

HP Client Automation Enterprise

Inventory Manager

for the Windows® operating system

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Installation and Configuration Guide

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Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
 - The number before the period identifies the major release number.
 - The first number after the period identifies the minor release number.
 - The second number after the period represents the minor-minor release number.
- Document Release Date, which changes each time the document is updated.
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You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Table 1 lists new features added for this release of Configuration Management 7.20.

Table 2 lists features added for the Configuration Management v 5.xx releases.

Table 1 New features for this Release

Chapter	Version	Changes
All	7.20	Most components in the HP Configuration Management Version 5.1x product family have been rebranded to HP Client Automation for Version 7.20.
1	7.20	Page 14, Using this Guide with Core and Satellite Servers , new topic.
2	7.20 Aug 2008	Page 27, Creating the Database and DSN for Inventory Manager , modified topic title, and added Roles and Privileges to the defined user profile needed to create the database using Oracle.
3	7.20	Page 31, Installing the Client Automation Agents , the Application Manager Agent includes embedded support for the components supported by the earlier Server Management Agent;

Chapter	Version	Changes
		Application Management Profiles and Windows Terminal Services and Citrix support. The Server Management Agent feature has been removed from the Client Automation Agent installation.
4	All	Page 71, Implementing Registry Scans , topic modified to use the Add Component dialog to both Add and Edit a registry scan instance from an AUDIT.PACKAGE instance.
4	7.20	Removed the topic Updating the CSDB for Registry Scans; the PRIMARY.AUDIT.REGISTRY class is included in the default CSDB.
4	All	Page 68, RIMOPTS Class , corrected the procedure: To enable drag-and-drop connections for RIMOPTS Class instances . Changed the CSDB class needed to access the CONNECT_ZSERVICE_TO_RULES instance from: PRIMARY → ADMIN → Name Lists (32) (ZLIST32) to PRIMARY → ADMIN → Name Lists (8) (ZLIST) .
8	all	Page 124, Table 20 , Scheduling Timer Class, ZSCHTYPE Row, timer examples now show the required leading zero to indicate 4 AM: e.g., ZSCHDEF = DAILY(&ZSYSDATE,04:00:00).

Table 2 New features added for Configuration Management 5.xx

Chapter	Version	Changes
	5.10	The Administrator installation chapter was removed and is now included in the Administrator Guide.
3	5.00	Page 25, Creating the Inventory Manager Environment , new chapter explains how to define an ODBC database and DSN for Inventory data, and how to setup the various Infrastructure servers used to collect (Configuration Server), post (Messaging Server), and report (Reporting Server) the data.
3	5.00	Page 32, System Requirements for installing the agents have changed.

Chapter	Version	Changes
5	5.00	Page 87, WBEM Object Processing , discusses how WBEM objects are collected and posted by the WBEM Data Delivery Agent of the Messaging Server to the Inventory ODBC database. Replaces the previous topic, WBEM Objects and the Configuration Server.
9	5.00	Page 139, Viewing Inventory from the Reporting Server , new chapter. Replaces the earlier chapter: “Viewing Inventory from the Radia Integration Server”.
10	5.00	Page 143, Windows Vista Readiness Reports , new reports are available from the Inventory Reports within the Reporting Server.

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- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
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To register for an HP Passport ID, go to:

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1 Introduction

At the end of this chapter, you will:

- Understand the components of the HP Client Automation Inventory Manager (Inventory Manager) agent.
- Understand the terminology associated with the Inventory Manager agent.
- Be familiar with supported platforms.
- Be familiar with WBEM and the Client Automation agent.
- Be familiar with related Client Automation infrastructure components for processing inventory agent data, such as the HP Client Automation Messaging Server (Messaging Server), the HP Client Automation Reporting Server (Reporting Server), and the HP Client Automation Portal (Portal).

About the Inventory Manager

The Inventory Manager is an agent utility used with the auditing software available in the Audit Domain of the Configuration Server Database (CSDB) to discover configuration information on remote computers. It enables centralized reporting and administration based upon the discovery results.

Use the Messaging Server with the Inventory Manager agent to maintain the discovery information within an ODBC-compliant (Open Database Connectivity) database.

Use the Reporting Server to view the data reported from the Inventory Manager.

This guide explains how to install and use the Inventory Manager agent and server components. Choose the appropriate strategies suited for your enterprise needs.

- For more information on using the Messaging Server to create the SQL tables for the Inventory ODBC database and post data to your inventory database, refer to the *HP Client Automation Messaging Server Installation and Configuration Guide (Messaging Server Guide)*. The Data Delivery Agents for CORE, INVENTORY, and WBEM objects provide this capability.
- For more information on using the Reporting Server for creating and obtaining reports, refer to the *HP Client Automation Reporting Server Installation and Configuration Guide (Reporting Server Guide)*.

Using this Guide with Core and Satellite Servers



If your environment uses Core and Satellite servers, first read the *Core and Satellite Servers Getting Started Guide* as the installation, configuration, and troubleshooting information in that guide may override the information in this guide.

Overview


Systems administrators use the HP Client Automation Administrator Configuration Server Database Editor (Admin CSDB Editor) or the HP Client Automation Enterprise Manager Console to manipulate the contents of the HP Client Automation Configuration Server Database (CSDB). They specify what inventory management tasks to perform and on which agent computers to perform them.

The collection of inventory information is performed on the Inventory Manager computer when a subscriber connects to and installs the auditing software with the HP Client Automation Configuration Server (Configuration Server) as follows:

- **Application Self-service Manager** installs the software when the user selects an application to be installed.
- **Application Manager** installs the software in one of the following ways:
 - through a logon script.
 - when the user double-clicks a desktop HP Connect icon.
 - according to a schedule.
 - using the Notify and Job capabilities of the Enterprise Manager or the Configuration Server.

The results of the inspection are then sent back to the Configuration Server. Any unwanted files discovered on a user's computer can be captured and/or deleted. This enables administrators to remove unauthorized content, such as games, from end users' computers.

The Configuration Server can store these inspection results in its database PROFILE File and/or have the Messaging Server route them for posting to an SQL-compliant database using ODBC.

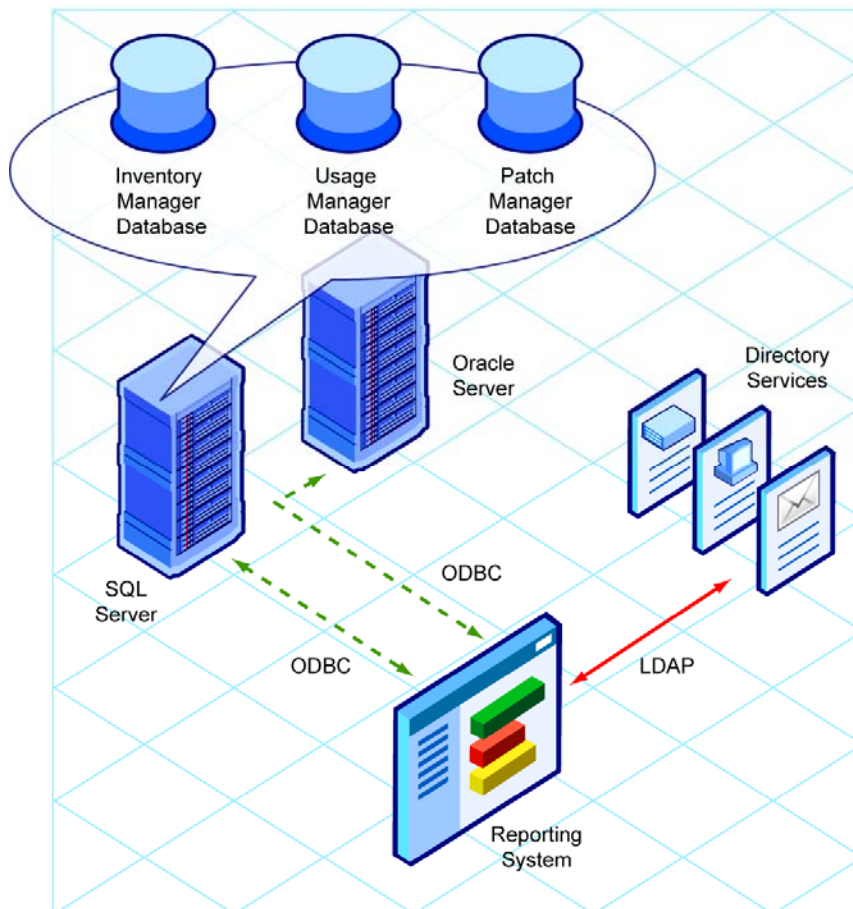
 By default, the Data Directory Agents of the Messaging Server post the inspection results directly to the ODBC database.

The Messaging Server handles the actual delivery of the inspection results directly to the Inventory Manager database, or, to another Messaging Server. Both of these options free up Configuration Server resources. Refer to the *Messaging Server Guide* for more information.

About the Reporting Server

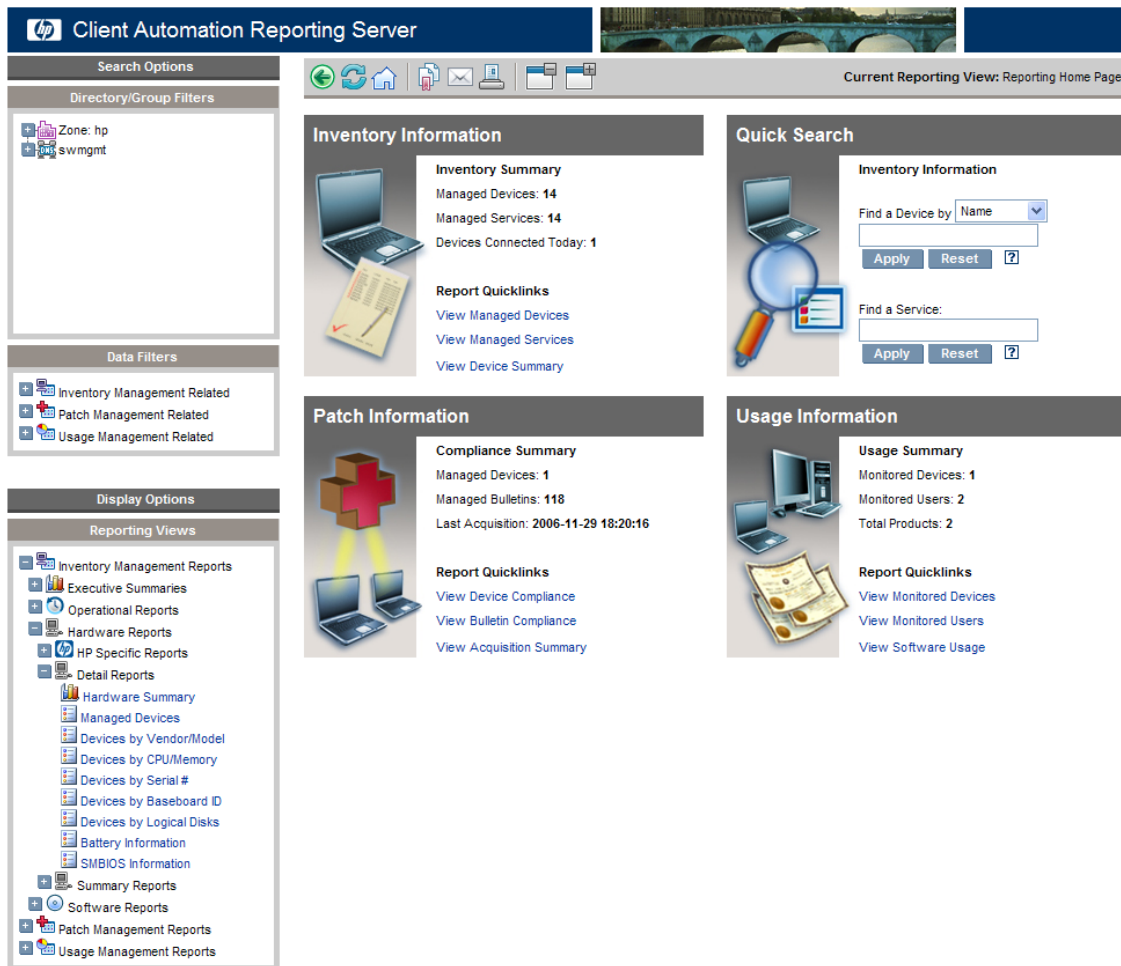
As part of the extended infrastructure for Client Automation, the web-based Reporting Server allows you to query the combined data in existing Inventory Manager, Patch Manager, and Application Usage Manager databases and obtain Executive, Summary, and Detailed reports. In addition, you have the option of mounting an existing LDAP directory, which allows you to filter your data using your LDAP directory levels. The Reporting Server environment is illustrated in the figure below.

Figure 1 Reporting environment



The Reporting Server interface provides a dynamic and intuitive way to view reports on all available data, or apply Search Criteria to limit the reports for specific purposes and environmental assessment.

Figure 2 Reporting Server Web interface supports auditing



Refer to the *Reporting Server Guide* for more information on how to install the Reporting Server and create a reporting environment for your Client Automation-related SQL databases, such as inventory, patch, and usage, which can link also to an optional LDAP directory.

The *Reporting Server Guide* also explains how to use the Reporting Server interface to create, filter, and export reports, as well as browse reports for specific entries.

Inventory Manager Terminology

agent computer

(noun) the computer on the end user's desktop that has the Client Automation agent software installed on it.

CIM (Common Information Model)

(noun) a standardized framework for WBEM. It is an object oriented set of schemas for cross-platform network management. Some of these objects include computer systems, devices (like printers and batteries), controllers (for example, PCI and USB controllers), files, software, etc.

clean machine

(noun) a desktop computer on which the operating system has just been installed, and no further changes have been made.

Client Automation agent

(noun, capitalized) the Client Automation software component that is installed on the end user's desktop computer.

Enterprise Manager

The Enterprise Manger is a Web-based interface with a Console used to manage your Client Automation devices. Refer to the *Enterprise Manager Guide* for additional information.

Messaging Server

The Messaging Server is the Client Automation infrastructure component that provides a common routing and inter-server data delivery service, especially for report-bound data. When servicing a Configuration Server, the Messaging Server handles the delivery of Inventory, Patch, and other data collected from Client Automation agents to the appropriate external location. Data Delivery Agents are used to post data directly to an SQL-compliant database using ODBC.

Reporting Server

The Reporting Server is a Web-based interface to the reportable data captured by the Client Automation extended infrastructure product suite. It allows you to query the combined data in existing Inventory Manager, Patch Manager, and Application Usage Manager databases and create detailed

reports. You have the option of mounting an existing LDAP directory, which allows you to filter your data using your LDAP directory levels.

Web-Based Enterprise Management (WEBM)

Web-Based Enterprise Management enables information such as the amount of RAM in a computer, hard disk capacity, process type, and versions of operating systems to be extracted from computers, routers, switches, and other networked devices.

Windows Management Instrumentation (WMI)

Windows Management Instrumentation (WMI) is Microsoft's implementation of WBEM for Microsoft Windows platforms.

WMI Repository

WMI repository is a central storage area designed to hold managed information.

Client Automation Prerequisites

The Inventory Manager requires the following Client Automation components:

- Configuration Server
- Client Automation agent
 - Application Managerand/or
 - Application Self-service Manager
- Messaging Server. Refer to the *Messaging Server Guide* for more information on installing or migrating to the Messaging Server, and how the Messaging Server transfers data directly, or indirectly, to an Inventory Manager database.

Necessary Skills

Client Automation Products

This document assumes that the reader is familiar with the CSDB, with administering it using the CSDB Editor and the Enterprise Manager. Refer to the *Administrator Guide* and the *Enterprise Manager User Guide* for more information.

Web-Based Enterprise Management

This document assumes that the reader is familiar with Web-Based Enterprise Management (WBEM). Resources for familiarizing yourself with WBEM can be found at the following web site:

<http://www.dmtf.org/spec/wbem.html>.

Microsoft Implementations of WBEM

This document also assumes that the reader is familiar with Windows Management Instrumentation (WMI). Information concerning WMI can be found at the following web site:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/w98ddk/hh/w98ddk/wmi_wp_03se.asp.

Inventory Manager Technology

While an administrator with little web-based knowledge can use the Inventory Manager with success, it is important to understand some of the technology behind the product. The information that is provided below is intended to give you a preliminary understanding of the technology behind the Inventory Manager agent. As indicated in [Necessary Skills](#) above, we recommend you become more familiar with web-based technology.

Common Information Model (CIM)

The Common Information Model (CIM) is an object-oriented model, or schema, that represents and organizes information within a managed environment. This includes:

- Defining **objects**, such as computer systems, devices, controllers, software, files, people, and so forth.
- Allowing for the definition of **associations**, such as describing relationships between object-dependencies, component relationships, and connections.
- Allowing for the definition of **methods**, such as input/output parameters and return codes.

By using object-oriented designs and constructs, one of the goals of the CIM model is to consolidate and extend management standards. Some of these management standards include Simple Network Management Protocol (SNMP) and Desktop Management Interface (DMI).

Web-Based Enterprise Management (WBEM)

Web-Based Enterprise Management (WBEM) is a set of management and Internet standard technologies developed to unify the management of enterprise computing environments. The Distributed Management Task Force (DMTF) has developed a core set of standards that make up WBEM. The core set includes a data model, the CIM standard, an encoding specification, xmlCIM encoding specification, and a transport mechanism, (CIM Operations over HTTP).

Windows Management Instrumentation (WMI)

Windows Management Instrumentation (WMI) is the Microsoft implementation of the Web-Based Enterprise Management (WBEM) that supports the CIM model as well as Microsoft-specific extensions of CIM. To put it simply, it is a set of services designed to input data into a repository via WBEM providers.

The WMI repository is a central storage area designed to hold managed information. It is organized by a series of schemas that are loaded into namespaces. A namespace provides a container, or domain, for the instances of the classes in that schema.

WMI comes installed on Windows 2000 and above. If the module is not installed on a machine, it can be downloaded from the Microsoft Web site at: <http://www.microsoft.com/downloads/details.aspx?FamilyID=afe41f46-e213-4cbf-9c5b-fbf236e0e875&DisplayLang=en>.



For the purpose of this document, when we refer to WBEM, this includes WMI.

Client Automation and WBEM

The Inventory Management agent queries the WBEM namespace (that is, the WBEM database) and sends the results back to the Configuration Server. All information collected by WBEM is available to the Inventory Manager agent. The collected information is then stored in the ODBC inventory database.



Windows 2000 and above systems have WMI natively installed. If necessary, WMI version 1.5 is available for download by licensed end users from the Microsoft download center at **<http://www.microsoft.com/downloads/details.aspx?FamilyID=afe41f46-e213-4cbf-9c5b-fbf236e0e875&DisplayLang=en>**.

For agent computers with WBEM (Web-Based Enterprise Management) installed, the Inventory Manager executes an HP-proprietary method (RIMWBEM) to query the WBEM namespace.

For agent computers that do not have WBEM installed, the Inventory Manager executes HP proprietary methods to *directly* inspect the hardware (built into the Client Automation agent – ZCONFIG) and/or the file system (RIMSFCAN).



Inventory Manager for Windows leverages Microsoft's Windows Management Instrumentation (WMI) to collect hardware and software inventory data by using WMI queries. Some WMI queries can traverse the network contacting other servers in the enterprise to collect the requested information. This may result in large volumes of data being returned, and could have a significantly negative effect on network performance. An example of this would be querying all users on the network using the W32_UserAccount WMI class. Extreme caution must be taken to understand the scope of these queries to ensure unexpected results do not occur. While Inventory Manager provides an interface to WMI and its providers, it cannot control how these queries are satisfied. It is the customer's responsibility to safeguard against using WMI queries that span the network, if this behavior is not desired.

About this Guide

In addition to this chapter, this book contains the following information.

- **Creating the Inventory Manager Environment**
This chapter describes how to define an ODBC database and DSN, and setup the related Client Automation infrastructure servers needed to collect, post, and report the inventory audit information.
- **Installing the Client Automation agents**
This chapter describes how to install the Client Automation Inventory Agents.
- **The AUDIT Domain**
This chapter discusses the AUDIT Domain within the CSDB.
- **Software and Hardware Auditing**
This chapter discusses the different types of auditing, how to configure a supplied audit service, and how to create your own audit service.
- **Configuring Timers for Audit Collection**
This chapter discusses how to perform audits using a timer.
- **Viewing Inventory from the Reporting Server**
This chapter discusses the topics related to viewing inventory data and reports from the Reporting Server.

2 Creating the Inventory Manager Environment

At the end of this chapter, you will:

- Be familiar with the tasks needed to set up the Client Automation infrastructure and SQL or Oracle database for an Inventory Manager environment.
- Create a SQL or Oracle database for the Inventory Manager data and an ODBC DSN connection to it.
- Have the following infrastructure installed and configured to support an Inventory Manager environment:
 - HP Client Automation Configuration Server (Configuration Server) and HP Client Automation Configuration Server Database (CSDB)
 - HP Client Automation Administrator Configuration Server Database Editor (Admin CSDB Editor)
 - HP Client Automation Messaging Server (Messaging Server)
 - HP Client Automation Reporting Server (Reporting Server)
 - HP Client Automation Enterprise Manager (optional)

Inventory Manager Implementation Tasks



If your environment uses Core and Satellite servers, first read the *Core and Satellite Servers Getting Started Guide* as the installation, configuration, and troubleshooting information in that guide may override the information in this guide.

To create a Client Automation infrastructure environment that supports the use of the Inventory Manager, you will need to complete the following tasks:

- Install the Configuration Server and its database. Refer to the *HP Client Automation Configuration Server, Portal, and Enterprise Manager Getting Started Guide (Getting Started Guide)*.
- Create a SQL or Oracle Database for Inventory Manager data and an ODBC DSN.
- Install the Messaging Server on the same server as the Configuration Server. Select and configure the Data Delivery Agents for Core, Inventory, and WBEM with the ODBC DSN connection needed to post the Inventory Manager data to your SQL or Oracle database. For installation and configuration information, refer to the *HP Client Automation Messaging Server Installation and Configuration Guide (Messaging Server Guide)*.
- Install the Reporting Server to view Inventory Reports. Refer to the *HP Client Automation Reporting Server Installation and Configuration Guide (Reporting Server Guide)*.
- Install the Admin CSDB Editor. Refer to the *HP Client Automation Administrator User Guide (Administrator Guide)*.
- Optional: Install the Enterprise Manager and Portal. Refer to the *HP Client Automation Configuration Server, Portal, and Enterprise Manager Getting Started Guide (Getting Started Guide)*.

Configuration Server and Database

Before setting up your environment for the Inventory Manager, you must have already installed the Configuration Server and Database.

SQL or Oracle Prerequisites

Before setting up your environment for the Inventory Manager, you must have already installed the latest version of Microsoft SQL Server 2000 Service Pack 3a or greater. Microsoft SQL Server 2005 is also supported.

If using Oracle, the minimum database and driver version is Oracle 9i Release 2, patch set 2 (9.2.0.3). Oracle 10g is also supported.

Creating the Database and DSN for Inventory Manager

Before installing the Inventory Manager agents, create a Microsoft SQL Server or Oracle database for Inventory Manager. If you do not have security rights to create the database, contact your SQL or Oracle database administrator.



The required size varies based on the number of managed devices in your environment and type of inventory audit information being collected. The procedures below merely reflect recommendations.

To create the Inventory database using Microsoft SQL Server

- 1 Create a database on your Microsoft SQL Server, with the following recommendations:

General tab	Name: CMAUDIT (or name of your choice with no blanks or underscores)
Data Files tab	Initial Size: 500 MB Select Autogrow by 20%.
Transaction Log tab	Change initial size: 100 MB

- 2 Use appropriate Microsoft SQL security recommendations for your enterprise.
- 3 On the computer that will be your Configuration Server and co-located Messaging Server, create an ODBC DSN called CMINVMGR, or name of your choice, pointing to the new INVENTORY database on your SQL Server. If you do not know how to create an ODBC DSN, contact your SQL database administrator.

To create the Inventory database using Oracle

- 1 Create a tablespace for inventorydata on your Oracle Server with the following recommendations:

Tablespace Name	INVENTORYDATA
Status	Online
Type	Permanent
Datafile	Fully qualified path and name of the datafile such as <code>inventorydata.dbf</code>
Storage	Minimum Size 200 M and Max size unlimited
Extent Management	Locally managed with automatic allocation
Segment Space Management	Automatic
Logging	No

- 2 Create a tablespace for inventorytemp with the following recommendations:

Tablespace Name	INVENTORYTEMP
Status	Online
Type	Temporary
Datafile	Fully qualified path and name of the datafile, such as <code>inventorytemp.dbf</code>
Storage	Size 1000 M
Extent Management	Locally managed with automatic allocation
Segment Space Management	Automatic
Logging	No

- 3 Create a user and associate the data and temporary tablespaces to the user with a default profile.

Username	<code>cminventory</code>
Password	Create one based on your enterprise's security recommendations.

Default tablespace	INVENTORYDATA
Temporary tablespace	INVENTORYTEMP
Profile	DEFAULT or a PROFILE NAME used for this schema)
Roles	CONNECT and RESOURCE
System Privileges	CREATE ANY VIEW SELECT ANY TABLE UNLIMITED TABLESPACE UPDATE ANY TABLE

- 4 On the computer that will be your Configuration Server and Messaging Server, create an ODBC DSN called CMINVMGR, or name of your choice, pointing to the new INVENTORY database on your Oracle Server. If you do not know how to create an ODBC DSN, contact your Oracle database administrator.



Be careful to ensure that the ODBC driver versions of your Oracle server and your Messaging Server match precisely; the connection to an Oracle database can fail with mismatched ODBC driver versions. For more information, contact your Oracle database administrator.

Administrator CSDB Editor

The Configuration Server media contains an Administrator installation. Use it to install the CSDB Editor. Refer to the *Administrator Guide* for information on installing and using the CSDB Editor.

Messaging Server

Install the Messaging Server on the Configuration Server. The installation includes the option to install various Data Delivery Agents. Enable the following three Data Delivery Agents and configure them with the ODBC DSN needed to post the Inventory Manager-related data to the appropriate back-end Inventory Manager database:

- CORE.DDA
- INVENTORY.DDA
- WBEM.DDA

For more information, refer to the *Messaging Server Guide*.

Reporting Server

The Reporting Server version is required to view basic and enhanced reports for Inventory Manager. Review the Reporting Server release notes prior to installing. The *Reporting Server Guide* also includes instructions on how to use its flexible features.

Enterprise Manager and Portal (Optional)

The Enterprise Manager and Portal are not required for Inventory Manager. When they are installed, the Enterprise Manager Console can be used to install the Inventory Manager Agent to groups of devices in your environment, remotely. For more information, see the *Enterprise Manager User Guide*.

3 Installing the Client Automation Agents

At the end of this chapter, you will:

- Understand the system requirements for installing Client Automation agents.
- Know how to customize the installation process.
- Be able to modify the [PROPERTIES] section of the `Install.ini` file in order to customize the behavior of the installation process.
- Be able to modify the [ARGS] section of the `Install.ini` file in order to customize the behavior of the HP Client Automation Application Self-service Manager (Application Self-service Manager).
- Be able to modify the [OBJECTS] section of the `Install.ini` file in order to specify Client Automation objects to be created on the Client Automation agent computer.
- Know how to use the Installation Wizard.
- Know how to remove and repair Client Automation agents using the Installation Wizard and command lines.
- Know how to modify the installation of the Client Automation agents using the Installation Wizard and command lines.
- Know how to use a pre-install script to customize MSI properties that affect installation.
- Know how to use a post-install script to run processes after installing Client Automation agents.

Client Automation Agent Installation

The Client Automation agent installation program uses Microsoft Windows Installer. The program consists of one MSI package with six feature sets:

- HP Client Automation Application Manager (Application Manager)
- HP Client Automation Application Self-service Manager (Application Self-service Manager)
- HP Client Automation Inventory Manager (Inventory Manager)
- HP Client Automation OS Manager (OS Manager)
- HP Client Automation Patch Manager (Patch Manager)



Install only the Client Automation agents for which you have licenses. If you do not have a license, the Client Automation agent will not authenticate with the Configuration Server.

System Requirements

- Microsoft .NET runtime version 1.1 or higher (required for Application Self-service Manager only). The .NET installation program is available in the `\dotnet` folder on the Client Automation agent media. If .NET does not exist on the Client Automation agent computer, the .NET installation program runs automatically. Microsoft .NET requires Microsoft Internet Explorer 5.01 or later.
- TCP/IP connection to a computer running the Configuration Server.
- For Windows 2000, Windows Server 2003, Windows XP, and Windows Vista, you must have administrator rights to the computer to install the Client Automation agents.

Platform Support

For information about the platforms that are supported in this release, see the accompanying release notes.

Client Automation Agent Installation Process

Whether the Client Automation agent installation program is distributed as an executable (`setup.exe`) or a Windows Installer **Administrative Installation Point (AIP)**, the installation process is the same. You can customize many aspects of the installation including which Client Automation agents to install and to which directory the installation files should be copied. If you want to customize the installation process, you should be familiar with the following files.

- **setup.exe**
Stored in the `\win32` directory on the Client Automation agent media, it accepts any standard Windows Installer command-line parameters and passes them to the Windows Installer service.

You can also create an AIP for network installations.



An Administrative Installation Point is also known as an **Administrative Control Point (ACP)**.

To create the Windows Installer AIP in a specified target directory, type:

```
setup.exe /a TARGETDIR=drive:\targetdirectory /qb
```

The target directory contains `HPCAE-MgmtAppsxx.msi`, the installation folders, `setup.exe`, and any files (such as `Install.ini` or Visual Basic scripts) stored in the same directory as `setup.exe`. Next, copy the `\dotnet` and `\MSI` folders into the target directory.

- **HPCAE-MgmtAppsxx.msi**
This MSI database file is stored in the `\win32` directory on the Client Automation agent media and contains the default configuration information for the installation.
- **Install.ini**
Use `Install.ini` to customize the installation or the Client Automation agent arguments file, or to create or set attributes for Client Automation objects. Settings in `Install.ini` override the defaults stored in `HPCAE-MgmtAppsxx.msi`.

A sample `Install.ini` is available in the `\win32` directory on the Client Automation agent media.
- **args.xml**
The Application Self-service Manager arguments file created from information stored in the [ARGS] section of `Install.ini`. This file, stored in `IDMLIB` on the Client Automation agent computer, controls the

behavior of the Application Self-service Manager. The default directory for IDMLIB is `SystemDrive:\Program Files\Hewlett-Packard\CM\Agent\Lib\`.

- **Pre-install scripts**

(Recommended for experienced users only.)

Use custom Visual Basic scripts to customize MSI properties that affect the installation. For an example of a simple script, see [Using a Pre-Install Script](#) on page 57.

- **Post-install scripts**

(Recommended for experienced users only.)

Use custom Visual Basic, REXX, or Tcl scripts to run processes such as the first Client Automation agent connect. For an example, see [Using a Post-Install Script](#) on page 58.

Preparing Install.ini

Create an installation file, `Install.ini`. Use this file to:

- Customize the installation.
- Customize the Client Automation agents.
- Create or set attributes for Client Automation objects.

Below is a sample `Install.ini`. A description of the three sections (**Properties**, **Args**, and **Objects**) and the attributes in each of these sections follows.



A semi-colon (;) at the beginning of attributes, properties, and object names indicates that this item is commented out and will be ignored. If you want to specify a value for any of these items, delete the semi-colon and type the appropriate value.

The following is a sample `Install.ini`.

```
[Properties]
;MSI Property overrides (Novadigm properties have the "nvd" prefix)

;Uncomment and specify the installation directory to replace the default directory
;INSTALLDIR=

;Uncomment to prevent subscribers from using Add/Remove Programs in the Control Panel to remove
the CM Agent
;ARPNOREMOVE=1

;Uncomment and specify the features that you want to install
```

```

;ADDDLOCAL=NVDINSTALLRAM,NVDINSTALLRSM,NVDINSTALLRIM,NVDINSTALLRLAE

;Uncomment to show/hide panels in the installation wizard (defaults shown below)
;NVDENABLEUSER=Y
;NVDENABLEIP=Y
;NVDENABLEPROXY=N
;NVDENABLESHORTCUT=Y
;NVDSHORTCUT=Y
;NVDSTARTMENUICON=Y
;NVDSTARTWMICFGMGR=Y
;NVDDRAMSHORTCUT=N
;NVDDRAMSTARTMENUSHORTCUT=N
;NVDRAMCONNECT="radntfyc localhost radskman cat=prompt,uid=$machine,ulogon=n,hreboot=y,ind=y,
ask=y,ip=xxx.xxx.xxx.xxx,port=3464,mname=Radia,dname=Software,startdir=SYSTEM,rtimeout=1
800,context=m,log=connect_manual.log"

;Uncomment and specify the location of maintenance files
;NVDMAINTDIR=

;Uncomment to allow notifies only from the local host.
;NVDLOCALNOTIFYONLY=Y

;Uncomment to start the System Tray automatically if CM Application Manager is selected during
the client install process.
;NVDTRAYSTART=Y

;Uncomment to disable "Allow service to interact with desktop" flag for HP CM Services
;NVDNOTIFYINTERACT=N
;NVDREDIRECTORINTERACT=N
;NVDSCHEULERINTERACT=N

;Uncomment and specify the file names of pre- and post-install custom action scripts
;NVDPRECAPATH=
;NVDPOSTCAPATH=

[Args]
; Tags to be placed into the CM Application Self Service Manager Agent ARGS.XML file
; A value of _NONE_ removes the tag from the file
;
;askconfirm=
;channelname=software
;dataurl=
;enterprisemanagement=
;identification=$USER
;log=connect.log
;logsize=
;logonpanel=
;managerurl=
;providername=Radia

```

```

;redirect=
;resolutionmanager=
;resolutionport=
;sslmanager=
;sslport=
;startdir=
;uioption=

[Objects]
; Set CM object attribute values
; A value of _NONE_ will set the attribute to blank
;
;ZMASTER_ZDSTSOCK=3464
;ZMASTER_ZIPADDR=xxx.xxx.xxx.xxx
;ZMASTER_ZNIFPORT=3465
;ZMASTER_ZNIFYSEC=Y
;ZMASTER_ZTIMEO=240
;ZMASTER_ZTRACE=N
;ZMASTER_ZTRACEL=_NONE_
;ZMASTER_ZUSERID=
;ZMASTER_ZVRFYUID=N
;
;PROXYINF_USEPROXY=
;PROXYINF_DISCOVER=
;PROXYINF_PROXADDR=
;
; Uncomment to enable Client Operations Profile (COP)
;RADSETUP_COP=Y
; Uncomment to disable collection of AD information
;RADSETUP_ADINFO=N
; Uncomment to disable collection of NT Group information
RADSETUP_ZGRPINFO=N
; Uncomment to always send configuration objects to the RCS
RADSETUP_ALWAYS=Y

```

[PROPERTIES] Section of Install.ini

Use the [PROPERTIES] section to modify Windows Installer properties or HP-specific properties to customize the behavior of the installation program. The values that you set in this section override the default values stored in the HPCAEMgmtAppsxx.msi database file.



All properties such as INSTALLDIR must be typed in all uppercase.

Table 3 [PROPERTIES] Section of Install.ini

Argument	Description
ADDLOCAL	<p>Specify the features that you want to install on the local hard drive. There is no default for this argument.</p> <p>The features are:</p> <p>NVDINSTALLRAM = Application Manager</p> <p>NVDINSTALLRSM = Application Self-service Manager</p> <p>NVDINSTALLRIM = Inventory Manager</p> <p>NVDINSTALLROM = OS Manager</p> <p>NVDINSTALLPATCH = Patch Manager</p> <p>NVDINSTALLRLAE = Local AIP Extension</p> <p>Note: This must be installed to use the Local AIP Support for the MSI Redirector feature described on page 59.</p>
ARNOREMOVE	<p>Set to 1 to disable the ability to remove the Client Automation agent from the computer using Add/Remove Programs in the Control Panel.</p> <p>For Windows 2000 and XP, the Remove button is disabled.</p> <p>For earlier operating systems, the Client Automation agent will not be listed in Add/Remove Programs in the Control Panel.</p> <p>Note: Setting to 0 will not disable this option due to a Windows Installer issue. If you want to allow your subscribers to remove the Client Automation agent from the computer using Add/Remove Programs, place a semi-colon (;) in front of the ARNOREMOVE argument in <code>Install.ini</code>.</p>
INSTALLDIR	<p>Specify the directory in which to install the Client Automation agent. The default is <code>SystemDrive:\Program Files\Hewlett-Packard\CM\Agent</code>.</p> <p>This value will be overridden if a new directory is specified in the Destination Folder window in the Client Automation Agent Installation Wizard.</p>

Argument	Description
NVDENABLEUSER	<p>Indicate whether to show or hide the Set User window in the Installation Wizard.</p> <p>Specify Y (the default) to show the window.</p> <p>Specify N to hide the window.</p> <p>Specify D to show the window, but disable the User Name field. The Create HPCA Application Self-service Manager icon on the desktop check box is still available.</p> <p>Note: If you hide the window, the Create HPCA Application Self-service Manager icon on the desktop check box will no longer be available to your subscribers.</p>
NVDENABLEIP	<p>Indicate whether to show or hide the Configuration Server window in the Installation Wizard. The default is Y.</p>
NVDENABLE PROXY	<p>Indicate whether to show or hide the Proxy Information window in the Installation Wizard. The default is N.</p> <p>If you want to use a Proxy Server during the Client Automation agent connect, show this window.</p> <p>The information that is specified in the Proxy Information window is stored, by default, in the PROXYINF object in the Client Automation agent computer's IDMLIB directory.</p>
NVDENABLE SHORTCUT	<p>Indicate whether to show the Create HPCA Application Self-service Manager icon on the desktop check box in the Set User window. The default is Y.</p> <p>Selecting this check box installs a shortcut on the subscriber's desktop for the Application Self-service Manager.</p>
NVDSHORTCUT	<p>Indicate whether to install a desktop shortcut for the Application Self-service Manager on the subscriber's computer. The default is Y.</p>
NVDSTART MENUICON	<p>Indicate whether to install an icon in the Start Menu for the Application Self-service Manager on the subscriber's computer. The default is Y.</p>
NVDSTARTWMI CFGMGR	<p>Indicates whether to install the shortcuts for WMI. The default is Y.</p>
NVDDRAMSHORT CUT	<p>Indicate whether to install a desktop shortcut for the Application Manager on the subscriber's computer. The default is N.</p>

Argument	Description
NVDRAMSTART MENUSHORTCUT	Indicate whether to install an icon in the Start Menu for the Application Manager on the subscriber's computer. The default is N .
NVDRAMCONNECT	Specify a command line to run if an Application Manager shortcut is created on the desktop or the Start Menu. There is no default for this argument.
NVDMMAINTDIR	Specify a directory in which to store the Client Automation agent maintenance files. The default is the <code>MAINT</code> sub-directory of the folder that contains <code>setup.exe</code> . Note: Specify a value only if you want to store maintenance files in a directory other than the default. If files in this directory are more recent than the installation files, they will be copied into the Client Automation agent's <code>IDMSYS</code> directory.
NVDLOCAL NOTIFYONLY	If set to y , the Client Automation agent will allow Notifies from the local host only. The default is N .
NVDRADTRAY START	Set to y to start the System Tray automatically if the Application Manager is selected during the Client Automation agent installation process. The default is N .
NVDNOTIFY INTERACT	Set to y to enable the Notify Daemon to interact with the desktop. The default is N .
NVDREDIRECT ORINTERACT	Set to y to enable the MSI Redirector to interact with the desktop. The default is N .
NVDSCHEDULER INTERACT	Set to y to enable the Scheduler to interact with the desktop. The default is N .
NVDPRECAPATH	Specify the fully qualified path and filename of a custom Visual Basic pre-install script. There is no default for this argument. Note: New objects or properties must be defined in <code>Install.ini</code> . You can use a pre-install script to override a value for the object or property, but if you attempt to specify a new object or property in the pre-install script, it will be ignored. For an example of a simple script, see Using a Pre-Install Script on page 57.

Argument	Description
NVDPOSTCAPATH	Specify the fully qualified path and filename of a custom Visual Basic or REXX post-install script. There is no default for this argument. For an example, see Using a Post-Install Script on page 58.

[ARGS] Section of Install.ini

Use the [ARGS] section to control the behavior of the Application Self-service Manager. The information in this section is used to build the Application Self-service Manager arguments file, `args.xml`, which is stored in `IDMLIB` on the Client Automation agent computer. The default directory for `IDMLIB` is `SystemDrive:\Program Files\Hewlett-Packard\CM\Agent\Lib\`.

The following is an example of `args.xml`.

```
<?xml version="1.0" ?>
<RADIO_ARGUMENTS>
<ARGUMENTS><CHANNELNAME>software</CHANNELNAME>
<IDENTIFICATION>jsmith</IDENTIFICATION>
<PROVIDERNAME>radia</PROVIDERNAME>
<RESOLUTIONMANAGER>10.10.10.1</RESOLUTIONMANAGER>
<LOG>connect.log</LOG>
<RESOLUTIONPORT>3464</RESOLUTIONPORT>
<ROOT_CATALOG_NAME>All Software</ROOT_CATALOG_NAME>
</ARGUMENTS>
</RADIO_ARGUMENTS>
```



The XML tags (arguments) that are described in this section are not case-sensitive when you type them in `Install.ini`. However, they will be automatically converted to uppercase in `args.xml`.

If you are using the Application Manager, any of the parameters in the [ARGS] section can be added to the `RADSKMAN` command line.

Table 4 [ARGS] section of Install.ini

Argument	Mandatory or Optional	Description
askconfirm	Optional	Controls the display of a confirmation message to your subscribers. For example, some instances in which a confirmation message might display are: A reboot is required. There is insufficient disk space during deployment. A data download is interrupted. The default is Y .
channelname	Mandatory	The CSDB Domain from which applications are retrieved. The default is SOFTWARE .
default_catalog	Optional	Set the default catalog that is selected when the Application Self-service Manager starts. There is no default for this argument.
default_catalog_only	Optional	Set to Y to make only the Default_catalog available when the Application Self-service Manager starts. The default is N .
identification	Optional	Identifies the Client Automation agent to the Configuration Server by defining the value for the ZUSERID variable in the ZMASTER object. The default is \$USER . This value will be overridden if a different User Name is specified in the Set User window in the Agent Installation Wizard. If you do not want this value to be modified, set NVDENABLEUSER=N in the [PROPERTIES] section of Install.ini. \$MACHINE : The Client Automation user ID is the name of the subscriber's computer. \$USER : The Client Automation user ID is the logon ID for the subscriber currently logged on. CUSTOM : literal custom specification.
log	Optional	Specifies the name of the log stored in IDMLOG. IDMLOG is specified in NVD.INI. The default is Connect.log. The default location of NVD.INI is

Argument	Mandatory or Optional	Description
		<i>SystemDrive:\Program Files\Hewlett-Packard\CM\Agent\LIB.</i>
logsize	Optional	<p>Specifies (in bytes) the size of the log file. The default is 1000000.</p> <p>When the logsize is reached, a backup file (.bak) is created. By default, this file is <code>connect.bak</code>. If a backup file already exists, it will be overwritten.</p>
logonpanel	Optional	Controls the display of the logon panel. The default is Y .
managerurl	Optional	Specifies the address (in the form <code>http://hostname:port/nvdurl</code>) of the Configuration Server to be used for HTTP object transfer. There is no default for this argument.
providername	Mandatory	<p>The name of the Configuration Server, as was set during its installation. The default is radia.</p> <p>This is used to name the folder below the STARTDIR on the Client Automation agent computer. See startdir on page 43 for more information.</p>
redirect	Optional	<p><i>Used for the Application Self-service Manager only.</i></p> <p>Specifies an alternate start-up file (<code>filename.xml</code>) that can be accessed via a network path or URL. There is no default for this argument.</p> <p>If the <code>redirect</code> tag is set in <code>args.xml</code>, the Application Self-service Manager uses the properties that are specified in the alternate file.</p>
resolutionmanager	Mandatory	<p>The IP address of the Configuration Server. The Configuration Server name can also be used. There is no default for this argument.</p> <p>This value will be overridden if a different IP address is specified in the Configuration Server window in the Agent Installation Wizard.</p> <p>To prevent this value being modified, set NVDENABLEIP=N in the [PROPERTIES] section of <code>Install.ini</code>.</p>

Argument	Mandatory or Optional	Description
resolutionport	Mandatory	<p>The port for the Configuration Server. There is no default for this argument.</p> <p>This value will be overridden if a different port is specified in the Configuration Server window in the Agent Installation Wizard.</p> <p>To prevent this value being modified, set NVDENABLEIP=N in the [PROPERTIES] section of <code>Install.ini</code>.</p>
root_catalog_name	Mandatory	<p>Use this to customize the name of the root catalog display name. There default is All Software.</p>
sslmanager	Optional	<p>The address of the Configuration Server that is to be used for SSL communications. There is no default for this argument.</p> <p>If you want self-maintenance to use SSL communications, append : :SM to the end of the specified IP address or host name, as in sslmanager=hostname: :SM.</p> <p>Warning: Use the : :SM switch with the following caveat in mind: the file (<code>cacert.pem</code>) that contains the CA root certificates cannot be maintained. If the corresponding CA root certificate for the certificate in use by the Configuration Server should ever become expired, revoked, or corrupt, it will result in disabling SSL communications to the Configuration Server.</p>
sslport	Optional	<p>The TCP/IP port (usually 443) on which the SSL Manager task is listening. There is no default for this argument. The sslport specification takes the form <code>sslport=port</code>.</p>
startdir	Optional	<p>The starting IDMLIB directory (by default, <code>SystemDrive:\Program Files\Hewlett-Packard\CM\Agent\Lib\</code>). The default is \$USER.</p> <p>\$MACHINE: The current computer name.</p> <p>\$USER: The user ID of the subscriber that is currently logged on.</p> <p>CUSTOM: literal custom specification. Type</p>

Argument	Mandatory or Optional	Description
		startdir = <i>foldername</i> . If the folder name contains embedded spaces, enclose the entire name in quotation marks (“ ”). Note: Do this to distribute a set of applications that will be shared by all subscribers of a multi-user computer.
uioption	Optional	Controls the display of the status window. The default is N .

[OBJECTS] Section of Install.ini

Use the [OBJECTS] section to specify Client Automation objects to be created on the Client Automation agent computer and to set their default values. The format is *clientobject_attribute*. For example, if you want to set the IP address for your Configuration Server, set ZMASTER_ZIPADDR.

Table 5 [OBJECTS] section of Install.ini

Argument	Description
ZMASTER_ZDSTSOCK	The port setting for the Configuration Server. The default is 3464 .
ZMASTER_ZIPADDR	The IP address for the Configuration Server. There is no default for this argument.
ZMASTER_ZNTFPORT	The port on which the Client Automation agent’s Notify daemon is “listening.” The default is 3465 .
ZMASTER_ZNTFYSEC	This attribute allows a Notify operation to execute programs from the IDMSYS directory only. This is used for security during Notify operations. The default is Y .
ZMASTER_ZTIMEO	The duration (in seconds) that the Client Automation agent will wait for a response from the Configuration Server before it times out. The default is 240 . Valid values are numerals from 0 to 3200.

Argument	Description
ZMASTER_ZTRACE	Indicates whether communications buffer information will be included in the log; also generates unique logs for create methods. The default is N . Y enables Communication and Method Tracing. S enables Communication summary information; Method Tracing is not enabled. N disables Communication Tracing and Method Tracing.
ZMASTER_ZTRACEL	The level of tracing that is generated in the Client Automation agent log files. The default is 040 . Valid values are 0 to 999, where 0 = minimal tracing, 40 is acceptable for most activity, and 999 = maximum tracing.
ZMASTER_ZUSERID	The subscriber's user ID. The default is the name of the user who is logged on to the computer.
ZMASTER_ZVRFYUID	Specify Y to verify the user ID that was sent by the Notify command. This verification uses the ZUSERID field from the Client Automation agent's ZMASTER object. The default is N .
PROXYINF_USEPROXY	Indicates whether a proxy server is used when connecting to the Configuration Server. The default is N .
PROXYINF_DISCOVER	<i>For use with Microsoft Internet Explorer.</i> Set to the proxy address and port that your web browser is using. The default is N .
PROXYINF_PROXADDR	The IP address and port number of your proxy server. The default is xxx.xxx.xxx.xxx:1080 .
RADSETUP_COP	Set to Y to enable Client Operations Profiles. The default is N .

Installing the Client Automation Agents

The Client Automation agent installation can be initiated by one of the following methods.

- *a command line*

See [Installing the Client Automation Agent from a Command Line](#) starting on page 46.

- a *logon script*
See [Initiating the Client Automation Agent Installation from a Logon Script](#) starting on page 49.
- the *Enterprise Manager Console jobs*
This is recommended for mass rollouts in Windows environments. Refer to the *Enterprise Manager User Guide* for more information.

After initiating the installation, the Client Automation agent installation program runs.

This section describes some of the ways that you can initiate the Client Automation agent installation, and then describes the standard Agent Installation Wizard.

Installing the Client Automation Agent from a Command Line

Before performing an installation from a command line, determine:

- Which Client Automation agents to install (See [Referencing the Client Automation Agents](#), below), and
- How the Client Automation agent installation program will be made available to your subscribers. This can be done via: a web page, an FTP site, a mapped drive, a CD-ROM, and e-mail,

Then pass the necessary arguments on a command line. The arguments are detailed in the section, [Specifying the Client Automation Agent Features to Install](#), starting on page 47, as well as in [Table 6](#) on page 47 and [Table 7](#) on page 47.

Referencing the Client Automation Agents

When specifying the arguments on the command line, reference the Client Automation agents as listed below.

- NVDINSTALLRAM to install the Application Manager.
- NVDINSTALLRSM to install the Application Self-service Manager.
- NVDINSTALLRIM to install the Inventory Manager.
- NVDINSTALLROM to install the OS Manager.
- NVDINSTALLPATCH to install the Patch Manager.

Specifying the Client Automation Agent Features to Install

To specify the features that you want to install, use the appropriate feature state argument, as described in the [Table 6](#) below.

Table 6 Client Automation agent feature state arguments

Specify:	Action
ADDLOCAL	Type a comma-delimited list of features that you want set to “Will be installed on local hard drive.”
REMOVE	Type a comma-delimited list of features that you want set to “Entire feature will be unavailable.” This removes the features only, not the product. Therefore, if you use the REMOVE property and type each of the feature names, the core product will still be stored on the computer. To remove the product, type REMOVE=ALL .

Additional Command Line Arguments

Additional arguments that you can pass to the installation program on the command line are described [Table 7](#) below.

Table 7 Command line arguments

Sample	Action
/qn	Performs a silent installation. Note: A silent installation is one that takes place without a user interface. This might also be referred to as a “quiet installation,” or an “unattended installation.”
/qb	Displays the progress bar only during the installation.
/L*v drive:\install.log	Creates a detailed Windows Installer log. Note: Using this option could impact the performance of the installation.

Sample	Action
<pre>/a TARGETDIR=drive: \targetdirectory</pre>	<p>Creates a Windows Installer AIP in the specified target directory.</p> <p>Note: A Windows Installer AIP is also known as an ACP.</p> <p>The target directory contains RADIA.MSI, the installation folders, setup.exe, and any files (such as Install.ini and Visual Basic scripts) that are stored in the same directory as setup.exe.</p> <p>After you have created the AIP, you can run setup.exe and pass the command-line parameters. This starts the Windows Installer and passes the specified parameters to it.</p>
<pre>NVDINIFILE=path \INIfilename</pre>	<p>To rename the installation INI file, pass this parameter to the command line. Be sure to include the fully qualified path.</p> <p>By default, the installation program refers to Install.ini, which is located in the current directory.</p>
<pre>INSTALLDIR=</pre>	<p>Specify the installation directory. Use quotation marks if the path contains spaces.</p>

If you initiate a Client Automation agent installation with a command line that does not contain the silent installation argument (/qn), the Client Automation Agent installation program will open. See [Using the Agent Installation Wizard](#) on page 50 for more information.

Examples

The following is an example of a command line that will silently install the Application Self-service Manager and create a detailed Windows Installer log.

```
SETUP.EXE ADDLOCAL=NVDINSTALLRSM /qn /L*v C:\Hewlett-Packard\
CM\Agent\install.log
```

The following is an example of a command line that will install the Application Manager and the Application Self-service Manager.

```
SETUP.EXE ADDLOCAL= NVDINSTALLRAM,NVDINSTALLRSM
```

The arguments in this command line, and others, are described in [Specifying the Client Automation Agent Features to Install](#) on page 47 and [Table 7](#) on page 47.

Initiating the Client Automation Agent Installation from a Logon Script

You can use a logon script on a Windows 2000, Windows 2003 Server, Windows XP Professional, or Netware agent to automate the Client Automation agent installation.

- ▶ To install the Client Automation agents automatically on subscriber's Windows 2000 Professional or Windows XP Professional computer, subscribers *must* have administrator rights on their local computers, and a domain controller must authenticate each subscriber's logon.

The following is an example of code that you can add to the logon script that installs the Client Automation agents. If the Client Automation agents are not already installed when the subscriber logs on to the server, this logon script runs the Client Automation agent installation program.

Sample Logon Script

```
:begin
@echo off
if exist C:\progra~1\Hewlett-Packard\CM\Agent\LIB\zmaster.edm
goto skipinst
    start setup.exe /qn
:skipinst
if exist C:\progra~1\Hewlett-Packard\CM\Agent\lib\zmaster.edm
goto skipinst
```

To determine if the Client Automation agents already exist, the script checks for the ZMASTER object (ZMASTER.EDM) in its default location on the computer. If ZMASTER:

- Exists, the script skips the installation.
- Does not exist, the Client Automation agent installation program launches.

- ▶ The ZMASTER object begins the resolution process and is the first object to be exchanged during the Client Automation agent “connect.”

In the sample logon script, the command, **start setup.exe /qn**, instructs the program to perform a silent installation of the Client Automation agents.

- ▶ Modify this script to reflect your organization's needs.

If the command line does not contain the silent installation arguments, the graphical Client Automation Agent installation program opens. See [Using the Agent Installation Wizard](#) below for more information.

Using the Agent Installation Wizard

If you start a Client Automation agent installation without the arguments for a silent installation, the Agent Installation Wizard opens. The following steps describe the standard installation procedure. These steps can vary based on `Install.ini` or any arguments passed when running the installation.

To install Client Automation agents using the Installation Wizard

- 1 From the folder containing the Client Automation agent installation files, run `setup.exe`.

- ▶ You can initiate `setup.exe` from a command line or logon script. Go to the beginning of this chapter for more information.

The Agent Installation Wizard opens.


- 2 Click **Next**. The License Agreement window opens.
- 3 After reading and accepting the license agreement, click **Next**.


The Destination Folder window opens.


The default location for the Client Automation agents is
`SystemDrive:\Program Files\Hewlett-Packard\CM\Agent`.

If you want to select a different destination for the Client Automation agent, click **Browse** and navigate to the appropriate destination folder. This overrides the value set for `INSTALLDIR` in `Install.ini`.

- 4 Click **OK** to continue.
- 5 Click **Next**. The Set User window opens.
- 6 In the User Name text box, type the name of the subscriber for whom you are installing the Client Automation agents. This overrides the value set for `IDENTIFICATION` in `Install.ini`.
- 7 Select the **Create HPCA Application Self-service Manager icon on the desktop** check box if necessary.

- 8 Click **Next**. The Configuration Server window opens.
- 9 In the IP Address text box, type the IP address for the Configuration Server. This overrides the value set for RESOLUTIONMANAGER in `Install.ini`.
- 10 In the Port text box, type the port number. This overrides the value set for RESOLUTIONPORT in `Install.ini`.
- 11 Click **Next**. The Select Features window opens.
- 12 Click  to select the features that you want to install.



Each time you click , a shortcut menu for that feature opens.

 Install only the Client Automation agents for which you are licensed.

- 13 From the shortcut menu, select an installation option. These options are described in [Table 8](#) below.

Table 8 Feature Settings for Client Automation Agents

Option	Description
Will be installed on local hard drive	Installs the top-level feature on the local hard drive, but not any sub-features listed below.
Entire feature will be installed on local hard drive	Installs the entire feature, including any sub-features listed below. Note: In this installation program, selecting this option or the “Will be installed on local hard drive” option for the Application Self-service Manager, Application Manager, or Inventory Manager results in the same installation because these features do not contain sub-features. Example: If you select this option for the Client Automation agent feature in the Select Features window, all of the Client Automation agents will be installed on the local hard drive.
Entire feature will be unavailable	The feature will not be installed. If previously installed this feature will be removed.

 If you want to set the same options for all of the features, you can click  **HPCA Agent** and select the appropriate option to apply the setting to all features.

Click **Disk Cost** to see an overview of the disk space needed for the installation.

14 Click **Next**.

If .NET is not installed on the target computer and you have chosen to install the Application Self-service Manager, .NET will be installed during the Client Automation agent installation. However, if you copied the installation program to your computer and did not include the \DotNet folder, the DotNet Settings message will open.

15 Click **OK**.

16 If necessary, click **Next** again.

If .NET is not already installed on the computer, the .NET Installation window opens.

17 Click **Next**.



If you have installed .NET Beta, be sure to remove it before installing .NET.

The Ready to Install the Application window opens.

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

If necessary, the .NET Framework Setup wizard opens. Follow the prompts to install .NET on the target computer. After .NET is successfully installed, the Client Automation agent installation begins.

When the installation is done, successful installation window opens.

19 Click **Finish** to close the Installation Wizard.

Removing the Client Automation Agents

The Windows Installer installation program offers the ability to remove your Client Automation agents. This section describes how to remove the Client Automation agent using the Installation Wizard and using a command line.

Using the Installation Wizard to Remove Client Automation Agents

This section describes how to remove the Client Automation agent using the Installation Wizard.



To remove features of the Client Automation agent, use the **Modify** option on the Application Maintenance window. This is discussed in [Modifying the Client Automation Agent Installation](#) on page 55.

To remove Client Automation agents using the Installation Wizard

- 1 From the folder containing the Client Automation agent installation files, double-click **setup.exe**. The Application Maintenance window opens.
- 2 Select the **Remove** option.
- 3 Click **Next**. The Client Automation Agent Uninstall window opens.
- 4 Click **Remove**. The files for all Client Automation agents are removed from the computer.

The Client Automation agent has been successfully uninstalled window opens.

- 5 Click **Finish**.

Using a Command Line to Remove Client Automation Agents

This section describes how to use a command line to remove Client Automation agents.

To remove Client Automation agents using a command line

- From the folder containing the Client Automation agent installation files, type the following command line:

```
SETUP.EXE REMOVE=ALL
```

See [Installing the Client Automation Agent from a Command Line](#) on page 46 for additional arguments.

or

If you would like to remove a single Client Automation agent, on the command line type a comma-delimited list of the features that you want to remove.

Reference the features for the Client Automation agent installation as follows:

- Application Manager `NVDINSTALLRAM`
- Application Self-service Manager `NVDINSTALLRSM`

- Inventory Manager NVDINSTALLRIM
- OS Manager NVDINSTALLROM
- Patch Manager NVDINSTALLPATCH

Example

To silently remove the Application Self-service Manager and Application Manager, type:

```
SETUP.EXE REMOVE=NVDINSTALLRSM,NVDINSTALLRAM /qn
```



This removes the features only, not the entire product. Therefore, if you use the REMOVE argument and type each of the feature names, the core product will still be stored on your computer.

Repairing the Client Automation Agents

The Windows Installer installation program offers the ability to repair your Client Automation agents. For example, if you have a missing Client Automation agent module, you can use this tool to repair the installation. This tool will not overwrite modules that exist on the agent computer if they are newer than the ones provided with the installation.

This section describes how to repair Client Automation agents using the Installation Wizard and using a command line.

Using the Installation Wizard to Repair Client Automation Agents

This section describes how to repair Client Automation agents using the Installation Wizard.

To repair Client Automation agents using the Installation Wizard

- 1 From the folder containing the Client Automation agent installation files, double-click **setup.exe**.

The Application Maintenance window opens.

- 2 Select the **Repair** option.
- 3 Click **Next**. The Ready to Repair the Application window opens.

- 4 Click **Next**. When the repair is done, the Client Automation agent has been successfully installed window opens.
- 5 Click **Finish**.

Using a Command Line to Repair Client Automation Agents

This section describes how to repair Client Automation agents using a command line.

To repair Client Automation agents using a command line

- From the folder containing the Client Automation agent installation files, type the following command line:

```
msiexec /f HPCAe-MgmtAppsxx.msi
```



In the above command line, the `xx` is a placeholder for the version of the Management Applications software release; be sure to replace this with the appropriate version number. You can use additional parameters with this command line. For more information, see your Windows Installer documentation.

Modifying the Client Automation Agent Installation

The Windows Installer installation program offers the ability to modify your Client Automation agent installation by adding or removing individual features. This section describes how to modify the installation of Client Automation agents using the Installation Wizard and using a command line.

Using the Installation Wizard to Modify the Client Automation Agent Installation

This section describes how to modify the installation of Client Automation agents using the Installation Wizard.

To modify the installation of Client Automation agents using the Installation Wizard

- 1 From the folder containing the Client Automation agent installation files, double-click **setup.exe**. The Application Maintenance window opens.
- 2 Select the **Modify** option.
- 3 Click **Next**. The Select Features window opens. See [Using the Agent Installation Wizard](#) on page 50 for information about how to use this window.
- 4 Click **Next**. The Ready to Modify the Application window opens.
- 5 Click **Next**. The Client Automation agent has been successfully installed window opens.
- 6 Click **Finish** to close the installation program.

Using a Command Line to Modify the Client Automation Agent Installation

This section describes how to modify the installation of Client Automation agents using a command line.

To modify the installation of Client Automation agents using a command line

- From the folder containing the Client Automation agent installation files, type the following command line:

```
SETUP.EXE FeatureStateArgument=feature1 , feature2
```

Table 9 Client Automation agent feature state arguments

Specify:	Action
ADDLOCAL	Type a comma-delimited list of features that you want to set to “Will be installed on local hard drive.”
REMOVE	Type a comma-delimited list of features that you want to set to “Entire feature will be unavailable.” This removes the features only, not the entire product. Therefore, if you use the REMOVE property and type each of the feature names, the core product will still be stored on your computer. If you want to remove the entire product, type REMOVE=ALL .

Reference the features for the Client Automation agent installation as follows:

- Application Manager NVDINSTALLRAM
- Application Self-service Manager NVDINSTALLRSM
- Inventory Manager NVDINSTALLRIM
- OS Manager NVDINSTALLROM
- Patch Manager NVDINSTALLPATCH

Example

If you want to install the Application Self-service Manager, and to make the Inventory Manager and Application Manager unavailable, use the following command line:

```
SETUP.EXE ADDLOCAL=NVDINSTALLRSM
REMOVE=NVDINSTALLRIM,NVDINSTALLRAM
```

See [Installing the Client Automation Agent from a Command Line](#) on page 46 for additional arguments.

Using a Pre-Install Script

Use Visual Basic scripts to customize MSI properties that affect the installation. The following is a very simple Visual Basic script, which is intended to be an example only.



Be sure to use the NVDPRECAPATH argument to specify the fully qualified path and file name of a custom Visual Basic pre-install script in `Install.ini` or on the command line. See the description of NVDPRECAPATH in [Table 3](#) on page 37.

Here is a sample pre-install script:

```
` The following sample demonstrates fetching an MSI property,
then setting the same property.

` The property values are displayed in message boxes for
debugging purposes.

Option Explicit

msgbox Session.Property("ALLUSERS")

Session.Property("ALLUSERS") = "1"

msgbox Session.Property("ALLUSERS")
```

You can use a pre-install script to override the property settings of the arguments that control the behavior of the Application Self-service Manager, such as those in the [ARGS] section of `Install.ini`, as well as the attribute values for Client Automation objects, such as those specified in the [OBJECTS] section of `Install.ini`.



New objects or properties must be defined in `Install.ini`.

You can use a pre-install script to override a value for the object or property, but if you attempt to specify a new object or property in the pre-install script, it will be ignored.

To override property settings or attributes for objects



Be sure to type the name of the property or the object and its attribute such as `NVDOBJZMASTER_ZDSTSOCK` in uppercase letters.

- Use the prefix `NVDARG` to override property settings.

For example, to override the value set for the identification property, which identifies the subscriber session to the Configuration Server, type:

```
Session.Property("NVDARGIDENTIFICATION")="jenns"
```

- Use the prefix `NVDOBJ` to override object attributes.

For example, if you want to override the value set for the `ZDSTSOCK` attribute of the `ZMASTER` object, which is the port setting for the Configuration Server, type:

```
Session.Property("NVDOBJZMASTER_ZDSTSOCK")="3462"
```

Using a Post-Install Script

Use custom Visual Basic, REXX, or Tcl scripts to run processes after installing Client Automation agents. For example, your post-install script can initiate a connection to the Configuration Server in order to process mandatory applications.



Be sure to use the `NVDPOSTCAPATH` argument to specify the fully qualified path and filename of the custom Visual Basic or REXX post-install script in `Install.ini` or on the command line. See the description of `NVDPOSTCAPATH` in [Table 3](#) on page 37. For example, if you want to run a script called `redstart.rex`, uncomment and set `NVDPOSTCAPATH=C:\Progra~1\Hewlett-Packard\CM\Agent\radstart.rex`

Include the script in the `\maint` folder of the Client Automation agent install. It will automatically get copied into `IDMSYS`. A script example is shown below:

The following is a sample REXX from a post-install script.

```

/** RADSTART.REX                                     **/
/**                                                 **/
/** DESCRIPTION:                                     **/
/** Client REXX will perform a CM connection to a CS defined in the **/
/** install.ini to process all mandatory applications.          **/
/**                                                 **/
/** AUTHOR:           HP                             **/
/** LANGUAGE:        REXX                           **/
/**                                                 **/
/*****/
/* trace i */

fullcmd = 'HIDE radntfyc localhost wait radskman context=m,log=connect_initial.log'
call edncmd fullcmd;

```

Local AIP Support for the MSI Redirector



Windows 2000, Service Pack 4 Note

In order for the Local AIP driver to work, the Microsoft Windows 2000 Rollup 1 cumulative patch must be installed.

The MSI Redirector is a specialized, local-host HTTP server that accepts and satisfies file requests that are made during an MSI installation. On receiving the HTTP request from MSI, the Redirector retrieves the file from its local cache (if it exists); if the file is not in its local cache, the Redirector requests the file from an upstream Configuration Server or Proxy Server. This process requires that the MSI installation supports HTTP, although some vendors (including Microsoft) have removed HTTP support from their product installations. Without HTTP support, the MSI installation will not be able to directly request the files from the MSI Redirector.

In order to continue to use the MSI Redirector, a level of redirection now exists at the local file-system level. When using this method, MSI is told that the AIP is local, and requests the files directly from the file system. This request is captured and forwarded to the MSI Redirector, which satisfies the request in its usual way. The file is then placed in the defined local AIP where MSI can process it. The local AIP is temporary; it is removed after the installation is completed.

To enable using the Local Application Installation Point

- 1 Use the CSDB Editor to navigate to the MSI Resources (MSI) Class in the SOFTWARE Domain. Each MSI application will have an MSI instance and an IDX instance.
- 2 Right-click the MSI instance and select **Edit Instance**.
- 3 Set **MSIDRIVR (Use Local AIP [Y/N])** to **Y**.



If MSIDRIVR is not in your database, create it in the MSI Resources (MSI) Class as a 1-byte variable with a description of **Use Local AIP [Y/N]**.

HP recommends backing up your database before making changes to a Class template.

For information on editing Class templates, refer to the *Administrator Guide*.

- 4 Click **OK**.
- 5 Click **Yes** to confirm the changes.
- 6 Configure the SETTINGS.LOCALAIP variable in COPs to control the destination of the local AIP folder on the Client Automation agent desktop. For example, **C:\localaip**.



HP recommends keeping your LOCALAIP as short as possible to accommodate AIPs that have deep directory structures.

Internet Proxies

Internet proxies are put in place by companies for a variety of reasons. HP Client Automation can detect when an internet proxy is being used. It stores the proxy's address in `PROXYINF.EDM`, which is in the Client Automation

agent computer's `IDMLIB` directory, thereby allowing the Client Automation agent authority to pass through the proxy.

You must enable the Client Automation agent to discover and use internet proxies by setting

USEPROXY=Y and **DISCOVER=Y**

in the Client Automation agent `PROXYINF.EDM` object.

The next time that the Client Automation agent connects to the Configuration Server it will use the internet proxy that is specified.

4 The AUDIT Domain

At the end of this chapter, you will:

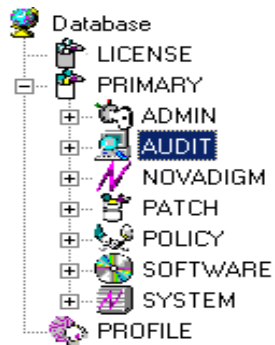
- Understand the AUDIT Domain in the HP Client Automation Configuration Server Database (CSDB).
- Understand the HP Client Automation Inventory Manager (Inventory Manager) database.

This manual is provided to assist you with installing and using the Inventory Manager. Choose the appropriate strategies suited for your enterprise needs.

The AUDIT Domain in the CSDB

The AUDIT Domain is located in the PRIMARY File of the CSDB. The AUDIT Domain contains the classes required to:

- Configure the tasks needed to collect the inventory information.
- Manage the agent computers' assets.



AUDIT Domain Defined

The AUDIT Domain is structured very much like the SOFTWARE Domain. The next figure shows its tree structure in the CSDB Editor.

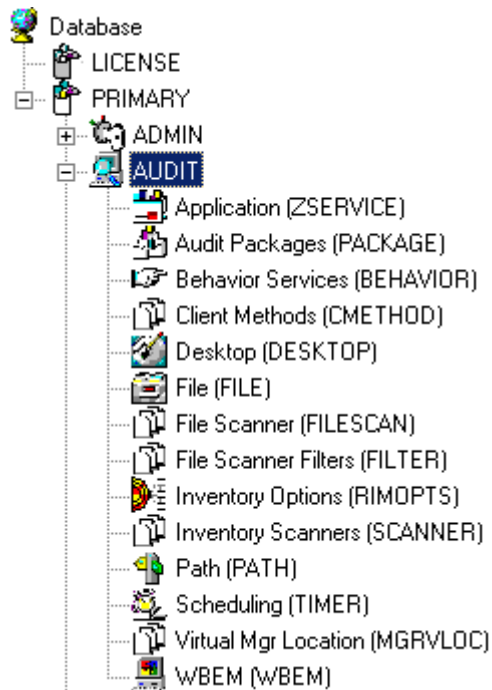


Table 10 below describes the classes in the AUDIT Domain.

Table 10 AUDIT Domain

Class	Description
Application (ZSERVICE)	These are sample services distributed with the Inventory Manager. The AUDIT.ZSERVICE instance is connected to a policy instance. A policy instance can be an instance of the Users, Departments, or Workgroups class. It can also be a customer-defined class within the POLICY Domain. Each of the sample ZSERVICE classes is connected to the PACKAGE instances.
Audit Packages (PACKAGE)	Defines what information to collect, and then what actions to take. These packages would contain various audit components. A good example is an audit of running services on a desktop. The AUDIT.ZSERVICE instance must contain a connection to an AUDIT.PACKAGE instance.

Class	Description
Behavior Services (BEHAVIOR)	Defines instances that enable the execution of auditing on the agent. Normally, there is no need to add or modify instances in this class.
Client Methods (CMETHOD)	This class is used to configure method points for Td inventory scans. The base instance of the SCANNER Class is connected to the CMETHOD.INV_FULL instance. This instance can be used for all inventory scans defined in the SCANNER Class.
Desktop (DESKTOP)	This class is reserved for future use.
File (FILE)	Defines file scans, such as auditing system DLLs.
File Scanner (FILESCAN)	For UNIX devices only, persistent component class used to configure an inventory scan. Adding File Scanner components to an audit package creates instances of the FILESCAN Class.
File Scanner Filters (FILTER)	For UNIX devices only, persistent component class used to configure an inventory scan. Adding FILE Scanner Filters components to an audit package creates instances of the FILTER Class.
Inventory Options (RIMOPTS)	Contains the attributes that offer options that control an inventory management task. For additional information, refer to the RIMOPTS Class on page 67.
Inventory Scanners (SCANNER)	This persistent component class is used to configure an inventory scan. Create instances of the SCANNER Class by adding Inventory Scanners components to an audit package.
Path (PATH)	This class stores the drive and directory required to install a resource. Packages can be relocated by updating instances of this class.
Registry (REGISTRY)	This class uses WMI to obtain a Registry scan of a Windows machine. Create instances of the REGISTRY Class to run scans of the Windows Registry and obtain a Registry Scan report.

Class	Description
Scheduling (TIMER)	This class contains the instances that enable the CM administrator to set a timer on end users' computers. One or multiple auditing services can be processed whenever the timer expires.
Virtual Mgr Location (MGRVLOC)	This class is used to specify the initial path for files being transferred to the Configuration Server during a FILE audit.
WBEM (WBEM)	This class contains instances that define Inventory Manager scans of WMI classes. These can include any class in the WMI database such as Win32_Services. This example would provide information on Windows NT or Windows 2000 services.

RIMOPTS Class

The RIMOPTS Class is also known as the Inventory Options Class. This class contains the attributes that control an inventory management task. [Table 11](#) below describes these attributes.

Table 11 RIMOPTS Class

Attribute	Usage
COLLECT	<p>Audit Collection Type by selecting Diff or Full</p> <ul style="list-style-type: none"> Select Diff to report the difference between the previous information collected for the service and the information collected during the current agent audit. This is the default setting. <p>Note: The first or initial scan of the DIFF setting will be a FULL scan as defined below. All subsequent scans will then be differenced unless the administrator changes the setting to FULL.</p> <ul style="list-style-type: none"> Select Full to report the information collected for the service during the current agent connect process without differencing against the previous collection for that service.

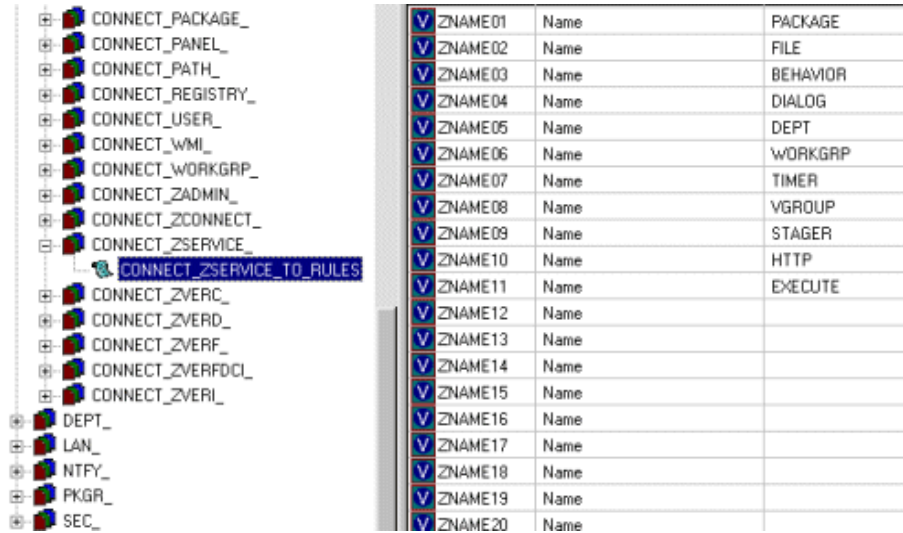
Attribute	Usage
RUNEXEC	<p>This string indicates what actions the Inventory Manager will take upon connection:</p> <ul style="list-style-type: none"> • Select I to invoke collection of information when the service is installed • Select U to invoke collection of information when the service is updated. • Select V to invoke collection of information when the service is verified. <p>The default settings are I and U.</p>
ZSVCTYPE	<p>Contains code that is used internally by the Inventory Manager agent. In all cases, this value should remain I.</p>
NAME	<p>Contains the friendly name of the instance. It is the name displayed for the instance in the tree view of the CSDB Editor.</p>

To apply an option expressed in the RIMOPTS instance to the inventory management task, the RIMOPTS instance must contain a connection to an audit service.

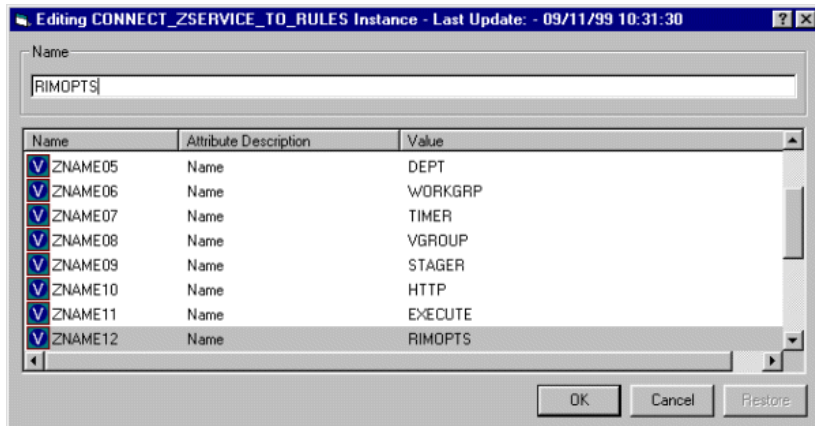
Prior to beginning any tasks using the Inventory Manager, you must enable the drag-and-drop feature for the newly created RIMOPTS Class instances. For additional information about editing instances, refer to the *Administrator Guide*.

To enable drag-and-drop connections for RIMOPTS Class instances

- 1 Open the Admin CSDB Editor and go to **PRIMARY** → **ADMIN** → **Name Lists (8) (ZLIST)** → **CONNECT_** → **CONNECT_ZSERVICE_**
- 2 Double-click on **CONNECT_ZSERVICE_TO_RULES**.



3 The Editing Instance dialog box opens.



4 Set the value of the **ZNAME n** attribute to **RIMOPTS**.

The drag-and-drop feature is now available for all attributes in RIMOPTS.

REGISTRY Class

The Registry Class uses WMI to obtain a Registry scan of a Windows machine. Most of the attributes are copied from the existing WBEM class of the AUDIT Domain, with descriptions adjusted for registry-specific needs. For example, the PROPERTY and CNDITION attributes define the current

Registry hive and subkey to scan, respectively. Three new Registry-specific attributes have been added to the class. They include:

- **RPTCLASS** – The Report Class Name in RIM.
- **FORMAT** – The Output format- requires REGISTRY (do not change).
- **DEPTH** – Defines the levels below the current subkey to scan.

Table 12 below summarizes the attributes and values for the Registry Class instances. Attributes in bold are new to this class (not in the WBEM class).

Table 12 Registry Class Instance Attributes

Attribute	Description	Default Value	Valid Values
ACTION	Report Flags (I, N, C, D, S, D, C)	YYYYXXN	Y, X, or N for each flag.
NAMESPACE	Name Space	root\default	root\default – Do not change.
CLASS	WBEM Class	StdRegProv	StdRegProv – Do not change.
RPTCLASS	Report Class Name	Registry	A valid table name. If blank “StdRegProv” will be used.
PROPERTY	Registry hive.	HKEY_LOCAL_MACHINE	Any Windows registry hive: HKEY_CLASSES_ROOT HKEY_CURRENT_USER HKEY_LOCAL_MACHINE HKEY_USERS HKEY_CURRENT_CONFIG HKEY_DYN_DATA
CNDITION	Registry subkey	SOFTWARE\Microsoft\Internet Explorer	Any Windows registry subkey.
FORMAT	Output format.	REGISTRY	REGISTRY – Do not change.

Attribute	Description	Default Value	Valid Values
DEPTH	Starting at the registry subkey named in the CNDITION attribute, depth specifies the number of descendent key levels to include in the scan.	0	0, -1, or <i>n</i> <ul style="list-style-type: none"> Set to 0 to only scan current subkey. Set to -1 to scan all subkey levels. Set from 1 through <i>n</i> to scan the current subkey and the specified number of subkey levels deep.
OUTPUT	Output Object Name	WBEMAUDT	WBEMAUDT
TYPE	Scan Type (WBEM)	WBEM	WBEM – Do not change.
NAME	Friendly Name	Default	Friendly name for this instance displayed in the Admin CSDB Editor.

Implementing Registry Scans

Use the following high-level procedures to create and run scans of the Windows Registry using the REGISTRY class in the AUDIT Domain.

- 1 Create an AUDIT.PACKAGE instance for the registry scan.
- 2 Right-click on the newly created AUDIT.PACKAGE instance and select **Add Component** from the shortcut-menu.
- 3 Use the Add Component dialog to both create and edit a new AUDIT.REGISTRY instance in a few steps:
 - a Use the Available Components drop-down list to select **Registry**.
 - b In the New Component Name text box type an instance name for the new registry scan.
 - c Click **Add + Edit**.

d Use the Edit instance dialog to modify the attributes, as necessary. The PROPERTY, CNDITION and DEPTH attributes define the hive, registry subkey and depth of the scan, respectively.

e Click **OK** to save your changes.

The registry scan instance is automatically created and attached to the audit package.

4 Connect the audit package to an audit service.

5 Entitle the audit service for the registry scan to the appropriate machines or users.











































































6 The registry scan service is deployed during the first connection to an entitled agent. Upon the next connection, the registry scan inventory is collected and passed to the Messaging Server, which posts it to the ODBC database for inventory.

7 View the Registry Scan report from the Reporting Server.

Inventory Database Tables

The inventory reporting database includes the tables shown in [Figure 3](#) on page 73, among others.

Figure 3 Standard Inventory Database – Tables.

 Create table in Design view	 rWin32_DisplayConf	 rWin32_Process
 Create table by using wizard	 rWin32_DisplayControllerConf	 rWin32_Processor
 Create table by entering data	 rWin32_DMAChannel	 rWin32_Product
 AppEvent	 rWin32_Environment	 rWin32_SerialPort
 DeviceConfig	 rWin32_FloppyController	 rWin32_Service
 DeviceErrors	 rWin32_FloppyDrive	 rWin32_Share
 DeviceMap	 rWin32_Group	 rWin32_SoftwareElement
 DeviceNotify	 rWin32_IDEController	 rWin32_SoftwareFeature
 DeviceServices	 rWin32_IRQResource	 rWin32_SoundDevice
 DeviceState	 rWin32_Keyboard	 rWin32_StartupCommand
 DeviceStatus	 rWin32_LoadOrderGroup	 rWin32_SystemDriver
 FileAudit	 rWin32_LogicalDisk	 rWin32_SystemEnclosure
 HAppEvent	 rWin32_LogicalMemoryConf	 rWin32_TimeZone
 HDeviceErrors	 rWin32_LogicalProgramGroup	 rWin32_USBController
 HDeviceState	 rWin32_MemoryArray	 rWin32_UserAccount
 HDeviceStatus	 rWin32_MemoryDevice	 rWin32_VideoController
 rCIM_Product	 rWin32_MotherboardDevice	
 rWin32_BIOS	 rWin32_NetworkAdapter	
 rWin32_BootConf	 rWin32_NetworkAdapterConf	
 rWin32_Bus	 rWin32_NetworkConnection	
 rWin32_CacheMemory	 rWin32_OperatingSystem	
 rWin32_CDRomDrive	 rWin32_PageFile	
 rWin32_ComputerSystem	 rWin32_PageFileSetting	
 rWin32_ComputerSystemProduct	 rWin32_PageFileUsage	
 rWin32_Desktop	 rWin32_ParallelPort	
 rWin32_DesktopMonitor	 rWin32_PnPEntity	
 rWin32_DeviceMemoryAddress	 rWin32_PointingDevice	
 rWin32_DiskDrive	 rWin32_PortResource	
 rWin32_DiskPartition	 rWin32_Printer	

The table names denote the origin of the data that they contain. For example, the **rWin_LogicalMemoryConf** table will be populated with data from the Win32_LogicalMemoryConfiguration Wbem class.

Tables that begin with rWin32_ are populated with the data from Wbem queries. Tables that do not start with rWin32_ are populated with data from non-Wbem sources.

The recommended product for viewing Inventory is the Reporting Server. Refer to the *Reporting Server Guide* for more information.

5 Software and Hardware Auditing

At the end of this chapter, you will:

- Understand file auditing.
- Understand WBEM auditing.
- Understand hardware auditing and the ZCONFIG object.

This guide is provided to assist you with installing and implementing the Inventory Manager. Choose the appropriate strategies suited for your enterprise needs.

Auditing Types

When configuring your audits, it is beneficial for the administrator to understand exactly what types of things can be audited and what the expected results from an audit will be.

The Inventory Manager allows for three types of audits:

- File auditing
- WBEM auditing
- Hardware auditing

File Auditing

The `AUDIT.FILE` Class instances in an audit package control the auditing function for files on the agent computer. The `RIMFSCAN` and the `RIMDIFF` methods on the agent computer perform the actual file auditing operations by specifying what files to look for. There can be one or more `AUDIT.FILE` instances in an audit package. Each `AUDIT.FILE` instance can specify a scan for one or more files.

See [What Happened during the Scan](#) on page 101 for additional information on the `RIMFSCAN` and the `RIMDIFF` methods.

The following table summarizes the attributes in an `AUDIT.FILE` class instance and their effects on the `RIMFSCAN` method.

Table 13 **AUDIT.FILE Class Instances**

Attribute	Description and Examples
SCANFOR	Indicate a fully qualified path and file name to search for. Wildcards are permitted. <i>Drive:\WinNt**.dll</i>
ACTION	The <code>RIMDIFF</code> method performs actions on the files discovered on the user's computer during the agent connect.

Attribute	Description and Examples
	<ul style="list-style-type: none"> • Y configures RIMDIFF to perform the action. • N configures RIMDIFF to not perform the action. <p>The first four flags determine <i>when</i> to report that the files were found: Report on: Initial, New, Changed, Deleted</p> <ul style="list-style-type: none"> • Initial means that the file was found during the first scan of the agent computer. • New means that the file was found during the current scan. The file was not present during the previous scan. • Changed means that the file was present during the previous scan and is different from the file found during the current scan. • Deleted means that the file was found during the previous scan. The file is not present for the current scan. <p>The last three flags control the <i>actions to take</i> on the files detected during the current scan. Action to take on discovery: Send, Delete, Custom</p> <ul style="list-style-type: none"> • Send means to send the files to the Configuration Server and store them in the location indicated by the ZRSCVLOC attribute (see ZRSCVLOC in this table). • Delete means to delete the files from the user's computer. • Custom means to execute the method indicated in the CUSTOM attribute. <p>YYYYNYN – Report whenever encountered and delete the files. NNYYNNN – Report when changed or deleted and take no action. NYNYNYN – Report when the files are new or changed. Then send and delete the files.</p>
OUTPUT	Output object name.

Attribute	Description and Examples
TYPE	Scan different file locations. Available scans are Behavior Services, Desktop, File, Path, Registry, and WBEM. File.
GROUP	Optional way to identify a set of scan results. This maybe useful for querying and reporting on the audited files from the database where audit results can be stored. Games, MPEGs.
ZVERINFO	<p>Collect extended information.</p> <ul style="list-style-type: none"> • Set the value to 1 to collect additional information for a file. • Set the value to 0 to not collect additional information. <p>In order for this data to be collected, the associated attribute must exist in the AUDIT.FILE class template.</p> <p>You can limit the scan to only those files that have some particular values in their extended information. You do so by supplying a value (either 1 or 0) for any of the associated attributes in an AUDIT.FILE instance. This causes the scan to be filtered. Only those files whose extended information data element contains the value you specify in its associated attribute will be scanned.</p> <p>Extended file information consists of one ore more of the following data elements. The associated attribute name for the data element is in parentheses:</p> <ul style="list-style-type: none"> • (VENDOR) – The seller of the file/product • (PRODUCT) – The name of the item for which the file is a part. • (PRODVERS) – The version of the product which the file is a part. • (ORGNAME) – The name of the organization. • (INTERNAL) – The internal data element encoded in the file. • (VERSION) – The version of the file. • (LANGUAGE) – The language of the file.

Attribute	Description and Examples
ZRSCSTYP	Server file type. This can be either Binary or Text. The administrator does not set this.
ZRSCMFIL	Manager directory location.
ZRSCVLOC	The location on the Configuration Server where the files are stored because of the Send Action (see ACTION in this table). This variable needs to be configured when sending a file back to the Configuration Server. The variable should contain the name of the MGRVLOC instance that will be used to resolve the location to store the uploaded file. <i>SystemDrive:\Data\&(ZOBJPID)\&(name)</i>
ZRSCMEM	PDS member name. This field is optional.
PRODUCT	The product name. See ZVERINFO on page 78 for more detail.
PRODVERS	The product version. See ZVERINFO on page 78 for more detail.
ORGNAME	The organization name. See ZVERINFO on page 78 for more detail.
INTERNAL	The internal data element encoded in the file. See ZVERINFO on page 78 for more detail.
VERSION	The version of the file. See ZVERINFO on page 78 for more detail.
LANGUAGE	The language of the file. See ZVERINFO on page 78 for more detail.
VENDOR	The product vendor. See ZVERINFO on page 78 for more detail.
ZRSCCRC	Resource CRC.

Attribute	Description and Examples
ZCRCINFO	<p>Collect file CRC. [Y/N] Default is N.</p> <ul style="list-style-type: none"> • Set the value to Y to collect CRC information for a file. • Set the value to N to not collect CRC information. • If blank, defaults to N. <p>Caution: Collecting file CRC information can dramatically extend the time it takes to collect information on the target machine.</p>
ZMD5INFO	<p>Collect file MD5 information. [Y/N] MD5 information is a 32-character value that can be used to uniquely identify a file based on its content. Default is N.</p> <ul style="list-style-type: none"> • Set the value to Y to collect MD5 information for a file. • Set the value to N to not collect MD5 information. • If blank, defaults to N. <p>Caution: Collecting MD5 information can dramatically extend the time it takes to collect information on the target machine.</p>
ZRSCOBJN	Persistent object name.
ZRSCPADM	Administrator ID.
ZRSCSRC	Resource Source, i.e., Publisher.
ZINIT	Not applicable at this time.
NAME	Not applicable at this time.
LOCATION	Not applicable at this time.

Use the Agent Explorer to view the FILEAUDT object results as shown in [Figure 4](#) on page 81.

Attribute	Description
DATE	The date of the most recent modification to this file.
DIRPATH	The directory path of the file.
DRIVE	The system drive location of the file.
FULLPATH	Fully qualified path and file name of the file.
PATHCRC	A unique number that indicates the CRC path used for differencing.
RESOLVE	The value of M indicates that the Configuration Server resolves each heap of the FILEAUDT object individually. This value cannot be modified.
SIZE	File size in bytes.
STATUS	<p>Indicates the status of the file on the agent computer. Possible values are:</p> <ul style="list-style-type: none"> • Exists This is the first time scanning for this file and it was found. • New This file was added to the file system of the agent computer since the last scan was performed. • Update This file exists in the new and previous scans. There have been changes to the date, time, size, and/or version. • Deleted This file was present in the previous scan but is missing in the new scan. • Not found No files were found that matched this request.
TIME	The time of the most recent modification to this file.
XTENSION	The file extension. This is useful for sorting and querying back-end database tables that store the data found in this object.

WBEM Auditing

Use the RIMWBEM method to query the WBEM namespaces to retrieve information about how a system's hardware and software is used. The RIMWBEM method constructs a query from the information contained in an instance of the AUDIT.WBEM class. WBEM has a query engine that processes the query statement and returns the query results to RIMWBEM. There is one heap in the query result object for every discovered instance.



Inventory Manager leverages Microsoft's Windows Management Instrumentation (WMI) to collect hardware and software inventory data by using WMI queries. Some WMI queries can traverse the network contacting other servers in the enterprise to collect the requested information. This may result in large volumes of data being returned, and could have a significantly negative effect on network performance. An example of this would be querying all users on the network using the W32_UserAccount WMI class. Extreme caution must be taken to understand the scope of these queries to ensure unexpected results do not occur. While Inventory Manager provides an interface to WMI and its providers, it cannot control how these queries are satisfied. It is the customer's responsibility to safeguard against using WMI queries that span the network, if this behavior is not desired.

An AUDIT.WBEM class instance defines a query into the WBEM namespace.

Figure 5 AUDIT.WBEM class instances.

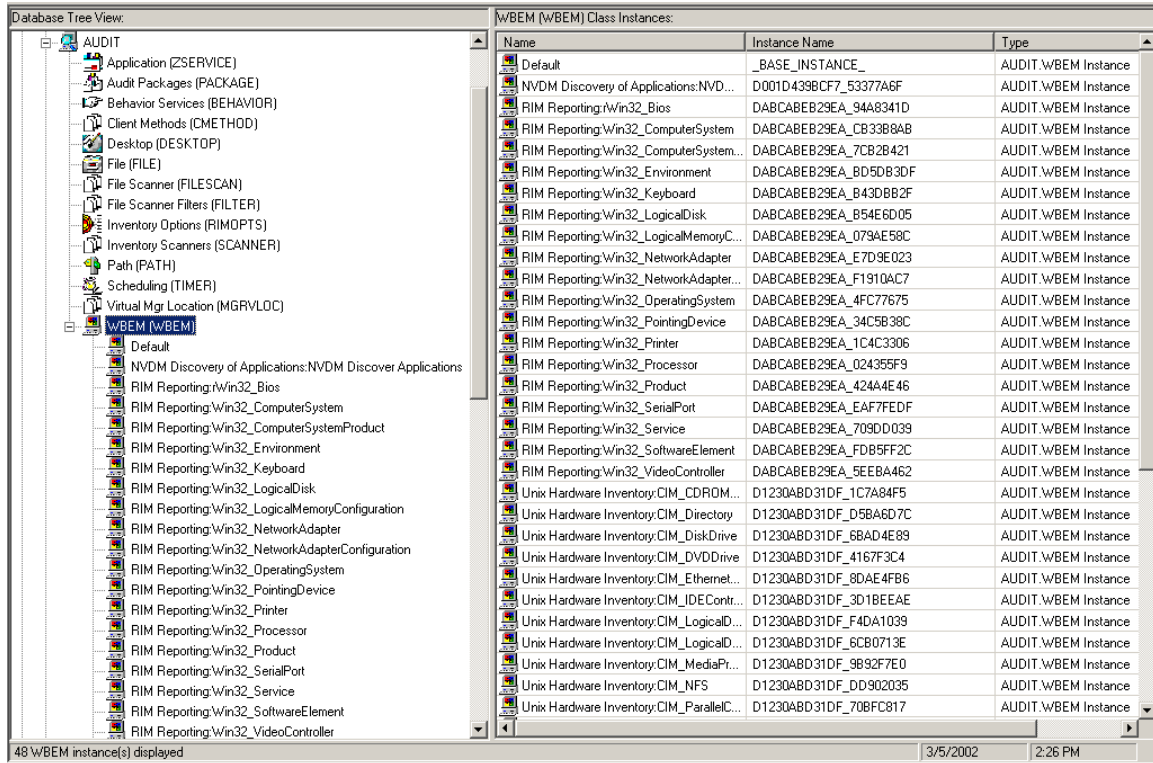


Table 15 below describes the attributes of the AUDIT.WBEM instance.

Table 15 AUDIT.WBEM Instance

Attribute Name	Description
ACTION	<p>The RIMDIFF method performs actions on the WBEM namespaces (s) instances discovered on the user's computer during the agent connect.</p> <ul style="list-style-type: none"> • Y configures RIMDIFF to perform the reporting action. • N configures RIMDIFF to not perform the reporting action. <p>The first four flags determine <i>when</i> to report that the WBEM namespace instance was found: Report on: Initial, New, Changed, Deleted, Scan,</p>

Attribute Name	Description
	<p>Delete, Custom</p> <ul style="list-style-type: none"> • Initial means that the file was found during the first scan of the agent computer. • New means that the file was found during the current scan. The file was not present during the previous scan. • Changed means that the file was present during the previous scan and is different from the file found during the current scan. • Deleted means that the file was found during the previous scan. The file is not present for the current scan. • Scan means that the file was found during the current scan. • Delete means that the file was found during the previous scan. The file is not present for the current scan. • Custom means that the file was found during a custom scan. <p>The last three flags are not applicable to WBEM audits.</p>
NAMESPACE	The name of the WBEM namespace to query or HARDWARE.
CLASS	The name of the WBEM class to query or HARDWARE.
PROPERTY	<p>Specify one or more property names to be queried and reported. Use commas to separate more than one property name.</p> <p>If this attribute is blank, all properties in the class will be queried and reported.</p>
CONDITION	An optional condition to narrow results of an audit.
OUTPUT	This is the name of the object to send to the Configuration Server.

Attribute Name	Description
TYPE	Indicates that WBEM scan is to be employed for this audit package.
NAME	Friendly name for this instance. This name will appear in the CSDB Editor's tree view to identify this instance.



When the keyword **HARDWARE** is used in the **NAMESPACE** and/or **CLASS** attributes of **AUDIT.WBEM**, hardware information is collected. This information is essentially the same as the **ZCONFIG** object.

The Inventory Manager agent stores the results of a WBEM scan in a WBEM object. This object can be found in the service node of the agent object tree. The results are also sent to the Configuration Server.

In addition to the attributes described in [Table 15](#) on page 84, the WBEM object also contains the following:

Table 16 WBEM Object Attributes in the Agent

Attribute	Description
ZOBJCID	Object child ID.
ZOBJCLAS	The targeted class for the audit such as ZRSOURCE or ZSERVICE.
ZOBJCRC	The CRC of all persistent and transient objects under the current node.
ZOBJDATE	The last date under the current node.
ZOBJDOMN	The domain name of the object.
ZOBJID	The object ID of the instance used to obtain information from the Resource file.
ZOBJNAME	The instance name of the object.
ZOBJPCLS	The parent class name.
ZOBJPID	The parent class ID.
ZOBJRCRC	The resource CRC maintained by the Configuration Server.
ZOBJRSIZ	The resource size maintained by the Configuration Server.

Attribute	Description
ZOBJTIME	The latest time under the current node.
ZRSCSRC	The name of the program promoted the resource.

WBEM Object Processing

When the Inventory Manager agent sends a WBEMAUDT object to the Configuration Server, processing is defined as follows:

- 1 At the end of the agent connect, the ZTASKEND REXX method on the Configuration Server is called and creates commands to invoke the QMSG executable.
- 2 QMSG.EXE places the WBEMAUDT objects into the Configuration Server \data\wbem directory, or message queue.
- 3 The Messaging Server includes a WBEM Data Delivery Agent (WBEM.DDA) that monitors this \data\wbem message queue and processes the WBEM objects.
- 4 The WBEM.DDA is usually configured to post the WBEM objects directly to an ODBC-compliant Inventory Manager database, or, it may be configured to first forward the WBEM objects to another Messaging Server located closer to the database. In the later case, the receiving Messaging Server posts the WBEM data to the Inventory ODBC-compliant database.
- 5 After it is posted to the Inventory Manager database, the new WBEM information is immediately available for query and reporting purposes through the Reporting Server.

For more information, refer to the *Messaging Server Guide*.

Disabling Remnant Configuration Server Instances for WBEM Object Processing

Inventory Manager no longer supports processing WBEM objects using these instances in the CSDB:

- SYSTEM.PROCESS.WBEMAUDT
- SYSTEM.ZMETHOD.POST_WBEM

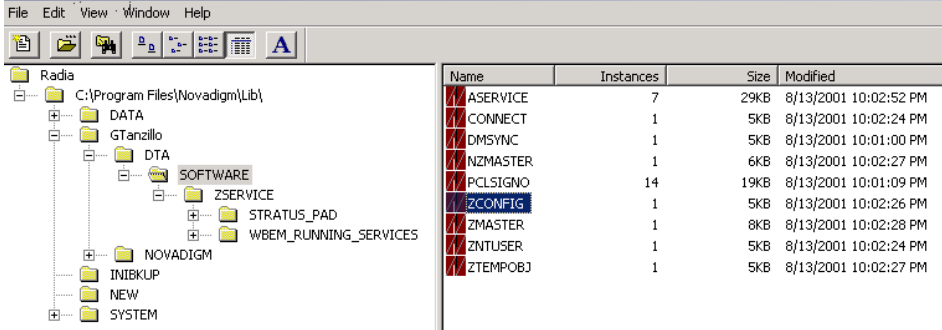
If these remnant instances exist or were imported into your CSDB, you must disable any configurations within them in order to ensure successful WBEM object processing.

Edit SYSTEM.PROCESS.WBEMAUDT and remove any connection to the SYSTEM.ZMETHOD.POST_WBEM instance.

Hardware Auditing

Each time a Client Automation agent connects to the Configuration Server, information about the agent's hardware configuration is stored in the ZCONFIG object. The ZCONFIG object is calculated and stored in the application service directory of the Client Automation agent's object directory tree as follows:

Figure 6 ZCONFIG object



Name	Instances	Size	Modified
ASERVICE	7	29KB	8/13/2001 10:02:52 PM
CONNECT	1	5KB	8/13/2001 10:02:24 PM
DMSYNC	1	5KB	8/13/2001 10:01:00 PM
NZMASTER	1	6KB	8/13/2001 10:02:27 PM
PCLSIGNO	14	19KB	8/13/2001 10:01:09 PM
ZCONFIG	1	5KB	8/13/2001 10:02:26 PM
ZMASTER	1	8KB	8/13/2001 10:02:28 PM
ZNTUSER	1	5KB	8/13/2001 10:02:24 PM
ZTEMPOBJ	1	5KB	8/13/2001 10:02:27 PM

A separate ZCONFIG object is calculated and stored for each service installed or updated during the agent connect. To force the transfer of the hardware information, the ZCONFIG attribute *must* be set to Y in the POLICY.USER class.

Figure 7 POLICY.USER Class – ZCONFIG attribute

Name	Attribute Description	Value
UNAME	Name	
ZCONFIG	Collect Hardware Info [Y/N]	Y
ZSETMSGA	Send Message to Audit Resource	DAILY
ZDLIMIT	Maximum Disk Space	0
USERID	Enterprise User Id	
ZTIMERID	Client Timeout (Seconds)	240
ZTRACEL	Trace Log Level [0-999]	040
ZTRACE	Trace On or Off [Y/N]	N
ZPRIORIT	Exec. Priority	000
ZSHOW	Display Status Indicator [Y/N]	N
ALWAYS	Utility Method	
ALWAYS	Member of	POLICY\WORKGRP.DEFAULT
ALWAYS	Member of	SOFTWARE.ZSERVICE.WEEDL...
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	
ALWAYS	Member of	NOVADIGM.ZSERVICE.CLIENT
NAME	Friendly name	ctanzillo
ZVERDT	Verify Desktop [Y/D/R/I]	Y

The ZCONFIG object contains a wealth of information about the agent computer's hardware.

Figure 8 ZCONFIG object.

Variable	Length	1 of 1
GATEWAY03	013	208.244.231.1
IPADDR01	007	0.0.0.0
IPADDR02	007	0.0.0.0
IPADDR03	015	208.244.231.104
LADAPT01	012	444553540000
LADAPT02	012	444553540001
LADAPT03	012	0050da644154
REBOOTD	008	20010608
REBOOTT	008	11:15:40
SUBNET01	007	0.0.0.0
SUBNET02	007	0.0.0.0
SUBNET03	013	255.255.255.0
ZGATEWAY	011	%(GATEWAY03)
ZHDWBIOS	037	04/22/99 PhoenixBIOS 4.0 Release 6.0
ZHDWCDDR	002	E:
ZHDWCOMP	009	ctanzillo
ZHDWCPU	007	Pentium
ZHDWCPUS	006	450MHz
ZHDWD00	002	C:
ZHDWD00C	005	Fixed
ZHDWD00F	014	10,109,403,136
ZHDWD00S	005	FAT32
ZHDWD00T	014	13,689,888,768
ZHDWD01	002	E:
ZHDWD01C	005	CDROM
ZHDWD02	002	F:
ZHDWD02C	006	Remote
ZHDWD02F	011	541,196,288
ZHDWD02S	007	NwCOMPA
ZHDWD02T	013	1,048,576,000
ZHDWD03	002	G:
ZHDWD03C	006	Remote
ZHDWD03F	014	51,560,579,072
ZHDWD03S	004	NTFS

The ZCONFIG object stores hardware information discovered by the Client Automation agent's standard hardware auditing method. Certain types of hardware can occur multiple times. The ZCONFIG object automatically expands to allow additional information to be stored.

The following table describes the attributes that are stored in the ZCONFIG object.

Table 17 ZCONFIG Object

Attribute	Description
GATEWAY	Router for your subnet.
HALCOMP	Company of HAL.DLL
HALDATE	Date and time of HAL.DLL

Attribute	Description
HALFNAME	Original name of HAL.DLL
HALFVER	Internal version of HAL.DLL
HALINAME	Name of HAL.DLL
HALLANG	Language of HAL.DLL
HALPNAME	Product name of HAL.DLL
HALPVER	Product version of HAL.DLL
HALSIZE	Size of HAL.DLL
IPADDR##	IP address of network adapter (there can be multiple addresses).
LADAPT##	Network card (there can be multiple network cards).
REBOOTD	Last re-boot date.
REBOOTT	Last re-boot time.
SUBNET##	Subnet mask.
ZGATEWAY	Looks at GATEWAY attribute.
ZHDWBIOS	BIOS type.
ZHDWCDDR	Client Automation agent's CD-ROM drive letter.
ZHDWCOMP	Computer name.
ZHDWCPU	Current CPU type.
ZHDWFPU	Current FPU type.
ZHDWIPAD	The IP address of the computer.
ZHDWKYBD	Keyboard type.
ZHDWLANA	LAN adapter.
ZHDWLANG	Language setting.
ZHDWMEM	Total physical memory (RAM).
ZHDWMEMF	Total free memory (RAM).
ZHDWMOUS	Mouse type.
ZHDWNET#	Network card information (can be multiple cards).
ZHDWNNET	Number of network cards.

Attribute	Description
ZHDWOS	Computer's operating system and version.
ZHDWOSCL	Operation system classification (Workstation or Server)
ZHDWOSDB	Operating system's build number.
ZHDWOSOG	Organization.
ZHDWOSOW	Owner.
ZHDWOSSR	Windows 9x Sub-Version Number (i.e., A, B, C)
ZHDWPA##	Printer information.
ZHDWPPAR	Number of parallel ports.
ZHDWPPRN	Number of printers available.
ZHDWPSE	Number of serial ports.
ZHDWVIDEO	Video type.
ZHDWVMSI	MSI Version
ZHDWVRES	Video resolution.
ZHDWXPAG	Page size.
ZHWCPU01	CPU type.
ZHWFPU01	FPU type.
ZMODEM	Modem present? Y or N
ZOBJDATE	The date of the Client Automation agent connect for this service.
ZOBJNAME	HARDWARE_SCAN (hard coded).
ZOBJTIME	The time of the agent connect.
ZSUBNET	The subnet mask.
ZUSERID	The name of the user who connected.

Whenever a Client Automation agent connects to the Configuration Server, certain hardware information concerning the subscriber is automatically forwarded to the Inventory Manager ODBC database as part of the Messaging Server processing of CORE objects. The hardware information is viewable through the Reporting Server.

6 Successful Auditing

At the end of this chapter, you will:

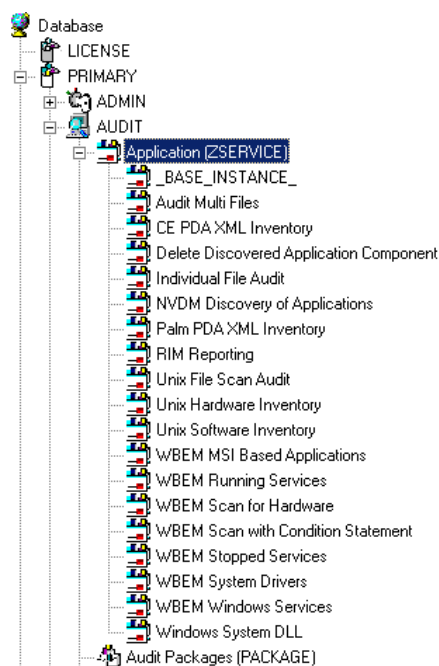
- Know how to use the pre-packaged Audit Applications (ZSERVICE).
- Know how to design your own Audit Packages (PACKAGE).

This manual is provided to assist you with installing and implementing the Inventory Manager. Choose the appropriate strategies suited for your enterprise needs.

Sample Auditing

To illustrate the concepts of inventory information collection, the Inventory Manager installation contains a set of representative audit service examples. These samples are located in the PRIMARY.AUDIT.Application (ZSERVICE) class as follows:

Figure 9 Sample Auditing services.



These sample services represent common scenarios for inventory collection and management. The best way to develop your own audit services is to study the samples that were installed with the Inventory Manager upgrade.

The sample audit services are described in the following table:

Table 18 Sample of Auditing Services

Service	Connected to Audit Package (PACKAGE)	Description
_BASE_INSTANCE_		This service instance is the base instance for the Audit Application (ZSERVICE) class.
Audit Multi Files	Audit to find and Capture Multiple Files	This service scans for a file name or pattern and reports that information back to the administrator.
CE PDA XML Inventory	CE PDA XML Inventory	This service scans for and reports back information on installed Windows CE PDA devices. Will only report back if a device is found.
Delete Discovered Application Component	Audit to Find and Remove Local File	This service looks for a specific file on the user's computer. If it is found, it will be deleted.
Individual File Audit	Audit to Find and Capture Local File	This service performs an NVDM scan of the user's computer for a specified file of an instance of the AUDIT.FILE classes.
NVDM Discovery of Applications	NVDM Discovery of Applications	Used to discover software applications that are installed on a Client Automation agent machine.
Palm PDA XML Inventory	Palm PDA XML Inventory	This service scans for and reports back information on installed Palm PDA devices. Will only report back if a device is found.

Service	Connected to Audit Package (PACKAGE)	Description
RIM Reporting	RIM Reporting	<p>This service performs a scan of a systems Win32 devices such as:</p> <p>Bios, Computer System, environment, keyboard, logical disk, logical memory configuration, network adapter, operating system, pointing device, printer, processor product, serial port, service, software element, and video controller.</p> <p>Note: This is a very large scan and may take several minutes to complete.</p>
Unix File Scan Audit	UNIX File Scan Audit	<p>This service performs a NVDM scan of the user's computer for a specified file of an instance of the AUDIT.FILE classes on UNIX platforms.</p>
Unix Hardware Inventory	Unix Hardware Inventory	<p>This service scans for and reports on a user's hardware on UNIX computers.</p>
Unix Software Inventory	Unix Software Audit	<p>This service performs an audit to find UNIX-based software.</p>
WBEM MSI Based Applications	WBEM Scan for Windows Installer Applications	<p>This service performs a WBEM scan of the user's computer for components registered in the WMI database that have been installed by Microsoft Windows Installer.</p>

Service	Connected to Audit Package (PACKAGE)	Description
WBEM Running Services	WBEM Scan for Running Services	This service scans the user's computer for system services that are running at the time of the scan.
WBEM Scan for Hardware	WBEM Scan for System Software	This service scans for and reports on a user's hardware.
WBEM Scan with Condition Statement	WBEM Scan with Condition Statement	This service performs scans based on a conditional statement set in the CONDITION attribute.
WBEM Stopped Services	WBEM Scan for STOPPED Services	This service scans the user's computer for system services that are stopped at the time of the scan.
WBEM System Drivers	WBEM Scan for Windows System Drivers	This service scans the user's computer for Win 32 system drivers.
WBEM Windows Services	WBEM Scan for Windows Services	This service scans for and reports on Windows Services.
Windows System DLL	Audit System DLL	This service scans for system DLLs and reports on them.

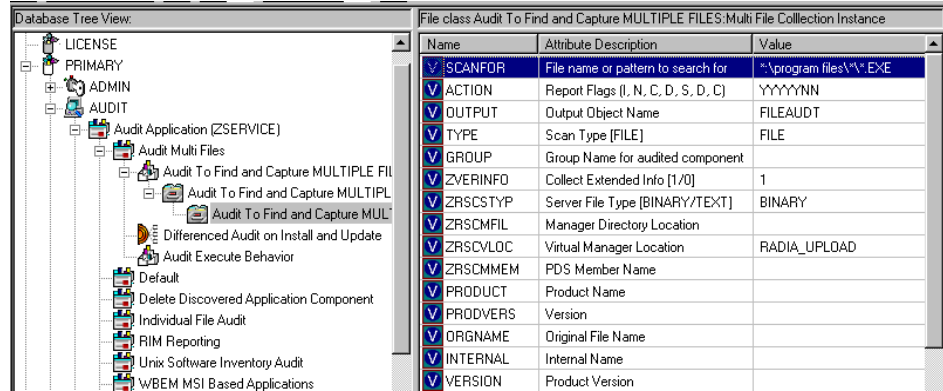
Configuring a Sample Audit

All of the examples presented can be configured for individuals, departments, work-groups, and so forth. Refer to the *Administrator Guide* for additional information on manipulating the database components.

For documentation purposes, we will configure the sample audit service Audit Multi Files. The file type we will be auditing is indicated in the SCANFOR attribute within the instance. This instance directs the Inventory Manager agent to scan for any `*:\program files**.exe` files on the

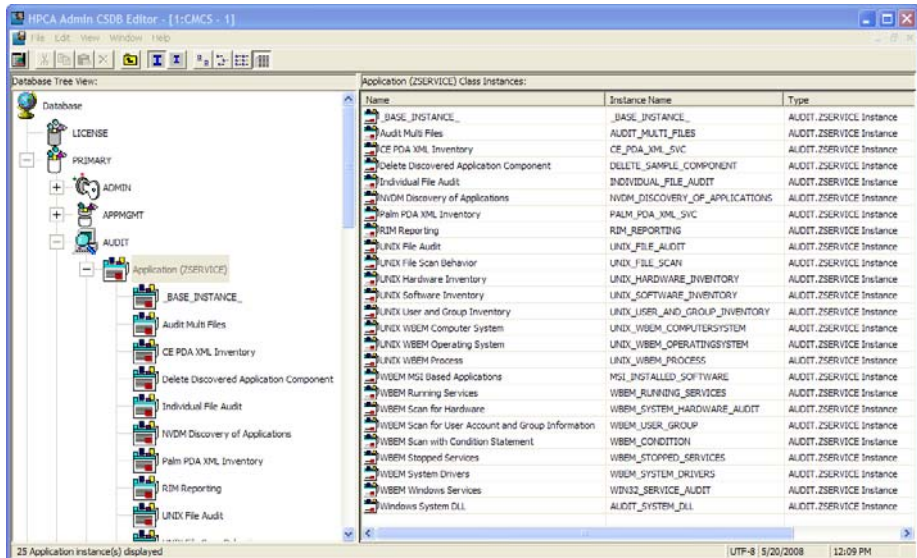
agent computer. The ACTION attribute indicates that the discovery of the file will be reported and sent to the Configuration Server for storage.

Figure 10 SCANFOR attribute of the Audit Multi Files instance.



To configure a sample Audit package

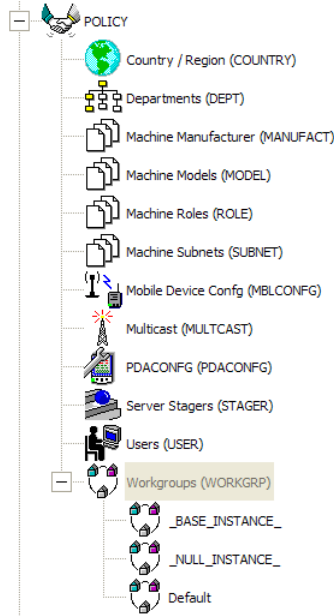
- 1 If you have not already done so, start the CSDB Editor.
- 2 Navigate to and expand the PRIMARY.AUDIT Domain.
- 3 Double-click on Application (ZSERVICE) to expand the class.



- 4 Scroll to and expand the POLICY Domain.

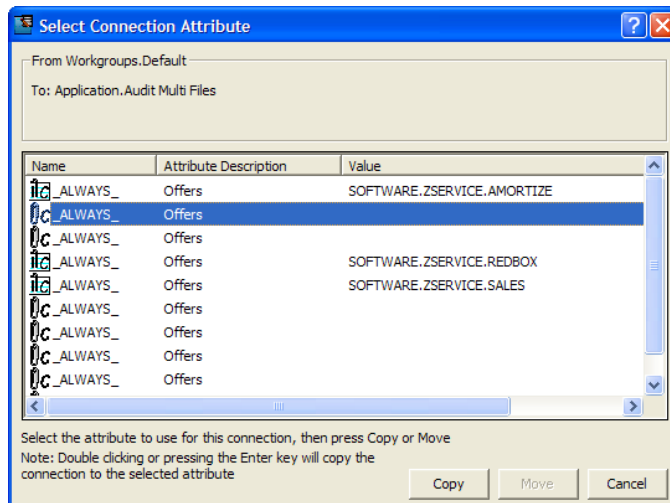
For our example, we would like all users that are members of the Workgroup class to select this audit package from their Application Self-service Manager.

5 Expand the POLICY.WORKGROUPS class.

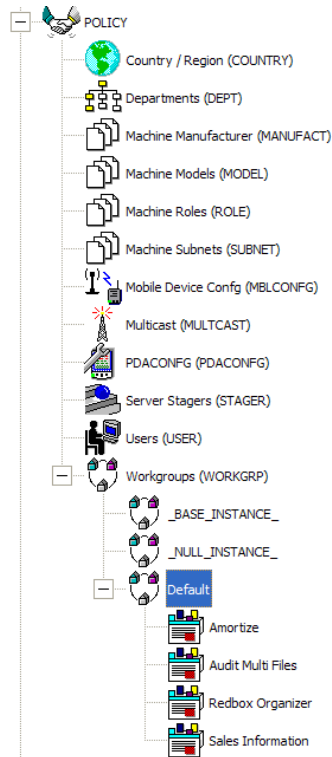


6 Select the **Audit Multi Files** package from the **ZSERVICE** class and drag it to the POLICY.WORKGROUPS class and drop it on the **Default** instance.

The Select Connections Attribute window opens.



- 7 Click **Copy** to add this package. The Confirm Connection dialog box opens.
- 8 Click **Yes** to confirm the connection. The Audit Multi Files package is added to WORKGRP Class.



The collection of inventory information occurs on the Inventory Manager agent computer when a user connects to the Configuration Server as follows:

- Through an Application Self-service Manager agent connect, when the user launches that program.
- or
- Through the Application Manager agent when the user double-clicks the Connect icon on his desktop, or is scheduled or notified to connect.

Figure 11 on page 101 shows the available Audit Multi Files package that an Application Self-service Manager user would see when connecting to the Configuration Server:

Figure 11 Application Self-service Manager shows Audit Multi Files

Name	Status	Compressed Size	Description	Mandatory	
Amortize	Available	n/a		0	
Audit Multi Files Version 1.0					Size 6.67 KB Compressed Size 2.34 KB
Available					
Drag & View	Available	2.51 MB		0	
GS-CALC	Available	n/a		0	
Redbox Organizer	Available	n/a		0	
Sales Information	Available	n/a		0	
StratusPad	Available	n/a		0	

When the subscriber selects and installs the Audit Multi Files package from the Application Self-service Manager, there are really two connections. The first connection downloads the Audit service. The second connection sends the audit results back to the Configuration Server. The audit-related scans are done between the two connections.

► Some scans may take several minutes to complete. This is a normal behavior of the audit scanning process.

What Happened during the Scan?

Use the Agent Explorer to locate the ZSERVICE for the **Audit Multi Files** package in the LIB directory.

Figure 12 AUDIT_MULTI_FILES in the LIB directory

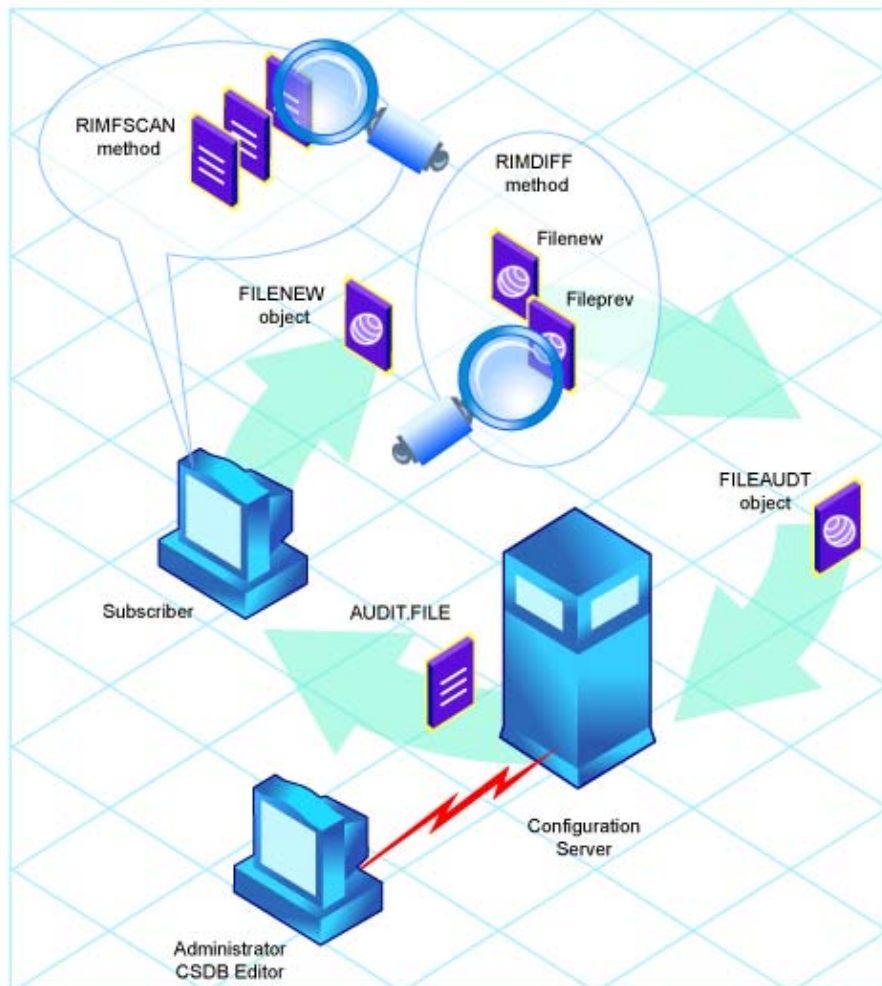
Name	Instances	Size	Modified
APPINFO	1	6KB	8/13/2001 10:10:19 PM
CONNECT	1	5KB	8/13/2001 10:10:19 PM
DMSYNC	1	5KB	8/13/2001 10:10:19 PM
FILEAUDT	370	1MB	8/13/2001 10:11:05 PM
FILEPREV	370	1MB	8/13/2001 10:11:05 PM
PCLSIGNO	14	19KB	8/13/2001 10:10:19 PM
ZCONFIG	1	5KB	8/13/2001 10:10:20 PM
ZMASTER	1	6KB	8/13/2001 10:13:07 PM
ZNTUSER	1	5KB	8/13/2001 10:10:19 PM

Within the ZSERVICE, note the two objects, **FILEAUDT** and **FILEPREV**. These objects are created and stored in the ZSERVICE of the LIB directory

whenever an audit package is installed. The FILEAUDT object contains one heap for each file discovered during the auditing scan. It also contains the attributes from the AUDIT.FILE instance that controlled the scan.

The AUDIT.FILE class instances in an audit package control the auditing for files on the agent computer. The RIMFSCAN and the RIMDIFF methods on the agent computer perform the actual file auditing operations by specifying what files to look for.

Figure 13 Auditing with the RIMFSCAN and RIMDIFF methods



- The RIMFSCAN method scans the Client Automation agent's file system based on the values in the AUDIT.FILE class instance in the audit package. It constructs an object called FILENEW. The FILENEW object contains one heap per file discovered during the current scan.
- The RIMDIFF method compares scan results from the current scan (the scan done during the current agent connect stored in the FILENEW object) with scan results from a previous scan (the scan done during a previous agent connect process stored in the FILEPREV object). It will construct the FILEAUDT object that is then sent to the Configuration Server. The RIMDIFF method then deletes the FILEPREV object and will rename the FILENEW object to FILEPREV.

For our particular example, there were 486 instances for both the FILEAUDT and the FILEPREV object located on the Client Automation agent's computer.

7 Creating Audit Packages

At the end of this chapter, you will:

- Have created a new file audit package.
- Have created a new ZSERVICE for your package.

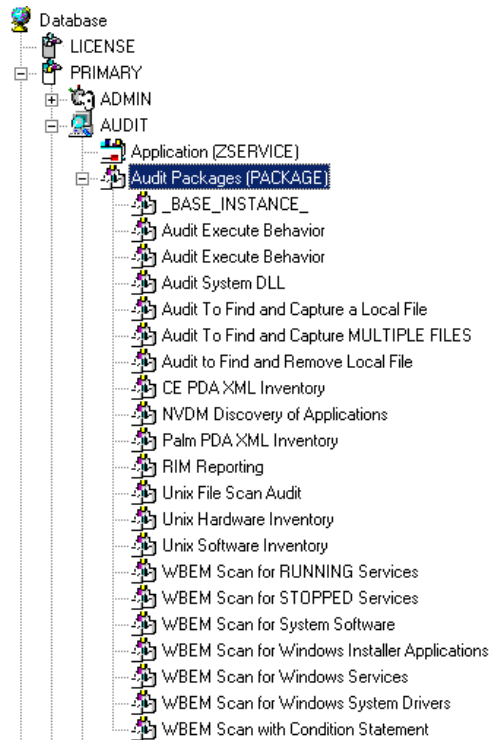
This manual is provided to assist you with installing and implementing the Inventory Manager. Choose the appropriate strategies suited for your enterprise needs.

Audit Packages or PACKAGE Class

Once you are comfortable auditing using the sample packages provided by HP, you will probably want to take the next step in designing your own audit packages.

By expanding the Audit Packages (PACKAGE) class, you will see the audit package instances.

Figure 14 Audit Package (PACKAGE) class.




A complete audit service consists of several connected instances in the AUDIT Domain. The audit package instance is a container that "owns" the instances connected to it. For example, open the AUDIT.ZSERVICE class and double-click on the Individual File Audit instance.

Figure 15 Individual File Audit instance.



In the example, the Individual File Audit ZSERVICE instance "owns" the Audit to Find and Capture a Local File instance. The fact that a package instance owns a component class instance means that all of the instances are managed as a package unit. If the package instance is deleted, all of its owned class instances are automatically deleted as well.

 Sound database management practices dictate that the component class instances owned by a package are not connected to any other package instance.

The audit service instance must also contain a connection to an instance of the RIMOPTS Class. Connecting an instance of the RIMOPTS Class to an audit service instance causes the expressed behavior to be performed. Specified behaviors are listed in the following table.

Table 19 Inventory Options (RIMOPTS) Class

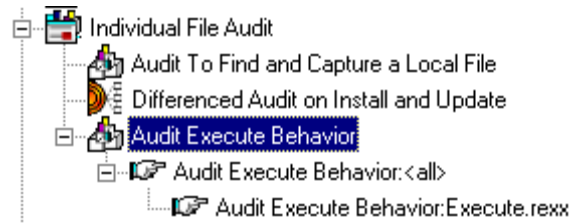
Instance	Description
Default	Contains the base instance attributes for the RIMOPTS Class. <ul style="list-style-type: none"> • Collect attribute is set to Diff. • Runexec attribute is set to IU. • ZSVCTYPE attribute is set to I.

Instance	Description
Differenced Audit on Install and Update	<p>When connected to an audit service will difference the audited information on installation and when the audited target is updated.</p> <ul style="list-style-type: none"> • Collect attribute is set to Diff. • Runexec attribute is set to IU. • ZSVCTYPE attribute is set to I.
Differenced Audit on Install, Verify, and Update	<p>When connected to an audit service, will difference the audited information in initial installation, on subsequent connects, and when updated.</p> <ul style="list-style-type: none"> • Collect attribute is set to Diff. • Runexec attribute is set to IVU. • ZSVCTYPE attribute is set to I.
Full Audit on Install and Update	<p>When connected to an audit service, will difference the audited information on installation and update.</p> <ul style="list-style-type: none"> • Collect attribute is set to Full. • Runexec attribute is set to IU. • ZSVCTYPE attribute is set to I.
Full Audit on Install, Verify and Update	<p>When connected to an audit service, will</p> <ul style="list-style-type: none"> • Collect attribute is set to Full. • Runexec attribute is set to IVU. • ZSVCTYPE attribute is set to I.

for additional information about RIMOPTS attributes.

Finally, a connection to an auditing behavior is needed.

Figure 16 Connection to an Audit Behavior



The audit behavior owned by the Individual File Audit ZSERVICE is connected to the Behavior Services (BEHAVIOR) class within the AUDIT Domain.

The BEHAVIOR class in the AUDIT Domain remains unchanged from the BEHAVIOR class within the SOFTWARE Domain. Refer to the *HP Client Automation Configuration Server Database Reference Guide, Chapter 8: The SOFTWARE Domain* for the description of the attributes found within this class.

Using the CSDB Editor Create/Maintain Audit Services

We will use the CSDB Editor to walk through the construction of a file audit. An instance of the AUDIT Domain's Audit Package (PACKAGE) Class contains information about the inventory information to collect, and what action to take with that collected information.

Prior to beginning the creations package, you should ask yourself the following questions:

- What am I auditing for? Will it be a hardware audit, a file audit, or a WBEM object audit?
- Will I be deploying to all users, or a select few?
- Will I want this to be connected to a timer for scheduled deployment? (See [Configuring Timers for Audit Collection](#) on page 121 for information concerning timers.)

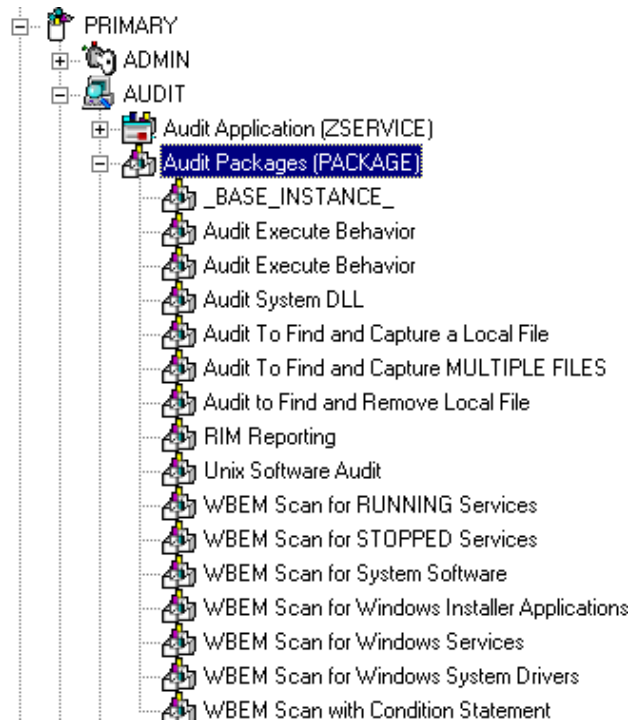
By viewing and deploying the sample audits provided by HP, system administrators will be able to create and use their own auditing packages.



If you are creating a WBEM Audit Package, be aware Inventory Manager leverages Microsoft's Windows Management Instrumentation (WMI) to collect hardware and software inventory data by using WMI queries. Some WMI queries can traverse the network contacting other servers in the enterprise to collect the requested information. This may result in large volumes of data being returned, and could have a significantly negative effect on network performance. An example of this would be querying all users on the network using the W32_UserAccount WMI class. Extreme caution must be taken to understand the scope of these queries to ensure unexpected results do not occur. While Inventory Manager provides an interface to WMI and its providers, it cannot control how these queries are satisfied. It is the customer's responsibility to safeguard against using WMI queries that span the network, if this behavior is not desired.

To create a new Audit package

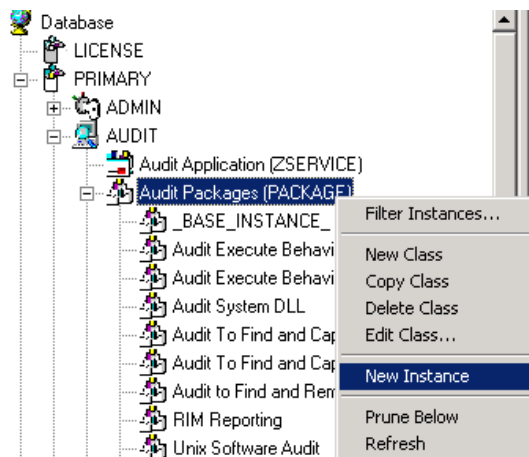
- 1 Go to **Start → Programs → HP Client Automation Administrator → HP Client Automation Administrator CSDB Editor**. The CSDB Editor Security Information dialog box opens.
- 2 Type a **User ID** and, if necessary, a **Password**, and then click **OK**. The CSDB Editor window opens.
 - ▶ The User ID, as shipped from HP, is **RAD_MAST**. No password is necessary. This may have been changed during installation. Check with your security administrator to obtain your own User ID and Password, if necessary.
- 3 Double-click **PRIMARY**.
- 4 Expand the **AUDIT Domain**.
- 5 Double-click on **Audit Packages (PACKAGE)** class.



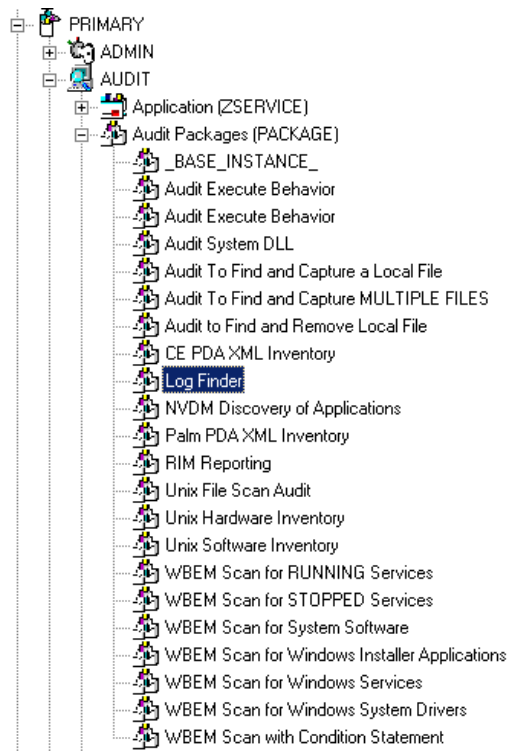
As an example, we will create a new auditing package called Log Finder. This package will scan a user's computer for .log files, capture them, and return the results to the administrator.

- 6 Right-click on the **Audit Packages (PACKAGE)** Class.

A shortcut menu opens.



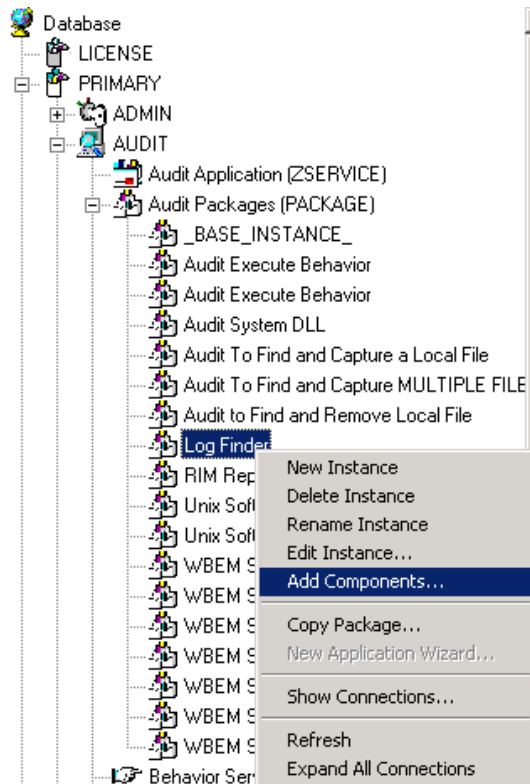
- 7 Select **New Instance** from the shortcut menu. The Create Instance dialog box opens.
- 8 Enter a new display name for the package instance. This friendly name will appear in the tree view.
- 9 Enter a name for the Create a new Audit Packages (PACKAGE) instance name. This name appears in the title bar of the list view of the CSDB Editor window when the instance is selected and opened in the tree view.
- 10 Click **OK** to continue. The new Log Finder package is added to the AUDIT.PACKAGE Class.



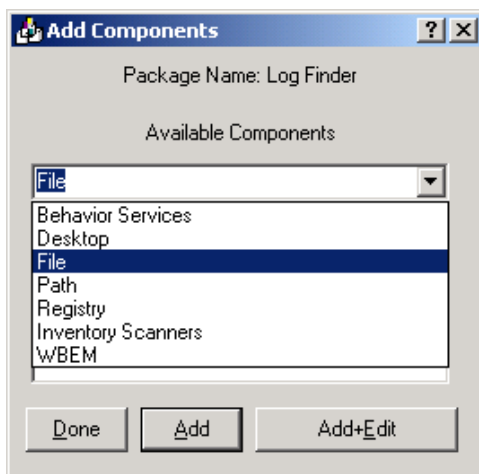
Once the Log Finder package is created, you will need to add its components.

To add a component to an Audit package

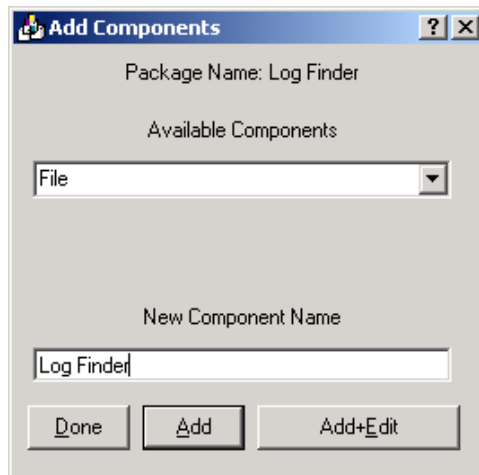
- 1 Right-click on the Log Finder package.
- 2 A shortcut menu opens.



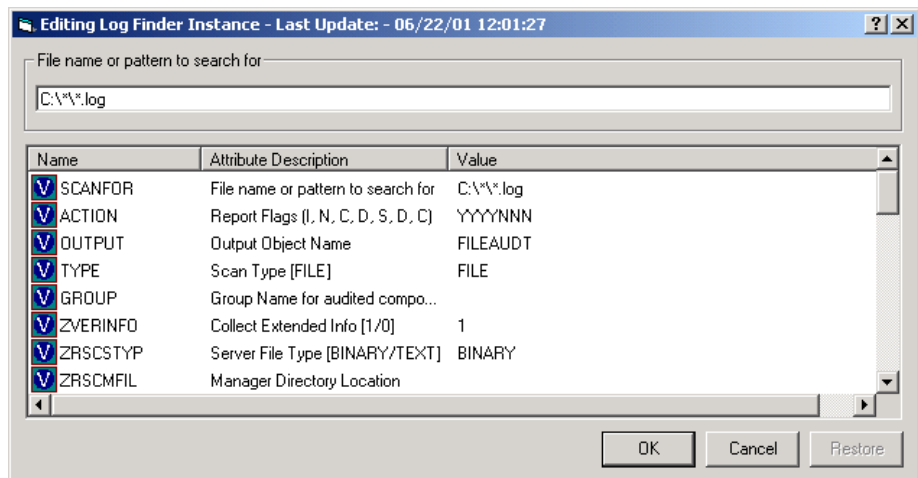
- 3 Select **Add Component** from the shortcut menu. The Add Components dialog box opens.
- 4 Click on the **Available Components** drop-down arrow, and select **File**.



- 5 In the **New Component Name** text box, enter the new component name.



- 6 Click **Add+Edit**. The component is added to the package and the Editing Instance dialog box opens.



In the Editing Instance dialog box, you can edit the instances that will be used in your audit.



Use the **AUDIT.FILE** Class instances to help you decide which instances you may want to edit.

For our example, we changed the **SCANFOR** attribute to `C:**.log`. Continue to edit, line-by-line, as necessary.

- 7 Click **OK** when you are done with your edit.

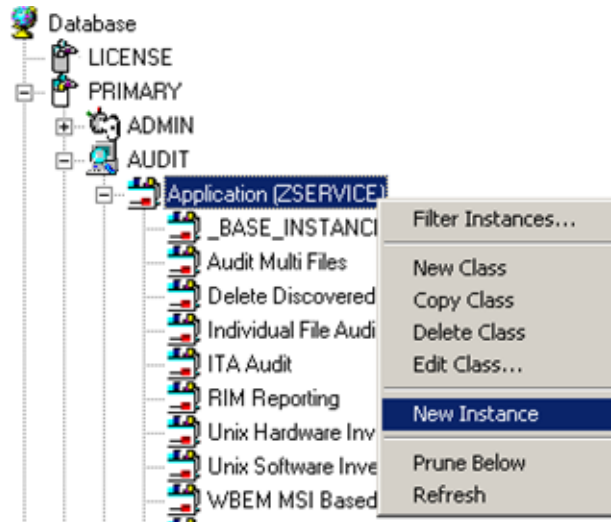
- 8 Click **Yes** to save your changes.

Next, you will need to create a ZSERVICE instance to contain the Log Finder package.

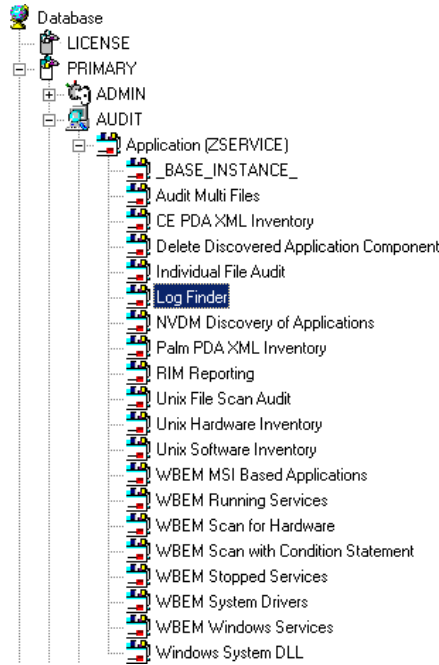
To create a ZSERVICE instance

▶ While working in the AUDIT Domain, note that the New Application Wizard is *not* available to connect a package to a service. You need to either copy an existing instance or create a new one.

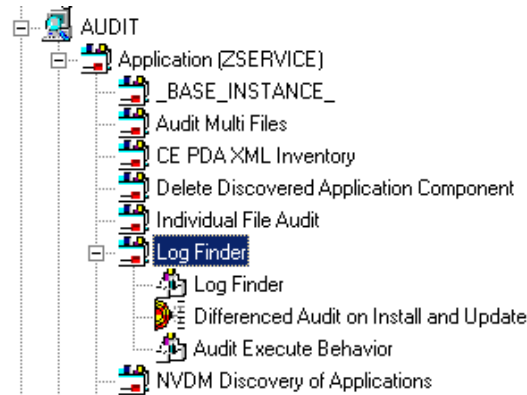
- 1 In the CSDB Editor, expand the AUDIT.ZSERVICE class in the tree view.
- 2 Right-click **Audit Application (ZSERVICE)** and a shortcut menu opens.



- 3 Select **New Instance** from the shortcut menu. The Create Instance dialog box opens.
- 4 Type a display and an instance name.
- 5 Click **OK**. The ZSERVICE Log Finder is added to the AUDIT.ZSERVICE class.



- 6 Use the CSDB Editor to connect the Log Finder package to the Log Finder service.



Once the connection to the ZSERVICE has been completed, various optional steps can be taken.

You might want to ask yourself the following questions:

- Will the service appear in the Application Self-service Manager? Should the ZSVCNAME be changed? Should I enter additional information that may appear in the Application Self-service Manager?

- Will this be a mandatory or optional service?
- Will the service have a certain length of time to be active?
- Do I want to confirm if the service is installed or not?

The answers to these questions can help you decide how to customize the service.

For our example, we wanted to change the service name from Unknown to Log Finder. We also wanted to make this service available to users in the Application Self-service Manager, so we have changed the ZSVCMO attribute from mandatory to mandatory *and* optional. We would like the Configuration Server to report back and store any .log files that are found. Therefore, we will change the ZRSCMFIL attribute to capture and store this information on the Configuration Server's directory.


Figure 17 Log Finder ZSERVICE attributes

Application class: Log Finder Instance Attributes:		
Name	Attribute Description	Value
ZSTOP000	Expression Resolution Method	
ZSTOP001	Expression Resolution Method - 001	
ZSTOP002	Expression Resolution Method - 002	
ZSTOP999	Stop Unless Radia Connect	
ZSVCNAME	Service Name/Description	Log Finder
ZSVCTTYP	Application Target Type [A/S]	
ZSVCMD	Mandatory or Optional Service [M/O]	MO
ZSVCCSTA	Service Status on Client (999)	999
ZSVCPRI	Service Create Ordering [01-99]	
ALWAYS	Contains	AUDIT.PACKAGE.LOG_FINDER
ALWAYS	Contains	
ALWAYS	Contains	
ALWAYS	Contains	
ALWAYS	Contains	
ALWAYS	Contains	AUDIT.RIMOPTS.DIFF_INSTALL_UPD...
ALWAYS	Contains	AUDIT.PACKAGE.AUDIT_EXECUTE_B...
ALWAYS	Utility Resolution Method	
ZCREATE	Service Installation Method	
ZINIT	Service Initialization Method	
ZDELETE	Service Delete Method	
ZUPDATE	Service Update Method	
ZVERIFY	Service Verify Method	
ZREPAIR	Service Repair Method	
ZAVIS	Available,Verified,Installed,Sync F	YXNX
PUBDATE	Published Date of Service	
VERDATE	Verified Date of Service	
UPGDATE	When Application was Upgraded on De	
UPDDATE	Upgrade Date (Programmatic)	
INSTDATE	Installed Date	
DELDATE	Delete Date	
AUTHOR	Author Name	
DESCRIPT	Application Description	

Use the CSDB Editor to connect and deploy the Log Finder audit service.

In this particular example, the user sees the new audit service in the Application Self-service Manager.

Figure 18 Log Finder in the Application Self-service Manager

Name	Status	Compressed Size	Description	Mandatory	
Amortize	Available	n/a		0	
Drag & View	Available	2.51 MB		0	
GS-CALC	Available	n/a		0	
Log Finder					Size 6.67 KB Compressed Size 2.34 KB
Available					
Redbox Organizer	Available	n/a		0	
Sales Information	Available	n/a		0	
StratusPad	Available	n/a		0	

8 Configuring Timers for Audit Collection

At the end of this chapter, you will:

- Have created an Audit `TIMER` instance for an audit package.
- Have created an Audit `TIMER ZSERVICE` for an audit package.

This guide helps you install and implement the Inventory Manager. Choose the appropriate strategies suited for your enterprise needs.

The Scheduling (TIMER) Class

The Scheduling (TIMER) class enables the Client Automation administrator to set a timer on the Client Automation agent computer that will cause one or more audit services to be processed whenever the timer expires. The administrator can use this method to process mandatory audit services automatically according to a pre-determined schedule.

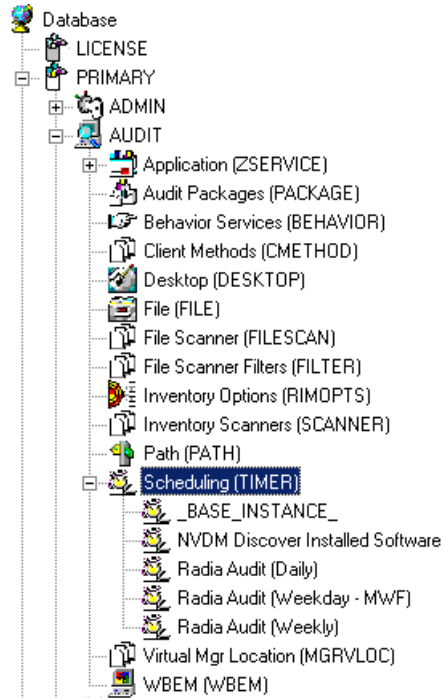
▶ As distributed by HP, the SOFTWARE Domain also contains a Scheduling (TIMER) class. Timers can be specified in instances of either of these Scheduling (TIMER) classes and can be connected to an Application (ZSERVICE) class instance in either the SOFTWARE or AUDIT Domain.

Housed within the AUDIT.Scheduling (TIMER) Class are sample Timer packages:

- **Daily**
which will deploy a ZSERVICE everyday at the time specified.
- **Weekday**
which will deploy a ZSERVICE on Mondays, Wednesdays, and Fridays at a specified time.
- **Weekly**
which will deploy a ZSERVICE every seven days at a specified time.
- **Discover Installed Software Timer**
executes a ZSERVICE weekly between 8:30 am and 10:30 pm. Use this particular timer in conjunction with the ZSERVICE Discovery of Applications that audits the ADD/REMOVE PROGRAM part of the OS.

These sample packages can be copied and modified, changing the time parameters to suit your needs. Refer to the *Administrator Guide* for information on copying an instance. Or, you can create a new timer instance by following the instructions given in [Creating a Timer Instance](#) on page 127.

Figure 19 AUDIT Scheduling (TIMER) class



Timers can be set to expire periodically (hourly, daily, weekly, monthly, or at defined intervals), on a specific date, or at a specific time. Each Client Automation agent is installed with the Scheduler service. This service contains an executable timer component that executes any program on the end-user desktop when a timer expires.

Typically, the Scheduler service lies dormant in the background, and wakes up once per minute to see if a timer has expired. When a timer expires, the command line associated with the expired timer is executed. Normally, this command line invokes a connection to the Configuration Server to deploy or maintain a service.

The following table contains descriptions of the Scheduling (TIMER) class attributes:

Table 20 Scheduling (TIMER) Class

Attribute	Description
ZOBJPRI	Sets the priority for deployment of the ZTIMEQ object. The ZTIMEQ object is deployed relative to the other elements being deployed during the agent connect. The elements with a priority number less than the value of ZOBJPRI are deployed <i>before</i> the ZTIMEQ object. A value of 90 is inherited from the base instance and should not be changed.
ZSTOP	Used to assign timer conditions. Indicate true to cause resolution of the instance to be skipped. The timer is not deployed for end users. Leave <i>blank</i> for the instance to be accepted, and resolution will continue.
ZSCHMODE	Specifies the timer owner. We recommend you leave the default configuration of USER.
ZSCHDEF	Indicates when the timer expires. The syntax varies depending on the frequency of expiration that can be DAILY, HOURLY, INTERVAL, NUMDAY, WEEKDAY, and WEEKLY.
ZSCHTYPE	<p><i>Used only when ZSCHFREQ = PERIODIC.</i></p> <p>Set ZSCHTYPE to DEFERRED to indicate that the first time an event is attempted to be launched, it will be deferred until the <i>next</i> scheduled time, no matter when the timer instance is evaluated. This was designed to handle the case of a daily 4 A.M. (non-peak) scheduled event that is sent to the Client Automation agent computer during the day. If it was not deferred, it would launch during the day instead of waiting until the next morning.</p> <p>Example 1:</p> <p>Suppose you create and deploy a timer with the ZSCHDEF = DAILY(&ZSYSDATE,04:00:00).</p> <p>If ZSCHTYPE = IMMEDIATE and it is:</p> <ul style="list-style-type: none"> • Before 4:00:00, the command in the instance will be executed the same day at 4:00:00. • After 4:00:00, the command in the instance will be executed immediately. <p>If ZSCHTYPE = DEFERRED and it is:</p>

Attribute	Description
	<ul style="list-style-type: none"> • Before 4:00:00, the command in the instance will be executed the <i>next</i> day at 4:00:00. • After 4:00:00, the command in the instance will be executed the <i>next</i> day at 4:00:00. <p>Example 2: Suppose you create and deploy a timer with the ZSCHDEF = WEEKDAY(FRIDAY,04:00:00) If ZSCHTYPE = IMMEDIATE and it is:</p> <ul style="list-style-type: none"> • Not Friday or Friday and before 4:00:00, the command in the instance will be executed on Friday at 4:00:00. • Friday and after 4:00:00, the command in the instance will be executed immediately. <p>If ZSCHTYPE = DEFERRED and it is:</p> <ul style="list-style-type: none"> • Not Friday or Friday and before 4:00:00, the command in the instance will be executed a week later on Friday at 4:00:00. • Friday and after 4:00:00, the command in the instance will be executed a week later on Friday at 4:00:00.
ZSCHFREQ	This attribute indicates how often the timer should expire according to the frequency specified in the ZSCHDEF attribute. <ul style="list-style-type: none"> • Once for a one-time expiration. • Periodic for a repeated expiration. • Random for random intervals.
ZRSCCMDL	This attribute indicates the command line that is executed on the subscriber's computer when the timer expires.
ZSVCOID	Specifies the object ID of the Application instance that this Scheduling instance is connected to. This value is inherited from the base instance and should not be modified.
ALWAYS	Stores the connections to other instances.
NAME	Friendly name for this instance.

Attribute	Description
APPSVC	Application.
REQUEST	Application request.
DOMAIN	Server's domain name.
IPADDR	Server's IP address/name.
SOCKET	Server's socket number.
MGRNAME	Server's name.
ZCREATE	Scheduler CREATE method that runs on the Client Automation agent computer. This value is inherited from the base instance and should not be changed.
ZVERIFY	Scheduler VERIFY method that runs on the Client Automation agent computer. This value is inherited from the base instance and should not be changed.
ZUPDATE	Scheduler UPDATE method that runs on the agent computer. This value is inherited from the base instance and should not be changed.
ZDELETE	Scheduler DELETE method that runs on the Client Automation agent computer. This value is inherited from the base instance and should not be changed.
RUNSYNC	Sets the value of Yes or No for the synchronous timer execution. The default value is Yes.
ZNOPING	Controls the automatic sensing of a network connection between the Client Automation agent computer and the Configuration Server. An expired time will continually evaluate whether communications with the Configuration Server can be established. When communications are established, the command line associated with the time is executed. After executing the command line, the Scheduler service resumes normal evaluation of whether the timer has expired again.

Attribute	Description
	<p>Use this attribute when there is a possibility that the Client Automation agent will not be able to connect with the Configuration Server. This attribute is especially useful for mobile users.</p> <p>Note: In order to use this attribute, you must add it to the TIMER class template.</p>
PINGDLAY	<p>Sets the amount of time between pings in milliseconds. The default setting is 2000 milliseconds.</p>
PINGCNT	<p>Sets the number of ping attempts to be made by the Configuration Server. The default setting is 3.</p>

This section describes how to create and configure a timer, and connect it to the service that you want to deploy. Prior to creating and configuring a timer, consider the following:

- What time of day should the timer expire?
- How often do you want the timer to expire?
- Does the timer need to expire more than once?
- What should happen when the timer expires?

Creating a Timer Instance

To create a timer in the CSDB, use the CSDB Editor to create a Scheduling (TIMER) instance in the AUDIT Domain.



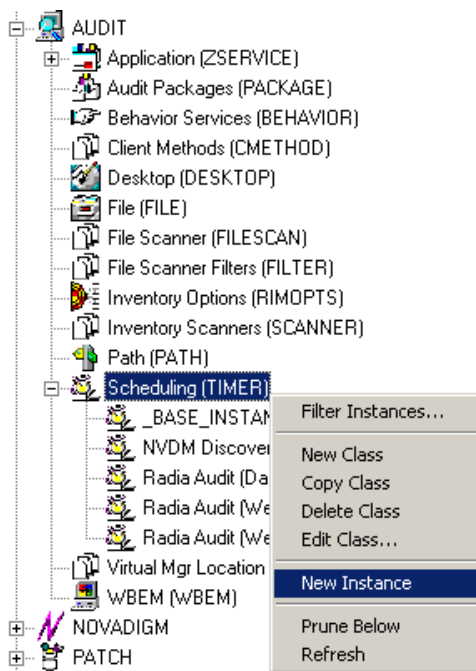
As distributed by HP, the SOFTWARE Domain also contains a Scheduling (TIMER) class. Timers can be specified in instances of either of the Scheduling (TIMER) classes and can be connected to an Application (ZSERVICE) class instance in either the SOFTWARE or AUDIT Domains.

For the purposes of documentation, the timer created will be created from within the AUDIT Domain.

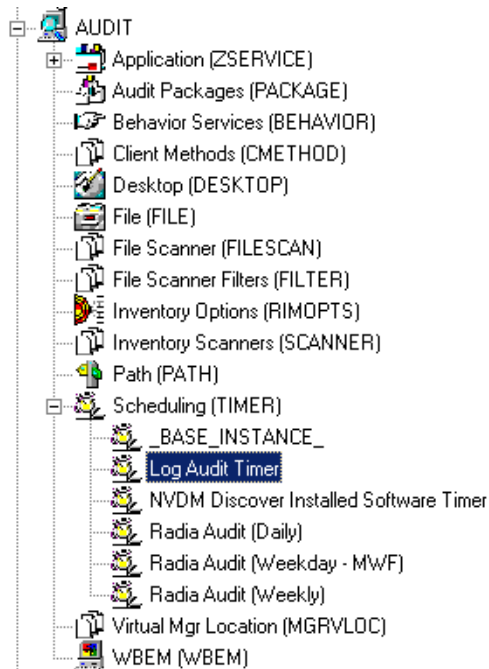
For additional information concerning the Scheduling (TIMER) class, see the *Deploying Applications* chapter in the *Application Manager and Application Self-service Manager Guide*.

To create a new timer in the AUDIT Domain

- 1 From the Start menu, go to **Programs → HP Client Automation Administrator → HP Client Automation Administrator CSDB Editor**. The Security Information dialog box opens.
- 2 Type a User ID and, if necessary, a Password, and then click **OK**. The CSDB Editor window opens.
 - ▶ The User ID, as shipped from HP, is **RAD_MAST.**, with no password necessary. This may have been changed during installation. Check with your security administrator to obtain your own User ID and Password, if necessary.
- 3 Double-click **PRIMARY**.
- 4 Double-click **AUDIT**.
- 5 Right-click **Scheduling (TIMER)**.



- 6 Select **New Instance**. The Create Instance dialog box opens.
- 7 Type a name for the new timer instance, such as Log Audit Timer.
- 8 Click **OK**. The timer instance appears in the Scheduling (TIMER) Class.



Specifying Timer Settings

Whether you have copied an existing timer or you have created a new Timer instance, you need to review and/or customize your timer settings. Refer to the *Application Manager and Application Self-service Manager Guide* for more information on how to specify the Client Automation agent timer settings.

Specifying ZSCHDEF

Use the ZSCHDEF attribute to define the time interval and date and time to execute the command line. The syntax varies depending upon the interval chosen. When configuring ZSCHDEF, the attribute is set in the following form depending on the interval.

```
DAILY (<DATE>, <TIME> [, <LIMIT> ] )
```

```
HOURLY (<DATE>, <TIME> [, <LIMIT> ] )
```

```
WEEKLY (<DATE>, <TIME> [, <LIMIT> ] )
```

WEEKDAY(<DAY of Week>,<TIME>[,<LIMIT>])
 NUMDAYS(<DATE>,<TIME>[,<LIMIT>],<Number of Days>)
 INTERVAL(<DATE>,<TIME>[,<LIMIT>],<Number of Seconds>)



In the case of NUMDAYS and Interval, the Optional parameter <LIMIT> is between mandatory parameters. If the optional parameter is omitted the place must be held with a double comma.

Example:

NUMDAYS: NUMDAYS(20000803,08:00:00,12:00:00,14)

NUMDAYS: NUMDAYS(20000803,08:00:00,,14)

- The value of freq can be:

DAILY, WEEKLY, WEEKDAY, HOURLY, INTERVAL, NUMDAYS

- If the value of freq is DAILY, WEEKLY, HOURLY, INTERVAL, or NUMDAYS, the date is then specified in the following form:

YYYYMMDD

- If the value of freq is WEEKDAY, the date is then specified as the name of a day of the week in all uppercase letters. This would be one of the following:

MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, SUNDAY

- The values for time and limit_time are optional. They are specified in the following form:

HH:MM:SS

- The value for count is optional. It is specified as an integer.

The timer expiration can also be configured on the value of ZSCHFREQ. Use [Table 20](#) on page 124 to help you determine the appropriate syntax.

Table 21 Syntax of ZSCHDEF Attributes

Type	Syntax	Timer Expires
DAILY	DAILY(&ZSYSDATE,24:00:00)	Daily at midnight by the system's date.
WEEKLY	WEEKLY(&ZSYSDATE,01:00:00)	Every seven days at 1:00 am.
WEEKDAY	WEEKDAY(Name of Weekday*,01:00:00)	Every <i>Name of Weekday*</i> at 1:00 AM. The weekday must be specified in uppercase.

Type	Syntax	Timer Expires
HOURLY	HOURLY (&ZSYSDATE, 08:41:00)	Hourly starting at 8:41 AM on the system's date.
INTERVAL	INTERVAL (&ZSYSDATE, 08:41:00, , 30)	Every 30 minutes starting at 8:41 AM based on system's date.
NUMDAYS	NUMDAYS (20000803, 08:00:00, , 14)	Every 14 days starting on August 3, 2000 at 8:00 AM.

Specifying ZSCHTYPE

The ZSCHTYPE controls how the timer handles the scheduled event when the agent receives the initial TIMER definition for a service. There are two valid controls:

- **IMMEDIATE**
will execute the command specified in the ZRSCCMDL attribute immediately if the date and time indicated in the ZSCHDEF attribute has passed when the ZTIMEQ object is initially created.
- **DEFERRED**
will defer the execution if the date and time defined in the ZSCHDEF has passed and will wait until the next occurrence to execute. This is the recommended setting.

If the time and date indicated in ZSCHDEF has not passed when the ZTIMEQ object is deployed, this setting has no effect.

Specifying ZSCHFREQ

Use the ZSCHFREQ to specify whether the timer should expire once (ONCE) or repeatedly (PERIODIC) according to the frequency specified in ZSCHDEF.

Specifying ZRSCCMDL

Use the ZRSCCMDL to execute a command on the subscriber's computer when the timer expires.

Use the following command line to run the audit service when the scheduled time occurs:

```
Radskman uid=&(ZMASTER.ZUSERID), startdir=&(ZMASTER.LOCALUID),  
mname=&(ZMASTER.ZMGRNAME), dname=&(ZMASTER.ZDOMNAME), sname=&(ZSERV  
ICE.ZOBJNAME)
```



Execution causes Client Automation to launch the AUDIT service behavior, (EXECUTE.REXX) attached to the AUDIT service.

The parameters indicated in the radskman command may differ depending upon customer specific implementations.

Specifying ZNOPING, PINGDLAY, and PINGCNT

Use the ZNOPING attribute to control automatic sensing of a network connection between the Client Automation agent computer and the Configuration Server. The default is Y. Use this attribute when there is a possibility that the Client Automation agent will not be able to connect with the Configuration Server such as a mobile user.

Refer to the *Application Manager and Application Self-service Manager Guide* for more information about the ZNOPING attribute.

- If the ZNOPING attribute is not in the ZTIMEQ object, or if ZNOPING is not equal to N, the Scheduler service does not ping the Configuration Server.
- If ZNOPING = N, the Scheduler service will ping the Configuration Server.
 - If the Configuration Server is pinged successfully, the command in the ZRSCCMDL attribute is executed. The PENDING attribute in the Client Automation agent's ZTIMEQ object is then set to N. This indicates that the Scheduler service does not need to ping the Configuration Server again.
 - Set ZNOPING to **W** if you are specifying an end limit in the ZCHDEF attribute. The Scheduler pings the Configuration Server before executing the command. If the Configuration Server is unavailable, the ZPENDING flag is set to "W". If the ZSCHEDEF has a limit time, then when that time passes, the ZPENDING flag is set to N, and the Scheduler will not attempt to execute the command until its next scheduled time.
 - If the Configuration Server is not pinged successfully, the timer is not processed any further. The ZPENDING attribute value remains set to Y. The next time the Scheduler service expires, it should ping the Configuration Server again.

If ZNOPING is set to N, also use the PINGDLAY and PINGCNT attributes to further specify the timing and number of pings between the agent computer and the Configuration Server.

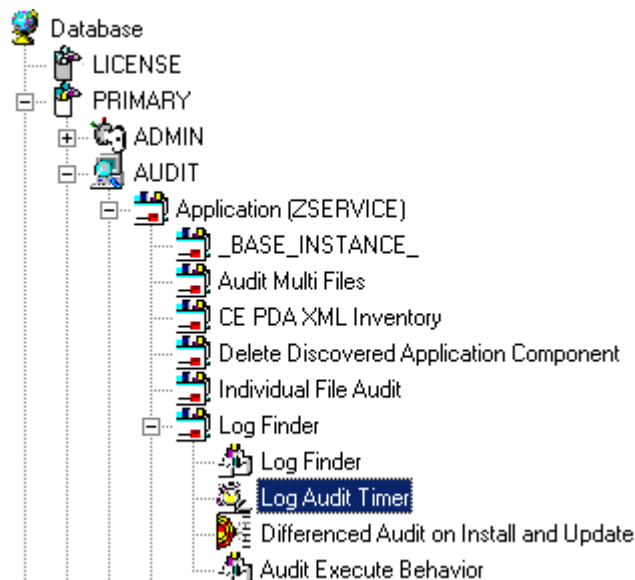
- If ZNOPING is set to N, PINGDLAY specifies the time in milliseconds between pings. The default is 2000.
- If ZNOPING is set to N, PINGCNT specifies number of ping attempts. The default is 3 attempts.

Connecting the Timer to a Service

Once you have created your timer, you must connect it to a service. Each subscriber that receives the ZSERVICE to which the timer is connected, will receive the timer information in the ZTIMEQ object the next time the Client Automation agent connects to the Configuration Server.

Use the CSDB Editor to connect the **Log Audit Timer** to the **Log Finder** ZSERVICE created earlier in this document.

Figure 20 Log Audit Timer instance connected to Log Finder service



Then connect the `AUDIT.ZSERVICE.Log Finder` to a user or group of users in the POLICY Domain.

Figure 21 Log Finder attached to a user



Audit Execution Configuration

By default, when an Audit service is installed on an end user's computer, it executes immediately and reports to the Configuration Server. This can be time consuming, especially if the audit service type is WBEM, File Scan, or an MSI request. The audit service definition may also be installed at a time when an audit scan is not desirable. For example, when an end user visits the Application Self-service Manager and mandatory applications are processed as defined in the embed tag `enterprisemanagement=auto`.

The easiest way to approach this issue is to manipulate how and when the audit actually executes. This can be accomplished by:

- Customizing the Inventory Options (RIMOPTS) attribute.
and
- Updating the embed tags in the html file for the Application Self-service Manager.

The following describes the steps necessary to customize RIMOPTS and update the embed tag to prevent audit execution during mandatory application processing.

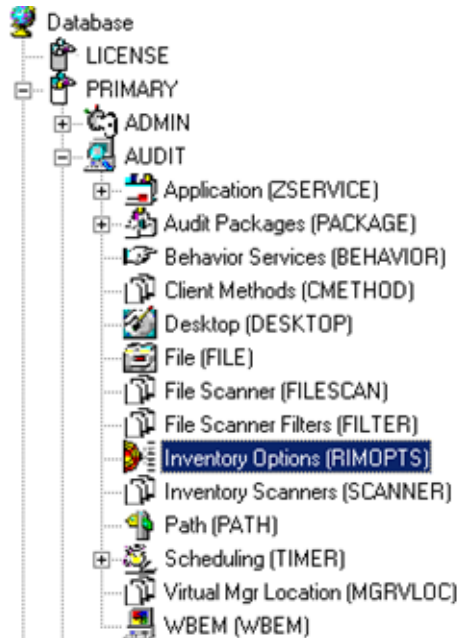
To customize the RIMOPTS instance

- 1 From the Start menu, select **Programs → HP Client Automation Administrator → HP Client Automation Administrator CSDB Editor**. The CSDB Editor Security Information dialog box opens.



The User ID, as shipped from HP, is `RAD_MAST`. No password is necessary. This may have been changed during installation. Check with your security administrator to obtain your own User ID and Password, if necessary.

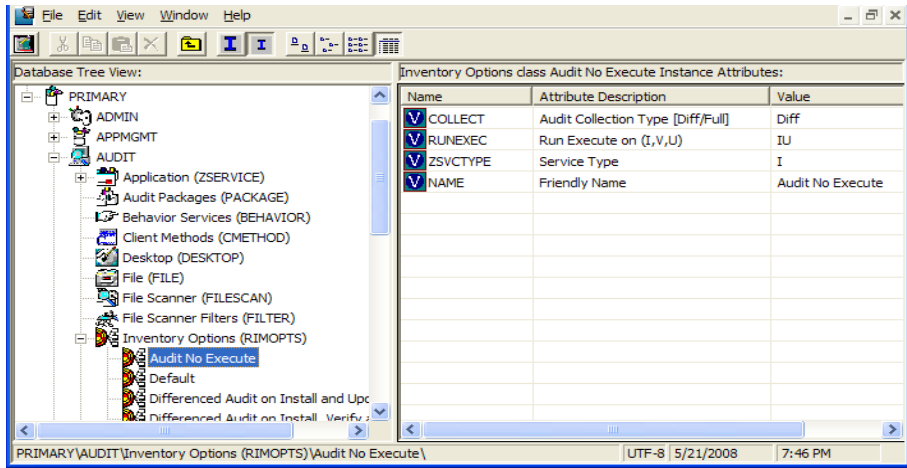
- 2 If necessary, type a User ID and Password, and then click **OK**. The CSDB Editor window opens.
- 3 Expand the **PRIMARY File** and the **AUDIT Domain**.



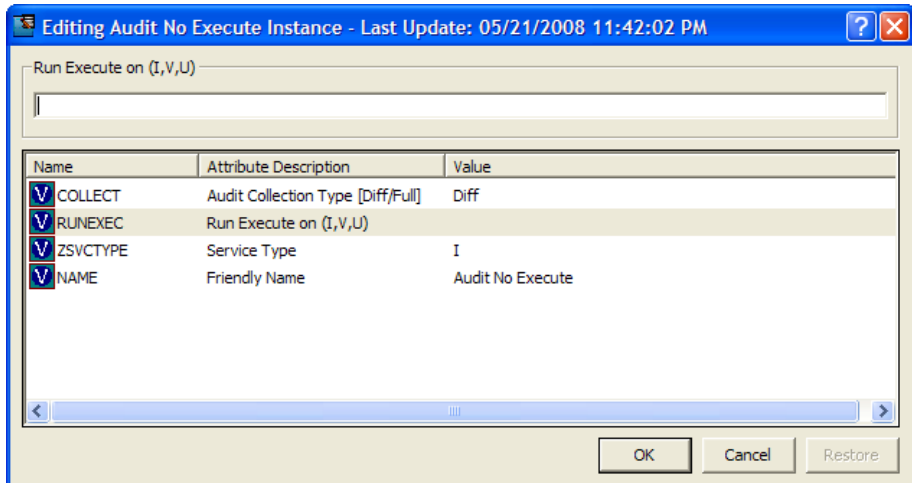
- 4 Create a new instance in the **Inventory Options (RIMOPTS)** class called **CM_AUDIT_NO_EXECUTE**, and click **OK**. The Create Instance dialog box opens.

Next, you will need to edit the Audit No Execute instance.

- 5 Expand the **Inventory Options (RIMOPTS)** class and double-click the **Audit No Execute** instance.

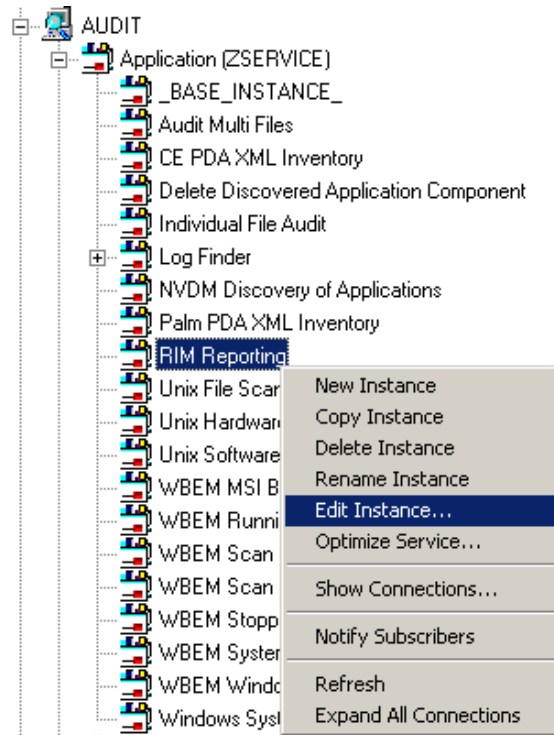


- 6 Double-click the **RUNEXEC** attribute in the list view to edit it. Remove any attribute information. This will ensure that the audit service will not run during the installation, verification, or update function.

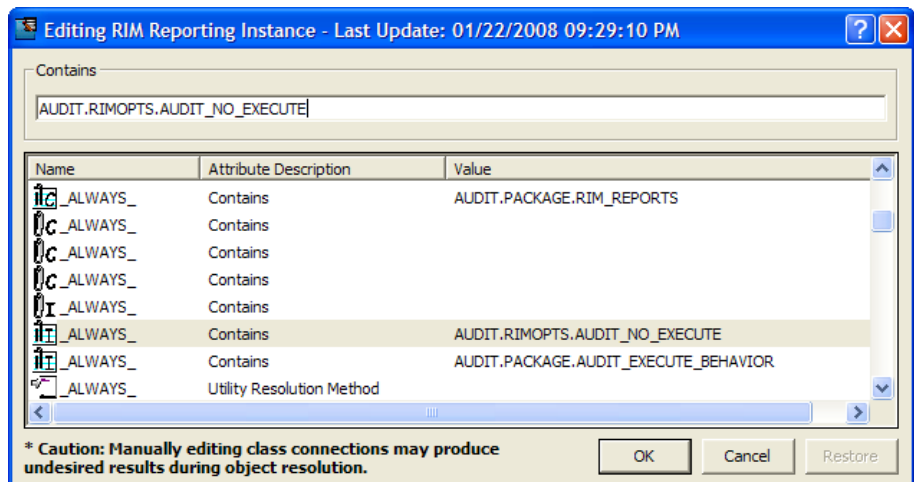


Next, determine which AUDIT service you will be adding the new RIMOPTS service to. For example, select the RIM_REPORTING service.

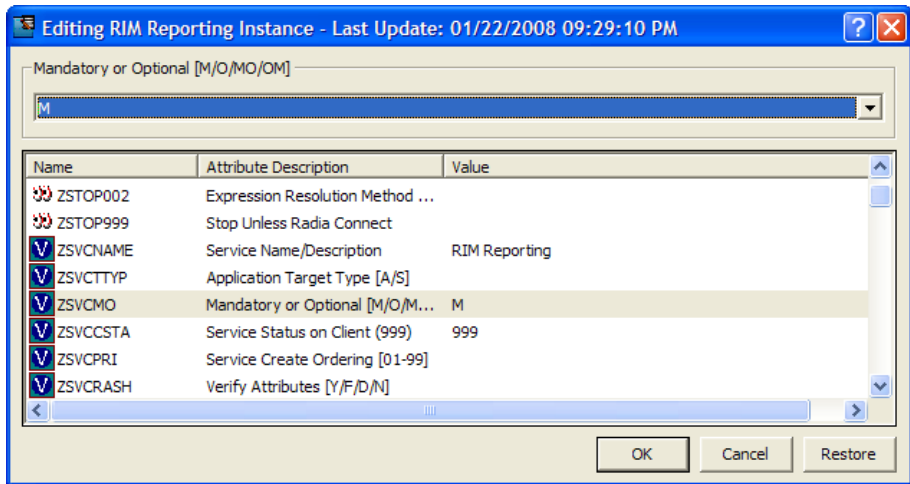
- 7 Right-click on **RIM_REPORTING** Service in the AUDIT class.
- 8 Select **Edit Instance**.



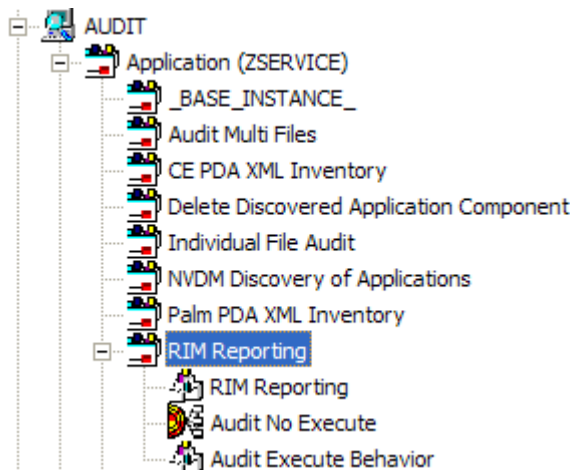
- 9 Locate the `_ALWAYS_ Contains` attribute with the value of `AUDIT.RIMOPTS.DIFF_INSTALL_UPDATE` and change it to a value of `AUDIT.RIMOPTS.AUDIT_NO_EXECUTE`.



- 10 Next, to define the audit service as Mandatory, locate the ZSVCMO field and set it to M. This will cause the initial TIMER definition associated with the audit service to be created on the Client Automation agent.



The Audit No Execute instance is now connected to the RIM Reporting service.



This completes the steps necessary to customize RIMOPTS and update the embed tag to prevent audit execution during mandatory application processing.

9 Viewing Inventory from the Reporting Server

At the end of this chapter, you will:

- Know how to access and use the Reporting Server to view the hardware, software and operational information obtained from client computers.
- Be able to navigate through the information collected by clicking on hyperlinks embedded within any table.

Accessing the Reporting Server

To access the Reporting Server

- Open a Web browser and type the following address:

```
http://<hostname>/reportingserver
```

Where `<hostname>` is the host name of the Apache web server on which the Reporting Server was installed and where `reportingserver` is the alias assigned to Reporting Server during its installation.



Reporting is optimized for display screen area setting 1024 x 768 or greater.

Viewing Audit Information Using the Reporting Server

The Reporting Server provides web-based reports for Inventory Manager. For installation and configuration instructions for the Reporting Server, refer to the *Reporting Server Guide*. The Reporting Server installation media is included with the Client Automation Infrastructure media.



Inventory Reports may need to be enabled. This is done using the Reporting Server configuration file (`setup.tcl`). Refer to the *Reporting Server Guide* for additional details.

Reporting Views for Inventory Reports

To view the reports, first access your Reporting Server. Then, under Reporting Views, click **Inventory Management Reports** to expand the list of reports.

There are different types of Inventory Management Reports:

- Executive Summaries
- Operational Reports
- Hardware Reports

- Software Reports
- Readiness Reports

Figure 22 Inventory Management reports



The following tables list the available Hardware and Software Reporting Views.

Table 22 Hardware Reporting Views

Reporting View Types	Reporting Views
HP Specific Reports	HP BIOS Settings HP Hardware Alerts HP Hardware Alerts (Boot Events)
Detail Reports	Hardware Summary Managed Devices Devices by Vendor/Model Devices by Serial # Device by Baseboard ID Device by Logical Disks Battery Information SMBIOS Information

Reporting View Types	Reporting Views
Summary Reports	Count by Summary Count by CPU Count by Memory Count by Operating System

Table 23 Software Reporting Views

Reporting View Types	Reporting Views
Managed Service Reports	Service Summary Service Details
Discovered Software	Vendor Reports <ul style="list-style-type: none"> Discovered Software by Vendor Product Reports <ul style="list-style-type: none"> Discovered Software by Product Discovered Software by Version Application Reports <ul style="list-style-type: none"> Discovered Software by Application Discovered Software by Application Version
Managed Software Reports	Vendor Reports <ul style="list-style-type: none"> Managed Software by Vendor Product Reports <ul style="list-style-type: none"> Managed Software by Product Managed Software by Product Version Application Reports <ul style="list-style-type: none"> Managed Software by Application Managed Software by Application Version

Windows Vista Readiness Reports

Use the Display Options to show Windows Vista readiness reports. These reports contain information you can use to determine individual device readiness for an upgrade to Windows Vista. The Reporting Server determines Vista readiness based on the following criteria:

- CPU Speed
- Memory
- System Drive Total
- System Drive Free

Refer to Microsoft's support web site for additional Vista readiness information.

To display Windows Vista Readiness reports

- 1 In the Display Options area, select **Inventory Management Reports**.
- 2 Select **Readiness Reports**.
- 3 Select Windows Vista.
- 4 View the reports and charts available to determine the Windows Vistas upgrade readiness of your devices. The Readiness Status and Additional Information columns contain information about the current level of readiness for each device.

Refer to the *Reporting Server Guide* for more information.

Filtering Inventory Reports with Reporting Server

Reporting Server provides extensive filtering capabilities. To access the filters, expand **Inventory Manager Related** in the Search Controls section of the Reporting Server page.

Filter types include:

- Operational Related
- Hardware Related
- Software Related
- OS Related

Figure 23 Inventory Management Related Data Filters

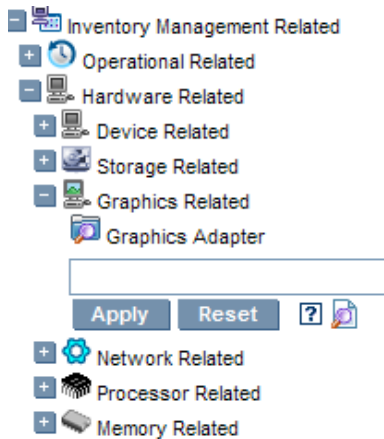


Expand each individual Inventory Management Related Data Filter to see the available filters you can apply to the current Reporting View.

Some filters only allow a text entry. Others have a Show available options button or magnifying glass to open a filter lookup window.

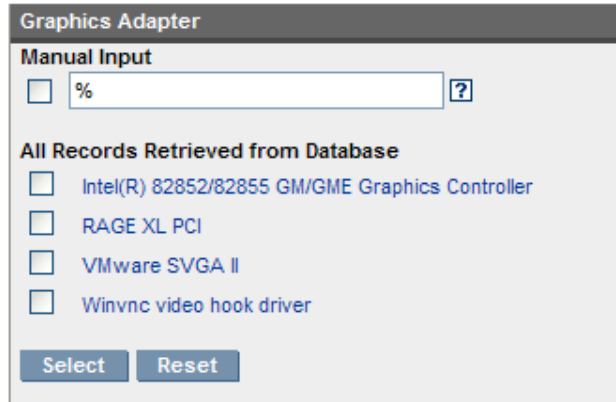
To get help when entering filter, point to the help icon and a tooltip specifies the syntax and gives examples.

Figure 24 Expand a filter



Click the magnifying glass to open the filter lookup window.

Figure 25 Select the filter.



The screenshot shows a dialog box titled "Graphics Adapter". It has a "Manual Input" section with a checkbox and a text field containing "%", followed by a question mark icon. Below this is the "All Records Retrieved from Database" section, which lists four items with checkboxes: "Intel(R) 82852/82855 GM/GME Graphics Controller", "RAGE XL PCI", "VMware SVGA II", and "Winvnc video hook driver". At the bottom of the dialog are two buttons: "Select" and "Reset".

Click any of the available criteria check boxes to select the criteria you would like to use in your filter. For additional information on creating filters and using the Reporting Server in general, refer to the *Reporting Server Guide*.

A Detail and Summary Reporting Tables

Table 24 Inventory Reporting – Detailed Reports

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried		
Applications	Managed Applications	device_id/Subscriber	AppEvent		
		service_id/Service			
		ctime/Created			
		mtime/Modified			
		app_name/Application Name			
		event/Event			
		del_time/Date Deleted			
		ver_time/Date Verified			
		inst_time/Date Installed			
		fix_time/Date Fixed			
	Audited Applications	Cim-show-apps.tsp			
	Installed Applications	Installed-apps.tsp			
	Add/Remove Applications	Installed-uninstalled-apps.tsp			
WBEM Applications	Installed Products	wName/Tag	rCIM_Product		
		wVendor/Vendor			
		wVersion/Version			
		wIdentifyingNumber/Software Spec			
		wCaption/Caption			
		Installed Filesets /		wPartComponent/Fileset	rCIM_SoftwareFeatureElements
		Packages		wName/Tab	rCIM_SoftwareElement
				wVersion/Version	
				wSoftwareElementID/SoftwareSpec	
				wTargetOperatingSystem/TargetOS	
	wManufacturer/Vendor				
	wCaption/Caption				
	wInstallDate/Install Date				
	Audited Applications	wCaption/Application Name	rNVD_Product		
		mtime/Modified			
		CIM_Product.wDescription/type			

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried
		wName/Name	
		wVendor/Vendor	
		wVersion/Version	
		wInstallState/Installed	
		wInstallDate/Date Installed	
Audited Files	Audited Files	name/Name	FileAudit
		version/Version	
		status/Status	
		vendor/Vendor	
		product/Product	
		prodvers/Product Version	
		scanfor/Scanned	
		file_date/File Date	
		file_size/File Size	
		mtime/Modified	
		file_type/File Type	
		path/Path	
Configuration Summary for Windows	O/S Configuration	mtime/Modified	rWin32_OperatingSystem
		_wOS/OS	
		wRegisteredUser/Registered User	
		wOrganization/Organization	
		wSerialNumber/S/N	
		wSystemDirectory/Sys Dir	
		WtotalPageFileSpace/PageFileSize (mb)	
	Hardware	manufacturer/Manufacturer	rWin32_ComputerSystemProduct
		_model/Model	RWin32_systemEnclosure
		_wSNTag/S/N	RWin32_Processor
		wManufacturer,wCurrentClockSpeed/Processor	RWin32_LogicalMemoryConf
		wTotalPhysicalMemory/Physical Memory (MB)	rWin32_Computer System
		wSystemType/System	rWin32_Bios
		_wBios / Bios	
		_wKybd/keyboard	RWin32_Keyboard
		_wMouse/Mouse	rWin32_PointingDevice
		_wVideo/Video/Video	rWin32_VideoController
		_wDriverName/Printer	rWin32_Printer

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried
		_WSerialPort/Serial Ports	rWin32_SerialPort
		_wParallelPort/Parallel Ports	rWin32_ParallelPort
	Network Adapter information	Wbem-show-network.tsp	
	Disk Drive Information	Wbem-show-drives.tsp	
	Environment	Wbem-show-environment.tsp	
	Windows Services	Wbem-show-services.tsp	
	Device Configuration	Ctime/Created	Device Config
		Mtime/modified	
		Os/OS	
		Os_level/ OS Level	
		Sysdrv/Sys Drive	
		Sysdrv_total/ Sys Drive Size (MB)	
		Sysdrv_free/Sys Drive Free (MB)	
	Software (AGENT and	Person/Person	Device Config
		Organization/Organization	
		Language/Language	
		Protocol/Protocol	
		Timeout/Timeout	
		Trace/Trace	
		Edmsys/Sys Dir	
		Edmlib/Lib Dir	
		Edmlog/Log Dir	
	Hardware	Ipaddr/ IP Address	Device Config
		Macaddr/ MAC Address	
		Bios/ Bios	
		Cpu/CPU	
		Memory/Mem (MB)	
		Keyboard/Keyboard	
		Mouse/Mouse	
		Video/Video	
		N_serial/Serial(#)	
		N_Parallel/Parallel (#)	
		N_PRINTER/printer (#)	
WBEM Features	Audited Features	wProductName/Product Name	RWind32_SoftwareFeature

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried
		mtime/Modified	
		WInstallDate/Date Installed	
		wVendor/Vendor	
		wVersion/Version	
Installed Applications	Audited Files	Show-fileaudit.tsp	
	Installed Applications	WFileDescription / Application Name	RNVD_Installed_Apps
		Mtime / Modified	
		WPath / Path	
		WoriginalFileName / Executable	
		WFileVersion / Executable Version	
		WcompanyName ? Vendor	
		WproductName / Product Name	
		WproducttVersion / Version	
	Add/Remove Applications	Installed-uninstall-apps.tsp	
WBEM Elements	Audited Elements	mtime/Modified	rWin32_SoftwareElement
		wName/Name	
		wVersion/Version	
		wInstallDate/Date Installed	
		wManufacturer/Manufacturer	
		wPath/Path	
PDA Devices	PDA Devices	mtime/Modified	rNVD_PDASystem
		wName/Name	
		wDescription/Type	
		wStatus/Status	
WBEM PDA Config	Configuration	Mtime/Modified	rCIM_OperatingSystem
		wCaption, wVersion / OS	
		wFreePhysicalMemory/Free Physical Memory (MB)	
		wTotalVirtualMemorySize/Total Virtual Memory (MB)	
		wFreeVirtualMemorySize/Free Virtual Memory (MB)	
	PDA Installed Products	Show-pda-inst-prod.tsp	RCIM_OperatingSystem
wbem-show-environment.tsp	Environment	mtime / Modified	rWin32_Environment

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried
		wUserName / Account	
		WSystemVariable / System Variable	
		wName / Name	
		wAttributeValue / Value	
wbem-show-services.tsp	Window Services	mtime / Modified	rWin32_Services
		wDisplayName / Services	
		wState / Status	
		wStartMode / Startup	
		wName / Name	
		wStartName / Logon	
		wDesktopInteract / Interact with Desktop	
		wPathName / Path	
Wbem-show-network.tsp	Network Adapter Information	Mtime / Modified	RWin32_NetworkAdapterConf
		Wdescription / Type	
		WIPAddress / IP Address	
		WMACAddress / MAC Address	
Wbem-show-drives.tsp	Disk Drive Information	Mtime / Modified	RWin32_LogicalDisk
		WDeviceID / Drive Letter	
		WDescription/Type	
		WfileSystem / File System	
		WSize / Size (MB)	
		WFreeSpace / Free Space (MB)	
		WProviderName / Provider Name	
		WvolumneSerialNumber / Serial Number	
Installed-uninstall-apps.tsp	Add/Remove Applications	WDisplayName / Application Name	RNVD_Installed_Uninstall
		Mtime / Modified	
		WUninstallString / Uninstall String	
Show-pda-inst-prod.tsp	PDA Installed Products	Mtime / Modified	Rnvd_Product
		Wdescription/ Type	
		WStatus / Status	
		WVersion / Version	

Table 25 General Reporting - Detailed Reports

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried	
Show-Config	Device Configuration	ctime/Created	DeviceConfig	
		mtime/Modified		
		os/OS		
		os_level/OS Level		
		sysdrv/Sys Drive		
		sysdrv_total/Sys Drive Size (MB)		
		sysdrv_free/Sys Drive Free (MB)		
		Software		person/Person
				organization/Organization
				language/Language
	protocol/Protocol			
	timeout/Timeout			
	trace/Trace			
	edmsys/Sys Dir			
	edmlib/Lib Dir			
	edmlog/Log Dir			
	Hardware		ipaddr/IP Address	
		macaddr/MAC Address		
		bios/Bios		
		cpu/CPU		
		memory/Mem (MB)		
		keyboard/Keyboard		
		mouse/Mouse		
		video/Video		
		n_serial/Serial (#)		
		n_parallel/Parallel (#)		
	n_printer/Printer (#)			
Status - Application Events	Application Events	device_id/Subscriber	AppEvent	
		service_id/Services		
		ctime/Created		
		mtime/Modified		
		app_name/Application Name		
		event/Event		
		status/Status		

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
		del_time/Date Deleted	
		ver_time/Date Verified	
		inst_time/Date Installed	
		fix_time/Date Fixed	
Status - Connect	Connect Status	mtime/Modified	DeviceStatus
		duration/Duration	
		mrc/Return Code	
		reason/Reason	
		svc_count/Services (#)	
		rsrc_count/Files (#)	
		rsrc_transfer/Files Tx (#)	
		rsrc_transfer_size/Files Tx (Sz)	
		ctime/Created	
	Errors	mtime/Modified	DeviceErrors
		type/Type	
		code/Code	
		reason/Reason	
		module/Module	
		object/Object	
		component/Component	
Status - Services	Service State	mtime/Modified	DeviceServices
		serviceid/Service	
		svc_actv/Svc Actv	
		rsrc_active/Files Active (#)	
		rsrc_inactive/Files Inactive (#)	
		ver_error/Vers Err	
		reason/Reason	
Status - Notify	Notification Status	device_id/Subscriber	DeviceNotify
		nfy_status/Status	
		mtime/Modified	
		nfy_reason/Reason	
		nfy_cmd/Command	
		ctime/Created	
		nfy_type/CommsType	
		nfy_attempts/Attempts (#)	
		nfy_userid/User Id	

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
		nfy_addr/Address	
		nfy_port/Port	
		nfy_maxretry/Max (#)	
		nfy_delay/Delay (s)	
		nfy_timeout/Timeout (s)	
		nfy_retry2/Retry2 (#)	
		nfy_retry2/Retry2 (#)	
		nfy_timeout2/Timeout2 (s)	
Status - Summary	Connect Status	mtime/Modified	DeviceState
		mrc/Return Code	
		duration/Duration	
		svc_count/Services (#)	
		rsrc_count/Files (#)	
		reason/Reason	
	Agent State	mtime/Modified	
		state/State	
		svc_count/Services (#)	
		rsrc_count/Files (#)	
		rsrc_error/File Err	
		ver_error/Vers Err	
		reason/Reason	
	Service State	Status-services.tsp	
Status - Detailed	Connect Status	<i>same as Status Connect entries</i>	
	Agent State	Mtime / Modified	
		State / State	
		Svc_count / Services (#)	
		Rsrc_count / Files (#)	
		Rsrc_error / File Err	
		Ver_error / Vers Err	
		Reason / Reason	
	Service State	Status-services.tsp	
	Errors	<i>same as Status Connect entries</i>	

Table 26 History Reporting – Detailed Reports

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
Application Events	Application Event History	device_id/Subscriber	HAppEvent
		service_id/Service	
		mtime/Modified	
		app_name/Application Name	
		event/Event	
		status/Status	
		del_time/Date Deleted	
		ver_time/Date Verified	
		inst_time/Date Installed	
		fix_time/Date Fixed	
		nvd_domain/Domain	
nvd_class/Class			
Connect	Connect History	mtime/Modified	HDeviceStatus
		duration/Duration	
		mrc/Return Code	
		reason/Reason	
		svc_count/Services (#)	
		rsrc_count/Files (#)	
		rsrc_transfer/Files Tx (#)	
rsrc_transfer_size/Files Tx (Sz)			
Errors	Error History	mtime/Modified	HDeviceErrors
		type/Type	
		code/Code	
		reason/Reason	
		module/Module	
State	State History	mtime/Modified	HDeviceState
		state/State	
		svc_count/Services (#)	
		ver_error/Vers Error	
		rsrc_count/Files (#)	
		rsrc_error/File Err	
rsrc_active/Files Active (#)			
rsrc_active_size/Files Active (Sz)			

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
		rsrc_inactive/Files Inactive (#)	
		rsrc_inactive_size/Files Inactive (Sz)	
		reason/Reason	

Table 27 Summary Reporting

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
Show - Subscribers	Application Subscribers	device_id/subscriber	DeviceStatus
		mtime/Modified	AppEvent
		llength [*/]InstalledApps (#)	
Show - Applications	Applications	app_name or service_id / Application Name	AppEvent
		count (device_id)/Subscribers	DeviceServices
Show - System Drivespace	Subscribers System Drive Space	device_id/Subscriber	DeviceConfig
		sysdrv/Sys Drive	
		sysdrv_total/Sys Drive Size (MB)	
		sysdrv_free/Sys Drive Free (MB)	
		(sysdrv_free*100)/sysdrv_total / Percent Free	
Show - IP Addresses	Subscribers IP Addresses	device_id/Subscriber	DeviceConfig
		ipaddr/IP Address	
		macaddr/MAC Address	
WBEM Configuration	Configuration	userid/Subscriber	rWin32_Bios
		mtime/Modified	rWin32_OperatingSystem
		wCaption, wBuildNumber, wCSDVersion/OS	rWin32_LogicalDisk
		wSystemDirectory/System Drive	rWin32_ComputerSystem
		wSize/System Drive Size (MB)	rWin32_Processor
		wFreeSpace/System Drive Free (MB)	rWin32_LogicalMemoryConf
		wSystemType/System	
		wManufacturer,	
		wCurrentClockSpeed/Processor	
		wTotalPhysicalMemory/Physical Memory (MB)	
	wVersion/Bios		
Status - Application Events	Application Events	device_id/Subscriber	AppEvent
		service_id/Service	

Action	Displayed Table Title	Columns Queried/Display Name	Tables Queried
		ctime/Created	
		mtime/Modified	
		app_name/Application Name	
		event/Event	
		status/Status	
		del_time/Date Deleted	
		ver_time/Date Verified	
		inst_time/Date Installed	
		fix_time/Date Fixed	
Status - Connect	Connections	mtime/Modified	DeviceStatus
		device_id/Subscriber	
		duration/Duration	
		mrc/Return Code	
		reason/Reason	
		rsrc_transfer/File Tx (#)	
		rsrc_transfer_size/Files Tx (Sz)	
Status - Notify	Notify Queue	mtime/Modified	DeviceNotify
		device_id/Subscriber	
		nfy_status/Status	
		nfy_reason/Reason	
		nfy_type/CommsType	
		nfy_attempts/Attempts (#)	
Errors - Connect	Connect Errors	mtime/Modified	DeviceErrors
		device_id/Subscriber	
		type/Type	
		code/Code	
		reason/Reason	
Errors - Notify	Notify Errors	mtime/Modified	DeviceNotify
		device_id/Subscriber	
		nfy_attempts/Attempts (#)	
		nfy_status/Status	
		nfy_reason/Reason	
		nfy_type/Comms Type	

Table 28 Inventory Reporting – Multicast Detail Reporting

Action	Displayed Table Title	Columns Queried /Display Name	Tables Queried
Status – Multicast Server Statistics	Multicast Server Statistics	mtime	rNVD_MulticastStatistics
		userid	
		wDuration/Transmit Duration	
		wNamespace	
		wNbytesRej	
		wNbytesReq	
		wNbytesXmt/Bytes Transmitted	
		wNclients/Agents Connected	
		wNdevices	
		wNfilesRej/Files Rejected	
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		wSourceType	
	wStartTime/Transmit Start		
Status – Agent Download Statistics	Agent Download Statistics	mtime	RNVD_DownloadStatistics
		userid/Subscriber	
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