the 255-character maximum allowed by System Center Configuration Manager 2007, the Wizard packages all the information into a shell script.

Do not use CDs or other non-writable media as the Source Directory for a Non-Windows Software Distribution. Instead, copy the files to a writable directory.

To specify the source directory location

1. **Browse** to select the Source Directory.

Note • If you are running the Configuration Manager Console on a machine other than the site server, then only network paths are allowed and the *Browse For Folder* dialog is rooted at "My Network Places".

2. Select **Create a compressed copy** if you want System Center Configuration Manager 2007 to compress the source files and store the compressed data for distribution.
3. Click **Next** to open the [Package Identification](#) dialog.

Package Identification

Identify the new Package and enter a comment to further describe it.

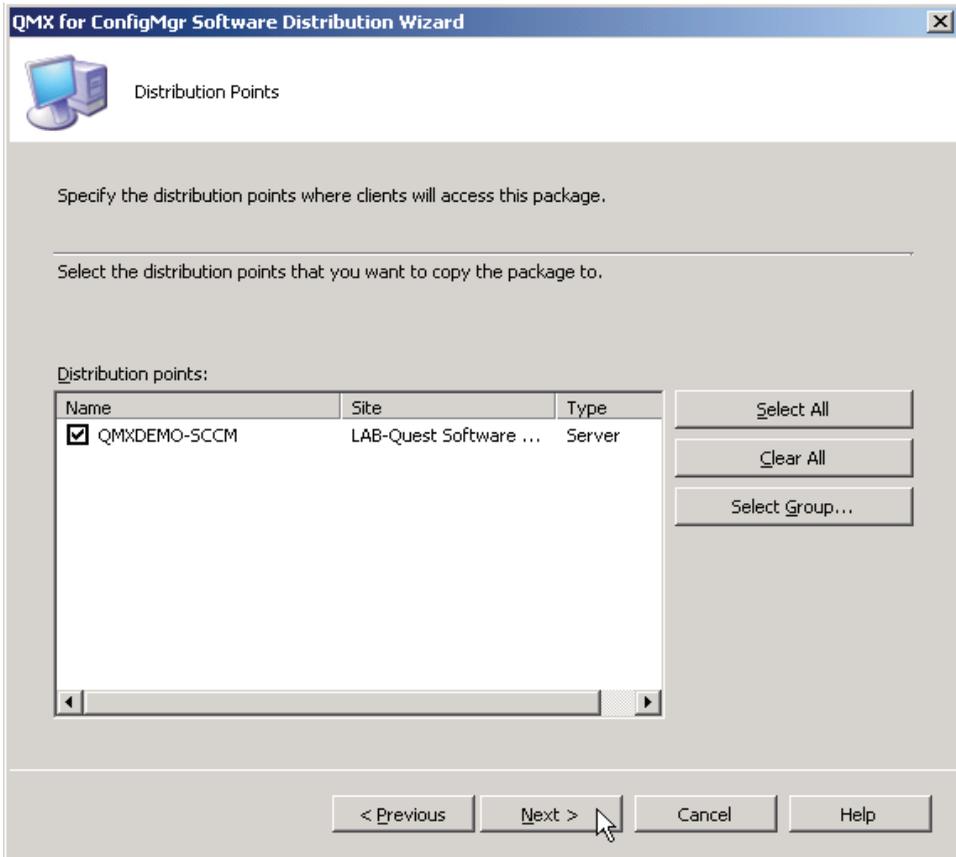
The screenshot shows a dialog box titled "QMX for ConfigMgr Software Distribution Wizard" with a close button (X) in the top right corner. The main title bar is blue. Below the title bar is a header area with a computer icon and the text "Package Identification". The main content area is light gray and contains the instruction: "Specify the information needed to identify the new package." Below this are five input fields: "Name:" with the value "chkrrtkit", "Version:" with the value "0.43-0", "Publisher:" which is empty, "Language:" with the value "English", and "Comment:" which is a large empty text area. Below the input fields is a yellow warning triangle icon followed by a paragraph of text: "It is recommended that you fill in all package properties for status Management Information Format (MIF) matching. If the fields are empty, the source program for the status MIF cannot be uniquely identified, in which case the advertised program status might be inaccurately reported." At the bottom of the dialog are four buttons: "< Previous", "Next >", "Cancel", and "Help". A mouse cursor is pointing at the "Next >" button.

To identify the package

1. Enter the package information.
2. Click **Next** to open the [Distribution Points](#) dialog.

Distribution Points

Select the distribution points. The package files will be copied to these distribution points so that the client can access them for distribution:



To select distribution points where clients will access the package

1. Select one or more distribution points for this package.

Note • Clicking **Select Group** selects all the distribution points in a selected distribution point group.

2. Click **Next** to open the [Program Identification](#) dialog.

Program Identification

Identify the new Program and enter a comment to further describe it:

The screenshot shows a Windows-style dialog box titled "QMX for ConfigMgr Software Distribution Wizard" with a sub-title "Program Properties". The dialog contains a computer icon and the text "Specify the information needed to identify and run the new program." Below this, there are three input fields: "Name:" with the text "chkrootkit", "Comment:" with a text area containing "chkrootkit is a tool that detects and cleans up rootkits, programs used by hackers to compromise Unix system roots.", and "Max run time (min):" with a dropdown menu set to "120". At the bottom, there are four buttons: "< Previous", "Next >", "Cancel", and "Help". A mouse cursor is pointing at the "Next >" button.

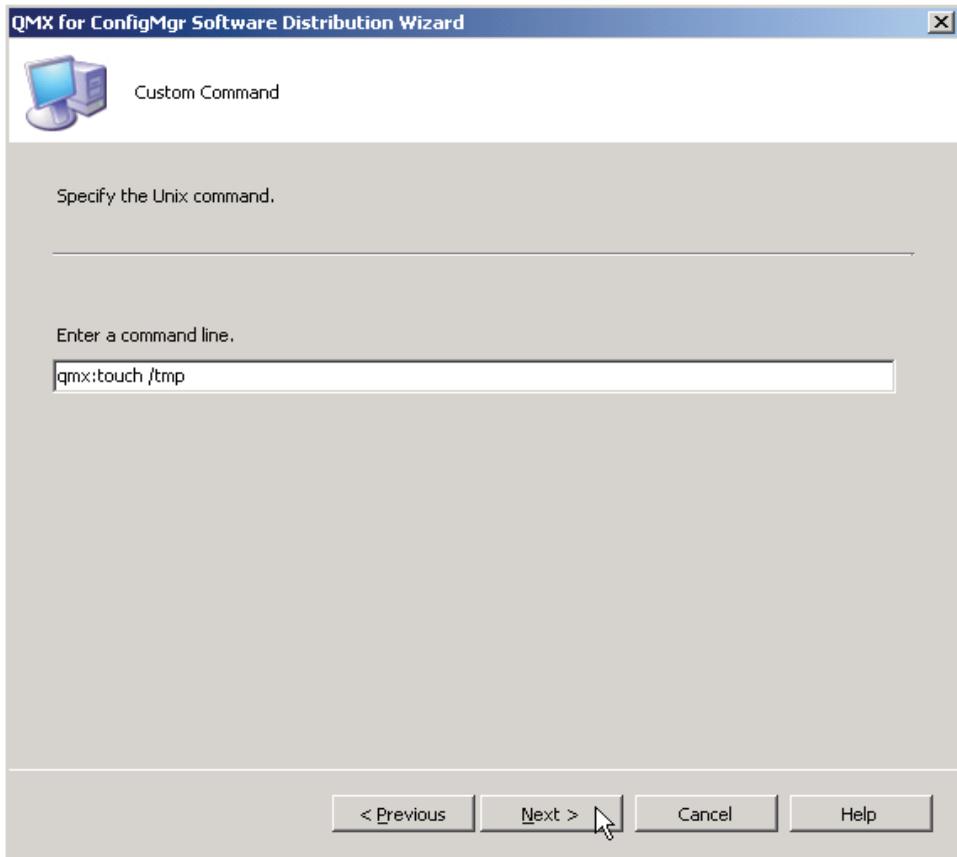
To identify the program

1. Enter a Program Name in the *Name* box.
2. Enter a comment in the *Comment* box, if desired.
3. Specify the *Maximum run time (in minutes)* that you expect the program to run on the client computer. Set this to a whole number between zero and 719 minutes or as "Unknown". The default setting is 120 minutes. (See also [Setting the Maximum Allowed Run Time.](#))

Note • QMX - Configuration Manager 2007 includes the time it takes to download a program in the run time.

- If a maintenance window is defined for the collection to which you are distributing this software, QMX - Configuration Manager 2007 will not start the distribution if there is not enough time remaining in the maintenance window.
 - If the maximum run time is exceeded, QMX - Configuration Manager 2007 stops the program like System Center Configuration Manager 2007 does.
 - If the value is set as "Unknown", QMX - Configuration Manager 2007 interprets the *Maximum run time* as zero permitting the program to start at any time within the maintenance window.
4. Click **Next** to open the [Package Type](#) dialog.

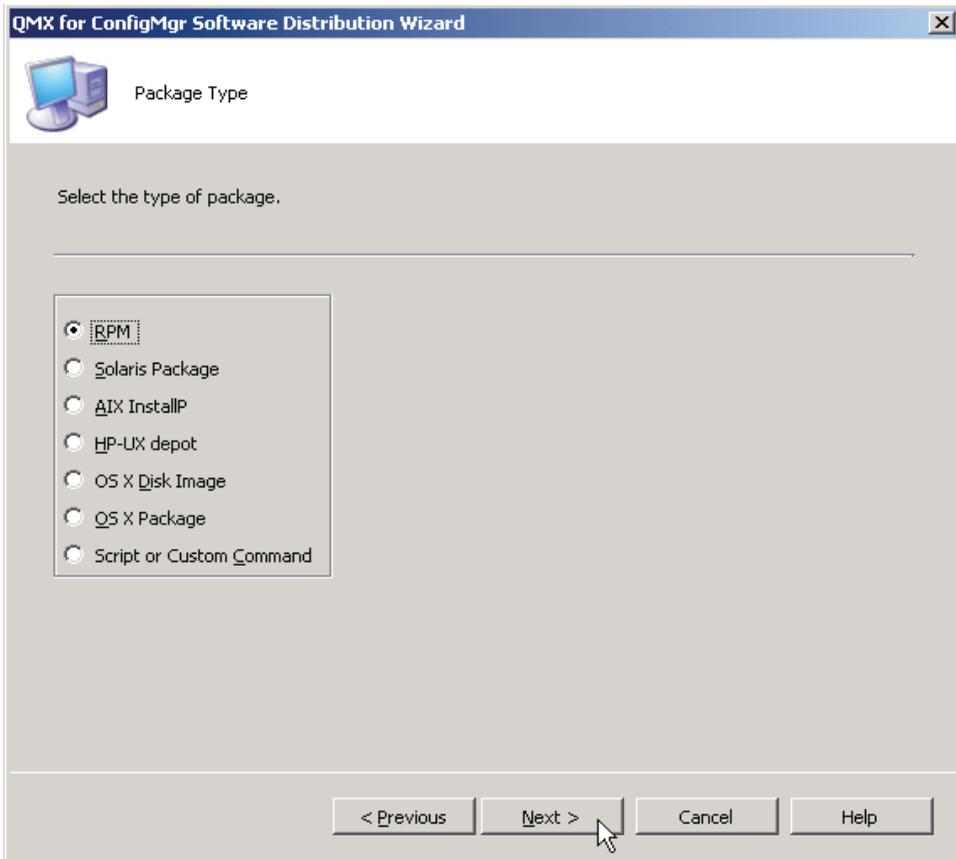
Note • If you started QMX for ConfigMgr Software Distribution Wizard by choosing **Distribute Non-Windows | Command** instead of **Distribution Non-Windows | Software**, clicking **Next** at this point opens the *Custom Command* dialog:



This allows you to run a Unix command on any supported platform. In this case, the Wizard does not create a script containing the command as it usually does; instead it creates a package containing the command in the form: `qmx:command <option>` as in: `qmx:touch /tmp`. The *Command* option creates a package, program, and an advertisement, but no other associated files. Clicking **Next** at this dialog opens the [Advertisement Name](#) dialog.)

Package Type

Select a software distribution package type to create a program associated with the package



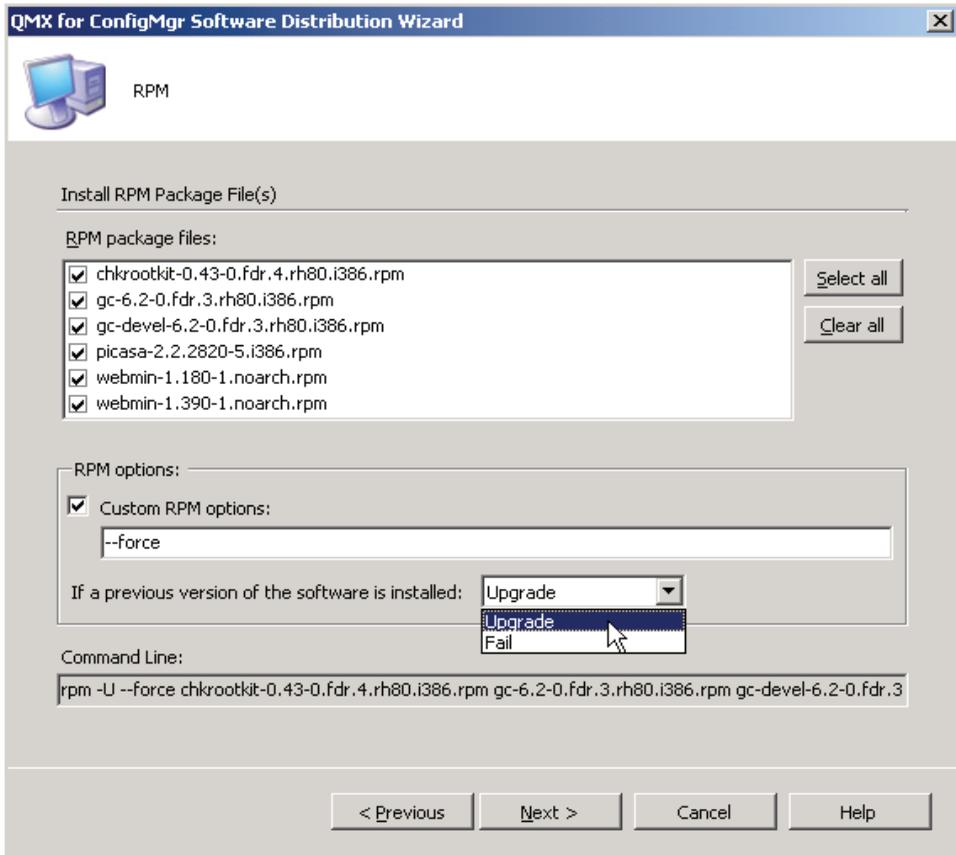
To select a software distribution Package Type

1. Select a Package Type.
2. When you click **Next**, QMX - Configuration Manager 2007 directs you to the dialog where you specify the properties for that type of distribution:
 - [RPM Package Type](#)
 - [Solaris Package Type](#)
 - [AIX InstallP Package Type](#)
 - [HP-UX Depot Package Type](#)
 - [OS X Disk Image Package Type](#)

- OS X Package Type
- Script or Custom Command Package Type

RPM Package Type

When you select **RPM** from the *Package Type* dialog, the Wizard opens the *RPM* software distribution dialog listing all the *.rpm files located in the [Source Directory](#). (**Note:** QMX - Configuration Manager 2007 supports both Linux and AIX rpm files).



To specify RPM package type properties

1. Select the *RPM package files* you wish to distribute.



QMX - Configuration Manager 2007 does not support distribution of RPM files with spaces in the name.

2. Select **Custom RPM options** and enter RPM Package options that you wish to use.

Note • QMX - Configuration Manager 2007 does not validate the command line options for you.

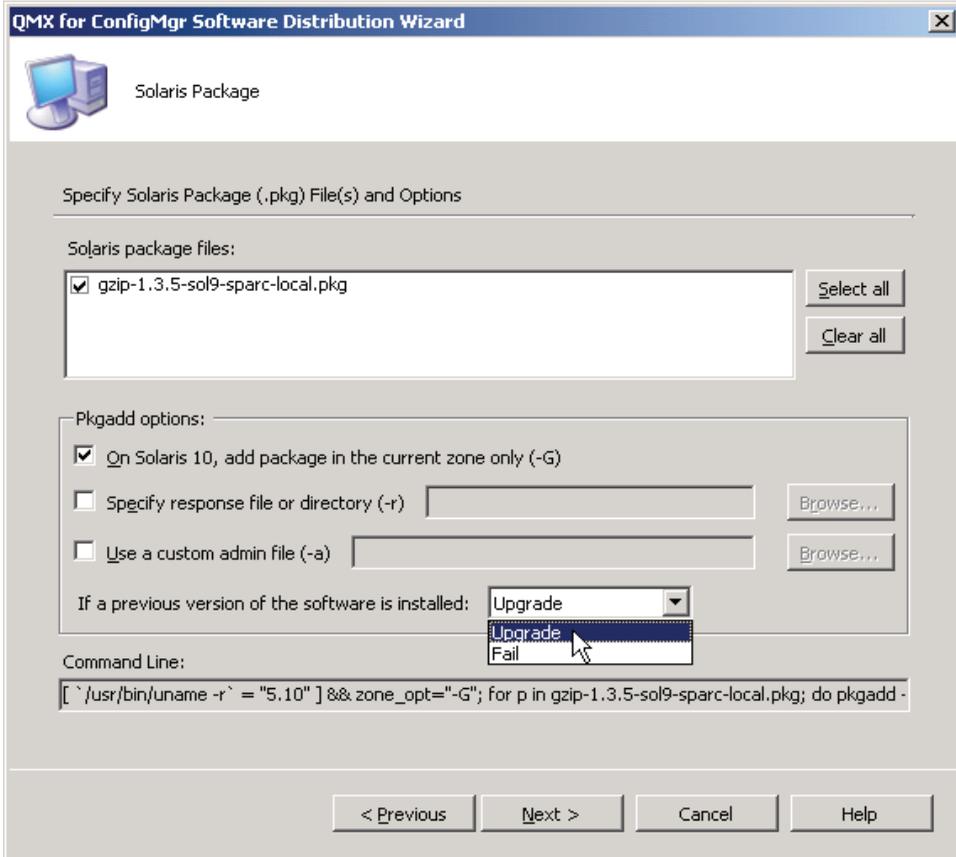
3. Choose **Fail** if you want the installation to *fail* rather than *upgrade* when a previous version of the software is already installed.

Note • As you select these options, QMX - Configuration Manager 2007 builds the command line at the bottom of the dialog. If the command line becomes longer than 256 characters, the wizard will allow you to create a wrapper script. However, wrapper scripts are hard to modify. As an alternative, if the command line becomes longer than 256 characters, you can distribute fewer packages by un-selecting some of the RPM package files. That will shorten the command line string.

4. Click **Next** to open the [Advertisement Name](#) dialog.

Solaris Package Type

When you select **Solaris Package** from the *Package Type* dialog, the Wizard opens the *Solaris Package* software distribution dialog listing all the *.pkg files located in the [Source Directory](#):



Note: all Solaris package files must have the .pkg extension to be detected by the Software Distribution Wizard.

To specify Solaris package type properties

1. Select the Solaris package files you wish to distribute.

2. Select **On Solaris 10, add package in the current zone only (-G)** to install the package only to the current zone. When you use this option in a global zone, the package is added to the global zone only and does not propagate to any non-global zones. When you use this option in a non-global zone, the package is added to the non-global zone only.

Each machine has one *global* zone; any other zones are *non-global* zones. If you leave the option un-selected and the QMX - Configuration Manager 2007 Agent is running in the global zone, the Agent installs the package to all zones (global and non-global). If the Agent is running in a non-global zone, the Agent installs the package only to the current zone (in this case, the behavior is the same whether you select this option or not).

3. Select **Specify response file or directory (-r)** and click **Browse** to select a response file or type in a directory containing a response file. (See [Response Files](#) for more information.)

Note • The value you supply can be a relative or an absolute path. To use a response file that is located on the target machine, you must precede the file path with a "/" (for example, `/opt/quest/qmxcm/share/my_responses`). To use a response file that is in the [Source Directory](#), it is unnecessary to precede the file path with a "/".

4. Select **Use a custom admin file (-a)** and click **Browse** to select a custom administration file. To use the default QMX - Configuration Manager 2007 non-interactive administration file, leave this option un-selected. (See [Administration Files](#) for more information.)

Note • To use an administration file that is located on the target machine, you must precede the file path with a "/" (as in, `/opt/quest/qmxcm/share/my_adminfile`). To use an administration file that is in the [Source Directory](#), it is unnecessary to precede the file path with a "/".

5. Choose **Fail** if you want the installation to fail rather than upgrade when a previous version of the software is already installed.

Note • As you select these options, QMX builds the command line at the bottom of the dialog. If the command line becomes longer than 256 characters, the wizard will allow you to create a wrapper script. However, wrapper scripts are hard to modify. As an alternative, if the command line becomes longer than 256 characters, you can distribute fewer packages by un-selecting some of the Solaris package files. That will shorten the command line string.

6. Click **Next** to open the [Advertisement Name](#) dialog.

Response Files

A response file contains output from a previous `pkgask` session; it contains the responses the package requires when operating in interactive mode. To create a response file, use the `pkgask` command. It allows you to store answers to an interactive package in a file that can be used as input at the time of installation. (See <http://docs.sun.com/app/docs/doc/816-5166/6mbb1kqb3?a=view> for more information.)

Administration Files

An administration file is an ASCII file that defines the default installation actions by assigning values to installation parameters. There is both a default Solaris administration file (`/var/sadm/install/admin/default`) and a default QMX - Configuration Manager 2007 administration file (`pkgadd_non_interactive_admin` located in `/opt/quest/qmxcn/share/`) installed with the QMX - Configuration Manager 2007 Agent. The default Solaris installation administration file is designed to favor user interaction when conflicts or settings issues arise. Quest therefore provides the non-interactive administration file used by the Software Distribution Wizard by default that is consistent with the non-interactive nature of the Agent. The default files are not writable, so to assign values different from the default values, create a new administration file using any text editor. (See <http://docs.sun.com/app/docs/doc/817-3945/6mjgluk33?!=en&a=view> for more information.)

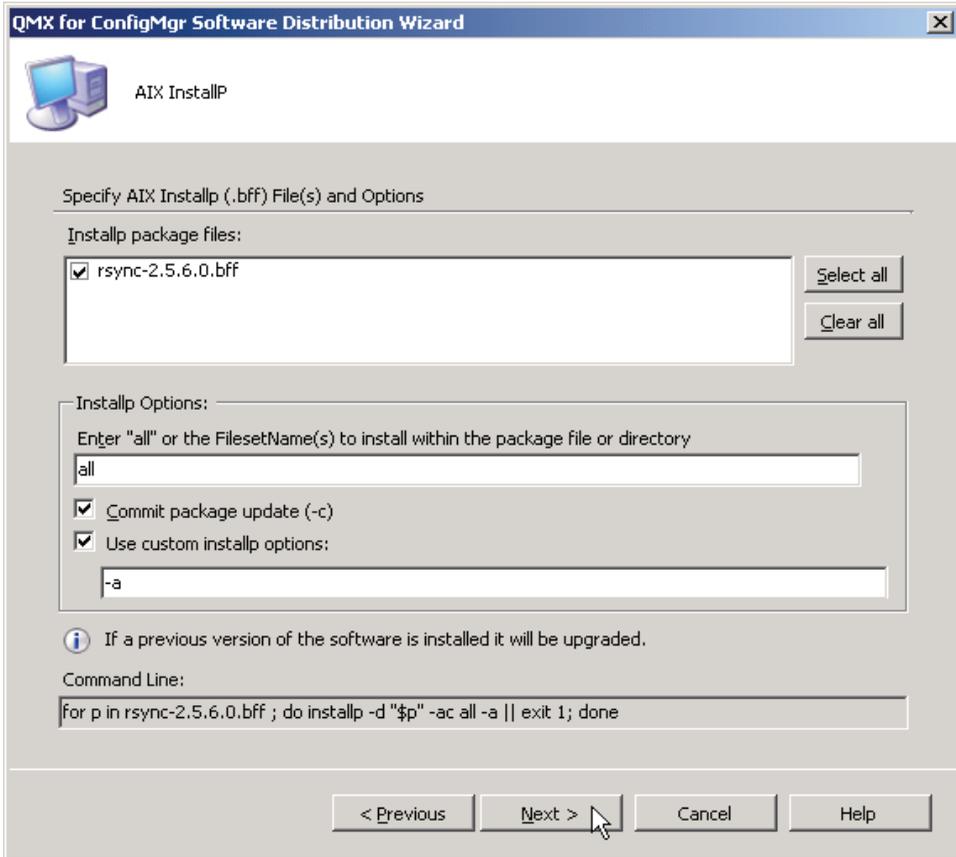
You can reference an existing administration file on the target machine. However, make sure the path to the file is consistent across all machines in the collection. Otherwise, when the `pkgadd` system prompts for input, the deployment will fail.



For more information about the Solaris admin file, refer to the man page under the Solaris command, by entering **man -s 4 admin** at the command line on the Solaris machine.

AIX InstallP Package Type

When you select **AIX InstallP** from the *Package Type* dialog, the Wizard opens the *AIX InstallP* software distribution dialog:



To specify AIX package type properties

1. Select the AIX InstallP files you wish to distribute.
2. Under *Installp Options*,
 - a) Enter the desired fileset name(s) or **all** to install all filesets in that package file or directory. Separate multiple fileset names with a space.

Note • You can only select one file at a time. If you want to install all files, enter "all" in the *Fileset name* box. If you want to install multiple files, but not all files in the directory, enter the

fileset names you want to install in the *FilesetNames* box, using spaces to separate the names.

- b) Select **Commit package update (-c)**, if desired.
- c) Select **Use custom installp options**, and enter the options you want to use.

Note • QMX - Configuration Manager 2007 does not validate the command line options for you.

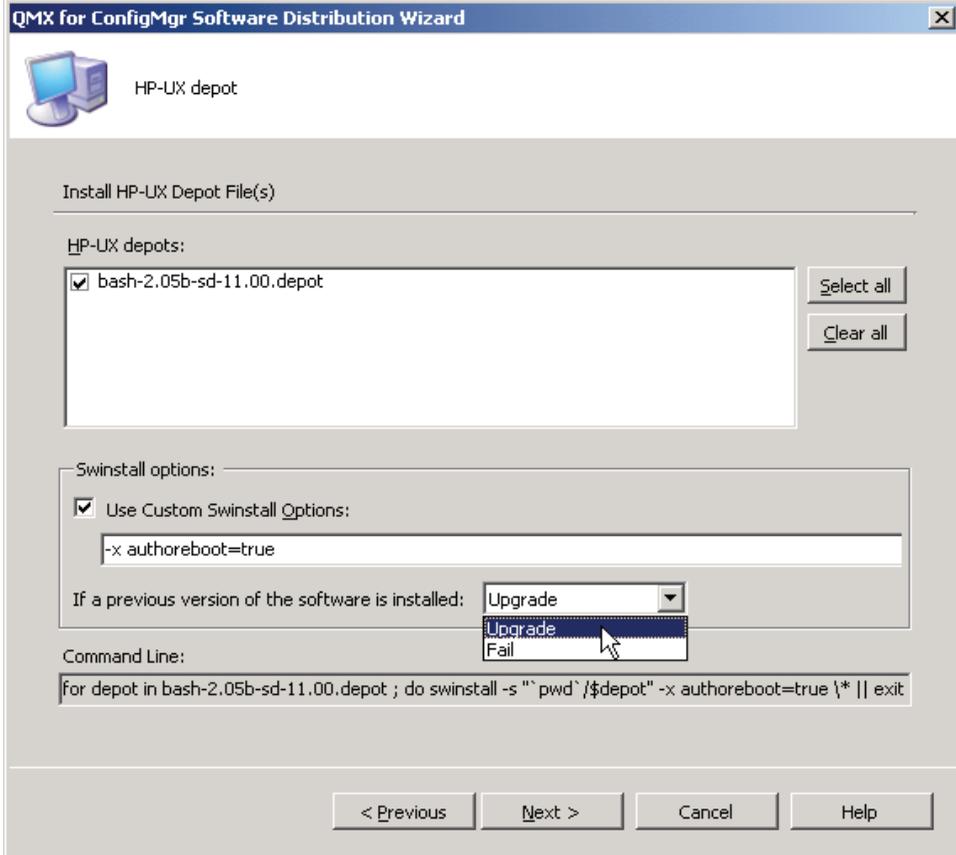
Note • As you select these options, QMX builds the command line at the bottom of the dialog. If the command line becomes longer than 256 characters, the wizard will allow you to create a wrapper script. However, wrapper scripts are hard to modify. As an alternative, if the command line becomes longer than 256 characters, you can distribute fewer packages by un-selecting some of the AIX InstallP package files. That will shorten the command line string.

- 3. Click **Next** to open the [Advertisement Name](#) dialog.

Note • System Center Configuration Manager 2007 copies the program and the related files to the distribution point you selected.

HP-UX Depot Package Type

When you select **HP-UX depot** from the *Package Type* dialog, the Wizard opens the *HP-UX* software distribution dialog listing all the *.depot files located in the *Source Directory*:



To specify HP-UX package type properties

1. Select the HP-UX package files you wish to distribute.
2. Select **Use Custom Swinstall Options** and enter the options you want to use.

Note • QMX - Configuration Manager 2007 does not validate the command line options for you.

Note • Enter the desired "option=value" pair(s) in the box provided. Enclose values with spaces in quotation marks; separate

multiple options with spaces. For example, by default the `autoreboot` option is set to `false`, but if you have a package which requires a reboot, select **Use Custom Swinstall Options** and enter `-x autoreboot=true` in the box. The `-x` option allows you to override the default value of session variables.

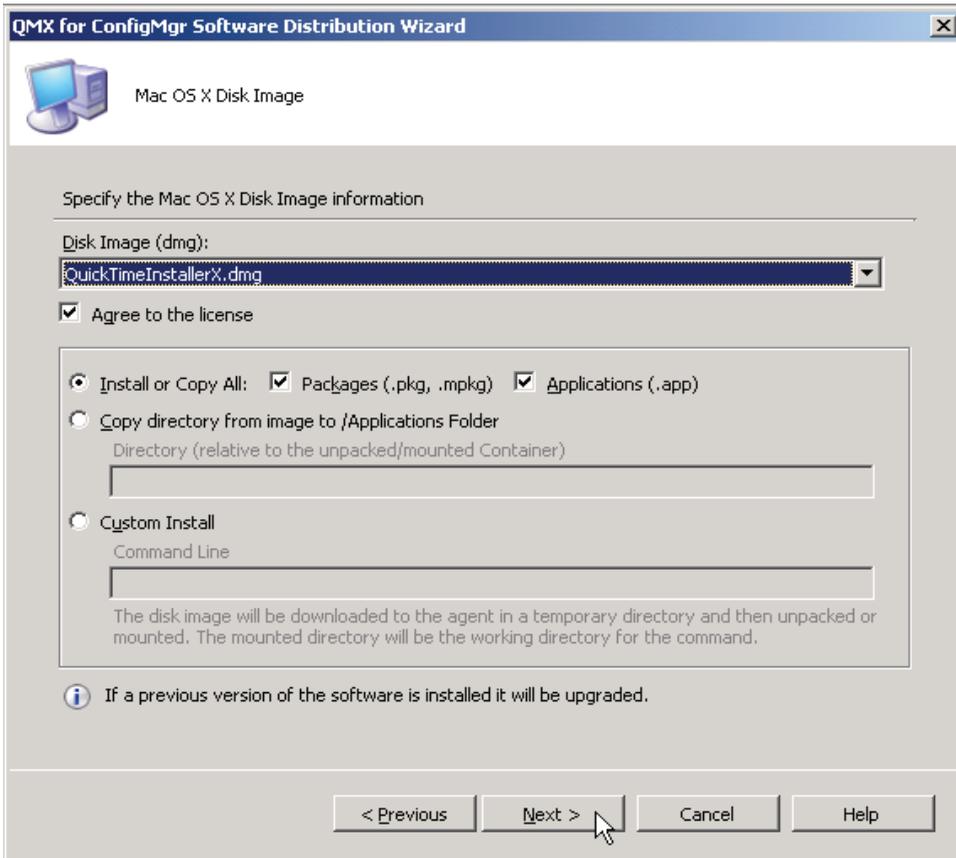
3. Choose **Fail** if you want the installation to fail rather than upgrade when a previous version of the software is already installed.

Note • As you select these options, QMX builds the command line at the bottom of the dialog. If the command line becomes longer than 256 characters, the wizard will allow you to create a wrapper script. However, wrapper scripts are hard to modify. As an alternative, if the command line becomes longer than 256 characters, you can distribute fewer packages by un-selecting some of the HP-UX depot package files. That will shorten the command line string.

4. Click **Next** to open the [Advertisement Name](#) dialog.

OS X Disk Image Package Type

When you select **OS X Disk Image** from the *Package Type* dialog, the Wizard opens the *Mac OS X Disk Image* software distribution dialog:



To specify Mac OS X disk image package type properties

1. Open the *Disk Image (dmg)* drop down menu to see the list of all the `dmg` files located in the [Source Directory](#).
2. Choose the `dmg` file you want to distribute.
3. Select **Agree to the license** to automatically accept the license agreement.

Note • When you do a software distribution of `dmg` files to a Mac OS X system, it will often wait for you to respond "Y" (yes) to the license agreement. If you want to avoid this hang up, use this option to automatically accept the license agreement.

4. Choose how you want QMX - Configuration Manager 2007 to generate the command line:
 - a) Select **Install or Copy All** and then select **Packages** and/or **Applications**.

If you select *Packages*, QMX - Configuration Manager 2007 will scan the folder where the `dmg` is mounted for all `*.pkg` files and install each of them.

If you select *Applications*, QMX - Configuration Manager 2007 will scan the folder where the `dmg` is mounted for all `*.app` files and will copy each item into the `/Applications` folder.

– OR –

- b) Select **Copy directory from image to /Applications Folder** and enter a relative path to a directory. Do not enter a leading `"/` in the *Directory* box.

This is intended for distributing packages that do not contain installable packages. Typically the installation instructions say "Drag <something> to the Applications folder". This is useful for programs where there are multiple applications within a single folder, such as MS Office, and that folder should be "dragged" to the `/Applications` directory.

– OR –

- c) Select **Custom Install** to enable the *Command Line* box so that you can specify the command to execute.

For example, to distribute Adobe Dreamweaver CS3, put the `deployment.xml` file into the same folder as the `.dmg` file. Then when you run the Software Distribution Wizard, enter the following into the *Command Line* box of the OSX Disk Image dialog and it will distribute the `.xml` file along with the `.dmg` file:

```
'Adobe Dreamweaver CS3/Setup.app/Contents/MacOS/Setup'  
--mode=silent --deploymentFile="$OLDPWD/deployment.xml"
```

Note • QMX - Configuration Manager 2007 does not validate the command line options for you.

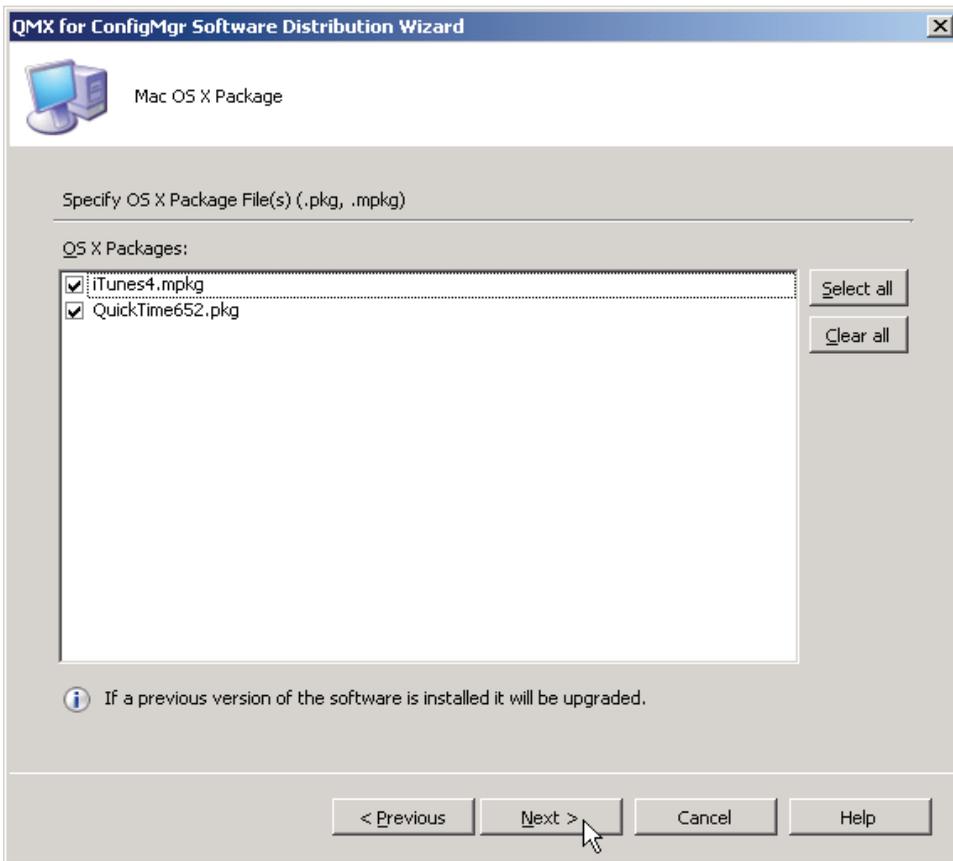
Note • According to Adobe, Dreamweaver requires that you customize the deployment script and copy it to the client machine for the unattended installation to work properly.

(See http://www.adobe.com/support/deployment/cs3_deployement.pdf for more information.)

5. Click **Next** to open the *Advertisement Name* dialog.

OS X Package Type

When you select **OS X Package** from the *Package Type* dialog, the Wizard opens the *Mac OS X Package* software distribution dialog listing all the packages (.pkg) and meta-packages (.mpkg) located in the *Source Directory*:



To specify Mac OS X package type properties

1. Select the Mac OS X package files you wish to distribute.

2. Click **Next** to open the [Advertisement Name](#) dialog.



When distributing software on a Mac, there are a few cases such as with Adobe or MS Office, where after you distribute the software package, you must then distribute a script to do the actual installation.

Script or Custom Command Package Type

When you select **Script or Custom Command** from the *Package Type* dialog, the Wizard opens the *Script or Custom Command* software distribution dialog:

QMX for ConfigMgr Software Distribution Wizard

Script or Custom Command

Specify the script or command.

Select a script file from the package directory or enter a command.

/etc/inet.d/sshd restart

Browse...

< Previous Next > Cancel Help

To distribute a script or a custom command properties

1. **Browse** to select the script file from the package directory.

– OR –

1. Enter the command line manually.

Note • The Wizard generates a script that contains the command you enter.

2. Click **Next** to open the [Advertisement Name](#) dialog.

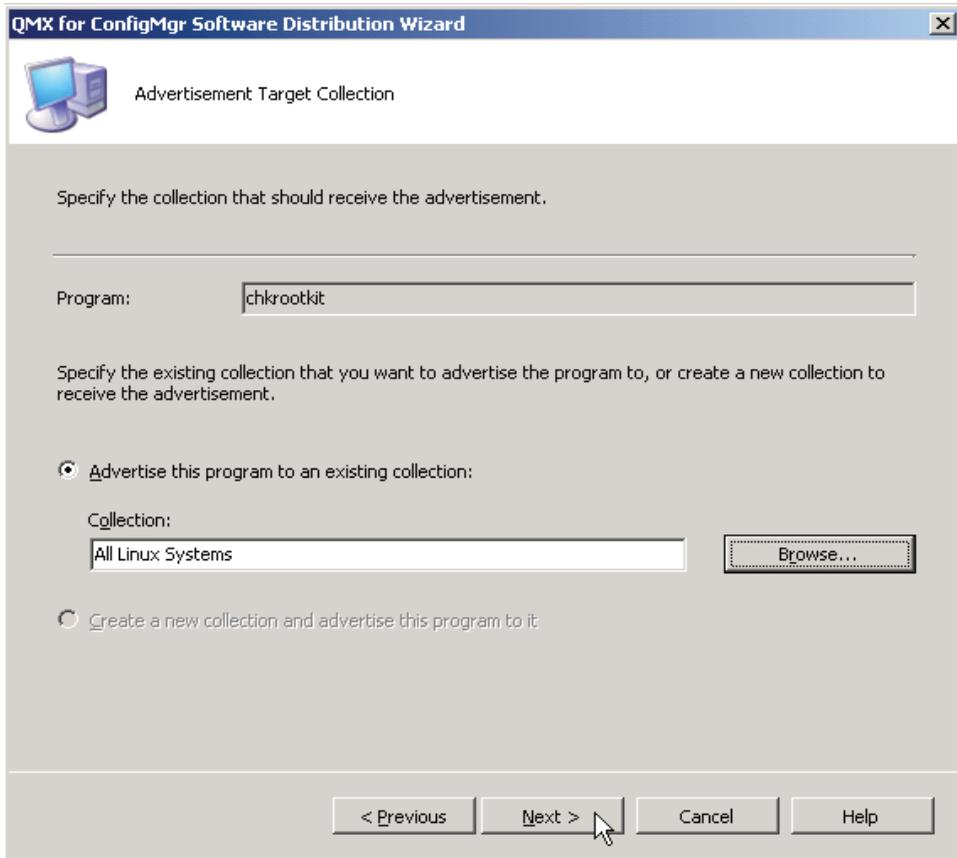
Advertisement Target Collection

By starting the wizard from a specific managed client, the *Advertisement Target System* page gives you the option to create a new collection containing the selected system.

Note: If you launch the Software Distribution Wizard from a specific collection, it skips the *Advertisement Target Collection* dialog and sends the advertisement to the collection from which you started the wizard.

Software Distribution

Specify an existing collection or create a new collection to receive the program advertisement:



The screenshot shows a dialog box titled "QMX for ConfigMgr Software Distribution Wizard". The main area is titled "Advertisement Target Collection" and contains the following elements:

- A computer icon and the text "Advertisement Target Collection".
- The instruction: "Specify the collection that should receive the advertisement."
- A horizontal line separator.
- A "Program:" label followed by a text box containing "chkrootkit".
- The instruction: "Specify the existing collection that you want to advertise the program to, or create a new collection to receive the advertisement."
- Two radio button options:
 - The first option is selected: "Advertise this program to an existing collection:". Below it is a "Collection:" label, a text box containing "All Linux Systems", and a "Browse..." button.
 - The second option is unselected: "Create a new collection and advertise this program to it".
- At the bottom, four buttons: "< Previous", "Next >", "Cancel", and "Help". A mouse cursor is pointing at the "Next >" button.

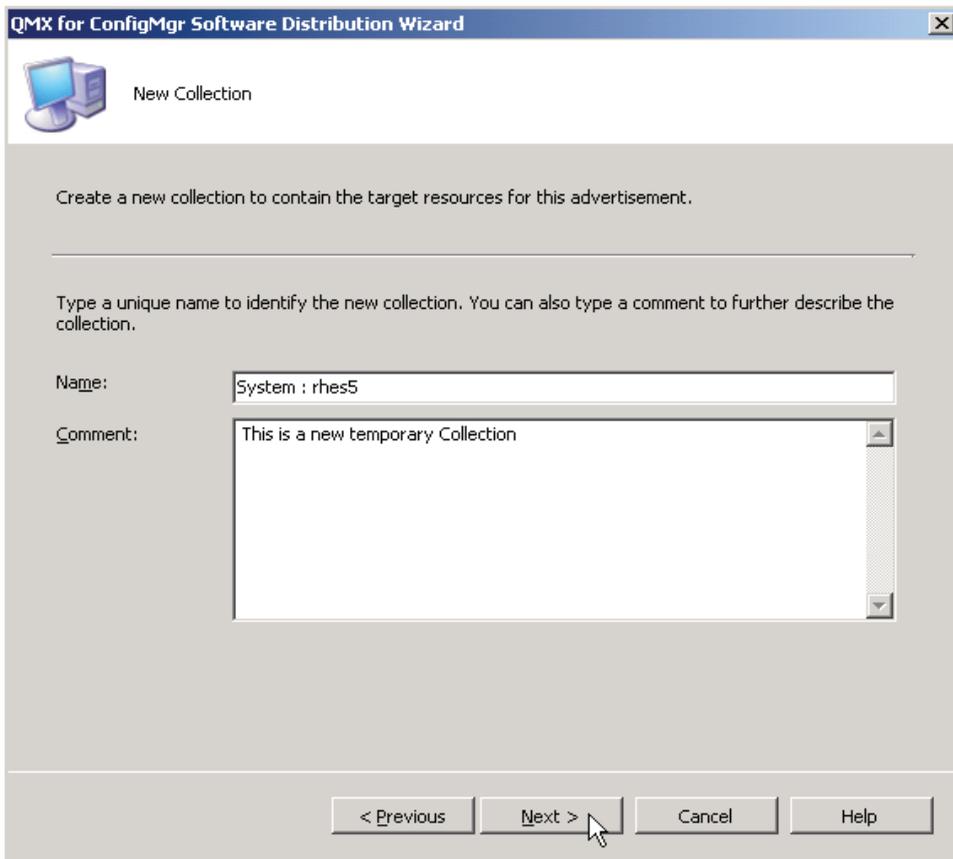
To specify a collection to receive the advertisement

1. **Browser** to select an existing collection to receive the advertisement.

– OR –

1. If you started the wizard from a specific managed client, the Advertisement Target System page gives you the option to create a new collection containing the selected system.

Select **Create a new collection and advertise this program to it** and click **Next** to open the *New Collection* wizard page:



2. Enter a unique Collection name in the *Name* box.
3. Enter a comment in the *Comment* box, if you want to further describe it.
4. Click **Next** to open the [Advertisement Name](#) dialog.

Advertisement Name

Specify a name and comment for the new Advertisement:

QMX for ConfigMgr Software Distribution Wizard

Advertisement Name

Specify a name and comment for the new advertisement.

Type a name to identify the new advertisement. You can also type a comment to describe the advertisement.

Name:

Comment:

< Previous Next > Cancel Help

To specify an advertisement name

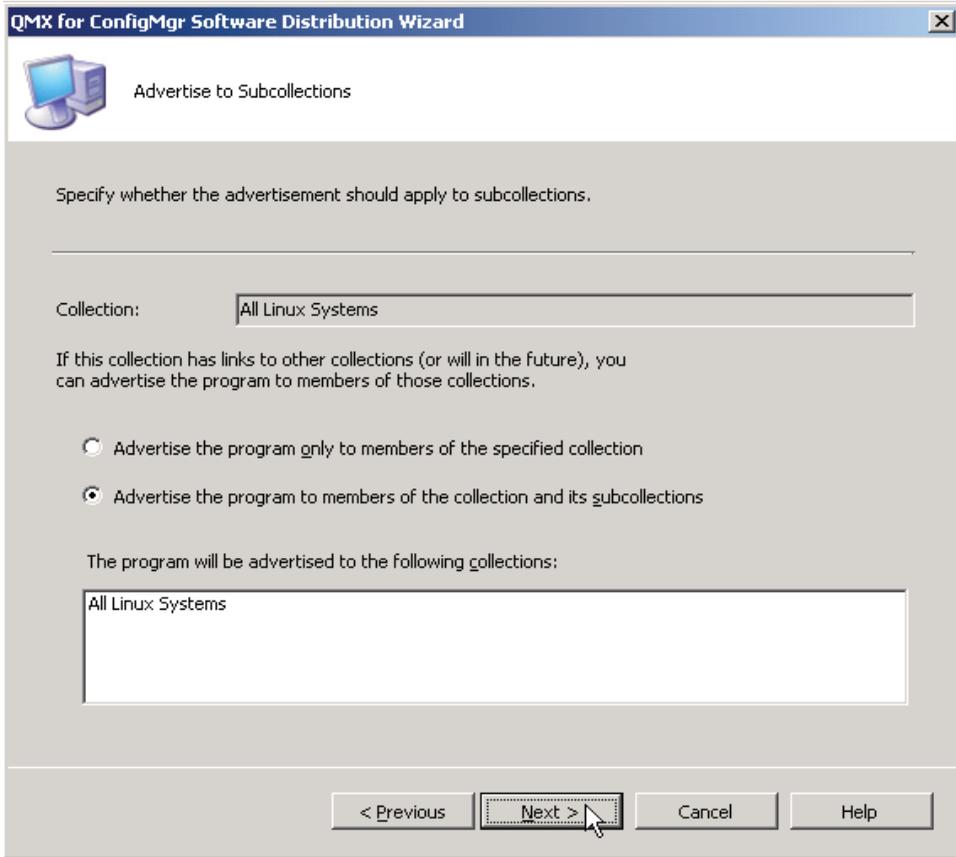
1. Enter an Advertisement Name in the *Name* box.

Note • The default value for the Advertisement Name is <packagename> - <program name> - <collection name>, but you can type in another name of your choice.

2. Enter a comment in the *Comment* box, if desired.
3. Click **Next** to open the [Advertise to Subcollections](#) dialog.

Advertise to Subcollections

Specify whether to apply the advertisement to subcollections.

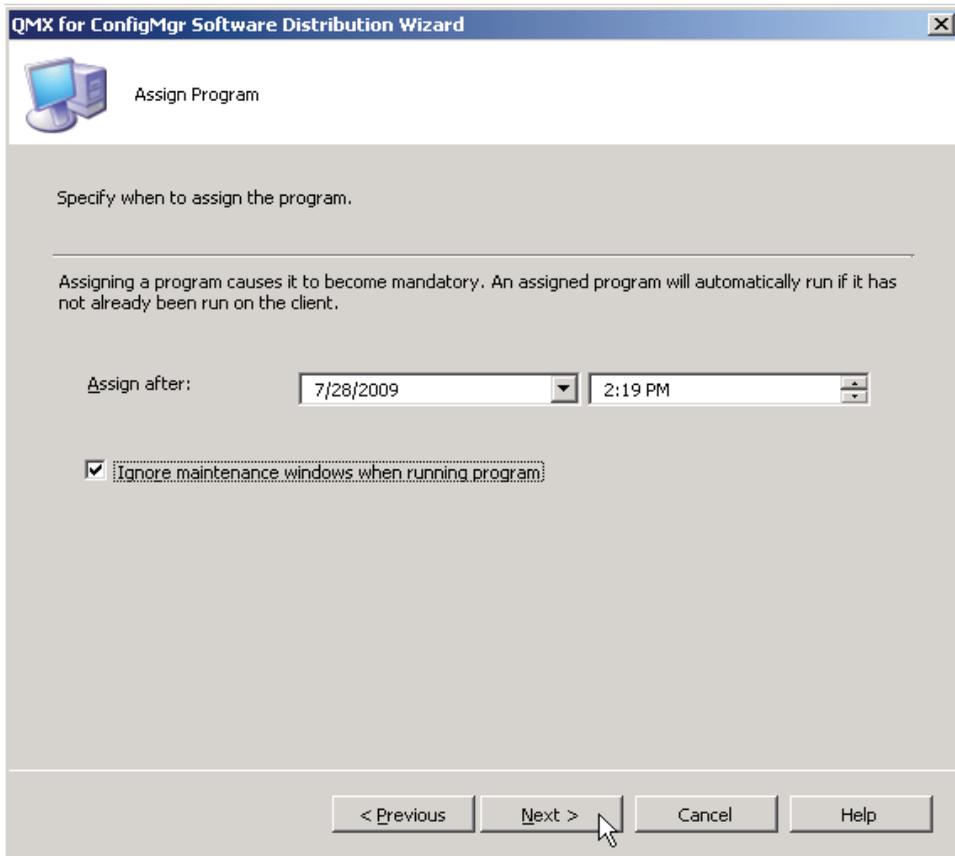


To advertise to Subcollections

1. Indicate whether you want to advertise this program only to members of the specified collection or to members of the collection and all of its descendent collections.
2. Click **Next** to open the [Assign Program](#) dialog.

Assign Program

Specify when you want the program to run.



To Assign a Program

1. Set the local date and time when you want to assign this program.

Note • The program automatically runs on target clients at or soon after the date and time you specify.

2. Select **Ignore maintenance windows when running program** to specify whether to have the advertised program ignore maintenance windows while the program is running.

Note • Software Distribution expects to run mandatory assignments within defined Maintenance Windows. If you have not

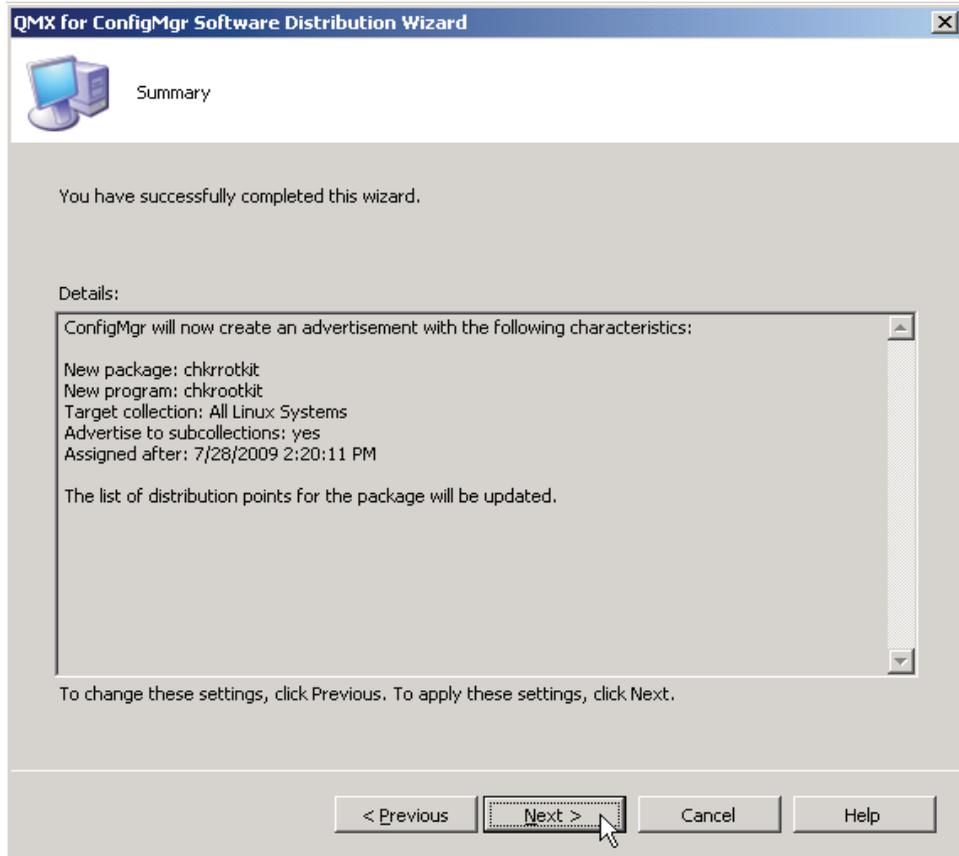
defined any maintenance windows, no distribution assignments will run unless you explicitly set them to ignore maintenance windows.

If you have not selected the **Ignore maintenance windows when running program** option and have not defined any maintenance windows or a program has a total *maximum run time* that is longer than any merged maintenance windows, QMX - Configuration Manager 2007 sends a status message that says there is not enough time in the Maintenance Window.

3. Click **Next** to open the [Summary](#) dialog.

Summary

Review the information you entered on the previous wizard pages before you create the specified package, program, and/or advertisement.

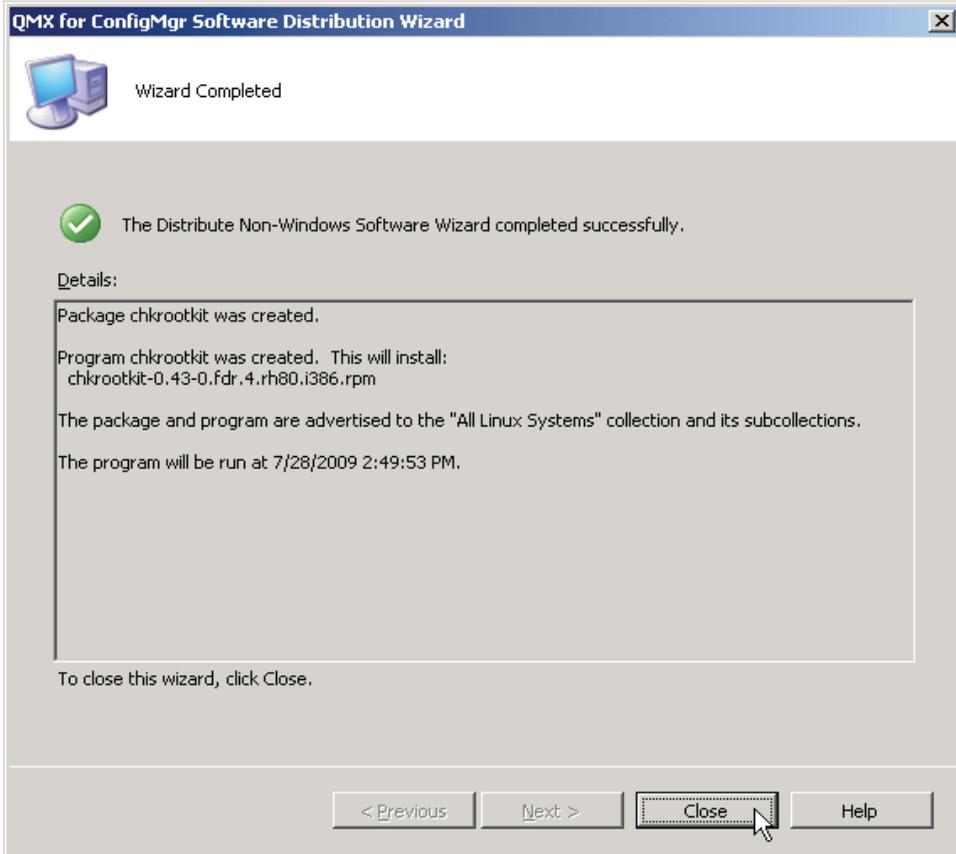


To distribute the non-Windows software

1. Click **Next** to create the package, program, and advertisement for the software distribution and open the [Wizard Completed](#) dialog.

Wizard Completed

The *Wizard Completed* dialog displays the results of creating the specified package, program, and/or advertisement; it indicates whether the operation completed successfully or not:

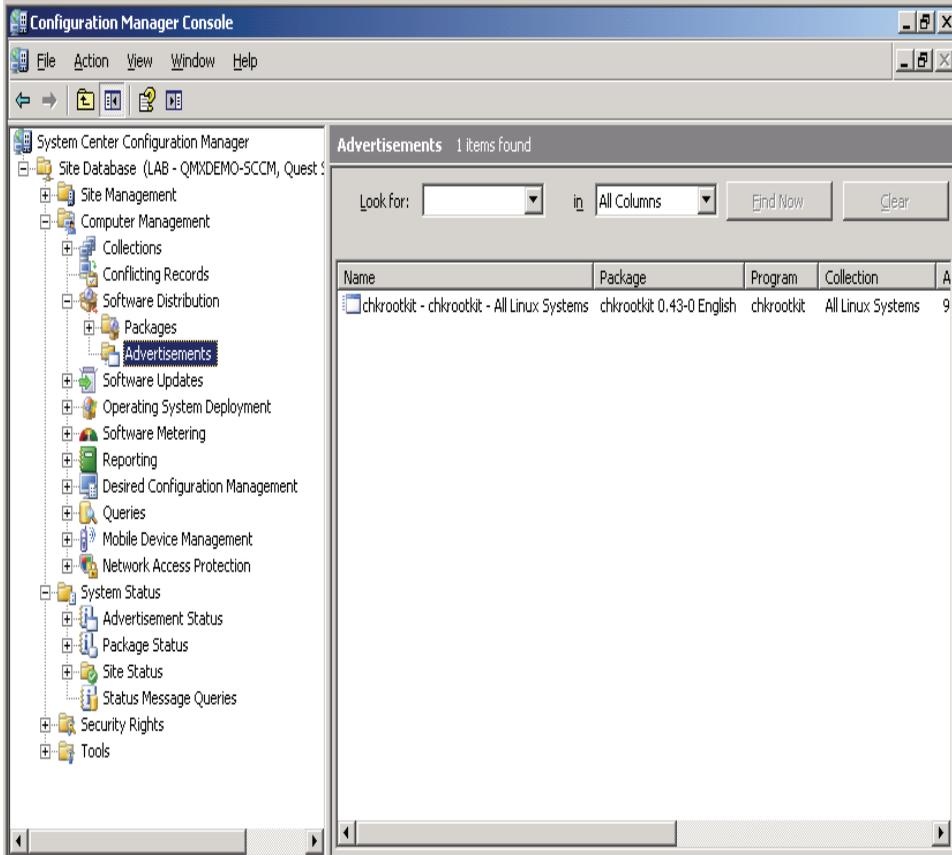


You can have a partially successful operation. For example, depending on the System Center Configuration Manager 2007 user permissions, you could create a package and a program but not an advertisement.

Verify the Software Distribution

To view the program you just set up for distribution

1. Navigate to **System Center Configuration Manager | Site Database | Computer Management | Software Distribution | Advertisements.**



Setting the Maximum Allowed Run Time

For large package distribution that may take several hours, you can configure the time out value for program run times on QMX - Configuration Manager 2007 Agent client computers. This avoids timing out when distributions take a long time. You can set the **Maximum run time** after you have created the program using the QMX - Configuration Manager 2007 Software Distribution Wizard or when you manually create a software program.

To reset the Maximum allowed run time

1. Navigate to **Software Distribution | Packages**.
2. Expand the package you want to reconfigure.
3. Select **Programs**.
4. Double-click the name of the program.
5. Open the *Requirement* tab.

If you do not specify a *Maximum allowed run time* on the *Program Properties* dialog, System Center Configuration Manager 2007 will provide a default value of 120 minutes. Programs with a maximum run time set to *Unknown* may run past the end of their maintenance windows. If you set the maximum run time to a specific period that exceeds the length of any available maintenance window (or combination of maintenance windows), it will not run that program.

For more information, click **F1** to access Microsoft's explanation of the *Maximum allowed run time* feature.

Forcing Software Distribution

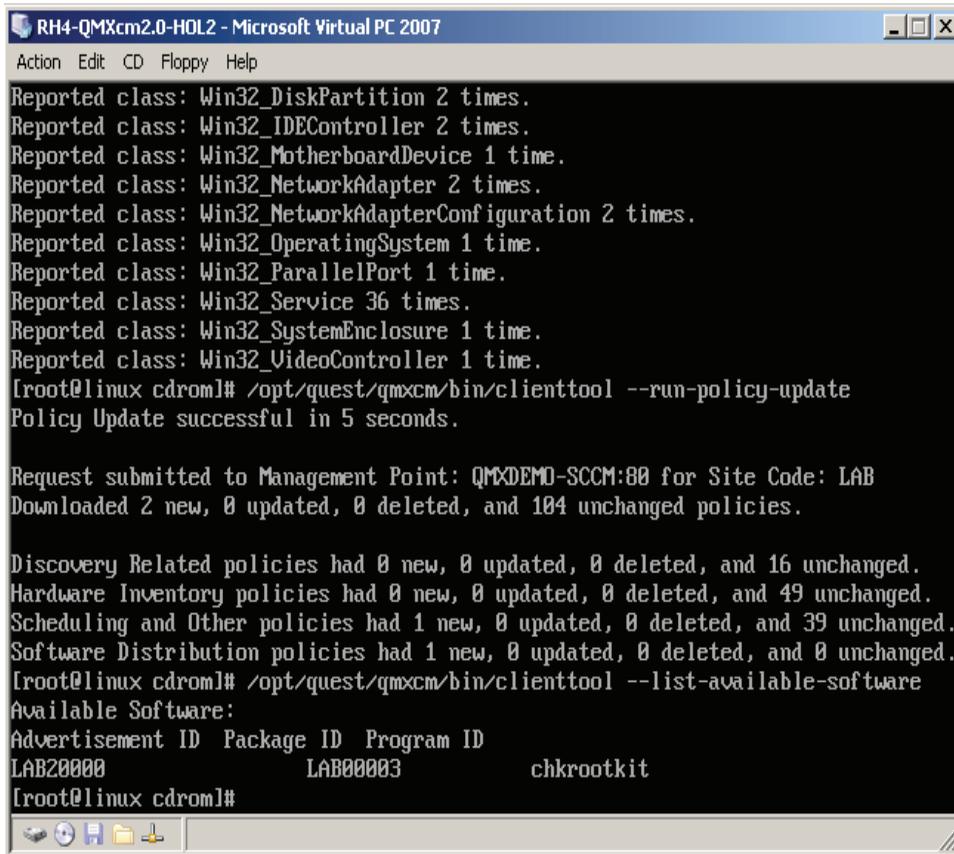
You can either wait for the normal software distribution cycle or force the distribution manually.

To manually force the software distribution

1. From the Linux console and enter the following command to update policy:

```
/opt/quest/qmxcm/bin/clienttool --run-policy-update
```
2. Enter the following command to see the program:

```
/opt/quest/qmxcm/bin/clienttool --list-available-software
```



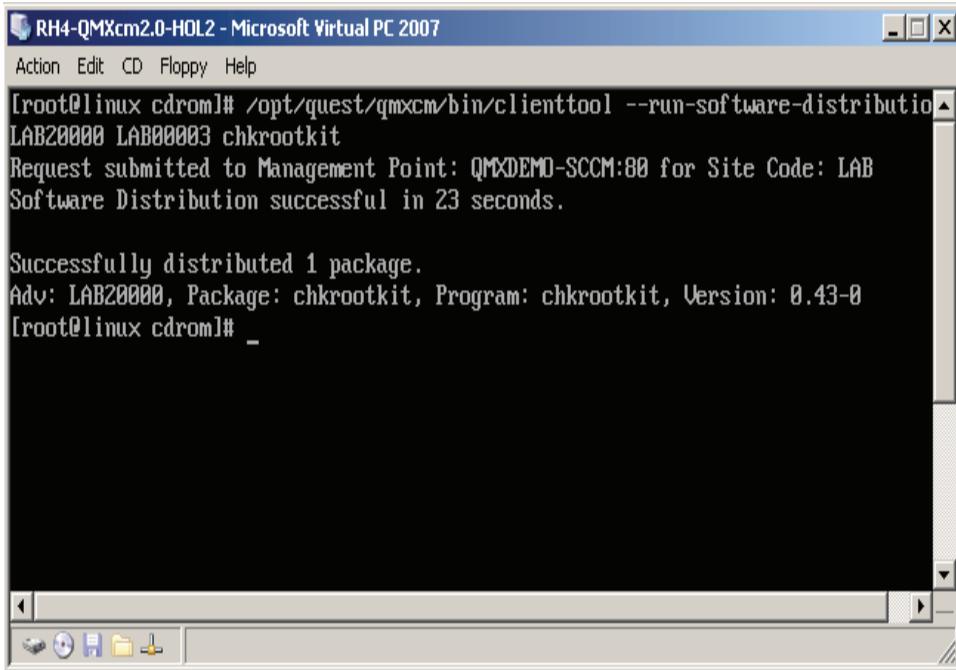
```
RH4-QMXcm2.0-HOL2 - Microsoft Virtual PC 2007
Action Edit CD Floppy Help
Reported class: Win32_DiskPartition 2 times.
Reported class: Win32_IDEController 2 times.
Reported class: Win32_MotherboardDevice 1 time.
Reported class: Win32_NetworkAdapter 2 times.
Reported class: Win32_NetworkAdapterConfiguration 2 times.
Reported class: Win32_OperatingSystem 1 time.
Reported class: Win32_ParallelPort 1 time.
Reported class: Win32_Service 36 times.
Reported class: Win32_SystemEnclosure 1 time.
Reported class: Win32_VideoController 1 time.
[root@linux cdrom]# /opt/quest/qmxc/bin/clienttool --run-policy-update
Policy Update successful in 5 seconds.

Request submitted to Management Point: QMXDEMO-SCCM:80 for Site Code: LAB
Downloaded 2 new, 0 updated, 0 deleted, and 104 unchanged policies.

Discovery Related policies had 0 new, 0 updated, 0 deleted, and 16 unchanged.
Hardware Inventory policies had 0 new, 0 updated, 0 deleted, and 49 unchanged.
Scheduling and Other policies had 1 new, 0 updated, 0 deleted, and 39 unchanged.
Software Distribution policies had 1 new, 0 updated, 0 deleted, and 0 unchanged.
[root@linux cdrom]# /opt/quest/qmxc/bin/clienttool --list-available-software
Available Software:
Advertisement ID  Package ID  Program ID
LAB20000         LAB00003         chkrootkit
[root@linux cdrom]#
```

3. Enter the following command to force the distribution:

```
/opt/quest/qmxc/bin/clienttool --run-software-distribution
LAB20000 LAB00003 chkrootkit
```



```
RH4-QMXcm2.0-HOL2 - Microsoft Virtual PC 2007
Action Edit CD Floppy Help
[root@linux cdrom]# /opt/quest/qmxc/bin/clienttool --run-software-distributio
LAB20000 LAB00003 chkrootkit
Request submitted to Management Point: QMXDEMO-SCCM:80 for Site Code: LAB
Software Distribution successful in 23 seconds.

Successfully distributed 1 package.
Adv: LAB20000, Package: chkrootkit, Program: chkrootkit, Version: 0.43-0
[root@linux cdrom]# _
```

Distributing Software Manually

You can manually create packages, programs and advertisements just like you can in Windows.

The following topics take you through a step-by-step demonstration of manually distributing software:

- [Creating a Package](#)
- [Selecting the Distribution Points](#)
- [Creating a Software Program](#)
- [Creating an Advertisement](#)

Creating a Package

To create a package

1. In the Configuration Manager Console, navigate to **Computer Management | Software Distribution** and right-click the **Packages** group.
2. Choose **New | Package** to start the *New Package Wizard*.
3. On the *General* page enter the package properties and click **Next**.
4. On the *Data Source* page specify whether this package contains source files.
5. Click **Set** to display the *Set Source Directory* dialog.
6. Select the *Source directory location*.
7. **Browse** to select the *Source directory*.
8. Click **Finish** to save the package properties you just configured.
9. Click **Next** until the *New Package Wizard* is finished.

Selecting the Distribution Points

To select the distribution points

1. In the Configuration Manager Console, expand the **Packages** group.
2. Expand the folder for package you want to distribute.
3. Right-click **Distribution Points**.
4. Select **New Distribution Points** to start the New Distribution Points Wizard.
5. Click **Next** to display the *Copy Package* page.
6. Select the Distribution Point(s) and click **Next**.
7. Click **Close**.

System Center Configuration Manager 2007 assigns the package to the new distribution point(s).

Creating a Software Program

To create a software program

1. In the Configuration Manager Console, expand the **Packages** group.
2. Expand the folder for package you want to distribute.
3. Right-click the **Programs** group and choose **New | Program** to start the *New Program Wizard*.
4. On the *General* page, enter the program properties.

5. In the *Command line* box, enter a command with a prefix of "QMX:" and click **Next**.
6. On the *Requirements* page you can change the **Maximum allowed run time** to the desired number of minutes.



For large package distribution that may take several hours you can configure the time out value for program run times on client computers. This avoids timing out when distributions take a long time. You can configure the timeout value after you have created the program using the QMX - Configuration Manager 2007 Software Distribution Wizard or when you manually create a software program.

If you have created an Advertisement using the QMX - Configuration Manager 2007 Software Distribution Wizard and then determine that you need to re-set the Maximum allowed run time, you can access the Program Properties, as follows: Navigate to **Packages**, expand the package you want to reconfigure. Then, select **Programs** and double click the name of the program to open the Properties dialog. Open the *Requirement* tab.

If you do not specify a *Maximum allowed run time* option on the *Program Properties* dialog, QMX - Configuration Manager 2007 will provide a default value of 12 hours.

For more information, click the **Help** button to access Microsoft's explanation of the *Maximum allowed run time* feature.

7. Click **Finish** to open the Summary page.
8. Click **Next** and **Close** to complete the wizard.

Creating an Advertisement

To create an advertisement

1. In the Configuration Manager Console, right-click the **Advertisements** group.
2. Choose **New | Advertisement** to start the *New Advertisement Wizard*.
3. On the *General* page select the Advertisement properties and click **Next**.
4. On the *Schedule* page, create the schedule as follows:
 - a) Click the **New** Schedule button (the "starburst" icon), to assign a new schedule.

Note: If you select the *Assign immediately after this event* option, you can only choose "As soon as possible"; QMX - Configuration Manager 2007 does not support *Logon* or *Logoff* schedules.

- b) Click **Next** to use the default schedule.
- c) Click **Next** to complete *New Advertisement Wizard*.
- d) Click **Close** to close the wizard.



QMX - Configuration Manager 2007 supports all System Center Configuration Manager 2007 program rerun behavior.

System Center Configuration Manager 2007 creates the advertisement and sends the appropriate distribution policy to the Management Point.

Verifying Software Distribution

Once you deploy software or patches using the QMX - Configuration Manager 2007 Software Distribution Wizard, you will want to verify that the package and advertisement were created and that no errors were generated in the System Center Configuration Manager 2007 Status System.

Using Package Status to Verify Distribution

You can use System Status to check the status of your Advertisements and Packages. Package Status provides a summary report of the health of packages and distribution points in your site. In many organizations, administrators distribute multiple packages concurrently to multiple destinations. Package Status allows you to monitor when packages arrive at distribution points. A package must arrive at a distribution point before a QMX - Configuration Manager 2007 Agent client can access, install, or run an advertisement. All dates in Package Status are displayed in the time zone of the computer running the Configuration Manager Console.

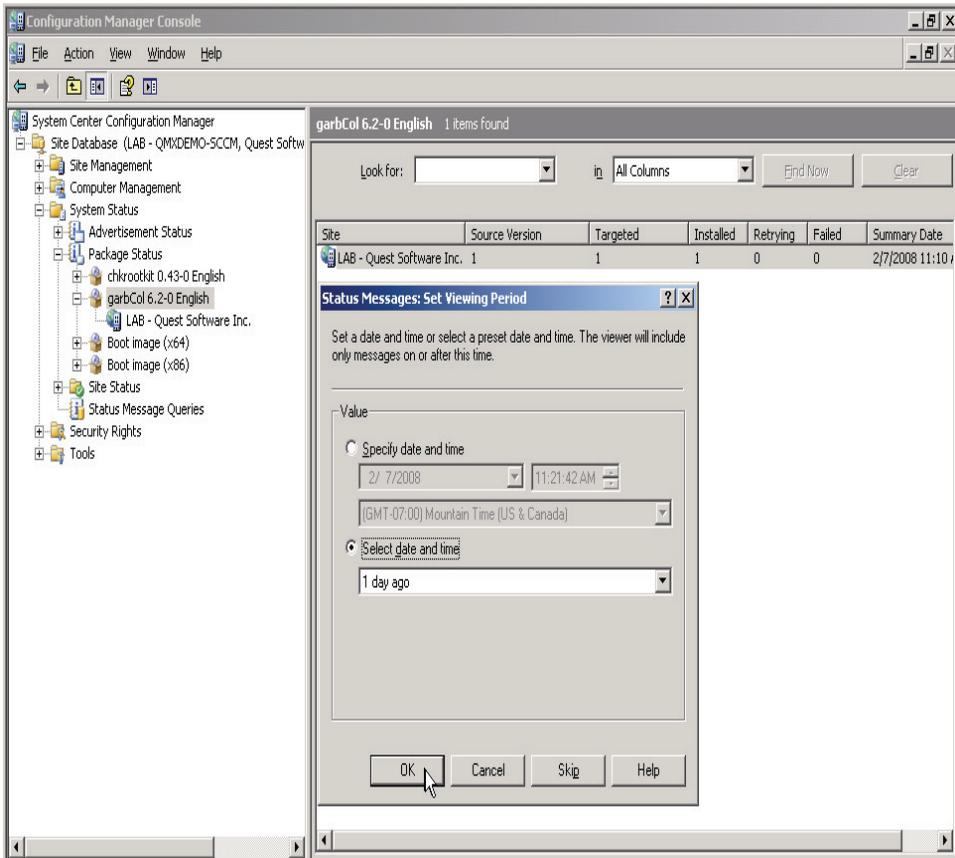
Package Status provides three levels of status information details:

- Summary status for all packages in all sites
- Details for a specific package in all sites
- Details for a specific package in a single site

To view details on a specific package

1. Expand **System Status** group of the Configuration Manager Console.
2. Expand **Package Status** to see the status of the packages.

3. Click the package name listed under Package Status to list the sites servers in the results pane.
4. Right-click a site server to open the shortcut menu.
5. Choose **Show Messages | All** to display the *Status Messages: Set Viewing Period* dialog:



6. Set the viewing period and click OK to display the QMX - Configuration Manager 2007 Status Message Viewer:

Severity	Type	Site code	Date / Time	System	Component
	Audit	LAB	2/7/2008 11:15:13 AM	QMXDEMO-SCCM	Microsoft.Conf
	Milestone	LAB	2/7/2008 11:14:08 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 11:14:08 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Audit	LAB	2/7/2008 11:13:57 AM	QMXDEMO-SCCM	Microsoft.Conf
	Milestone	LAB	2/7/2008 11:10:11 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 11:10:10 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 11:10:10 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 11:10:08 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 11:10:08 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Audit	LAB	2/7/2008 11:09:55 AM	QMXDEMO-SCCM	Microsoft.Conf
	Milestone	LAB	2/7/2008 10:52:58 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 10:52:58 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Milestone	LAB	2/7/2008 10:52:56 AM	QMXDEMO-SCCM	SMS_DISTRIBL
	Audit	LAB	2/7/2008 10:52:43 AM	QMXDEMO-SCCM	Microsoft.Conf

Command Query : 14 of 14 messages displayed. 1 selected.

Checking the Agent for the Distribution

In addition to using System Status, you can verify that the software was distributed by checking the QMX - Configuration Manager 2007 Agent for the distributed software.



System Center Configuration Manager 2007 can take some time to distribute the software. Be sure to let sufficient time lapse after the software distribution process.

In this example we will verify that the `chkrootkit` software was distributed using the QMX - Configuration Manager 2007 Software Distribution Wizard.

To verify the software distribution on a Linux system

1. In the Configuration Manager Console, navigate to **System Center Configuration Manager | Site Database | Computer Management | Software Distribution**.

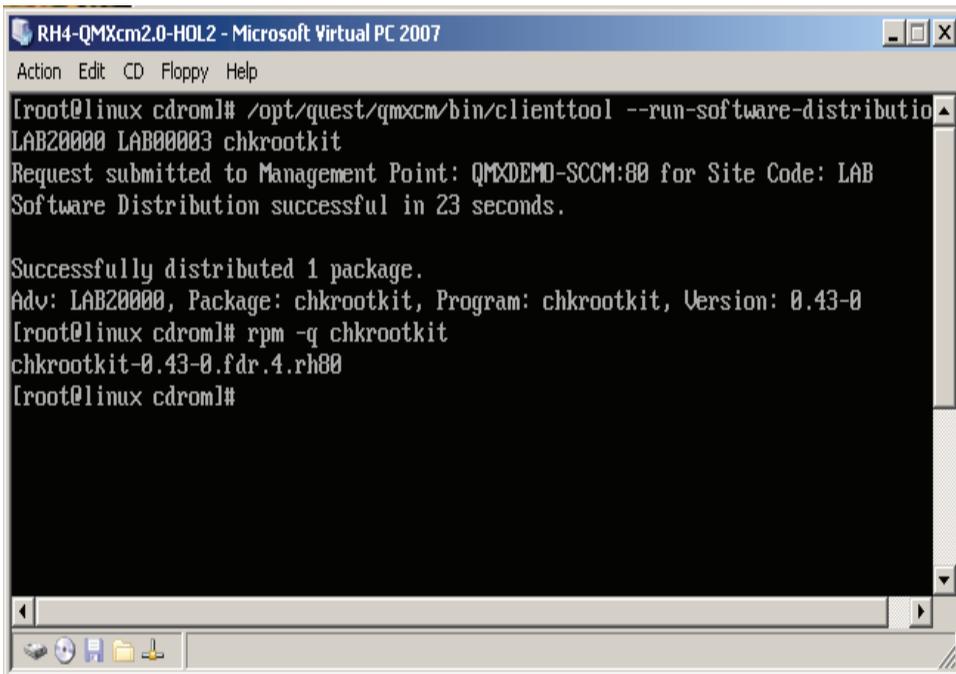
2. Click **Packages**.

Note • The Configuration Manager Console lists the names of the packages in the right-hand window along with their Package ID. The Package ID indicates that it was installed by means of the System Center Configuration Manager 2007 process.

3. Switch over to the Linux host.

Note • You can also establish a remote session with PuTTY. For more information about running remote tools, see [Remote Tools](#).

4. At the command prompt, enter **rpm -q chkrootkit**.



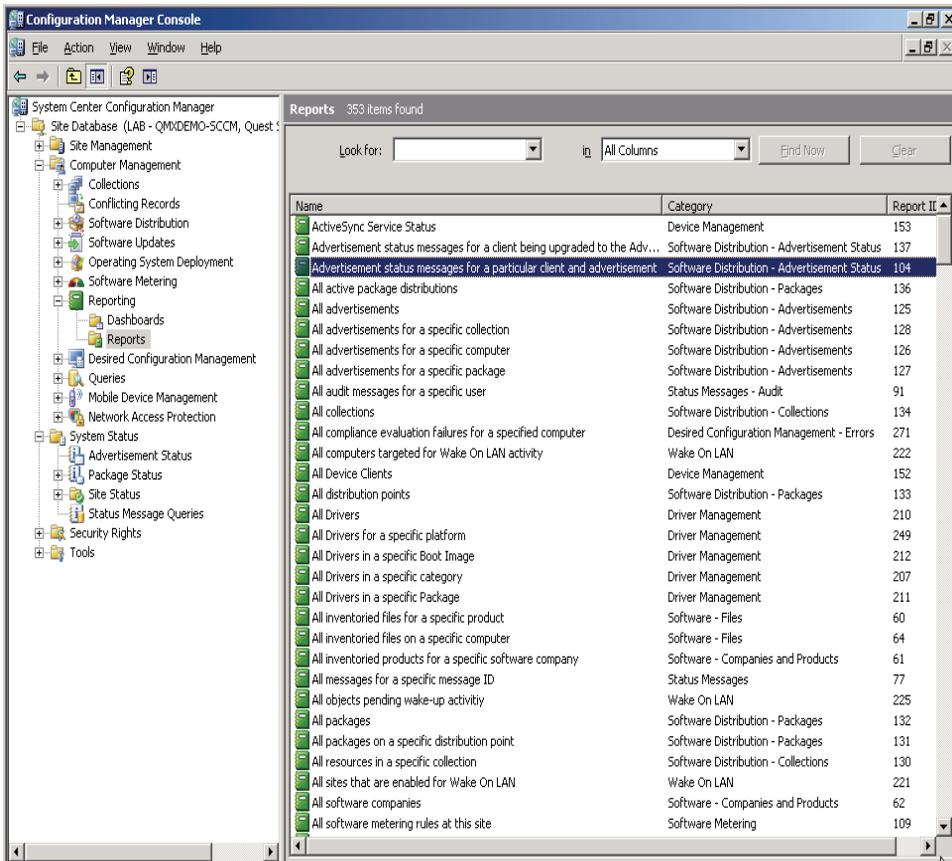
```
RH4-QMXcm2.0-HOL2 - Microsoft Virtual PC 2007
Action Edit CD Floppy Help
[root@linux cdrom]# /opt/quest/qmxcm/bin/clienttool --run-software-distributio
LAB20000 LAB00003 chkrootkit
Request submitted to Management Point: QMXDEMO-SCCM:80 for Site Code: LAB
Software Distribution successful in 23 seconds.

Successfully distributed 1 package.
Adv: LAB20000, Package: chkrootkit, Program: chkrootkit, Version: 0.43-0
[root@linux cdrom]# rpm -q chkrootkit
chkrootkit-0.43-0.fdr.4.rh80
[root@linux cdrom]#
```

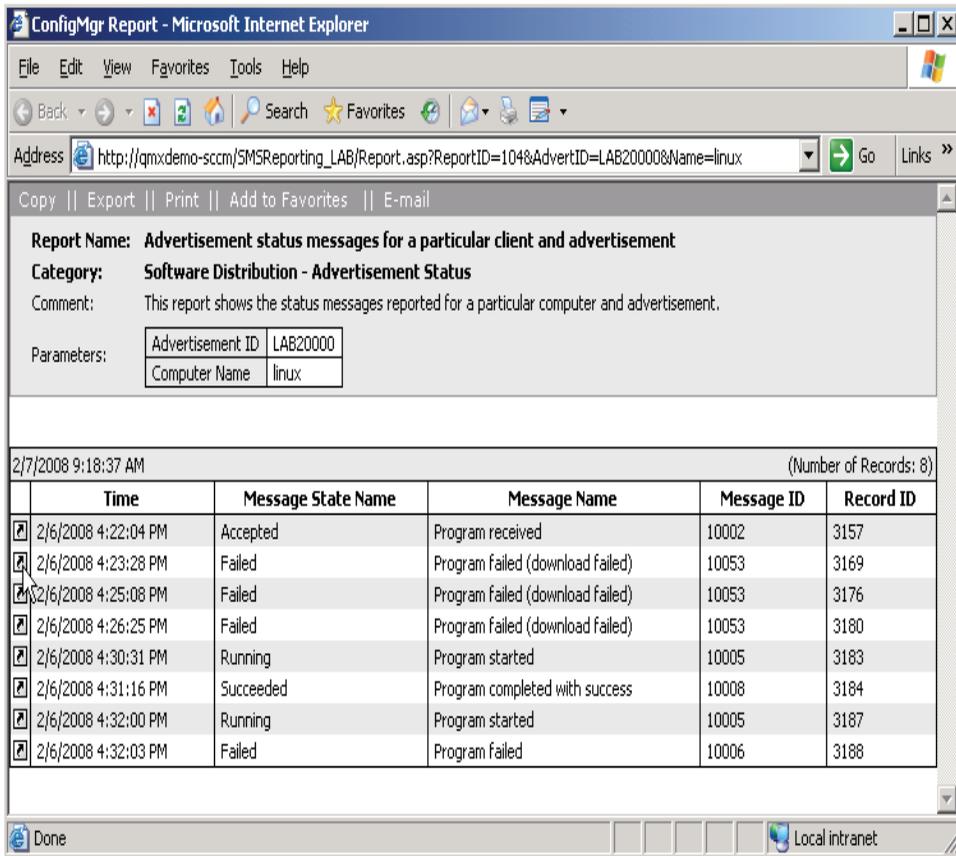
To verify that the software distributed

1. Navigate to **System Center Configuration Manager | Site Database | Computer Management**.
1. Expand **Reporting** group of the Configuration Manager Console.
2. Click **Reports**.

The Configuration Manager Console opens a list of Reports that are useful. For example, you will find **Advertisement status messages for a particular client and advertisement** helpful.



3. Right-click the report name and choose **Run**.
4. Choose a Value for the *Advertisement ID*.
5. Choose a Value for the *Computer Name*.
6. Click **Display**:



Report Name: Advertisement status messages for a particular client and advertisement

Category: Software Distribution - Advertisement Status

Comment: This report shows the status messages reported for a particular computer and advertisement.

Parameters:

Advertisement ID	LAB20000
Computer Name	linux

2/7/2008 9:18:37 AM (Number of Records: 8)

	Time	Message State Name	Message Name	Message ID	Record ID
[?]	2/6/2008 4:22:04 PM	Accepted	Program received	10002	3157
[?]	2/6/2008 4:23:28 PM	Failed	Program failed (download failed)	10053	3169
[?]	2/6/2008 4:25:08 PM	Failed	Program failed (download failed)	10053	3176
[?]	2/6/2008 4:26:25 PM	Failed	Program failed (download failed)	10053	3180
[?]	2/6/2008 4:30:31 PM	Running	Program started	10005	3183
[?]	2/6/2008 4:31:16 PM	Succeeded	Program completed with success	10008	3184
[?]	2/6/2008 4:32:00 PM	Running	Program started	10005	3187
[?]	2/6/2008 4:32:03 PM	Failed	Program failed	10006	3188

Done Local intranet

7. Drill down into any of the messages for further information.
8. Close the report and return the Console when you are finished exploring.

For more information about running reports, see [Reports](#).

6

Software Updates

- Important Considerations About Building Scripts
- Implementing Software Patches
- Troubleshooting Patch Implementation

Important Considerations About Building Scripts

QMX - Configuration Manager 2007 does not have full patch management. You can leverage your System Center Configuration Manager 2007 infrastructure to deploy patches by using collections to target machines, create packages, distribute them, track them, and report on installation status. If you have patches available, download them and distribute them by means of the software distribution methods described in [Software Distribution](#). Most often you will want to distribute a script file using the "Command" distribution option described in [Script or Custom Command Package Type](#).

If you build a script file on a Windows system, it will create Windows end-of-line characters unless your text editor has an option to save non-Windows end-of-line characters. QMX - Configuration Manager 2007 tries to correct for this. When QMX - Configuration Manager 2007 sees #! in the first line of a script file, it automatically replaces the Windows end-of-line characters with non-Windows end-of-line characters.

In some cases, patches or software files start with #! but include binary data. In that case, you must prepare a script that calls the file with the binary data.

Implementing Software Patches

This topic demonstrates how to successfully deploy patches for a non-Windows system using the QMX - Configuration Manager 2007 Software Distribution Wizard.

The system selected to perform this demonstration is a Sparc-based Solaris 9 system. The patch is the point patch #112661-06 obtained from the Sun site <http://sunsolve.sun.com>.

Point Patches are designed to fix or solve a specific bug on your system or the software installed on it. Usually they replace or add files to the system. The purpose of point patch #112661-06 is to prevent the IIM port from being hijacked.



Before you begin to deploy patches you must have a working System Center Configuration Manager 2007 environment, properly configured with installed QMX - Configuration Manager 2007 components. You must also have a QMX - Configuration Manager 2007 Agent running.

To deploy the Solaris Cluster Patch on a QMX - Configuration Manager 2007 Agent

1. Download the patch from the Sun site and copy it to a place on the site server where you will be able to distribute the software. For the sake of this demo the file is named: 112661-06.zip.
2. Create a shell script named `patchadd.sh` in the same directory you copied the zip file.

The content of this script file is as follows:

```
#!/bin/sh
# The above line must be present; it tells Quest Management
Extensions to strip the
# Windows end-of-line characters.
# This script will install the patch 112661-06 on a Sparc
based Solaris 9
#
echo "Patch Installation in progress.."

echo "Unpacking ZIP file.."
/usr/bin/unzip 112661-06.zip

echo "Moving patch folder to /tmp.."
mv 112661-06 /tmp

echo "Changing current directory to /tmp.."
cd /tmp

echo "Installing patch.."
/usr/sbin/patchadd 112661-06
```



Even though the package content is downloaded to `/var/opt/quest/qmxcm/packagecache`, the `patchadd` command will not install the software from that directory. For that reason, move the patch folder to the `/tmp` directory and install it from there.

3. From the Configuration Manager Console, right-click the **All Solaris Systems** collection and choose **Distribute Non-Windows | Software** to start the QMX - Configuration Manager 2007 Software Distribution Wizard.

4. Click **Next** at the *Welcome* page to continue.
The Wizard opens the following pages where you can specify the software distribution parameters:
 - a) [Source Directory](#)
 - Browse to select the directory where you placed the zip file content.
 - b) [Package Identification](#)
 - Enter **patch-112661-06** in the *Name* box.
 - Enter **9** in the *Version* box.
 - Enter **Sun Microsystems** in the *Publisher* box.
 - Enter **English** in the *Language* box.
 - Enter **Solaris Software Patching using SCCM** in the *Comments* box.
 - c) [Distribution Points](#)
 - Specify the distribution points where clients will access this package.
 - d) [Program Identification](#)
 - Enter **patch-112661-06** in the *Name* box.
 - Enter **This script will install patch 112661-06 on a Sparc based Solaris 9 system** in the *Comment* box.
 - e) [Package Type](#)
 - Select **Script or Custom Command** package type.
 - f) [Script or Custom Command Package Type](#)
 - **Browse** to select the script named **patchadd.sh**.
 - g) [Advertisement Name](#)
 - Specify a name and comment for the new advertisement.
 - h) [Advertise to Subcollections](#)
 - Specify whether the advertisement should apply to subcollections.
 - i) [Assign Program](#)
 - Specify when to assign the program.
 - j) [Summary](#)
 - Verify the package, program, and advertisement for the software distribution.
 - k) [Wizard Completed](#)
 - Click **Close** to complete the task

The QMX - Configuration Manager 2007 Software Distribution Wizard automatically creates the package, program, and advertisement for the software distribution. You can either wait for the normal software distribution cycle or force the distribution manually. (See [Forcing Software Distribution](#).)

After distributing patches to QMX - Configuration Manager 2007 Agent clients, you will want to verify that the procedure was successful. (See [Verifying Software Distribution](#).)

Troubleshooting Patch Implementation

There are different ways to confirm that a patch has been installed successfully or not depending on which method you used to install the patch. In our case, we can confirm the installation using the following command:

```
# showrev -p | grep 112661-06
Patch: 112661-06 Obsoletes: 113971-01 Requires:
Incompatibles:
Packages: SUNWlccom, SUNWiimu, SUNWiimr, SUNWxi18n,
SUNWxim, SUNWxi18x, SUNWximx, SUNWj3irt
#
```

The output shows the patch recently installed on the system along with other useful information. If you do not receive the previous output, consult the log file created in `/var/sadm/patch/112661-06`.

For more information refer to the README file that comes with the zip file or in the Sun site <http://sunsolve.sun.com>.

Software Metering

- About Software Metering
- Performing Software Metering
- Reporting Software Metering Data
- Disabling and Enabling Software Metering
- Summary

About Software Metering

System Center Configuration Manager 2007 Software Metering is quite different from other inventory tasks. Whereas Hardware and Software Inventory can provide a list of files and/or applications on any given client, software metering is designed to provide usage data on how applications are used in your environment. System Center Configuration Manager 2007 stores this data in the Site Database and replicates it up the hierarchy giving the organization a comprehensive view (along with inventory data) of where applications are deployed, who is using them, and when they are being used. System Center Configuration Manager 2007 uses standard customizable reports, run from your reporting point, to expose this data.



Agents must be joined to the domain for Software Metering to monitor user and domain information from Active Directory. (See [Integration with VAS](#) for more information about how to join a non-Windows client to the domain.)

All of this helps give intelligence around license renewal costs, cost of ownership of individual applications, and whether or not it might be time to retire a given application, thereby reducing not just the re-licensing costs but also the maintenance and training costs associated with it.

You enable Software Metering on a per site basis and you manage it under Client Agents settings. Software metering data is collected on the client when the Software Metering Client Agent is enabled. The Software Metering Client Agent examines each program that is running on the client and determines if the program matches a specified rule for the System Center Configuration Manager 2007 site to which the client is assigned.



To gather software metering data on a program, it must be running on the client.

Usage data is collected each time a monitored program runs on the client, regardless of whether the client is connected to the network. If the client is not connected to the network, the data remains on the client and is uploaded to the site server the next time that the client connects to the network and a usage upload interval has passed.

Software metering reports can be integrated with software inventory data that is stored in the System Center site database. When the client reports program usage, it reports the same identifying information for the executable program that software inventory reports. This means that software metering can report whether a particular executable program was found on a computer and whether the executable program was run on that computer during a particular time interval.

Summarize Software Metering Data

The amount of software metering data that is stored in the System Center site database is managed by a process called *data summarization*. To improve reporting performance, maintenance tasks run periodically to summarize the transactional data and delete old data, which reduces the amount of data that is retained.

There are two built-in site maintenance tasks that perform summarization of software metering data:

- *Summarize Software Metering File Usage Data*
- *Summarize Software Metering Monthly Usage Data*

By default, both tasks run daily but you can modify the schedule. *Summarize Software Metering File Usage Data* summarizes data from multiple records into one general record for the file. *Summarize Software Metering Monthly Usage Data* summarizes records older than one month. In a multi-site hierarchy, the monthly software usage data is sent to the central site one time each day by default.

Performing Software Metering

QMX - Configuration Manager 2007 allows administrators to leverage System Center Configuration Manager 2007 to collect information on files and applications on non-Windows clients helping you to determine how effectively your applications are being used in a non-Windows world.

What follows is a step-by-step demonstration that takes you through setting up software metering for a couple of applications running on a Red Hat Enterprise Linux box, but it could apply equally to any of the supported platforms.

To enable and configure software metering to track usage you must first enable the Software Metering Client Agent and then create a software metering rule.

Enable the Software Metering Client Agent

Enable the Software Metering Client Agent for the sites containing the QMX - Configuration Manager 2007 Agent you want to monitor.

To enable the Software Metering Client Agent

1. In the Configuration Manager console, navigate to **Site Database | Site Management | <site code> - <site name> | Site Settings | Client Agents**
2. Double click **Software Metering Client Agent** to open the *Properties* dialog.
3. Select the **Enable software metering on clients** check box.
4. Click the **Schedule** tab.
5. Specify the frequency that you want to collect usage data.

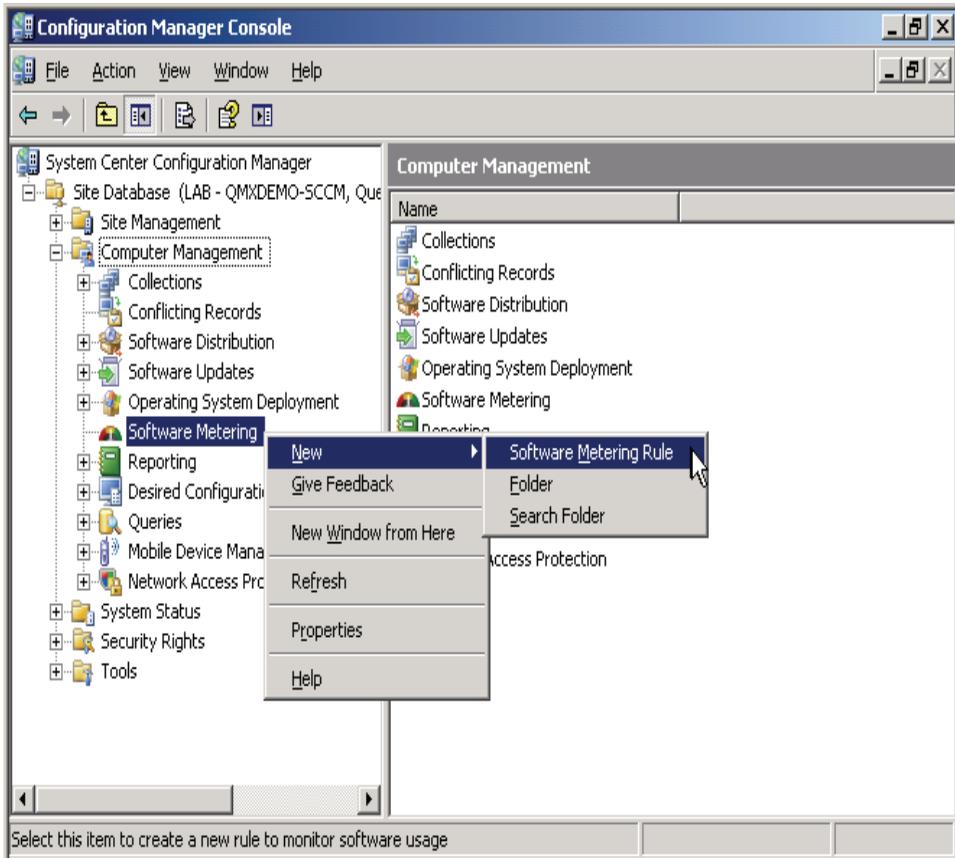
Creating a Software Metering Rule

Create a rule to tell the Software Metering Client Agent what you want to monitor.

To create a software metering rule

1. Expand **Computer Management** on the Configuration Manager Console.

2. Right-click **Software Metering** and choose **New | Software Metering Rule**.



- Complete the information on the *General* tab as you would normally do for System Center Configuration Manager 2007 with these exceptions:

Name: The name of the software program, up to 256 characters. This field is required.

File name: The software program's executable file name, up to 256 characters. *File Name* is the name that launches the program; it must be an appropriate executable file.



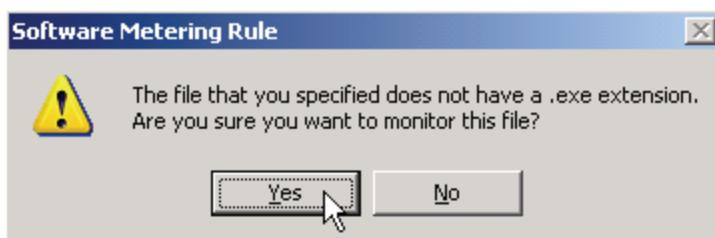
When you run a script it is usually executed by `/bin/sh` so you will not see the script name under running processes.

To monitor a shell script, make a copy of `/bin/sh` and give it a name. For example: `cp /bin/sh 'sleepNow'`. Then create a software metering rule to monitor `sleepNow`. Run your script by passing it as a parameter to `sleepNow`. For example: `./sleepNow <scriptName.sh>`. You are really passing your script to `/bin/sh` but it is just running under a different name.

Some programs are used as placeholders to launch other programs, so you should specify the name of the program that ultimately executes the program itself. Remember, in Software Metering, the file name is case sensitive. And, with QMX - Configuration Manager 2007, do NOT use **Browse**, to select non-Windows files.

Note • In QMX - Configuration Manager 2007, File Name is mandatory and not optional as it is for Windows applications. (See [Creating Metering Rules for Mac OS X](#) for information about how to find the File name for a Mac application.)

Non-Windows files do not have the .exe file type extension. So, when you click **Next**, a warning dialog displays, click **Yes**:



Original file name: QMX - Configuration Manager 2007 ignores this field; leave it blank when dealing with QMX - Configuration Manager 2007 Agent Software Metering.

Version: The version of the software program. You can use up to 48 characters. Alpha numeric, ?, *, and PERIOD characters are allowed. The asterisk and question mark characters are wildcard character entries. Use the wildcard character "*" for a string and "?" to represent a character. QMX - Configuration Manager 2007 checks the file version slightly differently than Windows does. For QMX - Configuration Manager 2007, if the executable's version information is not available, the rule's File Version will be ignored for purposes of matching the rule. In the Window's client, if you leave the Version field blank, software metering will match the rule only if the version in the program header is blank.

Language: The language of the software program.



If the language for a System Center Configuration Manager 2007 metering rule is set to anything besides "Any," the metered data will not be reported by System Center Configuration Manager 2007. So you must set the language for metering rules to "Any".

Comment: Administrator comments, up to 256 characters. This field is optional.

Site Code: The site code that the software metering rule will apply to.

4. Specify the security rights that users have on this object class or instance.
5. Click **Finish** to close the *New Software Metering Rule Wizard*.
The QMX - Configuration Manager 2007 Agent will receive the software metering rules in the policy.

Creating Metering Rules for Mac OS X

When metering software on a Mac, the file you meter will NOT be an `.app` file. In fact, the executable file name may or may not even correspond to the software program you want to meter. For example the executable file name for Firefox application is `firefox-bin`.

The best way to determine the executable file name is to use the `ps -ax` command. For example, suppose you want to monitor iTunes. If you start iTunes and execute `ps -ax` on the command line, you will see that you need to enter "iTunes" in the *File name* box as the name of the file you want to monitor; not `iTunes.app`:

```
/Applications/iTunes.app/Contents/MacOS/iTunes -psn_0_2228225
```

Scheduling Software Metering

The QMX - Configuration Manager 2007 Agent performs software metering every 10 seconds by default but a low polling interval can cause High CPU utilization.

To change the software metering interval

1. With your preferred editor, open the following at your client console:
`/etc/opt/quest/umi/openwbem/openwbem.conf.d/umi.conf`
2. Modify the following parameter in the `umi.conf` file:
`umi.metering_poll_interval=Value`
Where *Value* is a number of seconds.

Note • You can increase the Software Metering Agent polling interval to help prevent high CPU utilization. However, if the program started and finished between two software metering cycles, it will not be metered at all.

3. To activate the new settings, enter the following command to restart the daemon:
`/opt/quest/qmxcm/sbin/qmxcmd_init restart`

Metering Software

Once you have created some Software Metering rules, go to your QMX - Configuration Manager 2007 Agent client and refresh the policy.

To force the policy update

1. Enter the following command at the console:

```
/opt/quest/qmxcn/bin/clienttool --run-policy-update
```

```
nfig files (*.conf)
[308675] Loading additional config items from file: /etc/opt/quest/umi/openwbe
openwbem.conf.d/qmxsms.conf
[308675] Loading additional config items from file: /etc/opt/quest/umi/openwbe
openwbem.conf.d/qmxsms.allowed_users.conf
[308675] Loading additional config items from file: /etc/opt/quest/umi/openwbe
openwbem.conf.d/umi.conf
.
OpenWBEM CIMOM Daemon [owcimond] (9407) is running.
Starting the QMX for SMS Daemon[308639] Using config file: /etc/opt/quest/qmxc
qmxcn.conf
.
QMX for SMS Daemon [qmxcmd] (9422) is running.
[root@linux ~]# /opt/quest/qmxcn/bin/clienttool --run-policy-update
Policy Update successful in 9 seconds.

Request submitted to Management Point: QMXDEMO-SCCM:80 for Site Code: LAB
Downloaded 1 new, 0 updated, 0 deleted, and 104 unchanged policies.

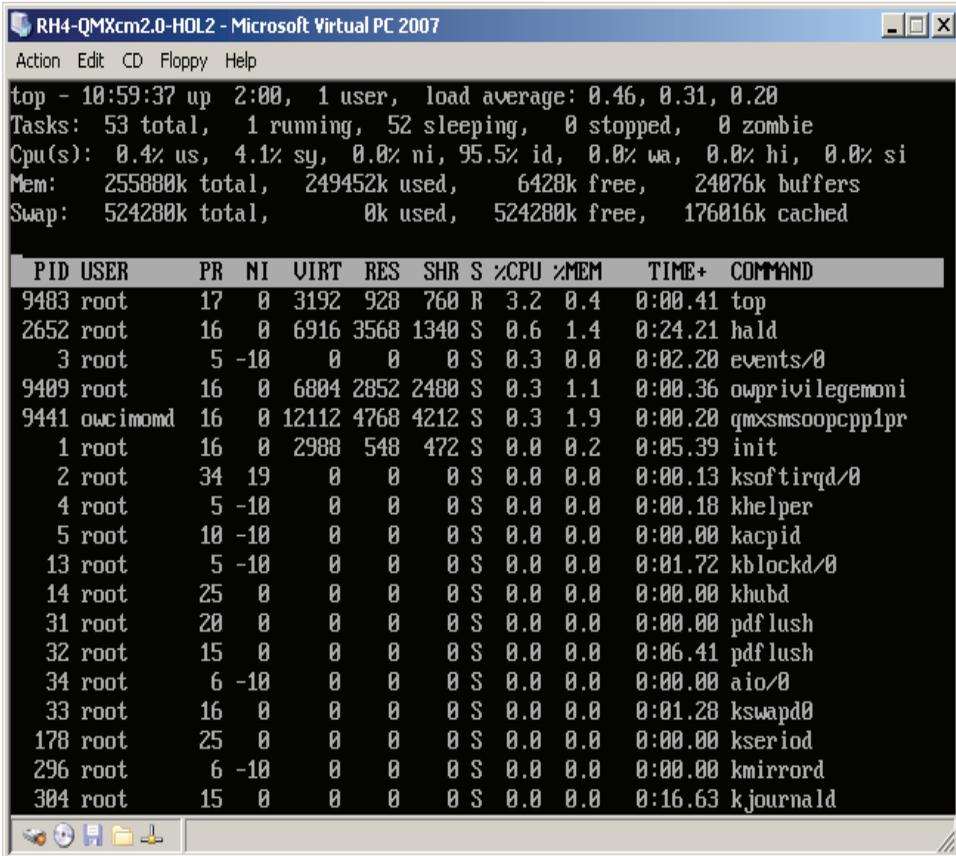
Discovery Related policies had 0 new, 0 updated, 0 deleted, and 16 unchanged.
Hardware Inventory policies had 0 new, 0 updated, 0 deleted, and 49 unchanged.
Scheduling and Other policies had 0 new, 0 updated, 0 deleted, and 39 unchange
Software Metering policies had 1 new, 0 updated, 0 deleted, and 0 unchanged.
[root@linux ~]#
```

You should see that *Software Metering policies* have been updated.

To further demonstrate how Software Metering works, launch the *Top Process Monitor* from the command window, let it run for awhile, stop the *Top Process Monitor*, and then run the Software Metering Report, as explained in the following procedures:

To start the Top Process Monitor

1. On your non-Windows system, enter **top** at the command prompt to start the *Top process Monitor*:



Top shows useful information about the current system state such as:

- Uptime
- Connected users
- Running processes information: Total, sleeping, running, zombie
 - Process ID and name
 - Process owner
 - Memory and CPU usage
- System memory usage
- System CPU usage
- System swap file usage (total, used, free, and cached)

2. For more information on *Top*, enter **?** for a list of Top commands.
3. From the list of Top commands, press any key to continue.
4. Enter **q** to quit the Top Process Monitor and return to the command prompt.
5. At the command prompt, enter **man top** to display the Top documentation.
6. From the Top documentation, click **Enter** or **Page Down** to view more of the Top documentation.
7. Enter **q** to quit the Top documentation and return to the command prompt.

You can add to this demonstration by opening and closing other applications, logging into the Red Hat machine as a different user and running the applications, or leaving the applications running for various periods of time.

To run the Software Metering report

1. At the command line, enter:

```
/opt/quest/qmxcm/bin/clienttool  
--run-software-metering-usage-report
```

```

1 root      16   0  1940  560  480 S  0.0  0.4  0:05.12 init
2 root      34  19    0    0    0 S  0.0  0.0  0:00.02 ksoftirqd/0
3 root       5 -10    0    0    0 S  0.0  0.0  0:05.90 events/0
4 root       5 -10    0    0    0 S  0.0  0.0  0:00.13 khelper
5 root      12 -10    0    0    0 S  0.0  0.0  0:00.00 kacpid
13 root      5 -10    0    0    0 S  0.0  0.0  0:01.20 kblockd/0
14 root     25   0    0    0    0 S  0.0  0.0  0:00.00 khubd
23 root     15   0    0    0    0 S  0.0  0.0  0:05.57 pdf_lush
24 root     15   0    0    0    0 S  0.0  0.0  0:04.75 pdf_lush
26 root      6 -10    0    0    0 S  0.0  0.0  0:00.00 aio/0
25 root     15   0    0    0    0 S  0.0  0.0  0:02.77 kswapd0
99 root     25   0    0    0    0 S  0.0  0.0  0:00.00 kseriod
175 root     6 -10    0    0    0 S  0.0  0.0  0:00.00 kmirror/0
184 root     15   0    0    0    0 S  0.0  0.0  0:24.04 kjournald
1004 root    6 -10  3072  448  376 S  0.0  0.4  0:00.07 udevd
1111 root    16   0    0    0    0 S  0.0  0.0  0:00.01 kjournald
[root@vmxdemo-lc ~]# /opt/quest/qmxsms/bin/clienttool --run-software-metering-us
age-report
Metering Post successful in 7 seconds.

Request submitted to Management Point: 192.168.135.50:80 for Site Code: LAB
2 metered applications reported
Application "ftp (krb5-workstation)" metered 2 times
Application "top (procps)" metered 3 times
[root@vmxdemo-lc ~]#

```

Here you can see that two applications were metered. This option reports the historical metering data; the number of times a process was started and stopped. If it reports that something was metered two times, it means the process was started and stopped twice. It does not count currently running processes.

Using SMS Trace

Trace allows you to view and monitor log files in System Center Configuration Manager as well as ASCII or Unicode text files. This tool helps you analyze log files.

To view the Software Metering Process in real time

1. From the **Start** menu, open **All Programs | ConfigMgr 2007 Toolkit | Trace32**:



ConfigMgr 2007 Toolkit contains some very useful utilities, but it is not installed with System Center Configuration Manager 2007 automatically. You must download the support tools separately from Microsoft.



The SMS Trace window opens.

2. From the *File* menu, open `C:\Program Files\Microsoft Configuration Manger\Logs\swmproc.log`:

The screenshot displays the SMS Trace application window with the following content:

Log Text	Component	Date/Time	Thread
Main thread waiting for file change notification or timeout after 60 minutes.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:00:21 PM	3768 (0xE8B)
Inbox notification triggered, pause for 10 seconds...	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:14 PM	3768 (0xE8B)
Moving up to 2048 usage data files to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Moved 0 .MUX files from the inbox to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Moved 0 .MUV files from the inbox to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
CSoftwareMeteringProcessor:ProcessMeterRuleChanges - Deleting rule change trigger file 'C:\Program Files\Microsof	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Meter rule changes detected.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Processing Meter Rule changes	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Loading XML meter rules file: C:\Program Files\Microsoft Configuration Manager\inboxes\swmproc.box\rules\MeterR	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Updating rule 'LAB00001'	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
The rule was created on site 'LAB' on 1/14/2008 2:32:09 PM and is targeted at site 'LAB' and "does" apply to child si	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
The rule is active and applies to this site	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
No more rule changes to process	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Saving XML meter rules file: C:\Program Files\Microsoft Configuration Manager\inboxes\swmproc.box\rules\MeterR	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
STATMSG: ID=5609 SEV=I LEV=M SOURCE="SMS Server" COMP="SMS_SOFTWARE_METERING_PROCE" S	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Successfully processed 1 rule changes	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Main thread waiting for file change notification or timeout after 60 minutes.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:24 PM	3768 (0xE8B)
Inbox notification triggered, pause for 10 seconds...	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:44 PM	3768 (0xE8B)
Moving up to 2048 usage data files to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Moved 0 .MUX files from the inbox to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Moved 0 .MUV files from the inbox to the processing queue.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
CSoftwareMeteringProcessor:ProcessMeterRuleChanges - Deleting rule change trigger file 'C:\Program Files\Microsof	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Meter rule changes detected.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Processing Meter Rule changes	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Loading XML meter rules file: C:\Program Files\Microsoft Configuration Manager\inboxes\swmproc.box\rules\MeterR	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Updating rule 'LAB00002'	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
The rule was created on site 'LAB' on 1/14/2008 2:32:40 PM and is targeted at site 'LAB' and "does" apply to child si	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
The rule is active and applies to this site	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
No more rule changes to process	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
Saving XML meter rules file: C:\Program Files\Microsoft Configuration Manager\inboxes\swmproc.box\rules\MeterR	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:54 PM	3768 (0xE8B)
STATMSG: ID=5609 SEV=I LEV=M SOURCE="SMS Server" COMP="SMS_SOFTWARE_METERING_PROCE" S	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:55 PM	3768 (0xE8B)
Successfully processed 1 rule changes	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:55 PM	3768 (0xE8B)
Main thread waiting for file change notification or timeout after 60 minutes.	SMS_SOFTWARE_METERING_PROCE	1/14/2008 2:32:55 PM	3768 (0xE8B)

Date/Time: 1/14/2008 2:32:55 PM	Component: SMS_SOFTWARE_METERING_PROCES
Thread: 3768 (0xE8B)	Source:

Main thread waiting for file change notification or timeout after 60 minutes.

Elapsed time is 2158h 26m 37s 790ms (7770397.790 seconds)

At the bottom of this log file you will see the software metering happening in real time.

3. Close SMS Trace.

Reporting Software Metering Data

System Center Configuration Manager 2007 reports display *summarized* Software Metering Usage data. The SQL summarization task summarizes data that is older than seven days by consolidating multiple records into one general record. Once System Center Configuration Manager 2007 does the initial summarization, you can influence when subsequent summarizations occur, as follows:

To schedule software metering data summarization

1. Navigate to **Site Database | Site Management | <site code> - <site name> | Site Settings | Site Maintenance | Tasks**.
2. Double click **Summarize Software Metering File Usage Data** and **Summarize Software Metering Monthly Usage Data** to open each of the Property dialogs separately.
3. Adjust the **Start after time** to be a few minutes past the present time.
4. Adjust the **Latest start time** to be a few minutes beyond that.

To view the reported data in the Configuration Manager Console

1. Navigate to **Site Database | Computer Management | Reporting | Reports**.
2. Click the **Category** column to sort by categories.
3. Scroll the pane to the *Software Metering* reports.
4. Right-click the **Users that have run a specific metered software program** report and choose **Run**.
5. Enter the Values required by the *Report Viewer* dialog and click **Display**.

Address  http://qmxdemo-sccm/SMSReporting_LAB/Report.asp?ReportID=115&RuleName=Top&Month=4&Year=2008  Go Links

Copy || Export || Print || Add to Favorites || E-mail

Report Name: Users that have run a specific metered software program

Category: Software Metering

Comment: Displays a list of users who have run programs matching the selected software metering rule within the specified month and year.

Parameters:

Rule Name	Top
Month (1-12)	4
Year	2008

4/11/2008 12:12:40 PM (Number of Records: 1)

Full User Name	Last Usage	Total Usages	Average Usages per Day	Total Duration (min)	Average Duration of Use (min)	Average Duration per Day (min)
root	4/9/2008 12:06:23 PM	3	0.1	5.73	1.91	0.19

Try running the following reports in the same manner:

- *Time of day usage summary for a specific metered software program*
- *Total usage trend analysis for a specific metered software program*

Disabling and Enabling Software Metering

During metering scans, you may want to reduce the CPU usage on your system. For example, you may have metering turned on for Windows but you are not using it on your non-Windows systems. Or, you may be using it on your non-Windows systems, but you would like to temporarily turn it off so that you do not see big CPU spikes.

The following procedure explains how to disable software metering using `detach.sh`. (For more information about `detach.sh`, see [About the detach Script.](#))

To disable software metering

1. Create a directory on your desktop.
2. Copy `detach.sh` and `disable_software_metering.sh` from the `scripts` directory into the new directory on your desktop.

3. From the Configuration Manager Console, choose **Distribute Non-Windows | Software** to create a new software distribution package using the *QMX for ConfigMgr Software Distribution Wizard*.
4. From the *Source Directory* dialog, **Browse** to the new directory you created on your desktop that contains the two scripts.
5. From the *Package Type* dialog, choose **Script or Custom Command**.
6. From the *Script or Custom Command* dialog, **Browse** to select `detach.sh` and click **Open**.

During the regular distribution, the SMS Distribution Manager will distribute the package to the distribution point which will deploy `detach.sh` and `disable_software_metering.sh` and restart the Agent.

To enable software metering

1. Repeat the same steps, using `reenable_software_metering.sh` in your package instead of `disable_software_metering.sh`.

Note: Distribute these scripts to disable metering for a whole collection of machines. There are `clienttool` options you can use to disable or re-enable software metering on a single machine. (See [Using the Client Tool](#) for more information.)

About the detach Script

Quest has included some utility scripts for your convenience at the root of the distribution media in the `scripts` directory. If you chose the default installation path it is in `D:\scripts`. For example, anytime you run a script that must restart the QMX - Configuration Manager 2007 Agent, create a software package that contains the `detach.sh` script along with the script you want to run and set `detach.sh` as the script to execute. This allows Software Distribution to finish before it attempts to restart the Agent. The `detach.sh` script and the script you plan to run must be in the same directory when you create the software package to distribute.

Note: Any arguments you pass to `detach.sh` are passed to the companion script.



For information about the `snapshot.sh` script that is also in the `/scripts` directory, refer to the *Troubleshooting* chapter in the *Installation Guide*.

Summary

By using software metering data, you can determine how your organization uses software programs to help ensure software license compliance. You can combine software metering program usage data with other System Center Configuration Manager 2007 data such as software inventory, product compliance, and hardware inventory to create comprehensive reports.

System Center Configuration Manager 2007 software metering monitors and collects software usage data on clients. Data collection is based on software metering rules that are configured by the System Administrator. The Software Metering Client Agent runs on the client. The agent accepts software metering rules from the System Center Configuration Manager 2007 site server and records program usage as specified in the rules. Program usage data from individual clients is forwarded to the client's assigned System Center Configuration Manager 2007 site for processing according to the prescribed metering collection schedule. The site then summarizes the data and propagates it to its parent site. The central site contains program usage data from all clients within the hierarchy that are assigned to sites that have software metering enabled.

QMX - Configuration Manager 2007 helps open up the power of System Center Configuration Manager 2007 to your non-Windows platform. In this chapter we looked at how using System Center Configuration Manager 2007 Software Metering can give you insight into how your users are actually utilizing the applications that they may or may not be using every day, helping administrators effectively determine future license costs and the support that may need to be provided for that application. Of course, software metering can effectively help you determine where applications are not being used and then you can use QMX - Configuration Manager 2007 to remove that application from that user's workstation, thereby reducing support costs and freeing up a license.

Remote Tools

- About Remote Tools
- Important Remote Tools Considerations
- Running Remote Tools
- Configuring VNC on a Mac OS X
- Modifying the List of Remote Tools
- Troubleshooting Remote Tools
- Configuring Single Sign-on For Remote Tools

About Remote Tools

QMX - Configuration Manager 2007 Remote Tools extensions allows you to remotely access non-Windows systems. This gives you the ability to run programs and utilities on your QMX - Configuration Manager 2007 Agent client systems from within the Configuration Manager Console. Remote tools give you the ability to remotely manage client computers in the site hierarchy using utilities such as Red Hat Logviewer or Gnome System Monitor. It also includes the ability to configure the Virtual Network Computer (VNC) software for remote access to a Mac OS X Desktop GUI. (See [Configuring VNC on a Mac OS X.](#))

Default Remote Tools

QMX - Configuration Manager 2007 comes with the following default Remote Tools:

TOOLS	REMOTE COMMAND	DESCRIPTION
AIX smit	/usr/bin/smit	System Management Interface Tool for selected AIX remote system
Gnome System Monitor	gnome-system-monitor	System Management Interface Tool for selected AIX remote system
HP-UX sam	/usr/sbin/sam	System Administrator Manager for selected HP-UX remote system
HPUX 11.31 smh	/usr/sbin/smh	System Management Home page for selected HP-UX remote system
HP-UX stm	/usr/bin/stm	Support Tools Manager for selected HP-UX remote system
PuTTY SSH shell	PuTTY	Opens an SSH shell on the selected remote system by means of PuTTY
RHEL 3 Network Configuration	redhat-config-network	Red Hat network configuration tool for selected system

Remote Tools

TOOLS	REMOTE COMMAND	DESCRIPTION
RHEL 3 Packages Manager	redhat-config-packages	Red Hat package manager for selected system
RHEL 3 Printer Manager	redhat-config-printer	Red Hat printer configuration utility for selected system
RHEL 3 Samba Configuration	redhat-config-samba	Red Hat Samba configuration utility for selected system
RHEL 3 User & Group Manager	redhat-config-users	Red Hat user configuration utility for selected system
RHEL 3 Services Configuration	redhat-config-services	Red Hat services configuration utility for selected system
RHEL 4/5 Network Configuration	system-config-network	Red Hat network configuration tool for selected system
RHEL 4/5 Packages Manager	system-config-packages	Red Hat package manager for selected system
RHEL 4/5 Printer Manager	system-config-printer	Red Hat printer configuration utility for selected system
RHEL 4/5 Samba Configuration	system-config-samba	Red Hat Samba configuration utility for selected system
RHEL 4/5 User & Group Manager	system-config-users	Red Hat user configuration utility for selected system
RHEL 4/5 Services Configuration	system-config-services	Red Hat services configuration utility for selected system
Solaris admintool	/usr/bin/admintool	Solaris system Administration tool with a graphical user interface for selected Solaris remote system

TOOLS	REMOTE COMMAND	DESCRIPTION
Solaris sdtprocess	/usr/dt/bin/ sdtprocess	Solaris Desktop process tool for selected Solaris remote system
Solaris smc	/usr/sbin/smc	Solaris Management Console for selected Solaris remote system
SuSE yast2	/sbin/yast2	SuSE YaST Tool for selected SuSE remote system
Top System Monitor	top	Top Process Monitor
VNC Viewer over SSH for Mac	ssh_vnc.vbs	Opens a VNC Viewer on the selected VNC-enabled Mac OS X system over SSH Note: You must configure this tool (See Configuring VNC on a Mac OS X).

These tools must be installed and configured on your Agent client machines to work properly.

Important Remote Tools Considerations

QMX - Configuration Manager 2007 can remotely access non-Windows systems by opening a standard, ssh-based, interactive shell window, or by launching specific tools such as the RedHat Log Viewer or the Top system monitor, or by using VNC (Virtual Network computer), a remote control client.

Each of these relies on a SSH (Secure Shell) server that is configured and running on the target system. QMX - Configuration Manager 2007 recommends the open-source SSH server OpenSSH. For information regarding obtaining and installing the proper SSH server software, go to Resource Central at <http://rc.quest.com/>, or to the OpenSSH website at www.openssh.org.

The following are some other special notes pertaining to accessing Remote Tools on non-Windows environments:

- Except with the use of VNC used for remote access to the Mac OS X Desktop GUI, QMX - Configuration Manager 2007 Remote Tools do not provide the ability to remotely control a non-Windows system like you can with a Windows system. QMX - Configuration Manager 2007 allows you to launch non-Windows tools located on a client computer from a Windows machine.
- Remote Tools X forwarding is required on SSH. If SSH on the system you are connecting to by means of Remote Tools doesn't allow X forwarding, the graphical remote tools will not work for that system.
- You must have an X Server running in order to launch some X based tools. A Windows-based X Server enables the UI to show the non-Windows tools on your Windows desktop. Some choices might be StarNet X-Win32 X Window Server, a platform-independent, network-transparent windowing system that provides a client/server interface between display hardware and the desktop environments. Or, you might use Cygwin/XFree86, an open-source implementation of the X Window system. There is also a Hummingbird product. However, Quest cannot provide support for any of these third-party products.

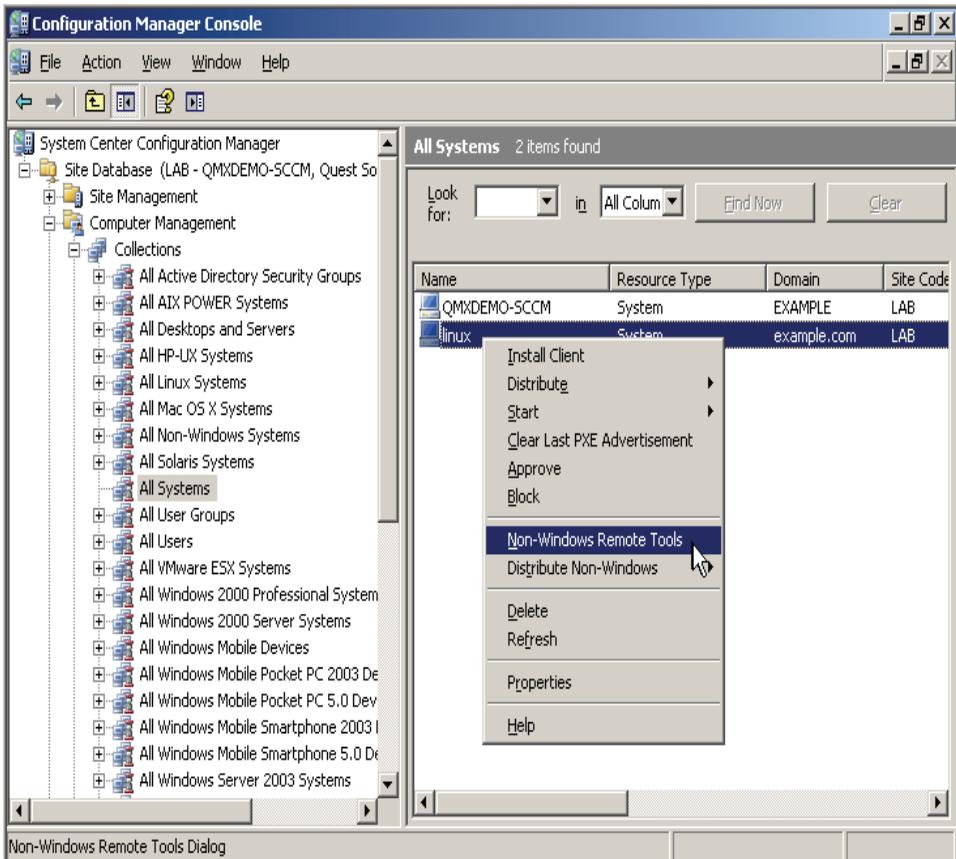
Running Remote Tools

To launch Remote Tools

1. Make sure your X Server is running if you plan to launch some X based tools.

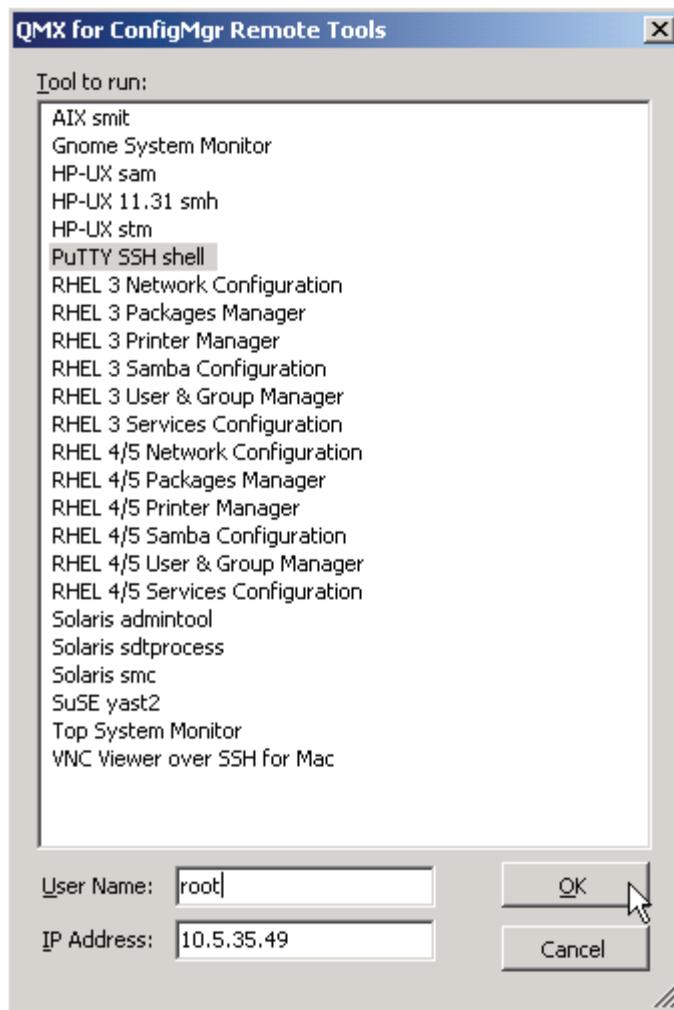
A Windows-based X Server enables the UI to show the non-Windows tools on your Windows desktop. (See the note in [Important Remote Tools Considerations](#) for information about X Servers.)

2. In the Configuration Manager Console, navigate to **Collections** and select the collection containing a QMX - Configuration Manager 2007 Agent-based system.



3. Right-click the desired client machine and choose **Non-Windows Remote Tools** to open the *Remote Tools* dialog.

The *Remote Tools* dialog displays:



The *Remote Tools* dialog lists the remote tools that are currently available. You can modify this list. (See [Modifying the List of Remote Tools](#).)

4. Choose a tool to run.
5. Accept the default *User Name* or enter a user name to login to the remote system.

6. Accept the default *IP Address* or enter the IP address of the remote system from which you will run the tool. (QMX - Configuration Manager 2007 retrieves the IP address of the client machine you select.)

Launching a PuTTY Session

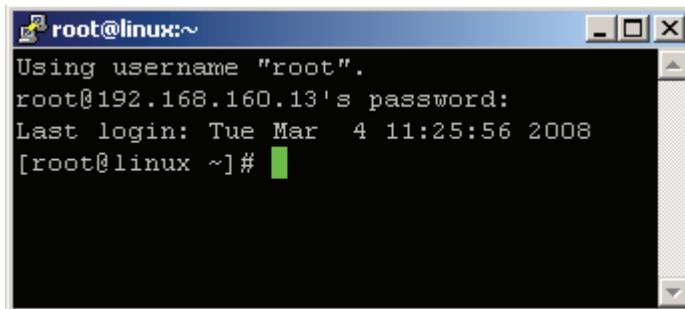
One of the remote tools QMX - Configuration Manager 2007 provides access to is PuTTY. When you establish a remote session with PuTTY, it opens a command line window where you can execute system administration commands, run monitoring utilities, or perform other tasks.

PuTTY is a Telnet/SSH client for Windows systems that lets you establish a remote session with a non-Windows resource.

To establish a remote session with a QMX - Configuration Manager 2007 Agent using PuTTY

1. Open the *Remote Tools* dialog. (See [Running Remote Tools.](#))
2. Choose **PuTTY ssh shell**.

A Terminal Command Line window opens and prompts you for a password:



```
root@linux:~
Using username "root".
root@192.168.160.13's password:
Last login: Tue Mar  4 11:25:56 2008
[root@linux ~]#
```

3. Enter the password at the command prompt. (Your keystrokes will not display as you type the password.)

PuTTY logs in to the remote system and starts the terminal session

You are now connected to the remote system and can execute system administration commands, run monitoring utilities, or perform other tasks. For example, you can enter `top` at the command line to start the Top Process Monitor.

Configuring VNC on a Mac OS X

Virtual Network Computing (**VNC**) software is remote control software which allows you to view and fully interact with one computer desktop (the "VNC Server") using a simple program (the "VNC Viewer") on any other computer or mobile device anywhere on the Internet in much the same fashion that the Windows-based remote control works. VNC software is cross-platform, allowing remote control between different types of computers.

You must have a full featured VNC Server that provides remote access to the GUI, keyboard, and mouse. One option that is available is at:

<http://www.redstonesoftware.com/vnc.html>.

In any case, you must download, install, and configure the VNC Server to use ports 5900 or 5901 on the remote Mac client machine. Once that is installed you must also set up the VNC Viewer on the Windows machine.

To set up the VNC Viewer on the Windows machine

1. Go to: <http://www.realvnc.com/>.
2. Download the VNC client (viewer) for Windows.
3. Install it to a directory of your choice.

Once the VNC Server and the VNC Viewers are set up, you are ready to configure the VNC tool on the QMX - Configuration Manager 2007 Remote Tools list.

To configure the VNC Viewer over SSH for Mac tool

1. Edit the `remote_tools_list.xml` file located in the QMX - Configuration Manager 2007 installation directory.

Look for the following entry:

```
<tool>
    <label>VNC Viewer over SSH for Mac</label>
    <description>Launch VNC Viewer over SSH for selected
    VNC enabled Mac OS X system</description>
    <command>%SSH_VNC% %USERNAME% %IPADDRESS% "C:\VNC
    Directory" "VNC Excecutable.exe" %PLINK%</command>
</tool>
```

`%SSH_VNC%` is the path to `ssh_vnc.vbs`, a script authored by Quest that allows the VNC-based communication to occur through SSH, found in `C:\Program Files\Quest Software\QMX for ConfigMgr`, if you chose the default installation path.

QMX - Configuration Manager 2007 uses `ssh_vnc.vbs` to remotely access the desktop. The `ssh_vnc.vbs` script uses `vmx-plink` to forward the local ports 5900 and 5901 to a remote box over an SSH tunnel. Then it uses the established SSH tunnel to connect the VNC Viewer to the remote VNC Server.

2. Change "*C:\VNC Directory*" to the actual location of the VNC Viewer directory.
3. Change "*VNC Executable.exe*" to the actual name of the executable on the local machine.

To launch the VNC Viewer

1. Start the X server. (See [Important Remote Tools Considerations](#))
2. Open the *Remote Tools* dialog. (See [Running Remote Tools.](#))
3. Choose **VNC Viewer over SSH for Mac**.
4. Modify the default *User Name* and *IP Address*, if necessary, and click **OK**.
5. Enter the VNC server password that you configured when you set up the VNC server in the *VNC Server Password* dialog.

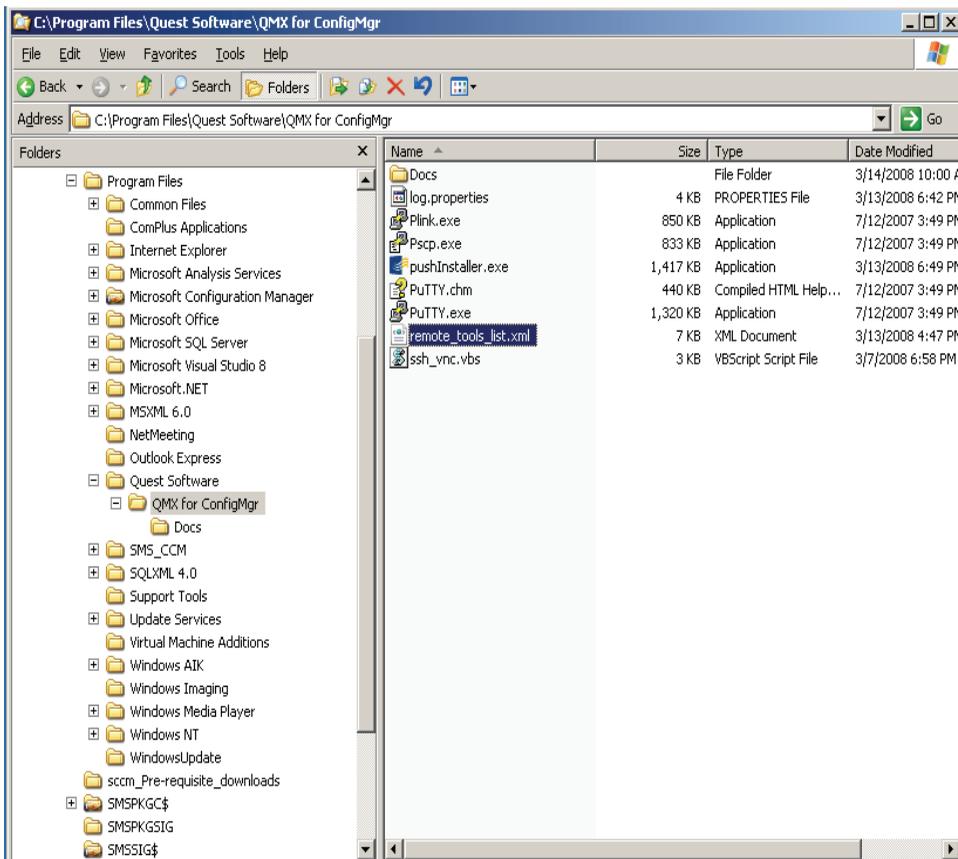
You now have remote control access.

An error displays for the following conditions:

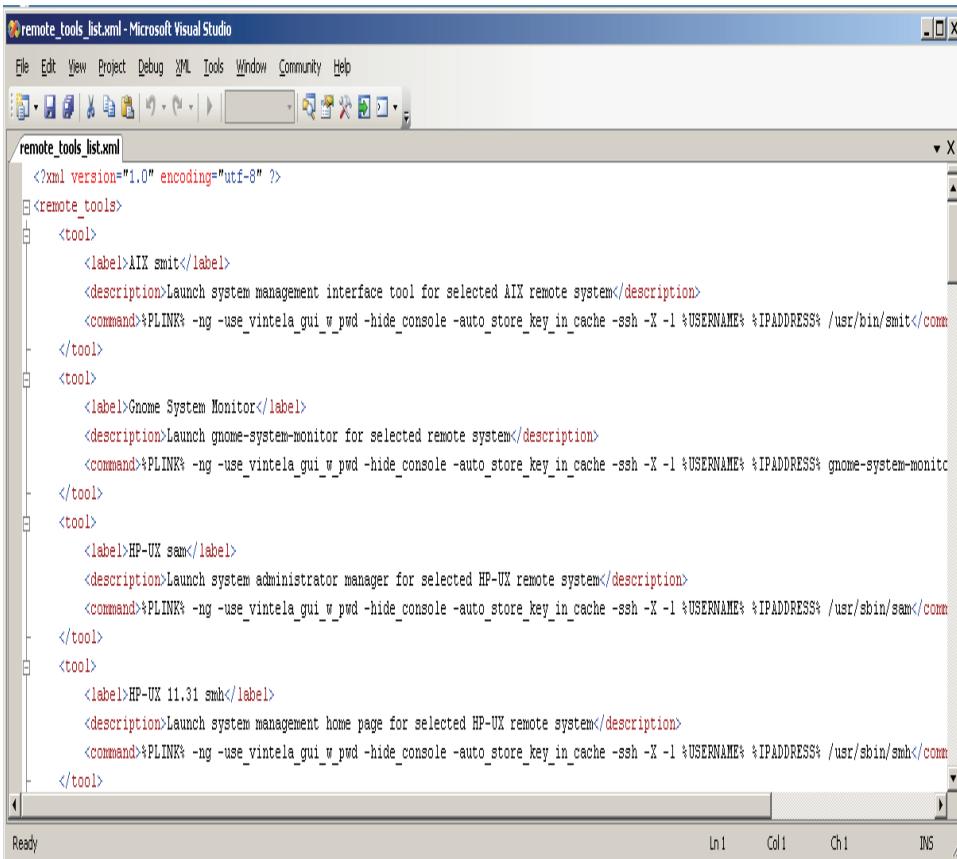
- If the SSH connection fails.
- If the VNC connection fails
- If a VNC session is already running; multiple VNC Viewer sessions are NOT allowed because the SSH port forwarding will only work with one host at a time.

Modifying the List of Remote Tools

To change the list of remote tools, you must edit the `remote_tools_list.xml` file located in the QMX - Configuration Manager 2007 installation directory. If you chose the default installation path, this file is in: `C:\Program Files\Quest Software\QMX for ConfigMgr`.



The `remote_tools_list.xml` file looks like this:



Each remote tool entry uses the following template:

```

<tool>
  <label>. . .</label>
  <description>. . .</description>
  <command>. . .</command>
</tool>

```

The following table describes these three parameters:

PARAMETER	DESCRIPTION
label	The text string that displays in the list of remote tools.
description	The tool tip text string that displays when you mouse-over the name of the remote tool.
command	The command line that is executed when this tool is selected (See Building the Command Line for more information).

Building the Command Line

The command lines in the `remote_tools_list.xml` file apply to all instances of the Configuration Manager Console. It is therefore important when building command lines to remember to build them so that they will run on all machines where the console is installed. To this end, QMX - Configuration Manager 2007 has supplied some substitution variables.

Use the following substitution variables when building the command line. QMX - Configuration Manager 2007 replaces these variables with the following data:

COMMAND LINE SUBSTITUTION VARIABLES

COMMAND	DESCRIPTION
%IPADDRESS%	QMX - Configuration Manager 2007 populates this from the IP Address entered into the <i>Remote Tools</i> dialog.
%PLINK%	The path to <code>PLINK.exe</code> , installed with the MMC Extensions, surrounded by double-quote characters. QMX - Configuration Manager 2007 gets this location from the Windows Registry. Note: To see a list of Plink command line options, run <code>C:\Program Files\Quest Software\QMX for ConfigMgr\plink.exe</code> (location may vary depending on the options chosen at installation.)
%PUTTY%	The path to <code>PuTTY.exe</code> , installed with the MMC Extensions, surrounded by double-quote characters. QMX - Configuration Manager 2007 gets this location from the Windows Registry.

COMMAND	DESCRIPTION
%SSH_VNC%	The path to the <code>ssh_vnc.vbs</code> script, surrounded by double-quote characters. This is a script authored by Quest that allows VNC-based communication to occur through SSH found in <code>C:\Program Files\Quest Software\QMX for ConfigMgr\ssh_vnc.vbs</code> (location may vary depending on the options chosen at installation.) QMX - Configuration Manager 2007 gets this location from the Windows Registry.
%USERNAME%	QMX - Configuration Manager 2007 populates this from the user name entered into the <i>Remote Tools</i> dialog.

Most Remote Tools commands have the following basic form (other options can be added):

```
%PLINK% -ssh -X -l %USERNAME% %IPADDRESS% <command>
```

After QMX - Configuration Manager 2007 replaces these variables, this command line will look similar to the following example:

```
"C:\Program Files\Quest Software\QMX for ConfigMgr\plink.exe"  
-ssh -X -l johnUser 192.168.5.10 redhat-config-users
```

This command directs PLINK to use the SSH protocol to connect to the target machine. The `-x` option enables X11 forwarding (must be enabled on the target machine). The `-l` option tells PLINK to use "johnUser" for the username, the IP address of the target machine is 192.168.5.10 (taken from the selected computer object), and the command to issue on the client is "redhat-config-users."

These restrictions apply to the command line:

- The command line is just a command name followed by arguments without any redirections, pipe operations, and so forth.
- The command line must not contain any percent sign (%) characters that are not part of the substitution variable names listed above.
- The command line must not contain any quote mark (") symbols other than those used to surround the command or some argument.

Note • Do not put %PLINK%, %PUTTY%, and %SSH_VNC% in quotes, as the substituted value is already quoted.

Remote Tool Types

PuTTY.exe, PLINK.exe, and any VNC utility you might use to connect to the remote system are the executables that QMX - Configuration Manager 2007 uses to run the default set of remote tools. They each have their unique characteristics.



You can add your own tools that may or may not use one of these executables.

For information regarding setting up VNC on Mac OS X clients and servers, see [Configuring VNC on a Mac OS X](#).

PuTTY is a client program for SSH, Telnet, and Rlogin network protocols. Using PuTTY you can run a command shell session on another computer. PuTTY implements the client end of that session: the end at which the session is displayed, rather than the end at which it runs. PuTTY allows you to remotely issue commands to a non-Windows shell.

A typical PuTTY command line has the following form:

```
%PUTTY% -ssh -X -l %USERNAME% %IPADDRESS%
```

PLINK (PuTTY Link) is a command-line connection tool similar to the Unix ssh. It is generally used to call specific, X-Windows based commands or applications. Unlike Putty, PLINK is not used to open an interactive command shell (unless you call a X-Windows based terminal emulator like xterm).

PLINK has the following options:

```

C:\WINDOWS\system32\cmd.exe
C:\Program Files\Quest Software\QMX for ConfigMgr>plink.exe
PuTTY Link: command-line connection utility
Release 0.60_q1.124RC2
Usage: plink [options] [user@]host [command]
        <"host" can also be a PuTTY saved session name>
Options:
  -U          print version information and exit
  -pgpfp     print PGP key fingerprints and exit
  -v         show verbose messages
  -load sessname Load settings from saved session
  -ssh -telnet -rlogin -raw
             force use of a particular protocol
  -P port    connect to specified port
  -l user    connect with specified username
  -batch     disable all interactive prompts
The following options only apply to SSH connections:
  -pw passwd login with specified password
  -D [listen-IP:]listen-port
             Dynamic SOCKS-based port forwarding
  -L [listen-IP:]listen-port:host:port
             Forward local port to remote address
  -R [listen-IP:]listen-port:host:port
             Forward remote port to local address
  -X -x     enable / disable X11 forwarding
  -A -a     enable / disable agent forwarding
  -t -T     enable / disable pty allocation
  -1 -2     force use of particular protocol version
  -4 -6     force use of IPv4 or IPv6
  -C        enable compression
  -i key    private key file for authentication
  -noagent  disable use of Pageant
  -agent    enable use of Pageant
  -m file   read remote command(s) from file
  -s        remote command is an SSH subsystem <SSH-2 only>
  -ng       disable GSSAPI authentication
  -f        delegate credentials when using GSSAPI
  -k name   service principal name <Kerberos>
  -use_vintela_gui_w_pwd
             Use dialogs instead of console for all prompts
  -use_vintela_gui_no_pwd
             Use dialogs instead of console for all prompts except password
  -hide_console
             Hides console window. Useful when automated.
  -auto_store_key_in_cache
             Always trust new host fingerprints <dangerous>
  -no_in    Redirect input from NUL:
  -no_out   Redirect output to NUL:
  -N        don't start a shell/command <SSH-2 only>
  -nc host:port
             open tunnel in place of session <SSH-2 only>
    
```

You can use any of these command line options together with the substitution variables in building your tool's command (See [Building the Command Line](#) for a list of substitution variables).

Troubleshooting Remote Tools

Generally speaking, if you are experiencing problems running remote tools, make sure that there is network connectivity and that the tool is actually installed on the target client system.

If that doesn't work, here are some other issues you may have with Remote Tools:

- X Server Not Installed or Running on the computer running the Configuration Manager Console.
You must have an X Server installed and running on the computer running the Configuration Manager Console.
- SSH Not Running on client machine.
Only Linux systems (Red Hat and Suse) and Solaris 9 and 10 have SSH installed on them by default. You must install SSH on AIX, HP-UX, OS X and older versions of Solaris clients manually.
- Remote Tool Application Not Installed on QMX - Configuration Manager 2007 Agent.
Install and test it on the client.
- Firewall or Network Problems.
Check with your System Administrator.
- Incorrect syntax used in `remote_tools_list.xml`.
- Executable not found (for custom tools added to `remote_tools_list.xml`).

Starting HP-UX Tools

If the HP-UX sam or HP-UX 11.31 smh tools do not start, log into your HP-UX computer, run Mozilla, and agree to the License Agreement.



This problem only occurs if you have never run Mozilla on your HP-UX host.

HP-UX System Administration Manager (SAM) is deprecated in HP-UX 11i v3 and replaced with the System Management Homepage (SMH) tool. However, SAM continues to provide access to Terminal User Interface and X-based interfaces. For more information, see

<http://docs.hp.com/en/4AA0-4052ENW/4AA0-4052ENW.pdf>

Configuring Single Sign-on For Remote Tools

Modify the command line of each tool to enable Single Sign-On, as follows:

To enable Single Sign-On

1. Open the `remote_tools_list.xml` file for editing. It is located in the QMX - Configuration Manager 2007 installation directory. (If you chose the default installation path, it is in: `C:\Program Files\Quest Software\QMX for ConfigMgr`.)
2. Each tool has an entry that looks similar to this:

```
<tool>
    <label>PuTTY SSH shell</label>
    <description>Open SSH shell via PuTTY to selected
    remote system</description>
    <command>%PUTTY% -ng -ssh -X -l %USERNAME%
    %IPADDRESS%</command>
</tool>
```

3. Remove the following items from the "command" section of each tool:
`-ng`, `-l`, and `%USERNAME%`
4. Save the `remote_tools_list.xml` file.

Then when you start the Remote Tool you can ignore the User Name; just click **OK** to launch the tool.

Reports

- About Reports
- Running Reports
- Troubleshooting Reports

About Reports

QMX - Configuration Manager 2007 provides access to resource reports for non-Windows systems within the standard System Center Configuration Manager 2007 reporting paradigm. QMX - Configuration Manager 2007 uses existing System Center Configuration Manager 2007 data and data structures so you can immediately generate reports about your non-Windows resources without having to create any new or different ones. The following report categories have heterogeneous data:

- Hardware Inventory
- Software Inventory
- Operating Systems
- Advertisements
- Software Metering

For example, viewing the *Count Processor Speeds* report automatically shows all non-Windows resources, together with Windows resources. Of course, you can create new reports, if you desire. These



Be sure to set up a Reporting Point System Role on your Site System so that you can run the reports. Use the System Center Configuration Manager 2007 New Site Role Wizard to add new site roles to your site system.

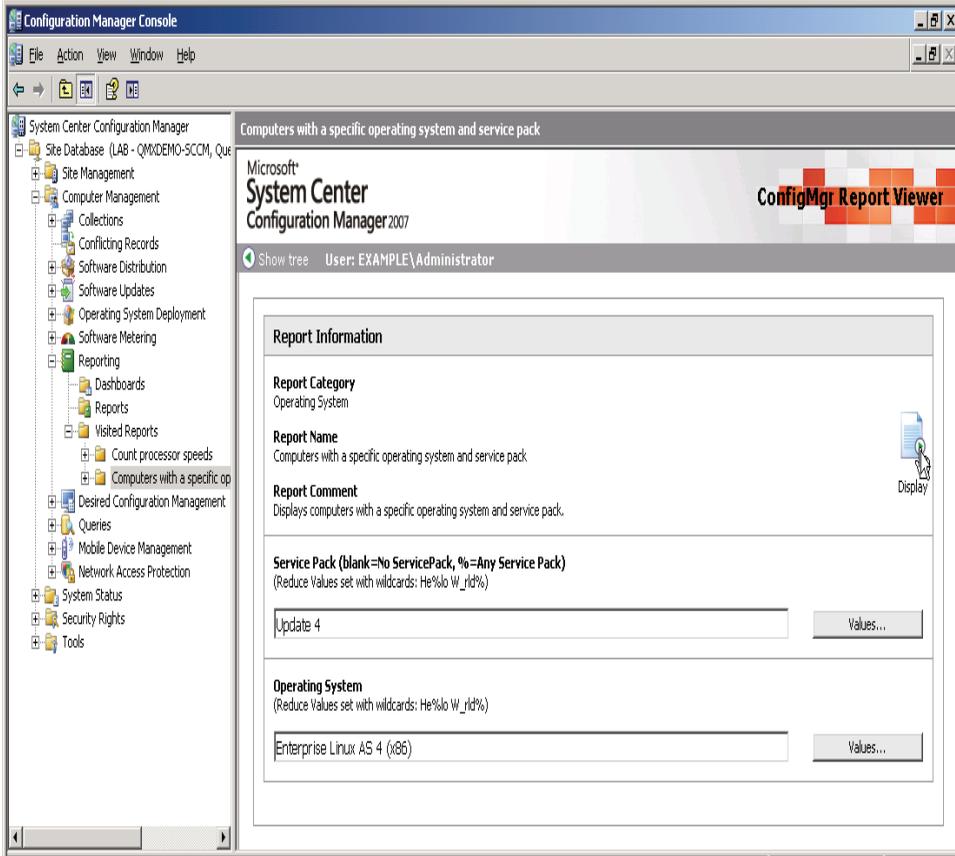
Running Reports

Access non-Windows resource reports just like Windows resource reports.

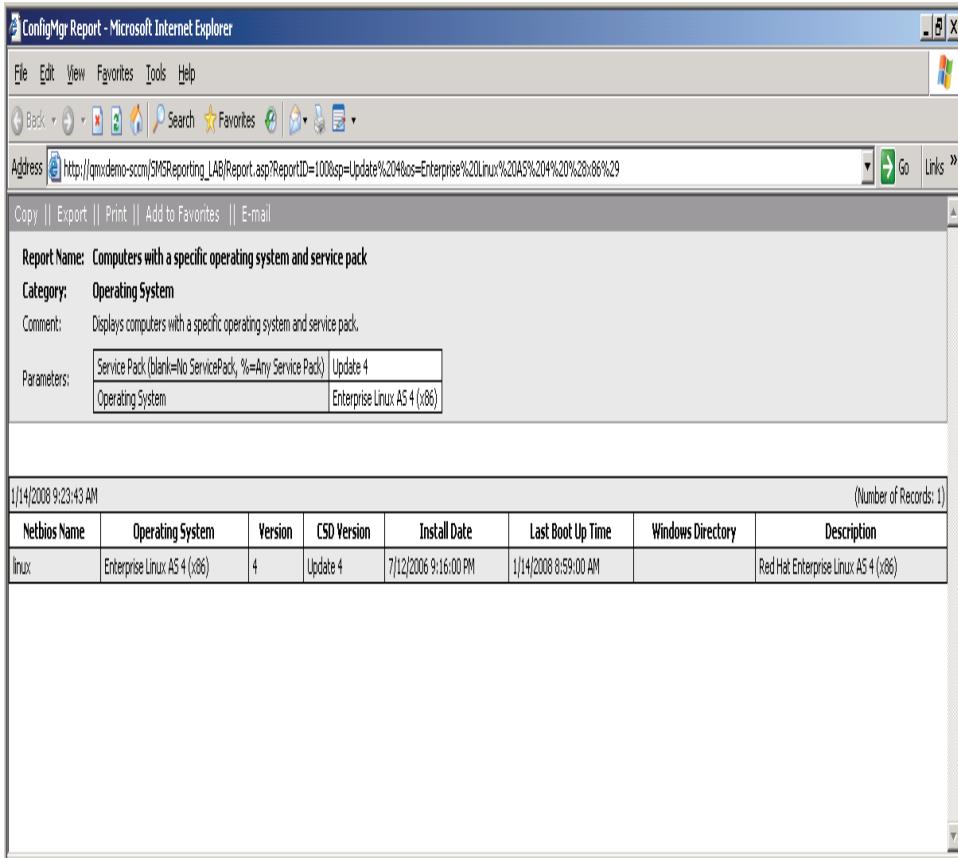
To run a report

1. In the Configuration Manager Console, expand **Reporting**.
2. Click **Reports**.
3. Locate, then right-click a report name in the report list. For example, right-click ***Computers with a specific operating system and service pack***.
4. Choose **Run**.

Configuration Manager Console displays the *Report Viewer* page for this report in your web browser:



5. Enter the Values requested on the Report View page.
6. Click **Display** to show the report:



Troubleshooting Reports

Reports in QMX - Configuration Manager 2007 work just like they do in System Center Configuration Manager 2007. The only difference is that the data in the fields may not look the same as it does for Windows. Please refer to <http://technet.microsoft.com/en-us/library/bb632942.aspx> for more information about Configuration Manager Reports.

Report Has Two Instances of Same Computer

System Center Configuration Manager 2007 is designed to report every record collected in Hardware Inventory based on the SQL search criteria for that report. So, for example, the *Computer information for a specific computer* report will list a computer with multiple processors, multiple times.

Report Is Missing Information

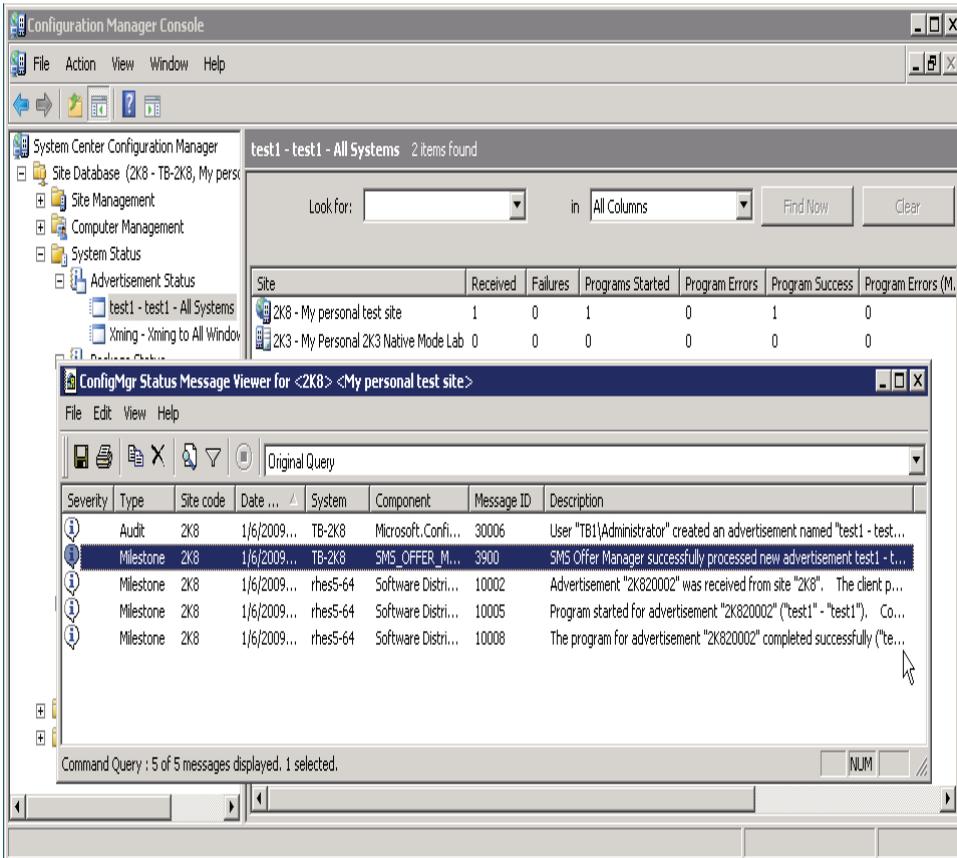
QMX - Configuration Manager 2007 does not collect everything that System Center Configuration Manager 2007 collects. For example, the Logical Disk Volume Name is not reported on a Mac OS X 10.5. For a complete list of devices supported by QMX - Configuration Manager 2007, go to <http://www.quest.com/device-support-database/full-matrix.aspx>

System Status

- About System Status
- Agent Status Messages

About System Status

System Status assists you in monitoring and troubleshooting your System Center Configuration Manager 2007 sites. System Status contains status summaries for Advertisement Status, Package Status, Site Status, and Status Message Queries.



Using System Status with QMX - Configuration Manager 2007 is the same as for System Center Configuration Manager 2007. Please refer to <http://technet.microsoft.com/en-us/library/bb632870.aspx> for more information about using Status Messages for Configuration Manager Troubleshooting.

Agent Status Messages

QMX - Configuration Manager 2007 does not update all status message queries. The following lists the Message #, the WMI Class Name, and the Descriptions of the Status Messages that QMX - Configuration Manager 2007 uses:

QMX - CONFIGURATION MANAGER 2007 AGENT STATUS MESSAGES

STATUS MESSAGE	DESCRIPTION
110800: SMS_RemoteClientInstalled	The System Center Configuration Manager 2007 client was installed.
10019: SoftDistOfferRejectedExpired Event	Advertisement was rejected because it has expired.
10002: SoftDistOfferReceivedEvent	Advertisement was received.
10025: SoftDistDownloadFailed Event	The download of the package files failed.
10053: SoftDistAdvertDownload FailedEvent	The advertisement failed due to the package download's failure.
10050: SoftDistErrorInsufficient CacheEvent	The cache directory did not have enough free space in which to store the package.
10051: SoftDistErrorNoContent	The content for the package could not be located.
10037: SoftDistProgramWaitingForAnot herProgram	The program is waiting for another program to finish.
10006: SoftDistProgramErrorEvent	The program for the advertisement failed.
10023: SoftDistDownloadStarted Event	Content download for the package has started.
10024: SoftDistDownload CompletedEvent	Content download for the package has completed.
10004: SoftDistProgramUnableTo ExecuteEvent	The program for the advertisement could not be executed.

STATUS MESSAGE	DESCRIPTION
10005: SoftDistProgramStartedEvent	The program for the advertisement has been started.
10070: SoftDistProgramExceededTime	The program for the advertisement did not finish in the allotted time and was cancelled.
10008: SoftDistProgramCompletedSuccessfullyEvent	The program for the advertisement completed successfully.
10900: SWMtr_Status_WMIFailure	Error Occurred Examining Current Metering CIM Instances.
10902: SWMtr_Status_Send_UsageReport_Failed	Upload of Meter report failed.
10605: CLIMSG_INV_INFO_GENERIC_COLLECTED_SUCCESSFULLY	Software inventory collected successfully
10651: CLIMSG_FILECOLL_WARNING_FILECOL_MAXIMUM	Maximums reached in file collection.
10652: CLIMSG_FILECOLL_WARNING_FILECOL_MAXIMUM	Error in execution of file collection processing.
10907: SWMtr_Status_Received_MeterRule	Software Metering Rule successfully received.

The Agent

- About The QMX - Configuration Manager 2007 Agent
- OpenWBEM
- Feature Providers
- Using the Client Tool
- Stopping and Restarting the Daemon

About The QMX - Configuration Manager 2007 Agent

Each non-Windows system under System Center Configuration Manager 2007 management runs the QMX - Configuration Manager 2007 Agent software. It provides all of the data and functionality necessary to manage non-Windows systems.

The QMX - Configuration Manager 2007 Agent consists of two primary components: OpenWBEM and Feature Providers. Although Feature Providers run under the auspices of OpenWBEM, they are treated as a single separate component for the purposes of this discussion.

OpenWBEM

Web Based Enterprise Management (WBEM) is an industry initiative to provide management of systems, networks, users, and applications across multiple vendor environments. WBEM simplifies system management, providing better access to both software and hardware data that is readable by WBEM-compliant applications. OpenWBEM is an enterprise-grade, open-source implementation of WBEM, and is a core component of the QMX - Configuration Manager 2007 Agent. It is a clean, well-designed, solid, open source, Quest-maintained implementation of a CIM Object Manager (or CIMOM) that complies with the DMTF-developed WBEM standard. DMTF stands for Distributed Management Task Force. (See: www.dmtf.org for more information.) Quest Software, Inc. is the primary author / maintainer of the project and owns many of the related copyrights.

The following summarizes why OpenWBEM is a key component in the QMX - Configuration Manager 2007 Agent.

- OpenWBEM is a stable, mature, CIMOM based on WBEM standards that has been implemented to deliver the data and control exactly as you would expect.
- OpenWBEM is no risk to use: Quest owns the copyrights to and is the principle maintainer of the software. Licensing is covered by the BSD Style License; information on it can be found at: <http://www.openwbem.org/license.html>.
- OpenWBEM carries with it full Quest customer support: If you have an issue with the QMX - Configuration Manager 2007 Agent implementation of OpenWBEM, Quest will solve it.

The following topics discuss these core components in detail:

- [OpenWBEM As Open Source Software](#)
- [OpenWBEM Maturity](#)
- [OpenWBEM Flexibility](#)

OpenWBEM As Open Source Software

OpenWBEM is open source software. It won Best Open Source Project at the January 2002 Linux-World Expo. One of the reasons it is a stable, mature client is because the open source nature of the software allows for a wide community of users and reviewers. Many developers from different organizations and companies work with the source and as they find issues or create new functionality, their contributions are added to the project. This makes OpenWBEM much more robust, stable, and solid than proprietary WBEM offerings.

Several commercial organizations have either adopted it or are in the process of adopting it as the basis for the agent technology portion of their management system. Moreover, OpenWBEM is licensed under the BSD Style License. Also, Quest maintains OpenWBEM and therefore incurs no risk in using it as the core component of the QMX - Configuration Manager 2007 Agent.

OpenWBEM Maturity

OpenWBEM has been in existence since late 2000, and because of the open source nature of the software and the dedicated and talented developers working on it, it has the most functionality of any similar system.

Here is a partial list of its major functionality:

- CIM operations of HTTP and HTTPS (see **Listeners** in [Extensible and Pluggable OpenWBEM Components](#).)
- Extensible authentication (see **Security/Authentication** in [Extensible and Pluggable OpenWBEM Components](#).)
- Fast scalable hierarchical repository with indexing
- Extensible Provider interface
- WQL Level 2 support for server and client
- Access control lists
- SLP integration

For more information on OpenWBEM functionality, see: www.openwbem.org.

OpenWBEM Flexibility

There are several things that make OpenWBEM the most flexible WBEM-based management software. First it has been ported to a number of operating systems.

Platforms:

- Linux
- Solaris
- OS X
- AIX
- HP-UX
- FreeBSD
- Windows

Architectures:

- x86:
- x86-64
- SPARC
- PPC
- MIPS
- s390

Second, OpenWBEM is designed for extensibility and contains several pluggable components, including listener/communication, authentication, logger, and scheduler modules. This means that OpenWBEM can easily accommodate new technologies and changing needs.

EXTENSIBLE AND PLUGGABLE OPENWBEM COMPONENTS

COMPONENT	DESCRIPTION
Listeners	OpenWBEM currently provides standards-based listeners (HTTP and HTTPS), and can support other proprietary communication protocols when necessary and when greater efficiency is desired.

COMPONENT	DESCRIPTION
Security/ Authentication	OpenWBEM provides authentication through pluggable authentication modules. Some of the authentication modules are: Access Control Lists (ACLs) and Public Key Infrastructure (PKI). OpenWBEM also supports Kerberos by means of Vintela Authentication Services (VAS). (See Integration with VAS for more information about Vintela Authentication Services.)
Dynamic CIM Schema	OpenWBEM supports dynamic CIM Schema: that is, a custom schema can be designed and installed into the OpenWBEM CIMOM; it will recognize and begin to operate on it without restarting or recompiling the system.
Providers	Providers are an integral and powerful part of OpenWBEM's robustness and flexibility. A provider can represent nearly anything to a management system, from simply providing hardware inventory data to an OpenWBEM repository to controlling different parts of a system. OpenWBEM providers also are dynamically loadable. Also, anyone can write their own providers using a variety of languages, including C, C++, and Perl.

Feature Providers

These topics discuss the providers that QMX - Configuration Manager 2007 adds to OpenWBEM to create the QMX - Configuration Manager 2007 Agent.

- [Hardware and Software Inventory Providers](#)
- [Software Distribution Providers](#)
- [qmxcmd Daemon](#)

Hardware and Software Inventory Providers

The QMX - Configuration Manager 2007 Agent contains Hardware and Software Inventory Providers that collect hardware, file, and product installation data. The providers take care of the system-specific functions necessary to collect the data. There is typically one provider for each hardware CIM class, including the

Add/Remove Programs class. For example, when you launch a Resource Explorer on a managed non-Windows system, the data collected by each Hardware Inventory Provider displays in the Resource Explorer, just like it does for a Windows-based resource.

Software Distribution Providers

The Software Distribution Providers deploy programs and packages to the non-Windows systems on which they reside. This includes support for native installation mechanisms, such as the Redhat Package Manager, the Solaris Packaging system, as well as a general, script-based delivery mechanism. The native versions all have corresponding options in the QMX - Configuration Manager 2007 Software Distribution Wizard in the Configuration Manager Console. The script-based version uses the Script or Custom Command software distribution package type in the wizard which requires you to enter the name of a script file. It runs the script file along with any supporting files such as tarballs and properly installs the desired software.

qmxcmd Daemon

The qmxcmd daemon enables the QMX - Configuration Manager 2007 Agent to communicate with the System Center Configuration Manager 2007 Management Points. It is the part of the QMX - Configuration Manager 2007 Agent that makes OpenWBEM act like a System Center Configuration Manager 2007 client. It communicates with the Management Point to seamlessly provide data and control to System Center Configuration Manager 2007.

Using the Client Tool

Quest has provided the `clienttool` to help you perform maintenance tasks. You can use it to force policy update, run hardware inventory and to run software distribution before its regularly scheduled process time.

The `clienttool` requires root access. It authenticates a user based on file system permissions and does not require a password. Anyone with an `eu`id (effective user ID) of 0 (zero) may use the `clienttool`. If you use `sudo` or another similar tool, you can also run `clienttool`.

Locate and run `clienttool` without parameters to list its options, as follows:

```
# /opt/quest/qmxcm/bin/clienttool
```

CLIENTTOOL OPTIONS

OPTIONS	DESCRIPTION
-h, --help	Lists a description of each <code>clienttool</code> option.
-v, --version	Displays the version of QMX - Configuration Manager 2007 that is currently installed.
--quiet	Suppresses the details; lists only summary information. Use with any option to summarize results. For example <code>--run-file-collection --quiet</code> .
--get-client-id	Displays the current Client ID.
--run-policy-update	Forces policy update.
--run-discovery	Sends a Discovery Data Record (DDR) report and posts only the discovery-related inventory that is found in the policy.
--run-hardware-inventory	Forces hardware inventory so your new program will appear in QMX - Configuration Manager 2007 without waiting for the next inventory cycle.
--run-software-inventory	Forces software inventory so your new application will appear in QMX - Configuration Manager 2007 without waiting for the next inventory cycle.
--list-available-software	Prints a list of software available for installation. Run this command to obtain the strings you need for the <code>--run-software-distribution</code> option.
--run-software-distribution <Advertisement ID> <Package ID> <Program ID>	Forces software distribution for the specified Advertisement, package, and program. To obtain the strings for this command's arguments, run the <code>--list-available-software</code> option.
--run-file-collection [arg]	Forces file collection on the specified collection so your inventory will appear in Resource Explorer without waiting for the next inventory cycle. Use the "full" argument to collect files from all collections; use no argument to collect only the files that have changed.
--run-software-metering-usage-report	Generates the software metering usage report.

OPTIONS	DESCRIPTION
--run-native-mode-readiness-check	Verifies that your Agent is communicating with the MP Proxy with or without SSL and indicates if your system is ready for you to switch from mixed to native mode. If your system is communicating directly with the Management Point, it indicates that your system is not ready for native mode.
--run-native-mode-ssl-check	Verifies that your Agent is communicating with the MP Proxy with SSL and indicates if your system is ready for you to switch from mixed to native mode.
--check-client	Troubleshooting tool that checks the format of the settings in the qmxcm.conf file and validates the directory permissions, basic CIMOM functionality, and MP (or MP Proxy) connectivity to ensure the QMX Agent is functioning properly.
--show-failed-actions	Lists failed actions. Use for troubleshooting. This option lists commands that have failed to run.
--show-schedules [arg]	Lists the next [arg] schedules (default is 1) for Policy Update, Hardware Inventory, Software Inventory, Discovery, File Collection, and Certificate Maintenance. Shows when each process ran last and when it will run again.
--show-maintenance-windows [arg]	Lists the next [arg] maintenance windows (default is 1).
--machine-readable-output	Displays schedules in a machine-readable format.
--list-classes	Prints a list of debuggable classes which are valid arguments to --debug-class.
--debug-class [arg]	Lists hardware inventory debug information for the specified class. If no class is given, lists information for all classes.

OPTIONS	DESCRIPTION
--reset-stored-site-info	<p>Refreshes the client settings (Management Point Certificates, Trusted Root Key, etc.) in the repository and re-registers the client with the Management Point.</p> <p>You can use this option in combination with --set-site-code, --set-mp, --set-port, and --set-ssl-port to reset specific client settings. This enables you to switch to a new site.</p> <p>Note: Use this option to clean up your site settings before switching from mixed to native mode or when moving from one MP to another. This option purges all of the site-specific information in the repository. It deletes certificates, removes the current Trusted Root Key (TRK) and some policy instances; then, it creates a policy update schedule, if one does not already exist, and verifies that the site is reachable using any communication settings in the <code>qmxcm.conf</code> file. This command immediately runs a discovery and, within approximately 15 minutes, it runs a policy update.</p>
--set-site-code <arg>	<p>Changes the Site Code to [arg] in the <code>qmxcm.conf</code> file and verifies that it is three uppercase characters.</p>
--set-mp <arg>	<p>Changes the Management Point to [arg] in the <code>qmxcm.conf</code> file or, if in native mode, changes the MP Proxy to [arg].</p> <p>Note: Changes the <code>qmxcm.mpe</code> value in the <code>qmxcm.conf</code> file to the Fully Qualified Domain Name (FDQN) of the MP Proxy. This verifies that it is reachable and warns if it cannot be used securely in native mode because it is set to something other than a FQDN.</p>
--set-port <arg>	<p>Changes the http port to [arg] in the <code>qmxcm.conf</code> file or, if in native mode, changes the MP Proxy http port to [arg].</p>
--set-ssl-port <arg>	<p>Changes the MP Proxy SSL port to [arg] in the <code>qmxcm.conf</code> file and verifies that it is numeric.</p> <p>Note: 443 is the default port. The value of <code>qmxcm.mpe.secureport</code> in the <code>qmxcm.conf</code> file must match the SSL configuration of IIS for the machine on which the MP Proxy is installed. <code>qmxcm.mpe.secureport</code> is the port the Agent uses to communicate to the MP Proxy using SSL.</p>

OPTIONS	DESCRIPTION
--disable-software-metering	Sets the <code>umi.metering_poll_interval</code> to 0 and disables software metering. Note: You must restart the agent for this to take effect.
--enable-software-metering [arg]	Sets the <code>umi.metering_poll_interval</code> to [arg] seconds (the default is 10). Note: You must restart the agent for this to take effect.
--set-custom-inventory-timeout <arg>	Sets the maximum runtime (timeout) for custom inventory scripts to <arg> seconds (default is 60 seconds). This is for hardware inventory NOIDMOF scripts and for scripted software inventory.

Note: See [Disabling and Enabling Software Metering](#) for information about using Software Distribution to disable or re-enable Software Metering for a whole collection of machines by means of a script that calls the `clienttool` option before restarting the Agent.



If you use `clienttool` to force a software distribution to a QMX - Configuration Manager 2007 Agent before the advertisement is scheduled, you may get messages indicating that the software is already installed when the QMX - Configuration Manager 2007 Agent runs the software distribution at the regularly scheduled time.

To change the trusted root key on the site server

1. From the client command line, run:
`clienttool --reset-stored-site-info`

This command deletes the old TRK and then, during the next maintenance cycle, the “trusted” Management Points that have been used in the past will pick up that change and distribute the correct TRK. If the client computer is not joined to Active Directory, it will fetch the new TRK from the Management Point when in mixed mode or from the MP Proxy, if you are in native mode.

If you do not want to wait for the next maintenance cycle, you can force the policy update, as follows:

2. Run:
`clienttool --policy-update`

Stopping and Restarting the Daemon

When troubleshooting the QMX - Configuration Manager 2007 Agent, it might be necessary for you to stop and restart the daemon in order to pick up configuration changes. Use `qmxcmd_init` (the QMX - Configuration Manager 2007 init script) to stop, start, restart, and check the status of the QMX - Configuration Manager 2007 Agent, as shown in this example:

```
/opt/quest/qmxcm/sbin/qmxcmd_init status
```

The options to the `qmxcmd_init` script are listed in this table:

THE QMXCMD_INIT SCRIPT OPTIONS

OPTION	DESCRIPTION
start	Start the service
stop	Stop the service
restart	Stop and restart the service if the service is already running, otherwise start the service.
reload	Reload the service configuration without actually stopping and restarting the service.
force reload	Reloads the service configuration if the service supports this, otherwise stops the service, if it is running, and then restarts it
status	Displays the current service status: running or not running; enabled or not enabled; or, dead.

Integration with VAS

- About the Integration of VAS
- Uninstalling VAS
- Upgrading VAS

About the Integration of VAS

The Quest Integrated Architecture component for integrating Unix systems with Active Directory is Vintela Authentication Services from Quest Software, Inc. or VAS. VAS extends the identity management capabilities of Microsoft Active Directory to non-Windows systems.

BENEFITS OF INTEGRATING VAS WITH QMX - CONFIGURATION MANAGER 2007

FEATURE	BENEFIT
Discovery	The Data Discovery Record (DDR) reports the Domain in the resource property page, when you right click a system/resource in the results pane.
Hardware Inventory	When hardware inventory is collected, the <i>Domain</i> field is populated in the Resource Explorer in the "Computer System" and "System" nodes.
Security	The Management Point Certificates and Trusted Root Key (TRK) are acquired through Active Directory to provide the additional security provided by Active Directory. These certificates are used to ensure the Management Point is "trusted" to reduce potential attacks by connecting to a non-valid management point.
Reports	Any report that has a Computer Domain column will report the domain names for non-Windows systems. In Software Metering Reports, the Domain that the user belongs to for each metering process is captured.
Client Installation Wizard	During the Client Installation Wizard process, a page displaying the SSH authentication prompts allows you to choose the option "Single sign-on with current user" takes advantage of an existing VAS installation, which eliminates the need for entering a user and password.

QMX - Configuration Manager 2007 automatically installs a VAS Client. However, without purchasing and installing the license for VAS, QMX - Configuration Manager 2007 only uses VAS to join Unix systems to Active Directory. Once joined to an Active Directory domain, QMX - Configuration Manager 2007 can then use the Active Directory identity for the Unix system and the VAS LDAP capabilities to query Active Directory for information relating to the Unix systems and SCCM 2007.

Another benefit of integrating VAS with QMX - Configuration Manager 2007 is increased security. VAS enables the Client to retrieve the Trusted Root Key (TRK) and Management Point certificates from Active Directory in a secure manner. Otherwise, the Client would have to download the TRK and Management Point certificates by means of HTTP, an insecure manner.

It is important to note that the VAS Client installed by QMX - Configuration Manager 2007 only enables the VAS features that are directly relevant to Active Directory domain joins and the added security benefits. For the user and group management features, you must purchase and download a license for VAS.

VAS has a command line tool, `vastool`, that provides an option called `join` that adds a Unix system to Active Directory.

To run `vastool join`

1. Enter the following at the command line of the managed host as root user:

```
# /opt/quest/bin/vastool -u root join example.com
```

Where *root* is the username of an Active Directory user with sufficient administrative privileges to create a computer object in Active Directory (normally a user who is a member of the Domain Admins group), and *example.com* is the name of the Active Directory domain to which you are joining the computer. When prompted for the user's password, enter it on the command line. The results of `vastool join` display.

For more information about using the `vastool` command, please see the `vastool.html` file found in the docs directory.

Uninstalling VAS

QMX - Configuration Manager 2007 has no dependency on VAS. QMX - Configuration Manager 2007 functions properly if VAS is uninstalled and VAS functions property if QMX - Configuration Manager 2007 is uninstalled. You can uninstall VAS by advertising a command using the Software Distribution Wizard. Or, you can do it manually. However, if you uninstall VAS, the identity management capabilities of Active Directory will no longer work.

The QMX - Configuration Manager 2007 uninstall script does not remove VAS if the VAS client is currently joined, or has ever been joined, to the domain. You have to do that manually, using the appropriate command for your platform.

1. Run the VAS uninstall script for your operating system:

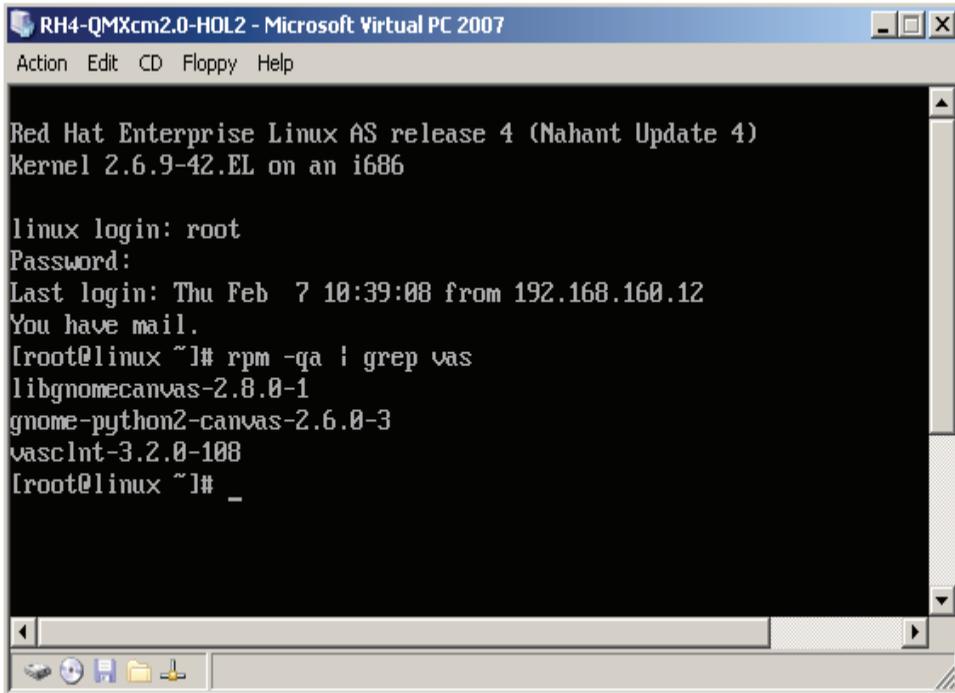
OPERATING SYSTEM	COMMAND
Linux	<code>rpm -qa grep vas</code> <code>rpm -e <vas_client_package></code>
Solaris	<code>pkginfo grep vas</code> <code>pkgrm <vas_client_package></code>
HPUX	<code>swlist grep vas</code> <code>swremove <vas_client_package></code>
AIX	<code>lspp -l grep vas</code> <code>installp -u <vas_client_package></code>



To uninstall VAS from a Mac OS X client that has been joined to the domain, you must use the GUI Uninstaller on the VAS disk image. Please refer to the VAS documentation for step-by-step instructions.

2. For example to remove VAS from a Linux client, enter the following command to determine the name of the vas-host package:

```
rpm -qa | grep vas
```



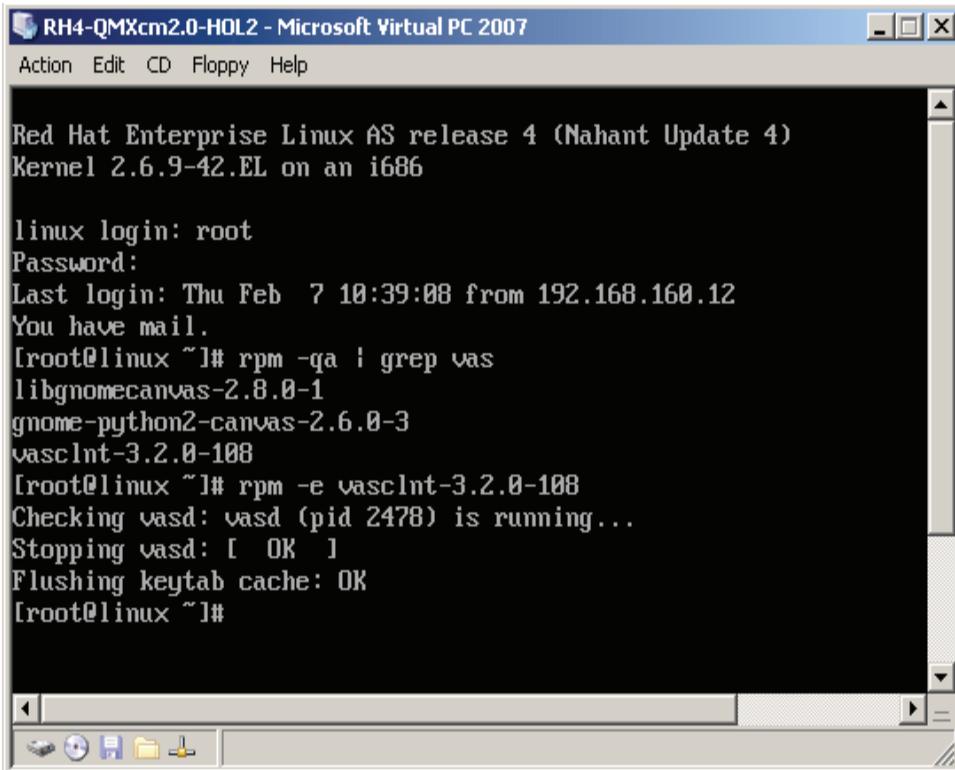
The screenshot shows a window titled "RH4-QMXcm2.0-HOL2 - Microsoft Virtual PC 2007". The window contains a terminal window with the following text:

```
Red Hat Enterprise Linux AS release 4 (Nahant Update 4)
Kernel 2.6.9-42.EL on an i686

linux login: root
Password:
Last login: Thu Feb  7 10:39:08 from 192.168.160.12
You have mail.
[root@linux ~]# rpm -qa | grep vas
libgnomecanvas-2.8.0-1
gnome-python2-canvas-2.6.0-3
vasclnt-3.2.0-108
[root@linux ~]# _
```

3. Then, using the output from the previous command, enter:

```
rpm -e vasclnt-3.2.0-108
```



```
RH4-QMXcm2.0-HOL2 - Microsoft Virtual PC 2007
Action Edit CD Floppy Help

Red Hat Enterprise Linux AS release 4 (Nahant Update 4)
Kernel 2.6.9-42.EL on an i686

linux login: root
Password:
Last login: Thu Feb  7 10:39:08 from 192.168.160.12
You have mail.
[root@linux ~]# rpm -qa | grep vas
libgnomecanvas-2.8.0-1
gnome-python2-canvas-2.6.0-3
vasclnt-3.2.0-108
[root@linux ~]# rpm -e vasclnt-3.2.0-108
Checking vasd: vasd (pid 2478) is running...
Stopping vasd: [ OK ]
Flushing keytab cache: OK
[root@linux ~]#
```

This uninstalls VAS from your Unix client.



If you want to join your domain to Active Directory you must have VAS installed on your QMX - Configuration Manager 2007 Agent client. Because running QMX - Configuration Manager 2007 without VAS-provided services makes your environment less secure, Quest does not recommend removing VAS altogether.

Upgrading VAS

The QMX - Configuration Manager 2007 Agent client allows you to upgrade VAS by advertising a command using the Software Distribution Wizard.

To upgrade the client, reference the following table for your specific platform:

PLATFORM	VERSION	PACKAGE COMMAND SYNTAX
LINUX	Suse x86	# rpm -Uvh vasclnt- <i><version></i> - <i><build number></i> .i386.rpm
	Red Hat x86	# rpm -Uvh vasclnt- <i><version></i> - <i><build number></i> .i386.rpm
	SLES 8 PPC	# rpm -Uvh vasclnt-glibc23- <i><version></i> - <i><build number></i> .ppc64.rpm
	SLES 9 PPC	# rpm -Uvh vasclnt-glibc23- <i><version></i> - <i><build number></i> .ppc64.rpm
	Red Hat x86 64-bit	# rpm -Uvh vasclnt- <i><version></i> - <i><build number></i> .x86_64.rpm
	Suse x86 64-bit	# rpm -Uvh vasclnt- <i><version></i> - <i><build number></i> .x86_64.rpm
	IBM s390-zSeries	# rpm -Uvh vasclnt- <i><version></i> - <i><build number></i> .s390x.rpm
SOLARIS	10 x64 8, 9, or 10 SPARC 8 or 9 for x86 2.6 SPARC 2.7 SPARC	# pkgadd -a ./solaris-upgrade-defaults \ -d vasclnt_SunOS_<SolarisVersion>_<Platform>- <version>.<build number>.pkg vasclnt
HP-UX	11i Itanium 11i v1 or 11.0	/cdrom/client/hpux-ia64/vasclnt_ia64- <version>.<build number>.depot vasclnt /cdrom/client/hpux-pa/vasclnt_9000- <version>.<build number>.depot vasclnt
AIX	4.3.3 5.1 or 5.2 5.3	# installp -acXd vasclnt.AIX_4_3.<version>. <build number>.bff all # installp -acXd vasclnt.AIX_5_1.<version>.<build number>.bff all # installp -acXd vasclnt.AIX_5_3.<version>.<build number>.bff all

PLATFORM	VERSION	PACKAGE COMMAND SYNTAX
MAC	All versions	<p>To install all of the VAS packages contained in the VAS metapackage, execute the following:</p> <pre>\$ cd /Volumes/VAS-Installer \$ sudo /usr/sbin/installer -pkg VAS.mpkg -target /</pre> <p>To install individual VAS components:</p> <pre>\$ cd /Volumes/VAS-Installer/VAS.mpkg/Contents \$ sudo /usr/sbin/installer -pkg Packages/vasclnt.pkg \ -target /</pre> <p>Note that you must install all VAS components into the <i>root</i> file system, so the parameter to the <code>-target</code> command line option must be <code>/</code>. Also, you must have local administrator rights to run commands using the <code>sudo</code> utility.</p>

Refer to the VAS Installation Guide for more information about the commands and options you need for your operating system.

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