COMPAQ

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Integrating Compaq Insight Manager with Microsoft Systems Management Server 1.2

Compaq TechNote

Includes information on:

- Innovative server management solutions for Systems Management Server

- Preinstallation considerations

- Performance recommentations

- Integrating Compaq Inventory Collector

- Integrating AssetControl information

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NOTICE

The information in this publication is subject to change without notice.

Integrating Compaq Insight Manager with Microsoft Systems Management Server 1.2

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Chapter 1
About This TechNote

This TechNote provides Compaq system management integration guidelines for Microsoft Systems Management Server 1.2, based on testing of hardware and software products from Compaq and other vendors.

NOTE: The network and hardware configurations that Compaq selected to test might not be the same as your configuration.

This TechNote also provides the following:

■   Overview on network management, standardsm and methods.

■   Discussion about Compaq Insight Management technologies and how they easily integrate with other management platforms.

■   Summary on Systems Management Server, its architecture and components to help you understand the complete management platform.

■   Discussion of preinstallation considerations providing informational tips along with some prerequisites you need to know before you start the installation process.

■   Performance recommendations that can assist you in deciding how to deploy Compaq Insight Manager and Systems Management Server as well as enhance their performance.

■   Installation procedures on how to integrate Compaq Insight Manager with Systems Management Server.

■   Discussion on how to use the Compaq Inventory Collector and the Microsoft Ferret program.

■   Discussion on configuring Systems Management Server to receive events and traps.

■   Detailed examples of Compaq-specific server management solutions.

This TechNote is for system integrators and network administrators with a knowledge of Compaq system products, Compaq Insight Manager, and Microsoft Systems Management Server. It is a supplement to the *Compaq Insight Manager User Guide*, the *Compaq Insight Management Agents for Microsoft Windows NT User Guide*, the Compaq hardware documentation, and the Microsoft Systems Management Server documentation.

For more information on distributing Compaq software from a Compaq Integration Server, see the Compaq TechNote, *Updating Compaq System Software from an Integration Server*.

Chapter Organization

The chapters in this Compaq TechNote contain the following information:

Chapter 1 -- Introduces the TechNote with a brief summary of each chapter, general information about notational conventions used, and additional resources you can use to find more information about network management, and the integration environment used.

Chapter 2 -- Discusses planning and performance information for your system(s) that includes a Microsoft Systems Management Server overview, preinstallation considerations, and performance recommendations.

Chapter 3 -- Discusses integrating Compaq Insight Manager with Microsoft Systems Management Sever and how to use Insight Manager with Systems Management Server.

Chapter 4 -- Discusses integrating the Compaq Inventory Collector program and the Microsoft Ferret program with Systems Management Server and how to use the information.

Chapter 5 -- Discusses configuring Systems Management Server to receive Windows NT Event Log events and SNMP traps.

Chapter 6 -- Provides specific Compaq system management solutions for using Compaq Insight Manager with Microsoft Systems Management Server.

Appendix A -- Provides a listing of traps generated by Compaq Insight Agents to assist you in translating trap variables.

Appendix B -- Provides information on how to get individual Compaq TechNotes, including location of Web site, pricing information, toll free telephone numbers, and a list of the latest TechNotes available.

Notational Conventions

Table 1-1 lists the conventions that this TechNote uses to distinguish elements of text found within this document:

Table 1-1
Notational Conventions

Convention	Use
CAUTION	Indicates that failure to follow directions could result in damage to equipment or loss of information.
COMMANDS, DIRECTORY NAMES, DRIVE NAMES, PROGRAMS, and UTILITIES	These items always appear in uppercase in DOS and in other environments.
FILENAMES	Names of files appear in uppercase italics in DOS and in other environments.
Set, Get	Screen button labels appear in initial caps.
IMPORTANT	Presents clarifying or specific points of information.
Items of importance	Presents important or specific points of information. These items appear in italics in all chapters of this TechNote.
Keys	Keys on your keyboard appear in boldface.

continued

Notational Conventions *continued*

Convention	Use
Key + **Key**	When you see a plus sign between two keys, hold down the first key while you simultaneously press the second key.
	For example, "Press the **Ctrl** + **Z** keys" means to press the **Ctrl** key while you simultaneously press and release the **Z** key.
"new terms" and "prompts"	The first occurrence of a technical term, prompts, and references to a word other than a command appears in quotes.
NOTE	Presents commentary, sidelines, or interesting points of information.
screen selections and variables	These items appear in italics in all chapters of this TechNote.
Select *item* → *item*	Items separated by arrows indicate items you select in a sequence.
type	When instructed to enter information, do so without pressing the **Enter** key.
User input and screen display	Information you type exactly as it appears, and information that displays on the screen displays in lowercase and in a different typeface in the UNIX environment.
USER INPUT	Information you type exactly as it appears is shown in uppercase and in a different typeface in the DOS and Windows NT environments.
WARNING	Indicates that failure to follow directions could result in bodily harm.

Additional Resources to Use

Use the following list of resources, which are used throughout this TechNote, for more information on Compaq Insight Manager, Microsoft Systems Management Server, or system management technology:

■ Compaq TechNote, *Integrating Compaq Insight Manager with Enterprise Management Platforms,* P/N 145806-005

This TechNote provides Compaq system management integration guidelines for managing Compaq systems with SunNet Manager, HP OpenView, and IBM NetView for AIX. See Appendix A, "Multivendor Integration from Compaq," for ordering information.

■ Compaq TechNote, *Configuration and Tuning of Microsoft SQL Server for Windows NT on Compaq Servers,* P/N 184207-002

This TechNote provides configuration and tuning guidelines for managing Compaq servers with Microsoft SQL Server for Windows NT. See Appendix A, "Multivendor Integration from Compaq," for ordering information.

■ Compaq TechNote, *Implementing Microsoft Windows NT Server RAS, DHCP, and WINS on Compaq Servers,* P/N 184488-001

This TechNote provides configuration and implementation guidelines for Microsoft Windows NT Server 3.5 RAS, DHCP, and WINS on Compaq servers. See Appendix A, "Multivendor Integration from Compaq," for ordering information.

■ Compaq TechNote, *Updating Compaq System Software From an Integration Server*, P/N 219467-002

This TechNote provides guidelines for distributing Compaq software from a Compaq Integration Server. See Appendix A, "Multivendor Integration from Compaq," for ordering information.

■ *Compaq Insight Manager User Guide,* P/N 133394-012

This document explains how to install, configure, and use Compaq Insight Manager.

■ *Compaq Insight Management Agents* for *Microsoft Windows NT User Guide*, P/N 145891-011

This document explains how to install, use and troubleshoot Compaq Insight Management Agents for Microsoft Windows NT.

■ *Microsoft Systems Management Sever for Windows NT Administrator's Guide*

This document explains how to plan, install, and configure a Microsoft Systems Management Server system. It also tells you how to use Systems Management Server to manage software for systems, to provide direct support to users with the remote troubleshooting utilities, to analyze network protocols, and to monitor the Systems Management Server system itself using alerts and events.

■ *Microsoft Windows NT Administrator's Guide*

This document provides detailed information for network administrators on the Microsoft Windows NT operating system.

■ *Microsoft SQL Server for Windows NT Systems Administrator's Guide*

This document provides detailed information for systems administrators on Microsoft SQL Server for the Microsoft Windows NT operating system.

■ *The Simple Book - An Introduction to Internet Management.* Marshall T. Rose. Englewood Cliffs, NJ: Prentice-Hall, 1994

This book explains the technology used to manage large internets, which includes wide and local area networks. It also discusses managing internets using Simple Network Management Protocol (SNMP) and SNMPv2.

■ *PC Systems Standard MIF Definition*, Desktop Management Task Force (DMTF). Release Version 2.0

This is the PC Systems Working Committee's standard set of attributes for major system components of a basic personal computer system. Each component has a corresponding Management Information Format (MIF) file.

■ The Basic Reference Model of Open Systems Interconnection (OSI), ISO 7498 - Part 4

This document provides a description of the activities necessary for systems to interwork using communication media. Additionally it provides supplemental information on the framework and structure of OSI Management.

■ *Compaq* hardware reference documentation

This documentation can help isolate a problem to a certain computer component or cable segment. Some network problems occur because of malfunctioning hardware; check the documentation that came with the hardware involved.

■ Microsoft Windows NT On-Line Help Guide

The online guide contains information on configuring and using the Microsoft Windows NT operating system.

■ Microsoft FastTips

This is an electronic service provided by Microsoft to receive automated answers to common questions and access a library of technical notes, which are delivered by recording or fax.

To access FastTips, call 800-936-4400 on a touch-tone telephone.

■ CompuServe

This electronic service is available to interact with other users and support engineers or to get product information.

❑ To access the Compaq forums, at any ! prompt:

go compaq

❑ To access the Microsoft forums, at any ! prompt:

go microsoft

❑ To access the Microsoft Knowledge Base, at any ! prompt:

go mskb

■ Internet

This electronic service is available to interact with other users and support engineers or to get product information.

❑ To access the Compaq home page on the Internet:

http://www.compaq.com

❑ To access the Microsoft home page on the Internet:

http://www.microsoft.com

Integration Environment

Compaq tested the Systems Management Server integration using the following hardware and software configurations:

■ Compaq ProLiant 4500R with one Pentium 5/133 processor board, two 5/100 processor boards, 64 megabytes of RAM, a SMART Array Controller, three 1.05-gigabyte SCSI drives, CD-ROM drive, and a mouse

❑ Microsoft Windows NT, Version 4.0

❑ Microsoft SQL Server, Version 6.5

❑ Microsoft Systems Management Server, Version 1.2

❑ Compaq Insight Manager, Version 3.2

❑ Compaq Insight Management Agents for Microsoft Windows NT, Version 3.2

❑ Compaq Inventory Collector program

❑ Microsoft Ferret program

■ Compaq Systempro 486/33 with 30 megabytes of RAM and one 480-megabyte IDA drive pair

❑ Compaq Insight Management Agents for NetWare, Version 3.2

❑ NetWare, Version 3.12

Chapter 2
Planning and Performance

This chapter provides a detailed overview of Microsoft Systems Management Server 1.2, preinstallation considerations, and performance recommendations. If you are installing Systems Management Server for the first time, you need to plan ahead for the installation to gain the best network performance.

Microsoft Systems Management Server Overview

Systems Management Server is a system management environment for networks that are composed of one or more local area networks (LANs). Systems Management Server works with your existing networked environment to provide a complete resource management solution. It can work on many different networked environments such as Windows NT or a combination of environments such as with Windows NT and NetWare.

Systems Management Server functions to:

■   Maintain an inventory of the hardware and software, and PC and client configurations across a network.

■   Distribute, install, and update software and data files.

■   Manage network applications.

■   Provide integrated support utilities that enable you to view diagnostic information for remote clients and take direct control of remote clients if needed.

See the *Microsoft Systems Management Server* documentation for detailed descriptions of each Systems Management Server feature.

Systems Management Server Terms

Table 2-1 contains a list of Systems Management Server terms and definitions associated with Systems Management Server sites, systems, and domains.

Table 2-1
Systems Management Server Terminology

Term	Definition
Central Site	Functions as a primary site/parent site only.
Child Site	Automatically reports pertinent site information to its respective parent site.
Distribution Server	Acts as a software repository for the client agents when they execute software distribution and shared application packages. It can be either a Windows NT, LAN Manager, or NetWare server.
Domain	Consists of servers and workstations as an organizational unit. The three types of domains are Windows NT, LAN Manager, and NetWare.
Logon Server	Supports the Systems Management Server clients within its domain. It is a repository of instructions for the client agents, as well as the initial point of collection for Systems Management Server client inventory information. Each domain must contain at least one logon server. It can be either a Windows NT, LAN Manager, or NetWare server.
Package Definition File (PDF)	An ASCII text file that contains pre-defined workstations, sharing, and inventory property settings for a package.
Parent Site	Contains all the pertinent information about its child sites, as well as having the ability to control many operations at the child sites.

continued

Systems Management Server Terminology *continued*

Term	Definition
Primary Site	Stores its system, inventory, package, job, and status information in an associated Systems Management Server database. It can be a parent only, a parent and child simultaneously, or a child site only. A site of this type is created by running the Systems Management Server setup application off the Systems Management Server CD.
Secondary Site	Performs the same functions as a primary site except that it does not have an associated Systems Management Server database that controls it. The site information is stored in the Systems Management Server database of its immediate parent site. Since it does not have an associated Systems Management Server database, a secondary site cannot have any child sites. It is created by its immediate parent site.
Site Server	Controls the Systems Management Server site. It handles the coordination of information and services within the site. Each site has one and only one site server. It must be a Microsoft Windows NT Server v3.5 or later.
Systems Management Server Hierarchy	Consists of one or more sites that are organized in an inverted tree structure. (See Figure 2-1 on the following page.)
Systems Management Server Site	Consists of one or more domains. The basic Systems Management Server hierarchy's organization unit.

Figure 2-1 illustrates the relationship between the terms described in Table 2-1.
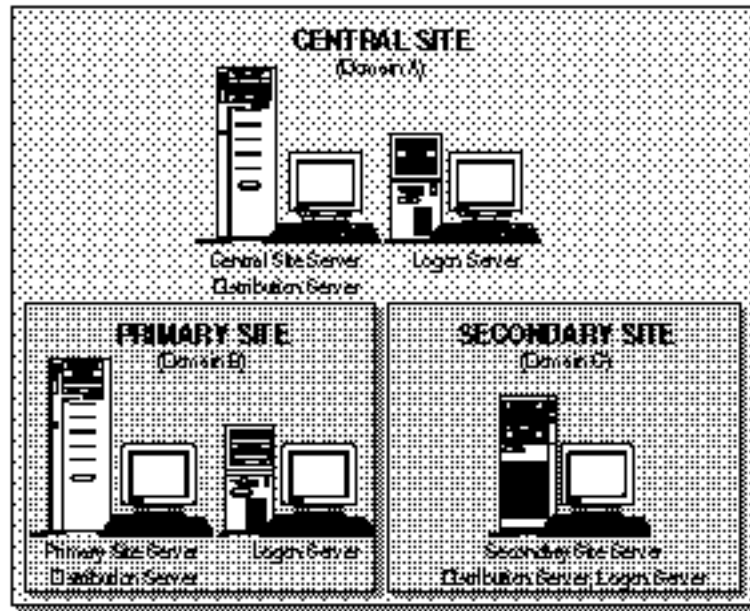
Figure 2-1. Relationship of Systems Management Server terms

In summary, every central site:

■ Possesses a Microsoft SQL Server database that stores system-wide information.

■ Possesses one or more domains associated with it.

■ Manages all sites, including primary and secondary sites.

■ Can have any number of subsites under it.

Every primary site:

■ Possesses a Microsoft SQL Server database that stores system, package, inventory, and status information for the primary site and secondary sites.

■ Possesses one or more domains associated with it.

■ Manages the primary site, including secondary sites under it.

■   Can have any number of primary or secondary sites under it.

Every Secondary site:

■   Forwards inventory and status information to the primary site.

■   Cannot have any sites under it.

Systems Management Server Hierarchy

Systems Management Server is based on a hierarchy of multiple sites. With Systems Management Server, you can set up your site structure to meet your organizational and management requirements. Once you have created your Central Site, you can attach as many primary and secondary sites under the Central Site as you need. You can attach additional primary and secondary sites under primary sites until you have completed your hierarchy. However, you cannot attach additional sites under secondary sites.

Figure 2-2 shows an example of a Systems Management Server hierarchy.
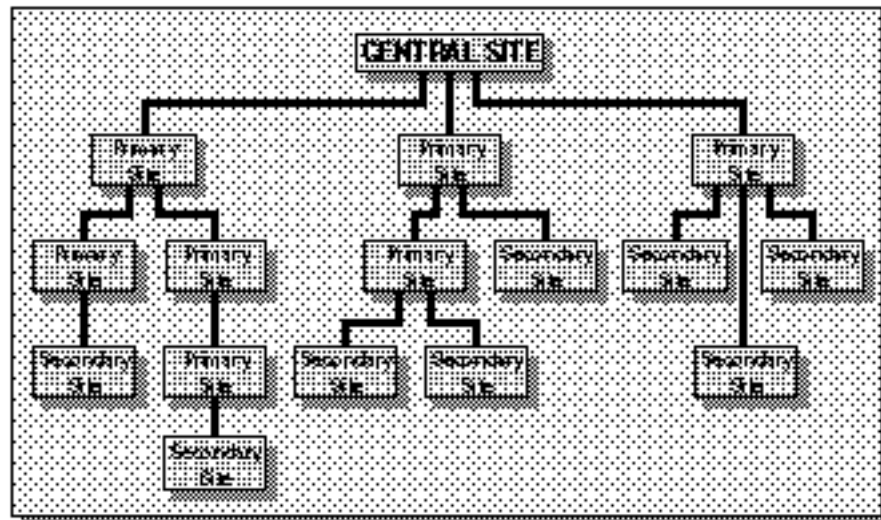
Figure 2-2.   Systems Management Server hierarchy

From the central site, you can send jobs, query inventory, and view the inventory for all sites. At any primary (parent) site, you can send a job to any secondary (child) site.

Site Components

A primary site consists of the following components:

- Site server

- Microsoft SQL Server

- Site server domain

- Logon servers

- Clients

Site Server

A computer that contains the Systems Management Server components needed to monitor and manage the site, its domain, and its computers is called a site server. Each site must have a site server. The site server also serves as a collection point for instructions and inventory information. A site server must be in a Windows NT environment.

Microsoft SQL Server

The Microsoft SQL Server database stores the site database. Each primary site, including the Central Site, must have a SQL Server database either on the site server or as a separate server. Sites can share the SQL Server software, however each site must have its own database. Secondary sites do not need a SQL Server database. The Systems Management Server SQL Server database must run on the SQL Server in a Windows NT environment.

Site Server Domain

A domain supplies centralized security and user-account information for a group of servers. When a user at a client running LAN Manager or Windows NT logs on to a domain, the client participates in that domain while that user is logged in to that server. The domain containing a site server is called the site server domain. In addition to the site server, the site server domain can also contain other servers and clients. The site server domain can be in a Windows NT, LAN Manager, or NetWare environment.

Logon Servers

A logon server supports configuration, inventory collection, package installation, and network applications for the Systems Management Server clients in its domain. To help ease the load on the site server, you can move some of the Systems Management Server components from the site server to logon servers. Logon servers can be in a Windows NT or NetWare environment.

Clients

Clients are computers connected to a network and running network client software. To add a client to the Systems Management Server computer inventory, you must connect to a logon server in a Systems Management Server-enabled domain and run the *SMSLS.BAT* file. Alternately, a machine can connect to the SMS Site Server's SMS_SHR directory and manually run the RUNSMS.BAT file. These files run the Client Setup program and the Inventory Agents. The client is then added to the domain. Clients can be in a Windows NT, DOS/Windows, OS/2, or Macintosh environment.

By choosing the Automatically Configure Workstation Logon Script option, you can automatically add clients to the Systems Management Server computer inventory when users log on to a Systems Management Server-enabled domain. When users log on to a Systems Management Server-enabled domain, they automatically connect to a logon server and run the Inventory Agents through their logon script.

Preinstallation Considerations

The following sections cover the hardware and software requirements, installation order, and preinstallation considerations.

Hardware and Software Requirements

The following subsections list the hardware and software requirements for the Systems Management Server Site Server, Compaq Insight Manager, Compaq Inventory Collector, and Microsoft Ferret.

Systems Management Server

Before installing Systems Management Server, make sure your server meets the following minimum requirements:

■ Compaq server with 486/66 processor

■ 32 megabytes of RAM if a primary Site Server (36 megabytes if SQL Server resides with Systems Management Server)

■ 24 megabytes of RAM if a secondary Site Server

■ 100 megabytes of available hard disk space

■ Network-accessible CD-ROM drive

■ Network Interface Controller (NIC)

■ Microsoft Windows NT Server version 3.5 or later acting as a primary or backup domain controller with Service Pack 3 or later. Service Packs can be found on the Microsoft home page or CompuServe.

■ Microsoft SQL Server for Windows NT version 6.x or later

■ Microsoft Mouse or compatible pointing device (required for SmartStart)

Compaq Insight Manager

To install Insight Manager 3.0 or later, make sure your computer meets the following requirements:

■ Microsoft Windows NT 3.51 or later

■ 16 megabytes of RAM; 24 megabytes of RAM recommended

■ 35 megabytes of available disk space

■ Network Interface Controller (NIC) supported by Microsoft Windows NT 3.51 or later

■ VGA color monitor or better

■ SNMP stack properly installed

■ TCP/IP stack properly installed

■ NWLink IPX/SPX transport installed (for Windows NT 3.51) if you want to manage NetWare servers with the IPX protocol

■ Hayes-compatible modem if Asynchronous Management, Remote Control, or Alarm Forwarding features are used

■ Remote Access Service (RAS) installed - If you want to use Insight Asynchronous Management, Remote Insight, or dial-in access to the Compaq Support Software Server

■ Microsoft Systems Management Server Launch Support installed on the Primary Site Server - If you want to integrate Insight Manager with Microsoft Systems Management Server Launch Support

Compaq Inventory Collector

To install the Inventory Collector, make sure your computer meets the following requirements:

■ Server running Windows NT 3.51 or later with Compaq Insight Management Agents 2.61 or later

■ Desktop running Windows 95 or Windows NT 3.51 or later and Compaq Insight Management Desktop Agents 3.10 or later

■ Workstation running Windows NT 4.0 or later and Compaq Insight Management Agents for Windows NT 3.10 or later

■ One megabyte of available disk space

■ NIC supported by Microsoft Windows NT

■ Systems Management Server properly installed

■ Make sure you know the name and location of the Windows NT logon script file for the Systems Management Server site. The default filename is *SMSLS.BAT*.

AssetControl Information

AssetControl information is gathered by the Ferret program from Microsoft. To install the Ferret program, make sure your computer meets the following requirements:

■ Microsoft Windows 95, Windows 3.1, or DOS

■ Compaq Deskpro with Intelligent Manageability features

Installation Order

Table 2-2 shows the order in which SQL Server, Systems Management Server, Insight Agents, Insight Manager, Inventory Collector, and Ferret program should be installed for the best performance optimization.

Table 2-2
Installation Order

Order	Software
1	SQL Server
2	Systems Management Server
3	Compaq Insight Agents for the operating system of choice
4	Compaq Inventory Collector (either step 4/or 6)
5	Compaq Insight Manager
6	Compaq Inventory Collector (either step 6/or 4)
7	Ferret program (either/or)

NOTE: Compaq Inventory Collector and Microsoft Ferret can be installed before or after Compaq Insight Manager.

See the *Microsoft SQL Server* and the *Microsoft Systems Management Server* documentation for detailed installation procedures for their products. See the *Compaq Insight Manager User Guide* and the *Compaq Insight Management Agents for Microsoft Windows NT User Guide* for detailed installation procedures for Insight Manager and Insight Agents.

Systems Management Server

Before installing Systems Management Server, you might also need to consider:

■ Planning the hierarchy of your Systems Management Server system.

■ Implementing Systems Management Server in phases, rather than all at once on your entire network.

■ Installing your Central Site first; after that the order of installation is up to you.

■ Evaluating your logon server load needs. Plan for potential high network traffic when users first log on if the Systems Management Server Client Setup program is set for automatic install.

■ Installing Systems Management Server on a primary or backup domain controller.

See the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information on planning your installation.

Systems Management Server relies heavily on the underlying SQL Server database. You can get the best performance from SQL Server and your Compaq server by using Compaq SmartStart to install SQL Server on the Systems Management Server primary site. SmartStart installs and configures SQL Server to take full advantage of the Compaq hardware. See the Compaq SmartStart documentation for more information.

Microsoft SQL Server

The following sections discuss the space considerations for SQL Server and parameters tuning if SmartStart was not used. See the Compaq TechNote, *Configuration and Tuning of Microsoft SQL Server for Windows NT on Compaq Servers,* for more detailed information on SQL Server performance improvements.

Space Considerations

Before allocating space to the Systems Management Server SQL Server database, use the following guidelines to determine the minimum amount of space required:

■ The database should have at least 10 Kbytes per machine for data.

■ The database log device should be at least 10 percent of the size of the SQL Server database.

■ The temporary database should have at least two Kbytes per machine allocated.

■ The database log device for the temporary database should be at least 20 percent of the size of the temporary database.

Parameter Tuning

If the SmartStart installation was not used to install your SQL Server, there are two parameters that can be tuned to increase performance. The SQL Server Setup program allows you to change two SQL Server parameters.

> ⚠ **CAUTION:** These changes might adversely affect the performance of Systems Management Server if Systems Management Server and the SQL Server reside on the same server.

■ Set SQL Server Priority to Real-Time

There are two classes of priority for SQL Server threads: variable and real-time. Most threads fall into the variable class, which is the default. This class allows the Windows NT dispatcher to vary the thread's priority within the class. Real-time is used by time critical threads requiring immediate processor attention. By running the SQL Server Setup program, you can set this parameter to allow SQL Server to run its threads with real-time priority. This parameter is recommended for a dedicated SQL machine.

■ Dedicate Multiprocessor Performance to SQL Server

This parameter determines how many system processor resources are dedicated exclusively to the SQL Server and can also greatly increase the SQL Server performance. However, it can adversely affect non-SQL Server applications running on the same machine. This parameter is only available on multiprocessor systems. This parameter is recommended for a dedicated SQL Server machine only.

For both of the SQL Server parameters, you might want to try changing one at a time and gauge your system performance after each change.

Windows NT Services

Make sure to turn off or stop all unnecessary services running on the server. These services add processing overhead to all processors. You can disable services such as *Clipbook Server, Computer Browser*, and others if you do not need them. Turn off these services by way of the Control Panel/Services icon. Even though a server can be run with as few as three services (*workstation, server*, and *SQL Server*), Compaq recommends also running the *EventLog*. Do not shutdown Systems Management Server services if Systems Management Server and the SQL Server reside on the same machine.

See the Compaq TechNote, *Configuration and Tuning of Microsoft SQL Server for Windows NT on Compaq Servers,* for more detailed information on SQL Server performance improvements.

Compaq Insight Manager Support

To ensure support for Insight Manager with Systems Management Server, you should follow these steps:

1. Install and properly configure the TCP/IP stack. This requires knowing the IP address of the Systems Management Server machine, the subnet mask, and the IP address of the default gateway.

    See the *Microsoft Windows NT Administrator's Guide* for more information on configuring the TCP/IP protocol stack.

2. Install and configure the NWLink IPX/SPX Protocol Service if you are managing NetWare servers. This requires selecting the proper frame types to use and configuring an internal network number for the server.

    See the *Microsoft Windows NT Administrator's Guide* for more information on configuring the NWLink IPX/SPX Protocol Service.

3. Install and properly configure the SNMP Service. This requires configuring the community string and trap destination for SNMP traps to the Compaq Insight Manager console and to Systems Management Server.

See the *Microsoft Windows NT Administrator's Guide* for more information on configuring the SNMP Service.

4. Install the Insight Agents for the appropriate operating system on each server being managed and check that the Insight Agents are operational.

    See the *Compaq Insight Management Agents User Guide* for the appropriate operating system for more information on installing the Insight Agents.

5. Install Insight Manager on a Systems Management Server central or primary site.

    NOTE: Insight Manager will not integrate with a Systems Management Server secondary site.

6. Specify the correct IPX or IP address of the Systems Management Server machine in the *TRAPTARG.CFG* file to receive SNMP TRAPS or alarms from all managed NetWare servers if you are managing NetWare servers. The *TRAPTARG.CFG* file is located on all NetWare servers in the SYS:SYSTEM\ETC directory.

    This allows Insight Manager installed on Windows NT to communicate with the NetWare servers. See the *Compaq Insight Management Server Agents for Microsoft Windows NT User Guide* to configure trap destinations for other management agents.

    NOTE: Compaq Insight Management Agents are licensed software. You need a separate license for each server you plan to manage.

Compaq Inventory Collector

Before you install the Compaq Inventory Collector program, make sure of the following:

■ All Windows NT server machines that will be running the Inventory Collector program are also running Compaq Insight Management Agents 2.5 or later.

■ All Deskpro machines that will be running the Inventory Collector program are also running Compaq Insight Management Desktop Agents 3.10 or later.

■ All Windows NT workstations machines that will be running the Inventory Collector program are also running Compaq Insight Management Agents for Windows NT 3.10 or later.

■ Name and location of the Systems Management Server logon script file, *SMSLS.BAT* and the name and location of the *RUNSMS.BAT* or *RUNSMS.CMD* file. These files execute the Systems Management Server software and hardware inventory programs and could contain other programs executed when these files are run.

AssetControl Information

AssetControl information is gathered by the Ferret program and the Compaq Inventory Collector. Before you install the Ferret program from Microsoft, make sure of the following:

■ The target machine is in the Systems Management Server database.

■ The target machine is running Windows 95, Windows 3.1, or DOS.

Performance Recommendations

This section explains some areas that you might need to be aware of before you install Systems Management Server with Compaq Insight Manager, which include disk subsystem configuration tuning, drive space allocation, software distribution, and inventory process.

Disk Subsystem Configuration Tuning

There are two main fault tolerance configurations that can be used with the
SQL Server database for Systems Management Server:

■   Hardware-based

■   Software-based

Hardware-Based Fault Tolerance

Hardware fault tolerance is configurable on a per logical volume basis.
Therefore, the entire logical volume is protected. The capacity reduction
depends on the size of the logical volume and the type of fault tolerance that
is configured.

Hardware-based fault tolerance offers the best reliability and automatic
recovery. When a drive fails, the system continues to operate. Once the failed
drive is replaced, the controller automatically rebuilds the new drive and
restores the system to its full fault tolerant capabilities, without user
intervention. With the Compaq ProLiant Family of Servers and external
storage systems, you can replace the failed drive without bringing the
system down.

Since the data protection occurs at the hardware level, there is no overhead on
the system processor. This type of fault tolerance is usually transparent to the
operating system and applications. With a CPU-intensive application/
environment, such as SQL Server, hardware-based fault tolerance can provide
the best performance.

Software-Based Fault Tolerance

Windows NT offers the option of software fault tolerance. Because this fault
tolerance is software operating system-based, there will be more CPU overhead
incurred with this method. When a drive goes down, you are required to down
the server, replace the drive and restart the server. However, the system will
remain functioning until you decide it is time to replace the failed drive.

SQL Server also offers built in data protection in the form of mirroring. SQL Server mirroring is based on SQL Server devices. This form of mirroring offers you the finest granularity for data protection. See *Microsoft SQL Server for Windows NT System Administrator's Guide* for more information. SQL Server only supports serial mirroring - writes to the first device must finish before writes to the second device begin. Reliability and recovery procedures are similar to those of Windows NT fault tolerance. This form of data protection also imposes additional CPU overhead.

Drive Space Allocation

If you plan to distribute large programs routinely, Compaq recommends a large amount of drive space be available on the Systems Management Server machines, including the NetWare servers. It is recommended that at least one gigabyte of drive space be available on the server. Smaller programs or less regular distribution of programs require less drive space.

NOTE: Be sure to delete the program files from all targeted site servers once the program has been distributed. Systems Management Server does not delete the files automatically.

As a general guideline for software distribution, each primary or secondary site needs at least three times the uncompressed applications size in disk space. See Chapters 8 through 11 and Appendix A of the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information.

Software Distribution

If you plan on distributing software to a large number of clients simultaneously from a NetWare server, you need to be aware of some possible performance issues. In performance testing, this scenario caused a server overload on the NetWare server. During testing, 75 DOS clients installed a DOS program simultaneously. This saturated the NetWare server due to the large number of disk reads and packet requests bombarding the server at the same time.

To counteract the possibility of overload, you might want to upgrade to a faster NIC, more efficient system processor, add more memory, or stage your installs to smaller numbers of clients.

Inventory Process

Systems Management Server employs the polling method of communication to implement the inventory of machines. This inventory process can delay the entry of information into the database on Windows NT servers by several hours to several days, depending on the configuration.

There are two important intervals to consider regarding the inventory process on Windows NT servers, which are:

■ On each site server, there is an inventory agent key in the registry that affects how often the Windows NT inventory agent on each server in the site checks to see if it is time to gather inventory on the servers.

The key is:

H_KEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\SYSTEMS MANAGEMENT SERVER\COMPONENTS\SYSTEMS MANGEMENT SERVER_MAINTENANCE_MANAGER\ INVENTORY_AGENT_SERVICE_INTERVAL

The default is 1440 minutes (once a day).

■ Each site has an inventory scan interval associated with it. This interval defines when inventory is to be taken, and it is used by the inventory agent to determine if it is time to take inventory. For example, if the interval is set to daily, the agent takes inventory only once for that day, no matter how many times it runs. This interval can be found in the Inventory dialog box under the Site Properties window.

The default for both hardware and software inventory is on every login.

The inventory agent (installed as a service on Windows NT servers) "wakes up" when the interval in the registry has expired and checks the scan interval. If the interval has expired, the inventory agent scans for inventory and creates the inventory files. These files are then loaded into the database.

When third-party products create the necessary inventory files, the information must wait for the inventory agent to read them. The gating factor now becomes the inventory scan interval. The inventory agent must wait for the inventory scan interval to expire before it performs an inventory scan. Thus, if a third-party product creates the inventory files just after the inventory agent has scanned, it takes until the next scan interval before the information is entered into the database. Depending on the service interval, it can take up to 24 hours into the scan interval before the inventory agent takes inventory.

See the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for detailed information on the inventory process.

Chapter 3
Integrating Compaq Insight Manager

This chapter describes how to integrate Compaq Insight Manager with Microsoft Systems Management Server 1.2. Using Insight Manager and Systems Management Server, you can monitor all hardware subsystems in Compaq servers, such as environmental systems, hard drive system, and system memory. This chapter provides two installation methods:

■ Installing Systems Management Server Launch Support from the Insight Manager installation process

■ Installing Compaq Insight Manager with Systems Management Server Launch Support

If you already have Insight Manager and Systems Management Server installed on your network and there are no communication links between the two environments, install only the Systems Management Server Launch Support. This option allows Systems Management Server to integrate with Insight Manager. See "Installing Systems Management Server Launch Support" in this chapter for detailed procedures.

If you have Systems Management Server installed on your network and need to install Insight Manager for the first time or to update to later version, install Insight Manager and Systems Management Server Launch Support. With these options, you can install or update Insight Manager and allow Systems Management Server to integrate with Insight Manager all in one process. See "Installing Compaq Insight Manager with Systems Management Server Launch Support" for detailed procedures.

With Insight Manager, you need to consider WINS/DNS and client support as well in planning your installation.

WINS/DNS Support

Compaq Insight Manager supports WINS/DNS to resolve IP addresses and machine names. When Insight Manager is launched from Systems Management Server, Systems Management Server passes the IP address to Insight Manager. Insight Manager then uses the IP address to launch the Server View window for that particular server.

When Insight Manager is using WINS/DNS to resolve addresses, the Systems Management Server launch of Insight Manager is unaffected. See *Compaq Insight Manager User Guide* for more information on configuring WINS/DNS support.

Client Support

Compaq Insight Manager 2.60 and later can manage Compaq Deskpro clients running Windows 95 or Windows NT. To discover clients from a Windows NT server, the server must be running the Insight Management Agents for Microsoft Windows NT 2.6 or later. When a client logs in to a Windows NT domain that has been configured to support Windows 95 clients, the client agent is loaded during startup and a logon script is run to do Client Discovery on the Windows 95 machine. This allows the administrator to manage Windows 95 machines from the same Insight Manager Console as the servers.

If Systems Management Server is using the Windows NT Automatic Directory Replication capability to continually update user IDs to run logon scripts, the default location for the Compaq Client Login Script causes a conflict with Systems Management Server.

NOTE: The default location has been corrected in Compaq Insight Manager 3.0.

Automatic Directory Replication is used by Windows NT and Systems Management Server to synchronize the login process and files across all logon servers in a domain. The configuration used by Systems Management Server places the source files in the following directory:

    \%SYSTEMROOT%\SYSTEM32\REPL\EXPORT\SCRIPTS

This directory is then replicated to all logon servers in the following directory:

    \%SYSTEMROOT%\SYSTEM32\REPL\IMPORT\SCRIPTS

NOTE: %SYSTEMROOT% is an environment variable set by Windows NT. The value can be found by opening a DOS box and typing "Set <enter>" on the command line.

This target directory is also shared as the NETLOGON share by all logon servers. When a client logs on to a server, it uses the NETLOGON share to connect to the server.

By default, the Insight Agents 2.61 and earlier place the client login script in the NETLOGON share of the Windows NT server. This file is deleted during the next replication period because Windows NT forces the NETLOGON directory to synchronize with the EXPORT\SCRIPTS directory. To work correctly with Automatic Directory Replication, the client login script should be installed only on the primary domain controller and it should be placed only in the subdirectory:

    \%SYSTEMROOT%\SYSTEM32\REPL\EXPORT\SCRIPTS

The script is then replicated to the NETLOGON share on all Windows NT logon servers in the domain. For more information on Automatic Directory Replication, see the *Microsoft Windows NT On-Line Help Guide*.

If Automatic Directory Replication is not being used, the default location used by the Insight Agent works correctly. If there are any existing login scripts make sure that, those scripts reference the client script created by the Insight Agents. Also, all user IDs must either point to the Compaq client script or a script that references the client script.

Installation Overview

Systems Management Server must be installed first before installing Systems Management Server Launch Support or Compaq Insight Manager with Systems Management Server Launch Support. This information is used during the installation process, which copies all the necessary files for integration into the site server directory.

Before installing Systems Management Server Launch Support or Compaq Insight Manager with Systems Management Server Launch Support, make sure you have the following information:

- Location of the Systems Management Server Site server files, which are usually located in a directory such as C:\SMS\SITE.SRV\X86.BIN

- Name and location of the Systems Management Server SQL Server database file (default: \SMSdata\SMS.db)

- Existing connection to the SQL Server database file

- SQL Server Administrator account ID and password

Installing Systems Management Server Launch Support

Once you have selected the Launch Support option, the Insight Manager installation program proceeds to copy the necessary files to the site server directory and run the SQL Server query to add Insight Manager support under Systems Management Server. Table 3-1 lists the files that are installed during the installation process.

Table 3-1
Site Server Files

File Name	Description
ADDCIM.SQL	Adds Systems Management Server Launch Support to Systems Management Server. This file is a SQL Server query file that searches the database for Compaq Windows NT machines running Insight Agents. This file adds the Insight Manager icon to the Personal Computer Properties window. This file can also be run manually using the ISQL/w tool, which comes with Microsoft SQL Server 4.2 or later.
CIM_SMS.DLL	Allows Insight Manager to be launched from inside Systems Management Server. Compaq Insight Manager will launch to the server view of Insight Manager for the selected server.
DELCIM.SQL	Deletes the Insight Manager icon from the Systems Management Server. This file is a SQL Server query file that searches the database for Compaq Windows NT machines running Systems Management Server. This file deletes the Insight Manager icon from the Personal Computer Properties window. This file can also be run manually using the ISQL/w tool, which comes with Microsoft SQL Server 4.2 or later.

Installation Procedure

To install Systems Management Server Launch Support, follow these steps:

1. Log on to Windows NT.

2. Insert the Insight Manager Diskette #1 into the diskette drive or the SmartStart CD into the CD-ROM drive.

3. Select *File → Run* from the Program Manager menu.

4. Type [cd drive]:\CIM\INSTALL\<language>\SETUP or [diskette drive]:\SETUP and select *OK*. After a few seconds of initialization, the Registration window is displayed. For example:

   C:\CIM\INSTALL\ENGLISH\SETUP

5. Fill in the registration information and select *OK*.

6. Select *OK* on the confirmation window to confirm the registration information. Press *Cancel* to change the information on the Registration window.

   NOTE: If you have a previous version of Insight Manager installed, the installation program notifies you that an old version exists and it will be unusable if you continue the installation and select the option, *Install Compaq Insight Manager.*

7. Select *OK* to continue with the installation and upgrade your previous version, or *Cancel* to quit the installation, exit, and preserve your old version before installing this version.

8. Select *Install Systems Management Server Launch Support* from the Compaq Insight Manager window and select *OK* to continue.

   Select the install options below:

   ❏ Install Compaq Insight Manager
   ■ Install Systems Management Server Launch Support

> **NOTE:** If you have a modem installed on your computer, another option will be displayed, which is "Install Asynchronous Management Windows NT 3.5x." See the *Compaq Insight Manager User Guide* for more information on Asynchronous Management.

9. Provide the path in Insight Manager for the location of the Systems Management Server executable files (for example, *SMS.EXE*), which is located in a directory such as C:\SMS\SITE.SRV\X86.BIN unless you have moved it to a different directory. Select *OK* to continue. Selecting *Cancel* aborts the Systems Management Server Launch Support installation.

10. Enter the administrative account name and password for the Systems Management Server database and select *OK* to continue. Selecting *Cancel* aborts the Systems Management Server Launch Support installation. The Compaq Insight Manager window is displayed, which recaps everything done by the Insight Manager Setup program.

> ⚠ **CAUTION:** Do not confuse the administrative account name and password for the Systems Management Server database with the administrative account/password for the Windows NT administrator.

> **NOTE:** Setup copies two files (*ADDCIM.SQL* and *DELCIM.SQL*) to your Systems Management Server directory and invokes the **ISQL** utility to insert Insight Manager launch support information into the Systems Management Server database. In the future, if you need to uninstall Insight Manager from Systems Management Server, use the *DELCIM.SQL* query script with the **ISQL** utility. This removes the Insight Manager information from Systems Management Server.

11. Take note of any instructions given on the Compaq Insight Manager window and follow them after setup is completed. Select *OK* to continue.

Now you are ready to use Compaq Insight Manager with Systems Management Server. Proceed to the section, "How to Use Compaq Insight Manager with Systems Management Server," in this TechNote.

Installing Compaq Insight Manager with Systems Management Server Launch Support

This section provides detailed procedures on installing Compaq Insight Manager or upgrading to a later version and installing Systems Management Server Launch Support. Before running Systems Management Server Launch Support, make sure you install Systems Management Server; otherwise, the Launch Support feature will not work.

Once you have selected the Launch Support option, the installation program proceeds to copy the necessary files in to the site server directory and run the SQL query to add Insight Manager support under Systems Management Server.

Installation Procedure

To install Insight Manager with Systems Management Server Launch Support, follow these steps:

1. Log on to Windows NT.

2. Place the SmartStart CD into the CD-ROM drive or the Insight Manager Diskette #1 into the diskette drive.

3. Select *File → Run* from the Program Manager menu.

4. Type [cd drive]:\CIM\INSTALL\SETUP or [diskette drive]:\SETUP and select *OK*. After a few seconds of initialization, a registration window is displayed.

5. Fill in the registration information and select *OK*.

6. Select *OK* on the confirmation window to confirm the registration information. Press *Cancel* to change the information on the Registration window.

   NOTE: If you have a previous version of Insight Manager installed, the installation program notifies you that an old version exists and it will be unusable if you continue the installation.

7. Select *OK* to continue with the installation and upgrade your previous version, or select *Cancel* to quit the installation, exit, and preserve your old version before installing this version.

8. Select *Install Compaq Insight Manager* and *Install Systems Management Server Launch Support* from the Compaq Insight Manager window and select *OK* to continue.

Select the install options below:

■ Install Compaq Insight Manager
■ Install Systems Management Server Launch Support

NOTE: If you have a modem installed on your management PC, another option will be displayed, which is "Install Asynchronous Management Windows NT 3.5x." See the *Compaq Insight Manager User Guide* for more information on Asynchronous Management.

9. Fill in the information for the directory where you want Insight Manager installed and select *OK* to continue.

10. Provide the path in Insight Manager for the location of the Systems Management Server executable files (for example, *SMS.EXE*), which is located in a directory such as C:\SMS\SITE.SRV\X86.BIN unless you have moved it to a different directory. Select *OK* to continue. Selecting *Cancel* aborts the Systems Management Server Launch Support installation.

11. Enter the administrative account name and password for the Systems Management Server database and select *OK* to continue. Selecting *Cancel* aborts the Systems Management Server Launch Support installation. The Compaq Insight Manager window is displayed, which recaps everything done by the Insight Manager Setup program.

> ⚠ **CAUTION:** Do not confuse the administrative account name and password for the Systems Management Server database with the administrative account/password for the Windows NT administrator.

NOTE: Setup copies two files (*ADDCIM.SQL* and *DELCIM.SQL*) to your Systems Management Server directory and invokes the **ISQL** utility to insert Insight Manager launch information into the Systems Management Server database. In the future, if you need to uninstall Insight Manager from Systems Management Server, use the *DELCIM.SQL* query script with the **ISQL** utility. This removes the Insight Manager information from Systems Management Server.

12. Take note of any instructions given on the Compaq Insight Manager window and follow them after setup is completed. Select *OK* to continue.

To enable Insight Manager to run from Systems Management Server, you need to update the PATH variable. See the following section for procedures on how to update the Windows NT PATH variable.

How to Update the Windows NT
PATH Variable

If you installed Insight Manager to a new directory, you will need to update the PATH variable. To update the PATH variable in Windows NT, follow these steps:

1. Select the *Control Panel* from the Main window. The Control Panel window is displayed.

2. Select the System icon from the Control Panel window. The System window is displayed.

3. Select the line beginning with *Path=* from the System Environment Variable section of the System window.

4. Select the text in the Variable box and press the *End* key to move to the end of the line.

5. Type a semicolon (;) followed by the full path for Insight Manager and select the *Set* button on the System window. For example:

   ;C:\WINNT35\IDW;C:\CIM25

6. Select *OK* on the System window. The Control Panel window is displayed.

7. Close the Control Panel window.

The path is now set for the current version of Insight Manager.

NOTE: You must restart the computer before running Insight Manager for the first time.

Now you are ready to use Compaq Insight Manager with Systems Management Server. Proceed to the section, "How to Use Compaq Insight Manager with Systems Management Server," in this TechNote.

If you have a HOSTS file, see the following section for procedures on how to have Insight Manager use a HOSTS file.

How to Have Compaq Insight Manager Use a HOSTS File

To have Insight Manager use a HOSTS file, follow these steps:

1. Start Insight Manager.

2. Select *Server List* from the Setup menu. The Server List Setup window is displayed.

3. Select the *IP Server List* button. The IP Server List window is displayed.

4. Select the *Update from HOSTS File* button from the Update List from HOSTS File window. Insight Manager prompts you for a path and name for the HOSTS file.

5. Enter the path and name for the HOSTS file and select *OK*. The IP Server List is updated with servers in the HOSTS file.

Now you are ready to use Compaq Insight Manager with Systems Management Server.

Running Insight Manager on the Admin Console

Systems Management Server allows the Admin Tool to be run on a separate computer from where the Systems Management Server database resides. This separate computer is called the Admin Console. The Admin Console can also launch Insight Manager from the Personal Computer Properties window.

First, install Insight Manager on the computer where the Systems Management Server database resides. Then, to configure the Admin Console to launch Insight Manager on that computer, follow these steps:

1. Run the Insight Manager Setup program.

2. Select the *Install Systems Management Server Launch Support* only. Insight Manager itself need not reside on the Systems Management Server database computer.

3. Follow the steps on the screen to install Systems Management Server Launch Support.

To configure the Admin Console to launch Insight Manager on the Admin Console computer, follow these steps:

1. Install Insight Manager. Do not install the Systems Management Server Launch Support.

2. Follow the steps on the screen to install Insight Manager.

3. Make sure that Insight Manager is in the path on the Admin Console computer.

Insight Manager should now launch when you select the *Start Insight Manager* button inside Systems Management Server.

How to Use Compaq Insight Manager with Systems Management Server

Compaq Insight Manager can be run either separately or in conjunction with Systems Management Server. This feature allows you to leave Insight Manager running even while Systems Management Server is not running. Insight Manager continues to provide you with real time information on all servers in the Responsible Server list. The operation of Insight Manager with Systems Management Server is no different than for stand-alone applications.

To use Insight Manager from Systems Management Server, follow these steps:

1. Open Systems Management Server.

2. Find the computer you are interested in finding out more information on and bring up the Personal Computer Properties window (double-click on computer's icon).

3. Scroll through the list of icons until you see the Compaq Insight Manager icon and select the *Compaq Insight Manager* icon as shown in Figure 3.1.
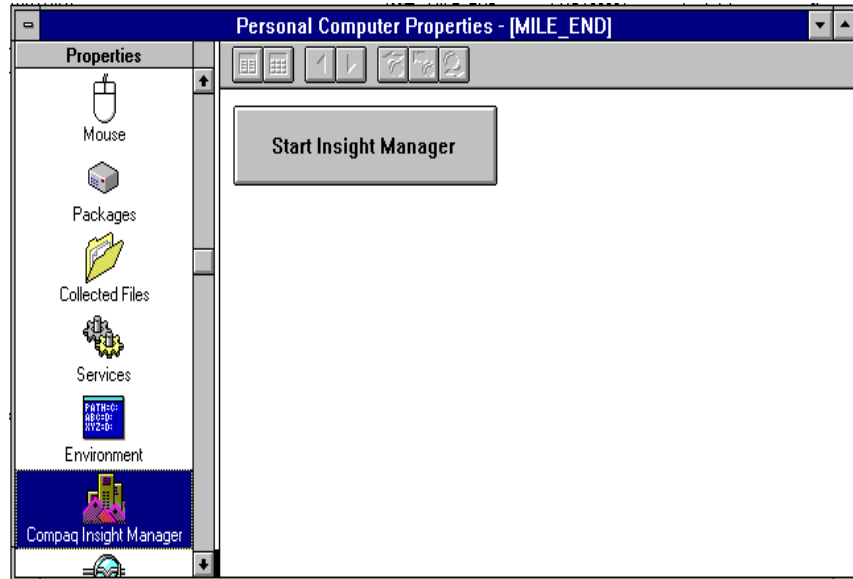
Figure 3-1.   Selecting the Compaq Insight Manager icon

4.   Single click on the Start Insight Manager button in the right window pane
     to launch, or make active, Insight Manager. This button launches to
     the server view for the computer being viewed from Systems
     Management Server.

     For example in Figure 3-1, MILE_END is being viewed from Systems
     Management Server so the launch button causes Insight Manager to show
     the server view for MILE_END. This function bypasses the server list in
     Insight Manager.

This allows you to use Compaq Insight Manager with Systems Management
Server to find certain information on Compaq servers. See Chapter 6,
"Compaq Management Solutions," for more detailed information.

Chapter 4
Additional Compaq Inventory Information

There are two different ways to gather additional Compaq-specific inventory information for Microsoft Systems Management Server 1.2:

■   Compaq Inventory Collector

■   Microsoft Ferret Program

The Compaq Inventory Collector program, which was developed by Compaq, works on Compaq servers, Deskpros, Professional Workstations, and portables. The program uses the Insight Management Agents to gain access to Compaq-specific hardware information. The Collector uses that information and outputs a NOIDMIF file that Systems Management Server uses to update its database. The Collector can be found on the Compaq Management CD as part of the Systems Management Toolkit.

The Microsoft Ferret program, which was developed by Microsoft, works on Deskpros running Windows 95, Windows, or DOS. The program uses BIOS calls to gather a subset of information. The Ferret program can be found on the Systems Management Server 1.2 CD.

You can then use the query capabilities of Systems Management Server to query on the extended Compaq features in the database. These extended queries can then be used in a variety of ways such as package distribution and database alerting. See Chapter 6, "Compaq Management Solutions," for more information on using the extended Compaq information with Systems Management Server.

Compaq Inventory Collector

The *COLLECTOR.EXE* is an executable file known as the Compaq Inventory Collector for Systems Management Server. This chapter describes how to install and integrate the Inventory Collector program with Systems Management Server.

The Inventory Collector program executes as part of the Systems Management Server logon script files and adds Compaq specific tables to the Systems Management Server database. These tables are viewable in the Personal Computer Properties window of Systems Management Server. Also, you can use these tables of information generated by the queries in reports.

When you install the Inventory Collector, the program creates several intermediate files. The program creates files, called Management Information Format (MIF) files, on the client during inventory collection. The MIF files are then transferred to the Systems Management Server site server. The MIF files are converted and updated into the SQL Server database. The MIF files are text files that can be viewed with Windows Notepad.

The Inventory Collector program is written for Compaq servers running Microsoft Windows NT 3.51 or later, Compaq Deskpros running Windows 95 or Windows NT in conjunction with the Compaq Desktop Management Agents, and Compaq Professional workstations running Windows NT and the Compaq Insight Management Agents for Windows NT. This program is designed to work with the Compaq Insight Management Agents for Microsoft Windows NT 2.61 or later, the Compaq Desktop Management Agents 3.10 or later, and Systems Management Server 1.1 or later.

Installing the Compaq Inventory Collector

The Compaq Inventory Collector can be integrated into Systems Management Server in several ways. It can be:

■ Scheduled using login scripts to run every time a user logs in to a Windows NT domain from a Windows NT server.

■ Scheduled to run periodically using the Windows NT AT command.

■ Scheduled using Systems Management Server to schedule a repeating job.

The following sections describe how to use the Compaq Inventory Collector in the three different ways.

Using Login Scripts

In very small environments, the Systems Management Server, as well as the other Windows NT servers, can also be someone's productivity machine. In this case, it makes sense to have the Compaq Inventory Collector run on every login to those servers. The user probably logs in every day; thus, the Inventory Collector runs daily and the information is updated daily in the Systems Management Server database. In this case, the Systems Management Server uses login scripts to integrate the Inventory Collector.

The login script file, *SMSLS.BAT*, has been changed from Systems Management Server 1.0 to 1.1. The *SMSLS.BAT* file has been split into two files:

■   *SMSLS.BAT* - Runs only as a login script (for automatic inventory).

■   *RUNSMS.BAT* - Runs only from the command line (for manual inventory).

The location of *SMSLS.BAT* has also changed from Systems Management Server 1.0 to 1.1. It is no longer located in the \SMS\LOGON.SRV directory. It is placed only in the NETLOGON share. If an upgrade has taken place, the old *SMSLS.BAT* is left in the \SMS\LOGON.SRV directory so changes can be made to the new file. *RUNSMS.BAT* is located in the \SMS\LOGON.SRV directory.

To install the Inventory Collector into the login script, follow these steps on each primary site server:

1.   Log on to Windows NT.

2.   Copy the *COLLECTOR.EXE* program into both binary directories of your Systems Management Server. The *COLLECTOR.EXE* file is located on the Compaq Management CD.

These two binary directories are usually located as follows:

\SMS\LOGON.SRV\X86.BIN
\SMS\SITE.SRV\MAINCFG.BOX\CLIENT.SRC\X86.BIN

3. Modify the logon script file to run the Inventory Collector program. This script file is named *SMSLS.BAT* and is located on your primary domain controller in the NETLOGON share. The default is %SYSTEMROOT%\SYSTEM32\REPL\IMPORT\ SCRIPTS. Make sure to back up a copy of this script file.

   NOTE: If you are using another logon script file, make the same changes to the appropriate sections of the file.

   Add the following line (indicated by the   ):

   ```
   :RUN_NT
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\CLI_NT.EXE -pa:/p:%%SMS_UNC%%\ -p...
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\COLLECT.EXE -pa:/SMS -pa:/M
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\INVWIN32.EXE -pa:/I:%%SMS_UNC%%\ ...
   ```

4. Modify the manual entry batch file to run the Inventory Collector program. This batch file is named *RUNSMS.BAT* and is located on your primary domain controller in the SMS_SHR share. The default is \SMS\LOGON.SRV. Make sure to back up a copy of this script file.

   Also add the following line (indicated by the   ):

   ```
   :RUN_NT
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\CLI_NT.EXE -pa:/p:%%SMS_UNC%%\ -p...
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\COLLECT.EXE -pa:/SMS -pa:/M
     SETLS%SMS_OS% -m:E -i -p:%SMS_BIN%\INVWIN32.EXE -pa:/I:%%SMS_UNC%%\ ...
   ```

The Inventory Collector is now configured to run every time a user logs in to the Windows NT domain with a Windows NT server.

NOTE: If the login script is not configured to run every time a user logs in, you must manually run the *RUNSMS.BAT* file after every login to get accurate inventory information.

You are now ready to use the Inventory Collector program. See "How to Use the Compaq Inventory Collector Command Line Options" section later in this chapter.

Scheduling the Compaq Inventory Collector

The previous section tells you how to configure the Inventory Collector to run on each Windows NT server whenever someone logs in to that server at the server's console with a user ID configured to run the *SMSLS.BAT* login script. This might be impractical at larger sites where servers are used as application servers. Because these servers are logged into infrequently, it makes sense to schedule the Inventory Collector to run periodically.

This section describes how to schedule the Inventory Collector so that the server's configuration information is periodically updated in Systems Management Server.

The process of scheduling the Inventory Collector can be done either manually or automatically using the Systems Management Server distribution feature. The scheduling process can take one of two forms:

■ Manually installing the Compaq Inventory Collector on each Windows NT server and scheduling it to run via the Windows NT AT command.

■ Using Systems Management Server to distribute the Compaq Inventory Collector and scheduling it to run via the Windows NT AT command.

Prerequisites

The following conditions must be met before the Inventory Collector can be scheduled:

■ The Insight Management Agents for Windows NT 3.51 or later must be installed on each Windows NT server to be inventoried.

■ The servers where the Inventory Collector runs must already be in the Systems Management Server database and the Systems Management Server client software must be installed on the server.

■ For the manual process, you must be logged in to the server with a user ID that is a member of the local Admins group. This allows for the use of the Windows NT AT command.

Manual Scheduling (Local Copy)

This section describes how to schedule the Inventory Collector manually using the AT command scheduler found in Windows NT. See the *Microsoft Windows NT On-Line Help* file for more information on the syntax and use of the Windows NT AT command.

This method is best used at sites with small numbers of Windows NT servers. Installing manually eliminates the wait time imposed by a Systems Management Server software distribution job. The inventory is also taken regardless of the condition of the Systems Management Server machine or the condition of the network. However, each machine must be updated when a new version of the Inventory Collector is released.

To manually schedule the Inventory Collector, follow these steps on each server:

1. Create a directory on the server where the Inventory Collector will reside.

   NOTE: A separate directory is not necessary for the correct operation of the Inventory Collector. However, a separate directory is used here for clarity. For the purposes of this example, C:\COLLECT is used.

2. Copy the *COLLECT.EXE* file from the Compaq Management CD into the directory (C:\COLLECT).

3. At a command prompt, type the following:

   AT 23:00 /EVERY:M,T,W,Th,F,S,SU C:\COLLECT\COLLECT.EXE /M /SMS

   Use the appropriate time for the current Systems Management Server configuration.

This completes the manual scheduling of the Inventory Collector. In this example, the Inventory Collector runs every day at 11:00 p.m. However, there might be a substantial waiting period before the information is added to the database. For a complete discussion on why this might happen, see the subsection, "Inventory Process," in Chapter 2.

Automated Scheduling
(Local Copy)

This section describes how to use Systems Management Server to help automate the scheduling of the Inventory Collector. This method is best for sites with large numbers of Windows NT servers.

With automated scheduling, the server always collects inventory, even if the site server goes down or the network is nonfunctional. This option allows you to put a copy of the Inventory Collector on each Windows NT server and automate the scheduling.

These steps need to be run only once. However, when a new version of the Inventory Collector is released, the steps must be followed again to copy the new version to each Windows NT server.

To automatically schedule the Inventory Collector, follow these steps on the primary site:

1. Create a directory on the primary site server to hold the Inventory Collector.

   NOTE: This directory is used later to create a package for the Inventory Collector. For the purposes of this example, C:\COLLECT is used.

2. Copy the *COLLECT.EXE* file from the Compaq Management CD into the directory (C:\COLLECT).

3. Create a *.CMD* file in this directory (this example uses *SCHED.CMD*) containing the following commands:

   ```
   MD C:\COLLECT
   COPY COLLECT.EXE C:\COLLECT
   AT 23:00 /EVERY:M,T,W,Th,F,S,SU C:\COLLECT\COLLECT.EXE /M /SMS
   ```

4. Create a package in Systems Management Server for the scheduling of the Inventory Collector.

5. Under the workstation button, specify the source directory as the directory created in step 1 (C:\COLLECT).

6. Under the New button, give the command a name and enter the command line to be run (in this case, the command is *SCHED.CMD*).

7. Select both the *Automated Task* and *System Task* buttons.

8. Select *Windows NT (x86)* as the target operating system.

9. Select *OK* and *Close* to save the package.

10. Schedule a job to distribute the Inventory Collector package to all Windows NT servers. The Administrator must decide the selection criteria for the site.

> **IMPORTANT:**   The job **must** be scheduled as mandatory so it runs while no one is logged on to the server.

Scheduling a Repeating Job

This section describes how to use Systems Management Server to schedule a repeating job to run the Inventory Collector on target machines. This option relies on the primary site servers to schedule and run the Inventory Collector, which allows the Inventory Collector to be run on all target machines at the same time every day. When a new version comes out, it needs only to be copied into the directory of step 1 and all machines will automatically run the new version. However, if the site server goes down, the Inventory Collector may be unavailable until the site server is functioning again.

To schedule a repeating job to run the Inventory Collector, follow these steps on any primary site server:

1. Create a directory on the primary site to hold the Inventory Collector.

    NOTE: This directory is used later to create a package for the Inventory Collector. For the purposes of this example, C:\COLLECT is used.

2. Copy the *COLLECT.EXE* file from the Compaq Management CD into the directory (C:\COLLECT).

3. Create a package in Systems Management Server for the scheduling of the Inventory Collector.

4. Under the workstation button, specify the source directory as the directory created in step 1 (C:\COLLECT).

5. Under the New button, give the command a name and enter the command line as:

    COLLECT /M /SMS

6. Select both the *Automated Task* and *System Task* buttons.

7. Select *Windows NT (x86)* and *Windows 95* as the target operating systems.

8. Schedule a job to distribute the collector package to all Compaq Windows NT servers.

    IMPORTANT: This job must be scheduled as mandatory and must have the *Expires After* check box cleared.

9. Select the Schedule button from the Job Properties window to make the job a repeating job.

**Running the Compaq
Inventory Collector**

Once the Inventory Collector has been scheduled, it runs at the time specified by the AT command or when the repeating job specifies, even if the NT machine is at a login prompt (Windows 95 machines must have a user logged in for the job to run and cannot be left at a login prompt). The Inventory Collector creates several Management Information Format (MIF) files and places them in the appropriate directories for the Systems Management Server inventory process. The next time the inventory agent scans for software, it reads these MIF files and sends them to the site server.

The interval between the time the MIF files are created and the time the information is entered in the database depends on two factors:

■   The Inventory Agent Service scan interval (once a day by default)

■   How often inventory is configured to run on clients (once a day by default)

This could take a few hours to a few days, depending on how often inventory is scheduled to run. See Chapter 2 of this TechNote and the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information on scheduling jobs.

How to Use the Compaq Inventory Collector Command Line Options

To use the Inventory Collector program, follow this command line syntax:

COLLECT [[/SMS /M] /F outfile] [/SE|/SS|/SC|/SW|/H|/U|/I | [?]]

Table 4-1 describes the options for the Inventory Collector program. If a specific information option is not used, the Inventory Collector gathers all information on installed components.

Table 4-1
Command Line Options

Option	Syntax	Description
Output File	/F	Specifies the output file.
Server Health	/H	Collects Server Health information.
Drive Array	/I	Collects Drive Array information.
Multiple	/M	Creates multiple output files, which are named *COMPAQx.MIF*.
SCSI	/SC	Collects SCSI information.
Standard Equipment	/SE	Collects standard equipment information.
SMS	/SMS	Opens *SMS.INI* and adds the path for NOIDMIF to the output file. This is the location for third party-generated MIF files. This option requires /F or /M.
Storage System	/SS	Collects storage system information.
Software Version	/SW	Collects software version information.
UPS	/U	Collects UPS information.
Help	/?	Displays the help screen.

How to Use the Compaq Inventory Collector Information

This sections explains what Inventory Collector information each MIF file contains and what the possible values are for each piece of information. Each MIF file is described in one of the following tables. For simplicity, Compaq creates a separate MIF file for each component by default (/M option).

NOTE: Not all MIF files can be created for every server. A MIF file is only created if a component is present in the system.

Compaq Central Processing Unit

This MIF file contains information on all central processing units (CPUs) present in the Compaq server. There might be more than one entry in this MIF file. Table 4-2 describes each type.

Table 4-2
CPU MIF Attributes

Type	Description
CPU Number	Specifies which processor position a CPU is in ranging from 1 to 4.
CPU Type	Describes the class of Intel processors a CPU belongs to. For example: 80486, Pentium, etc.
CPU Speed	Displays the CPU speed as determined by the Compaq Insight Agents. This value will be in MHz.
L2 Cache	Displays the amount of level 2 cache a particular CPU has installed.
L3 Cache	Displays the amount of level 3 cache a particular CPU has installed.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq EISA/PCI Slots

This MIF file displays information on all EISA/PCI boards installed in the server. There will be one entry in the MIF file for each board in the server. Table 4-3 describes each type.

Table 4-3
EISA/PCI Slots MIF Attributes

Type	Description
Slot Number	The number of the slot in which the board is physically located.
Board EISA/PCI ID	The identification number of the board. This will usually be three characters (denoting manufacturer) followed by a numeric value specific to the board.
Board Name	The name the manufacturer has given the board. The format is specified in the EISA/PCI specifications.
Board Revision	The revision level of the board installed.

Because the ID and Name follow a standard specification, the MIF file from Compaq displays third-party board information if the manufacturer has followed the specification. Also, any ISA board that has been added to EISA or PCI configuration will also be displayed. Only ISA boards that have not been configured via Compaq Systems Configuration will not be displayed.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq System

This MIF file contains information specific to Compaq systems. Table 4-4 describes each type.

Table 4-4
System MIF Attributes

Type	Description
Product Name	The full name of the Compaq server. For example: Compaq ProLiant 1000.
Flash ROM	Indicates presence of flash ROM. This will be a YES/NO value.
System Partition	Indicates the presence of a Compaq Utilities partition on the system. The value will be either PRESENT or NONE.
System ROM Revision	The revision level of the ROMs installed on the system board.
Serial Number	The serial number of the Compaq system.
Asset Tag	The system asset tag string. This string, by default, is the same as the serial number. It can be changed by the user.
Total System Memory	The total amount of memory installed on a Deskpro system.
Hood Removal	The date and time when the Deskpro hood was removed.
Hot Plug PCI	hot Plug PCI Bus Support. Yes/No value.
Ownership Tag	Standard ASCII character string describing the computer's ownership tag.
ROM Family	The family type of the System ROM.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Memory Modules

This MIF file contains information on the memory modules installed on the
system board. This MIF file contains an entry for each memory module
installed in the system. Table 4-5 describes each type.

Table 4-5
Memory Modules MIF Attributes

Type	Description
Board/Module Number	The location of the particular module listed by memory board number then module number on the memory board.
Module Size	The size, in MB, of the installed module.
Module Type	The type of memory that is on the module. For example: SIMM.
Module Speed	The speed of the memory installed on a module. For example: 80ns.
Memory Error Checking Type	The error checking method used by the module. (For example, EDO.)
Memory Technology Type	The memory technology used by the module. (For example, FPM.)
Module Serial Number	The serial number of the module.
Module Part Number	The part number for the module.
Module Manufacturer	The module's manufacturer.
Module Manufacture Date	The date of the module's manufacture.

NOTE: This information is best displayed using the *Table of Data Records* view in
the Personal Computer Properties window of Systems Management Server.

Compaq Software Versions

This MIF file contains information on Compaq software installed on the system. This covers not only agents but drivers as well. Table 4-6 describes each type.

Table 4-6
Software Versions MIF Attributes

Type	Description
Name	The name of the .EXE, .SYS, or utility program file that runs the particular Compaq software component.
Description	A text description of what the file does. For example: Compaq Insight Management Service.
Version	The version of the installed software.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Drive Array Controller

This MIF file contains information on the Compaq Drive Array Controller. This pertains only to the board itself and not to any drives. Table 4-7 describes each type.

Table 4-7
Drive Array Controller MIF Attributes

Type	Description
Model	The model of the drive array installed. For example: SMART Array.
FWRevision	The revision level of the firmware on the Drive Array controller board.
Slot	The slot number where the Drive Array board is installed.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Drive Array
Logical Drive

This MIF file contains information on the logical drive components on the
Drive Array controller. Table 4-8 describes each type.

Table 4-8
Drive Array Logical Drive MIF Attributes

Type	Description
Index	The index into the logical drive list for the logical drive being displayed.
Controller Slot	The slot of the Drive Array controller to which this logical drive is associated.
Drive Size	The size of the logical drive.
Fault Tolerance	The type of fault tolerance being used for the logical drive. For example: Raid 5.
Physical Drives	A list of the physical drives that comprise the logical drive.

NOTE: This information is best displayed using the *Table of Data Records* view in
the Personal Computer Properties window of Systems Management Server.

Compaq Drive Array
Physical Drive

This MIF file contains information on the physical drives associated with the Compaq Drive Array. Table 4-9 describes each type.

Table 4-9
Drive Array Physical Drive MIF Attributes

Type	Description
Slot/Port/Bay	The slot number of the controller, the port used by the physical drive, and the drive bay the physical drive is in.
Model	The model of the physical drive. For example: Compaq M2694ES-512.
Firmware Revision	The firmware revision level for the drive.
Drive Size	The size of the physical drive.
Hot Pluggable	A YES/NO value indicating whether the drive is hot pluggable.
Serial Number	The serial number of the IDA physical drive.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Health Subsystem

This MIF file contains information on the configuration of the Compaq Health subsystem. Table 4-10 describes each type.

Table 4-10
Health Subsystem MIF Attributes

Type	Description
ASR Status	Shows whether Automatic Server Recovery-2 is enabled or disabled.
ASR Reboot To	Displays how the server will reboot after an ASR-2 event. This will be either the Operating System or Compaq Utilities.
Pager Status	Shows whether ASR paging is enabled or disabled on the server.
Pager Number	Displays the number the server will call when initiating a paging event.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Storage System

This MIF file contains information on external Compaq Storage systems. This is a different MIF file from the Compaq Drive Array system. Table 4-11 describes each type.

Table 4-11
Storage System MIF Attributes

Type	Description
Index	The index number of the storage system.
Model	The model of the storage system being used. For example: ProLiant 1-5E.
Controller Slot	The slot number where the controller for the storage system is located.
SCSI Bus Index	The SCSI index number used by the storage system.
FWRevision	The firmware revision level for the storage system.
Vendor	The vendor of the storage system. This is usually Compaq.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Uninterruptible Power Supply Subsystem

This MIF file contains information pertaining to any Compaq manageable Uninterruptible Power Supply (UPS) attached to the system. Table 4-12 describes each type.

Table 4-12
UPS Subsystem MIF Attributes

Type	Description
Model	The model of the UPS being used on the system.
Serial Number	The serial number of the UPS.
Auto Shutdown Delay	The amount of time, in minutes, the UPS will wait before shutting down after power loss.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq SCSI Devices

This MIF file contains information on SCSI devices in the Compaq system.
Table 4-13 describes each type.

Table 4-13
SCSI Devices MIF Attributes

Type	Description
Controller Slot/SCSI ID	The slot number and SCSI ID for the SCSI controller.
Name	The Compaq name of the SCSI device. For example: Compaq 2105.
Type	The type of SCSI device. For example: Disk.
Firmware Revision	The revision level of the firmware for the SCSI device.
Bus Width	The width of the SCSI bus. For example: 8bits.
Disk Size	The size of the SCSI disk (CD-ROM, hard drive).
Hot Pluggable	A YES/NO value stating if a device is hot pluggable.
Serial Number	The serial number of the SCSI device.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq IDE Devices

This MIF file contains information on IDE devices in the Compaq system. Table 4-14 describes each type.

Table 4-14
IDE Devices MIF Attributes

Type	Description
Controller / Drive	The slot number and IDE ID for the IDE controller.
Name	The Compaq name of the IDE device. For example: Compaq 2105.
Type	The type of IDE device. For example: Disk.
Firmware Revision	The revision level of the firmware for the IDE device.
Disk Size	The size of the IDE disk (CD-ROM, hard drive).
Serial Number	The serial number of the drive.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Remote Insight Board

This MIF file contains information on Remote Insight Board in the Compaq system. Table 4-15 describes each type.

Table 4-15
Remote Insight MIF Attributes

Type	Description
Serial Number	The serial number of the Remote Insight Board.
Firmware Revision	The revision level of the firmware for the Remote Insight Board.
Video Status	The status of the video, which is enabled or disabled.
Keyboard Status	The status of the keyboard, which is enabled or disabled.
Alert Status	The status of alerts, which is enabled or disabled.
Battery Status	The status of the battery, which is enabled or disabled.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Fibre Channel Array Controller

This MIF file contains information on Fibre Channel Array Controllers in the Compaq system. Table 4-16 describes each type.

Table 4-16
Fibre Channel Array Controller MIF Attributes

Type	Description
Model	The model number of the Fibre Channel Array Controller.
Firmware Revision	The revision level of the firmware for the Fibre Channel Array Controller.
Serial Number	The serial number of the Fibre Channel Array Controller.
Storage Box I/O Slot	Identifies the physical I/O slot where this controller resides in the storage box.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Fibre Channel Array Logical Drive Table

This MIF file contains information on Fibre Channel Array Logical Drive Tables in the Compaq system. Table 4-17 describes each type.

Table 4-17
Fibre Channel Array Logical Drive Table MIF Attributes

Type	Description
Storage Box Index	Indicates which storage box this logical drive is in.
Logical Drive Index	Keeps track of multiple instances of logical drives which are in the same storage box.
Logical Drive Fault Tolerance Mode	The fault tolerance mode of the logical drive.
Logical Drive Size	The size of the logical drive in megabytes.
List of Physical Drives	List the physcial drive Ids which are associated with this logical drive.
Accelerator Status	The status of the accelerator, which is enabled or disabled.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Fibre Channel Array Physical Drive Table

This MIF file contains information on Fibre Channel Array Physical Drive Tables in the Compaq system. Table 4-18 describes each type.

Table 4-18
Fibre Channel Array Physical Drive Table MIF Attributes

Type	Description
Storage Box Index	Indicates which storage box this physical drive is in.
Physical Drive Index	This number, along with the Storage Box Index, uniquely identifies a specific physical drive.
Drive Model	Text description of the physical drive.
Drive Size	The size of the physical drive in megabytes.
Firmware Revision Level	Physical Drive Firmware Revision.
Serial Number	The serial number assigned to the physical drive.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Fibre Channel Host Controller

This MIF file contains information on Fibre Channel Host Controllers in the Compaq system. Table 4-19 describes each type.

Table 4-19
Fibre Channel Host Controller MIF Attributes

Type	Description
Host Controller Slot	Identifies the physical slot where the Compaq Fibre Channel Host Controller resides in the system.
Model	The type of controller card.
WorldWide Name	This value can be used to further identify a particular controller.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Cluster Node Information Table

This MIF file contains information on Cluster Node Information Tables in the Compaq system. Table 4-20 describes each type.

Table 4-20
Cluster Node Information Table MIF Attributes

Type	Description
Cluster Name	The name of the cluster this node belongs to.
Cluster IP Address	The static IP address for the cluster.
Cluster Node	The name of the node.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Cluster Interconnect Information Table

This MIF file contains information on Cluster Interconnect Information Tables in the Compaq system. Table 4-21 describes each type.

Table 4-21
Cluster Interconnect Information Table MIF Attributes

Type	Description
Interconnect Physical ID	The physical identification of the device.
Interconnect Transport	The network transport used by the interconnect. For example, TCP/IP.
Interconnect Address	The address used by the interconnect.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Compaq Video Monitor

This MIF file contains information on the Compaq video monitors installed in the Compaq system. Table 4-22 describes each type.

Table 4-22
Compaq Video Monitor MIF Attributes

Type	Description
Description	The type of monitor used.
Name	The model name of the monitor.
Serial Number	The serial number of the monitor.
Horizontal Pixels	The maximum horizontal pixel resolution.
Vertical Pixels	The maximum vertical pixel resoultion.
Frequency Range	The vertical and horizontal frequency range supported by the monitor.
Fault Management Support	Existence of fault management support.
Manufacturer ID	The monitor manufacturer.
EDID Version	The version of EDID used by the monitor.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Portable Batteries

This MIF file contains information on the Compaq portable batteries installed in the Compaq system. Table 4-23 describes each type.

Table 4-23
Compaq Portable Batteries MIF Attributes

Type	Description
Index	The battery index for the list of available batteries.
Manufacturer	The manufacturer of the battery.
Date	The battery manufacture date.
Serial Number	The serial number of the battery.
Asset Tag	The asset tag for the battery.
Chemistry	The battery chemistry. (Ex.- Lithium-ion)

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Portable Docking Station

This MIF file contains information on the Compaq portable docking stations installed in the Compaq system. Table 4-24 describes each type.

Table 4-24
Compaq Portable Docking Station MIF Attributes

Type	Description
Dock Status	Docked/Undocked.
Model Name	Name of the attached docking station.
Serial Number	The serial number for the docking station.
Asset Tag	The asset tag for the docking station.
ROM Revision	The revision date of the docking station ROM.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Compaq Portable PC Card Slots

This MIF file contains information on the Compaq portable PC card slots
installed in the Compaq system. Table 4-25 describes each type.

Table 4-25
Compaq Portable PC Card Slot MIF Attributes

Type	Description
Index	The PC Card slot number index.
Slot Location	The physical slot location.
Card Presence	Card present in slot or not.
Card Status	The operational status of the installed card.
Manufacturer Name	The manufacturer of the card.
Device Name	Name of the device.

NOTE: This information is best displayed using the *Table of Data Records* view in
the Personal Computer Properties window of Systems Management Server.

Microsoft Ferret Program

The *FERRET.EXE* program is an executable file written by Microsoft for Microsoft Windows 95, Windows 3.1, or DOS machines. This program is designed to work with Systems Management Server 1.1 or later and Compaq Deskpro machines with Intelligent Manageability features.

The Ferret program gathers the AssetControl information for Systems Management Server. This chapter describes how to install the Ferret program and integrate the AssetControl information with Systems Management Server.

The AssetControl information is a set of hardware and software component information reported through integrated hardware, firmware, software, and third-party management tools. AssetControl provides detailed component information including manufacturer, model, and serial number for system, monitor, and hard drive(s). It also provides revision level information for system board, system ROM, Compaq option ROM, and device drivers developed by Compaq.

When you run FERRET.EXE, the program creates a MIF file on the client during inventory collection. The MIF file is then transferred to the Systems Management Server site server. The MIF file is converted and updated into the SQL Server database. The MIF file is a text file that can be viewed with Windows Notepad.

Installing the
Ferret Program

To install the Ferret program into your Systems Management Server primary site, follow these steps:

1. Log on to Windows NT.

2. Copy the *CPQBSSA.TXT, FERRET.EXE* , and *FERRET.PDF* files into a directory on the primary site server.

   The *CPQBSSA.TXT* file is used to identify the Deskpro model from a BIOS call.

   The *FERRET.EXE* file is located on the Systems Management Server CD in the \PSSTOOLS\X86.BIN directory.

   The FERRET.PDF file is not a text file. It is used to create a package for the AssetControl program.

3. Open the *FERRET.PDF* file using Microsoft Notepad and save the *FERRET.PDF* file as a text file, with the same name and TXT extension.

   IMPORTANT: You must convert the *FERRET.PDF* file to a text file for Systems Management Server to be able to use the file to make a package for AssetControl.

   ---

4. Create a package for the *FERRET.EXE* program using the *FERRET.PDF* file.

5. Press the *OK* button to save the package.

6. Create a job to distribute the package to a Compaq Deskpro computer or workstation.

The installation process is complete. You are now ready to use the AssetControl information. See *the Microsoft Systems Management Server Administrator's Guide* for more information on creating a package or a job.

How to Use the Ferret
Command Line Options

To use the Ferret program, follow this command line syntax:

FERRET [outfile] /V [?]

Table 4-26 describes the options for the Ferret program. If a specific
information option is not used, Ferret gathers all AssetControl information
on installed components.

Table 4-26
Command Line Options

Option	Syntax	Description
Verbose	/V	Turns on the verbose mode.
Help	/?	Displays the help screen.

How to Use the
AssetControl Information

The Ferret program breaks the AssetControl information into four
separate groups:

■ Service - Contains the asset tag.

■ System Enclosure - Contains the serial number and the system make
and system model of the machine.

■ Motherboard - Contains the revision number.

■ Monitor - Contains the monitor manufacturer, model, and serial
number.

When the *FERRET.EXE* file is run, it creates a MIF file in the
\MS\SMS\NOIDMIFS directory on the client PC. This information is read the
next time the client PC has inventory run on it. This will usually be the next
time the user logs onto the network from that machine.

IMPORTANT: *FERRET.EXE* returns only the serial number when you run it on a Deskpro XL. The Deskpro XL was designed and built before AssetControl was implemented. The Deskpro XL does not have the circuitry to support the AssetControl call from *FERRET.EXE.*

This information can be used like any other piece of information contained in the Systems Management Server database (for queries, job scheduling, and so on). For example, a query could be written to find all Compaq Deskpro 5100 machines on the network. This query could then be used to also distribute software to all Compaq Deskpro 5100 machines.

Service Group

This MIF file contains information on the asset tag present in the Compaq server. There might be more than one entry in this MIF file. Table 4-27 describes asset tag.

Table 4-27
Service Group MIF Attribute

Type	Description
Asset Tag	Displays the asset tag associated with the machine. This can be changed by using F10+Setup or Computer Setup for Windows. The default is the machine's serial number.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

System Enclosure

This MIF file displays information on all system enclosures installed in the desktop. Table 4-28 describes each type.

Table 4-28
System Enclosure MIF Attributes

Type	Description
Serial Number	Displays the serial number of the machine. This number was set during manufacture of the machine and cannot be changed.
Make and Model	Displays the make and model of the machine.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Motherboard

This MIF file contains information specific to the motherboards of Compaq desktops. Table 4-29 describes revision number.

**Table 4-29
Motherboard MIF Attribute**

Type	Description
Revision Number	Displays the revision number of the motherboard.

NOTE: This information is best displayed using the *Single Data Record* view in the Personal Computer Properties window of Systems Management Server.

Monitor

This MIF file contains information on the monitors installed on the network.
Table 4-30 describes each type.

Table 4-30
Monitor MIF Attributes

Type	Description
Manufacturer	Displays the manufacturer of the monitor.
Model	Displays the model of the monitor.
Serial Number	Displays the serial number of the monitor. This number was set during manufacture of the monitor and cannot be changed.

NOTE: This information is best displayed using the *Table of Data Records* view in the Personal Computer Properties window of Systems Management Server.

Summary

The Inventory Collector program works in conjunction with Insight Agents and Systems Management Server. It adds Compaq specific tables to the Systems Management Server database. When the Inventory Collector is installed, it creates MIF files for different hardware and software areas specific to Compaq. Ferret works on any Deskpro with Intelligent Manageability running Windows 95, DOS, or Windows. Ferret creates MIF files for inclusion in the Systems Management Server database. See Chapter 6, "Compaq Management Solutions," for more information on using the extended Compaq information with Systems Management Server.

Chapter 5

Configuring Systems Management Server to Receive Events and Traps

Systems Management Server 1.2 has the ability to translate Windows NT Event Log events to SNMP Traps and to receive SNMP traps from any SNMP device. This chapter discusses how to configure the Event To Trap Translator to send Compaq Insight Management Agent events as SNMP traps to Systems Management Server and how to configure Systems Management Server to receive Compaq Traps.

Compaq recommends using the Translator to send SNMP traps to Systems Management Server rather than sending the original SNMP trap. Due to the original trap being sent in a raw format, Systems Management Server does not allow for any processing of the trap.

Configuring SNMP Trap Destinations

Before any SNMP trap can be received by the SMS console, the SMS console must be listed as a trap destination for SNMP events on the machine originating the trap. This requires manually configuring the SNMP service on each machine sending an SNMP trap.

To configure the SNMP service, follow these steps:

1. Open the Network icon from the Control Panel.

2. Select the SNMP service and press the *Configure* button.

3. Enter the community string to be used for the traps in the *Community Name* box and press the *Add* button. The default setting is "public."

4. Enter the IP addresses for all machines (including the SMS console) that will be receiving traps from this machine in the *IP Host Address* box and press the *Add* button.

5. Select *OK* twice.

The SNMP service needs to be stopped and re-started for these changes to take affect. Alternately, a reboot achieves the same result. See *Microsoft Windows NT Administrator's Guide* for more information on installing and configuring the SNMP service.

Configuring the Event To
Trap Translator

The Event to Trap Translator takes Windows NT Event Log events and translates them into SNMP traps on any client running Windows NT 3.51 or later. When an SNMP trap is generated by the Compaq Insight Agents for Windows NT, the Insight Agents also enter an event into the Windows NT event log. This event is entered in a manner to make it easier to understand what the trap that was generated was about.

NOTE: The Event to Trap Translator requires read/write access to the Windows NT Registry, so you must have administrative privileges on the client before you can configure events on that computer.

There are two methods for configuring the Translator:

■ Automatically via a Systems Management Server job

■ Manually

Automatically Configuring
the Translator

Systems Management Server provides a tool that allows for the modification of the event configuration on target machines remotely, using a job. This tool, *EVENTCMI.EXE*, allows you to use a data file to update the event configuration.

Compaq supplies a data file, found on the Compaq Management CD in the \TOOLKIT\SMS\EVENTS directory and called *CPQEVNTS.CNF*, that configures a target machine to translate all Compaq Insight Agent events to traps.

Prerequisites for the target machines are:

■ Compaq Insight Agents 2.6 or later

■ TCP/IP correctly installed and configured

■ SNMP correctly installed and configured

To update target machines, follow these steps:

1. Create a package for *EVENTCMI.EXE*. This tool is located on an SMS site server in the \SMS\SITE.SRV\MAINCFG.BOX\MSTEST directory.

   The command line will be: *EVENTCMI.EXE CPQEVNTS.CNF*

2. Create a job that will run this package on the target machines.

After the job is completed, all the target machines will have the translator configured. See *Systems Management Server 1.2 Books Online* help file for more information on Packages, Jobs, and the Translator.

Manually Configuring the Translator

To manually configure the Event to Trap Translator, follow these steps:

1. Open the Personal Computer Properties window for the Windows NT machine to be configured.

2. Highlight the Windows NT Administrative Tools icon.

3. Select the *Event to Trap Translator* button.

4. Select the *Custom* radio button then select the Edit button.

5. Open the System folder.

6. Scroll to the Insight Agents folder and highlight it. An example of the *Event to Trap Translator* window is shown in Figure 5-1.
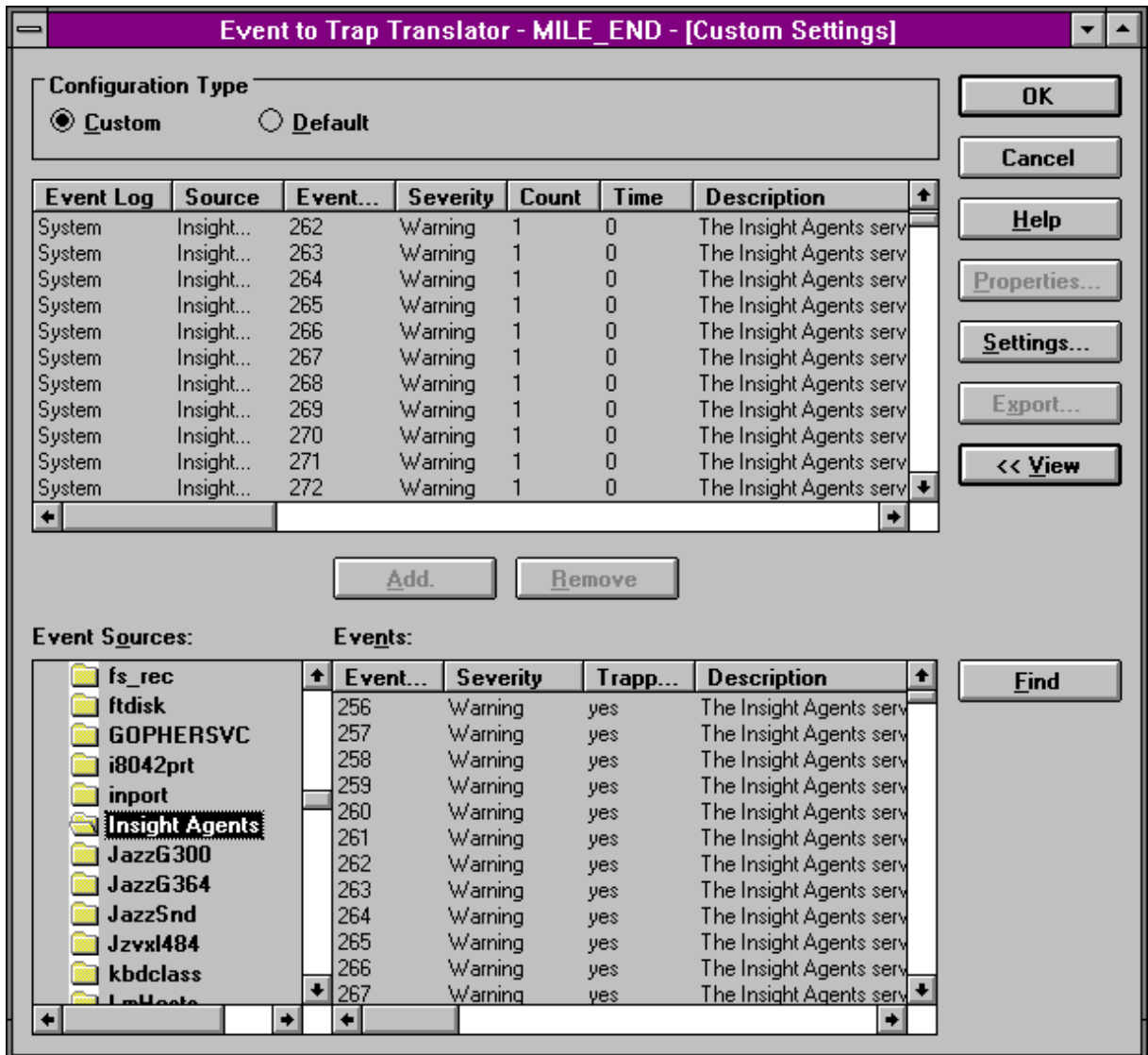
Figure 5-1. Finding the Insight Agents folder

7. Select the events to be translated into SNMP traps and press the *Add* button.

7.   Select the events to be translated into SNMP traps and press the *Add* button.

8.   Press the *OK* button until Systems Management Server updates the database.

The Windows NT Events for the target machine are now configured. Whenever the Insight Agents place an event into the Windows NT event log, the translator sends that event to the machines listed as trap destinations.

Configuring Systems Management Server to Receive Translated Traps

The last step before Systems Management Server can receive a trap is to configure the SMS site to receive traps. This is done by the administrator at any SMS primary site receiving traps.

To configure the trap receiver, follow these steps:

1.   Open the Site Properties window for the primary site.

2.   Press on the *SNMP Traps* button.

3.   Select *Proposed Properties* and press the *Create* button.

4.   Enter a description, such as Insight Agents Traps.

5.   Select the *NT Event Source* and enter Insight Agents in the box.

6.   Press the *OK* button several times until Systems Management Server asks if you want to update the site. When it does, press the *Yes* button.

The trap receiver now accepts any translated traps that originate from an Insight Agent event. See Appendix A, *Trap Overview,* for more information on Compaq Traps.

These traps are now included in the Systems Management Server database. This allows the systems administrator to use the information to generate queries for software distribution and to generate database alerts. However using the trap IDs outlined in Appendix A queries can be written against these traps. See Chapter 6 for a detailed example of how to use these traps.

Configuring Systems Management
Server to Receive Compaq Traps

Systems Management Server can receive raw SNMP traps from any device capable of sending a trap. However, there is no facility in Systems Management Server to process the traps into a form that is easier to understand. Using the trap IDs outlined in Appendix A, queries can be written against these traps.

To receive the raw Insight Agent traps in Systems Management Server, follow these steps:

1. Open the Site Properties window for the primary site.

2. Press the *SNMP Traps* button.

3. Select Proposed Properties and press the *Create* button.

4. Enter a description, such as Compaq Enterprise Traps.

5. Select the *OID* button and enter: 1.3.6.1.4.1.232. An example of the *SNMP Trap Filer Properties* window is shown in Figure 5-2.

Figure 5-2. Entering the OID number

6. Press the *OK* button until Systems Management Server asks if you want
    to update the site. When it does, press the *Yes* button.

Systems Management Server is now configured to accept traps from any
Compaq device. See Appendix A, *Trap Overview*, for more information on
Compaq Traps.

These traps are now included in the Systems Management Server database.
This allows the systems administrator to use the information to generate queries
for software distribution and to generate database alerts. See Chapter 6 for a
detailed example of how to use these traps.

Summary

Once configured, Systems Management Server places SNMP traps into the site database. These traps can now be used in the same ways as any other piece of information in the database: queries, alerts, job targets, and so on.

NOTE: Systems Management Server is not a real-time management platform. There may be a delay from the time a trap is entered into the database until an alert, if configured, is generated. Compaq recommends using Compaq Insight Manager as your real-time, fault detection platform.

Chapter 6
Compaq Management Solutions

This chapter provides several scenarios to illustrate how Compaq Insight Manager and Microsoft Systems Management Server work together. Compaq integrates with Systems Management Server in two ways:

■ Launching Compaq Insight Manager from the Personal Computer Properties window of Systems Management Server.

■ Supplying Systems Management Server with Compaq specific information periodically using the Compaq Inventory Collector.

Compaq Insight Manager installs an Insight Manager launch button into the Personal Computer Properties window of Systems Management Server on all Microsoft Windows NT servers running the Compaq Insight Management Agents for Microsoft Windows NT. This allows you to acquire real-time information on servers on the network from within Systems Management Server using Insight Manager.

Systems Management Server collects hardware and software inventory for client PCs and stores this information in the SQL Server database. When the Inventory Collector program is installed, Systems Management Server gains access to extended Compaq specific information on Windows NT servers and workstations, and on Deskpros running Windows 95 or Windows NT and the Insight Manager Desktop Agents. This information is also stored in the SQL Server database. See Chapter 4, "Integrating the Compaq Inventory Collector," for more information.

The following management solution scenarios are discussed in this chapter:

■ Using Systems Management Server to query for Compaq specific equipment on the network

■ Using Systems Management Server and Compaq Insight Manager to find Pager status of Compaq servers

■ Using Compaq Insight Manager and Systems Management Server to find out what version of Compaq Insight Management Agents is on a server

■ Using Systems Management Server and Compaq Insight Manager to find the ASR status of Compaq servers

- Using Systems Management Server to manage disk usage on all servers

- Using Compaq Insight Manager and Systems Management Server to set a server threshold for network monitoring

- Using Systems Management Server and Compaq Inventory Collector to find Deskpros with 8 megabytes of memory

- Using Systems Management Server to find all SNMP traps for a particular machine

These scenarios are suggestions only on how to use Insight Manager and Systems Management Server. There are many other ways the two can be used together. See the *Compaq Insight Manager User Guide* and the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information.

The following sections explain the scenarios which demonstrate how to use Compaq Insight Manager and Systems Management Server to perform management functions according to the network management model.

How can I find Compaq specific equipment on the network?

In Systems Management Server, a network is displayed only as a list of icons with machine names. Unless you are intimately familiar with all the servers, you might not know the manufacturer of each computer component or what equipment is installed in each server. With Insight Manager and Systems Management Server, it is easy to query for Compaq specific servers or components.

With the Inventory Collector information, you can query the Systems Management Server database for all Compaq specific servers. This scenario involves creating a query from the Query window of Systems Management Server.

NOTE: Inventory Collector must be properly installed. See Chapter 4, "Integrating the Compaq Inventory Collector," for more information.

Querying the Database

This example queries for all Compaq servers known to Systems Management Server. To use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows: Queries* icon from the SMS Administrator in Systems Management Server. The Queries window is displayed.

3. Press **Ctrl**+**N** to add a new query. The Query Properties window is displayed as shown in Figure 6-1.
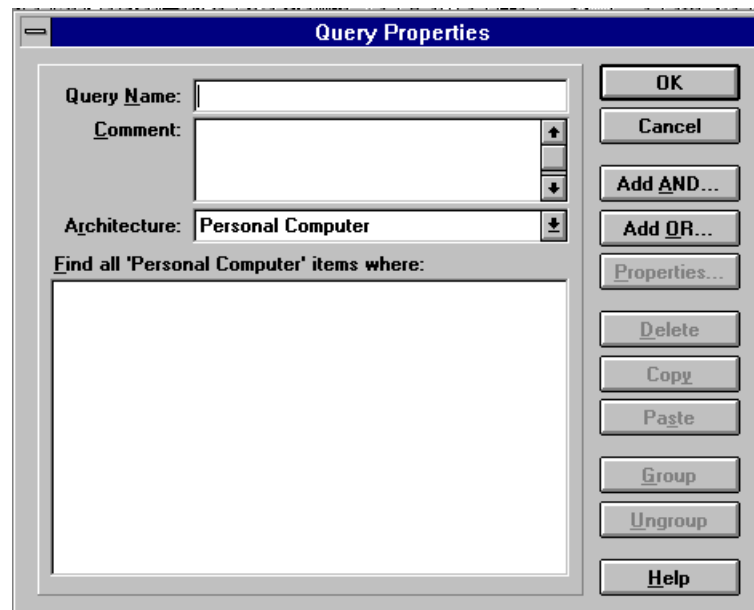

Figure 6-1.　Adding a new query

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *System Name* attribute. An example of the Query Expression Properties window is shown in Figure 6-2.
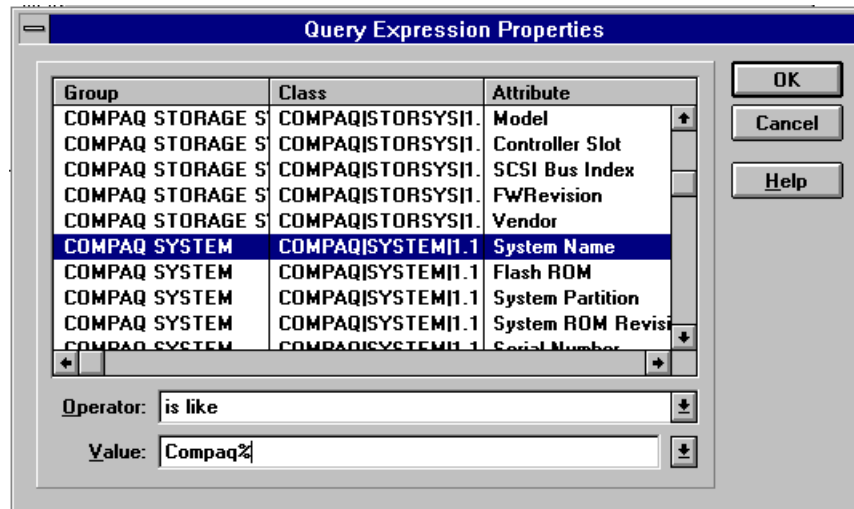

Figure 6-2. Finding the System Name attribute

Single-click on this line to select it.

7. Select *is like* for Operator from the Query Expression Properties window.

8. Type *Compaq%* for Value from the Query Expression Properties window and press *OK*. The Query Properties window is displayed.

9. Type the Query name, from the Query Properties window (for this scenario, the Query name is *Find Compaq Systems*) and press *OK*. This saves the query in the database. The Queries window is displayed.

10. Scroll through the list to find the query named "Find Compaq Systems" and highlight it.

11. Select *File → Execute Query* from the File menu. The Execute Query window is displayed.

12. Press *OK* to execute the query. The Query Results - Find Compaq Systems window is displayed with the results of the query.

This window displays all Windows NT-based Compaq servers on
the network. It shows the name, ID, site, domain, and location for
each Compaq system. You can double-click on a particular system to get
more detailed information from the Personal Computer
Properties window.

Summary

By querying the database using Systems Management Server, you have
direct access to a complete inventory of equipment components on the network.
Using Systems Management Server with Insight Manager, you can save time
and resources when looking for a specific component on the network. For
example, you can create a query that generates a list of all machines using a
Compaq IDA Controller. See Chapter 4, "Integrating the Compaq Inventory
Collector," for a list of Compaq specific information that might be in the
database.

How do I configure the Pager status of Compaq servers?

It can be difficult to track the configuration of servers on a network, especially
when there are many different types. With Systems Management Server and
Compaq Insight Manager, it is easy to track the configuration of all Compaq
Windows NT servers.

As an example, suppose you want all Compaq Windows NT servers to have
Pager Status enabled. A query allows you to check the pager status for any
Compaq server. Systems Management Server has the tools, with the Compaq
Inventory Collector program, to display the pager status on all Compaq servers.
In conjunction with Insight Manager, you have the ability to remotely monitor
and change the pager status of Compaq servers. You can then keep a consistent
pager configuration across all servers. This scenario involves creating a query
from the Query window of Systems Management Server and setting a value
from Insight Manager.

Querying the Database

This example queries for all Compaq Windows NT servers on a network. To

use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows: Queries* icon from the SMS Administrator in Systems Management Server. The Queries window is displayed.

3. Press **Ctrl**+**N** to add a new query. The Query Properties window is displayed.

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *Pager Status* attribute. An example of the Query Expression Properties window is shown in Figure 6-3.
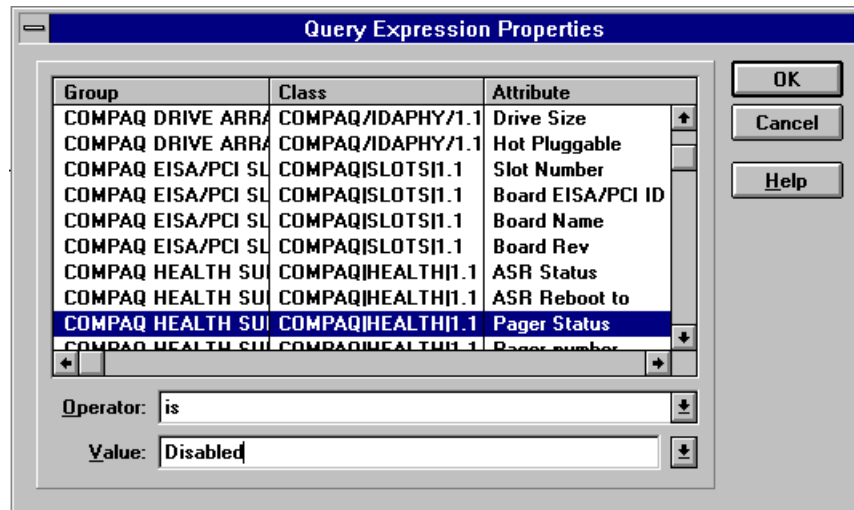

Figure 6-3.   Finding the Pager Status attribute

Single-click on this line to select it.

7. Select *is* for Operator from the Query Expression Properties window.

8. Type *Disabled* for Value from the Query Expression Properties window and press *OK*. The Query Properties window is displayed.

9. Type the Query name from the Query Properties window, (for this scenario, the Query name is *Find All Pager Status Disabled*) and press *OK*. This saves the query in the database. The Queries window is displayed.

10. Scroll through the list to find the query named "Find All Pager Status Disabled" and highlight it.

11. Select *File → Execute Query* from the File menu. The Execute Query window is displayed.

12. Press *OK* to execute the query. The Query Results - Find All Pager Status Disabled window is displayed with the results of the query.

    This window displays all Compaq servers that have Pager Status disabled. It shows the name, ID, site, domain, and location for each server.

Setting a New Value

To use Compaq Insight Manager to set a new value, follow these steps:

1. Double-click on a particular server from the Query Results - Find All Pager Status Disabled window. This opens the Personal Computer Properties window.

2. Scroll through the icon list until you see the Compaq Insight Manager icon and single-click on the icon to select it. The Start Insight Manager button is displayed.

3. Press the *Start Insight Manager* button. Insight Manager starts, if it is not already running, and opens the Server window for the selected server.

4. Press the *Recovery* icon from the Server window. The Recovery window for that server is displayed.

5. Press the *Comm Setting* icon from the Recovery window. The Comm Settings window is displayed as shown in Figure 6-4. You can change the pager status in this window (for this scenario, the Status is Disabled).
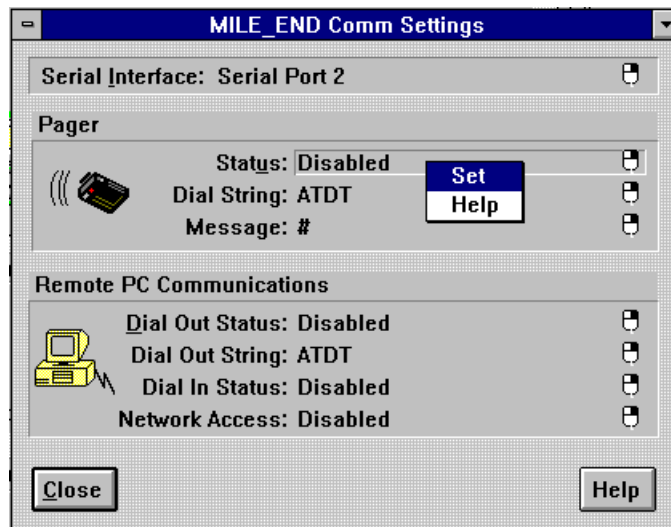

Figure 6-4.   Changing Pager Status

6. Right click in the *Status* box and select *SET* from the options presented. The Set Value window is displayed.

7. Select *Enabled* for New Value from the Set Value window.

8. Press the *SET* button in this window. Insight Manager changes the Pager status on the server and displays the Comm Settings window. Now the Status is Enabled.

   NOTE: This step might take up to a minute to update depending on where in the poll cycle Insight Manager is when the SET button is pushed.

Summary

With Systems Management Server, you can easily find particular configurations on servers in the network. Then with Insight Manager, you can set new values for those servers. Using Systems Management Server and Insight Manager together makes managing networks faster and more productive.

How do I find out of date versions of Insight Management Agents?

For Compaq Insight Manager to work correctly, the Insight Management Agents must be loaded and active on each server. These Insight Agents are updated regularly to work with new Compaq hardware and to add new features.

Insight Manager has a menu selection for each server called "Version Control." Version Control contains a database with the latest version information for not only the Insight Agents, but also Compaq drivers and utilities. This allows you to see which software components on a server are out of date as well as those recommended to be upgraded.

For example, Compaq servers come with the latest version of SmartStart, which includes the Insight Agents. There is a possibility that servers on the network could have inconsistent versions of the agents due to different versions of SmartStart. This scenario shows you how to find the latest version of the Insight Agents and find which servers are running older versions.

Using Insight Version Control

To use Compaq Insight Manager to access Version Control, follow these steps:

1. Start Insight Manager, if not already running. The Server List window is displayed.

2. Select a server from the Server List and double-click on it. The Server window is displayed for the server in question.

3. Select the *Task* button on the Server window. The Server Task List window is displayed with four options as shown in Figure 6-5.
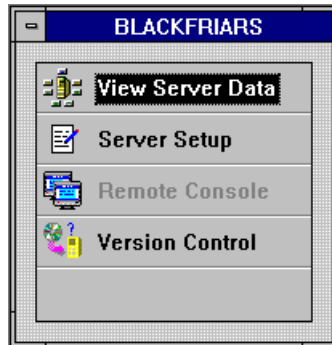

Figure 6-5. Selecting an option in the Server Task List window

4. Select *Version Control* from the Server Task List window. The Version Control database is loaded and the Version Control window is displayed.

5. Select the *CPQMGMT.EXE* program from the Version Control window. This program will have a color-coded icon to show the urgency of an upgrade. Table 6-1 lists each color-code and its description.

NOTE: You can get the latest version of Insight Agents from the Compaq Support Software CD or SoftPaq SP0965.

Table 6-1
Color Coding

Color	Description
Green	No upgrade is necessary.
Yellow	Upgrade available.
Red	Upgrade recommended.

On the right side of the window, there are text fields describing why the upgrade should take place. Version Control also shows what version of the software is current.

6. Select the *Compaq Insight Management Agents for Microsoft Windows NT* to see the current version of Insight Agents. Make a note of the database version (for this scenario, use *2.50* as the database version).

Querying the Database

Now that you know what the database version is for the Insight Agents for Windows NT, you need to query for that version. To use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows:Queries* icon from the SMS Administrator in Systems Management Server. The Queries window is displayed.

3. Press **Ctrl**+**N** to start a new query. The Query Properties window is displayed.

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *Version* attribute. An example of the Query Expression Properties window is shown in Figure 6-6.
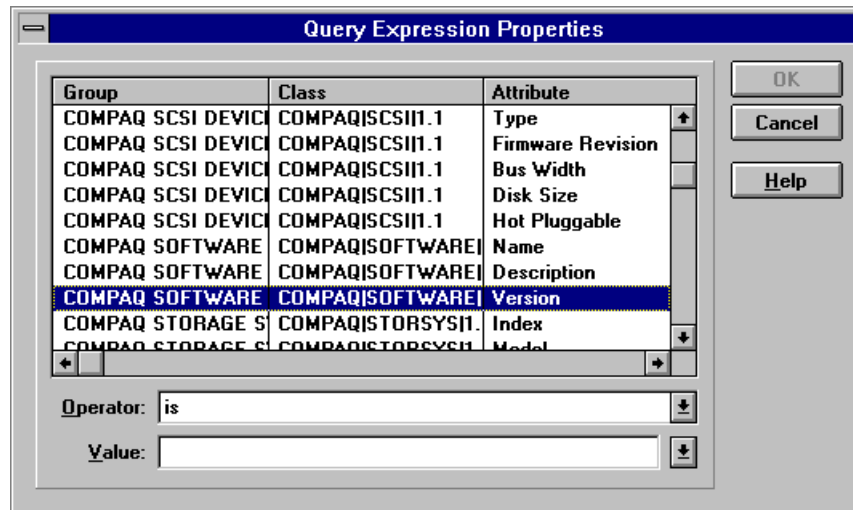

Figure 6-6. Finding the Version attribute

Single-click on this line to select it.

7. Select *comes before* for Operator from the Query Expression Properties window.

8. Type *2.50* for Value from the Query Expression Properties window and press *OK*. The Queries Properties window is displayed.

9. Select the *Add AND...* button from the Queries Properties window. The Query Expression Properties window is displayed.

10. Scroll through the list until you find the *Name* attribute. An example of the Query Expression Properties window is shown in Figure 6-7.
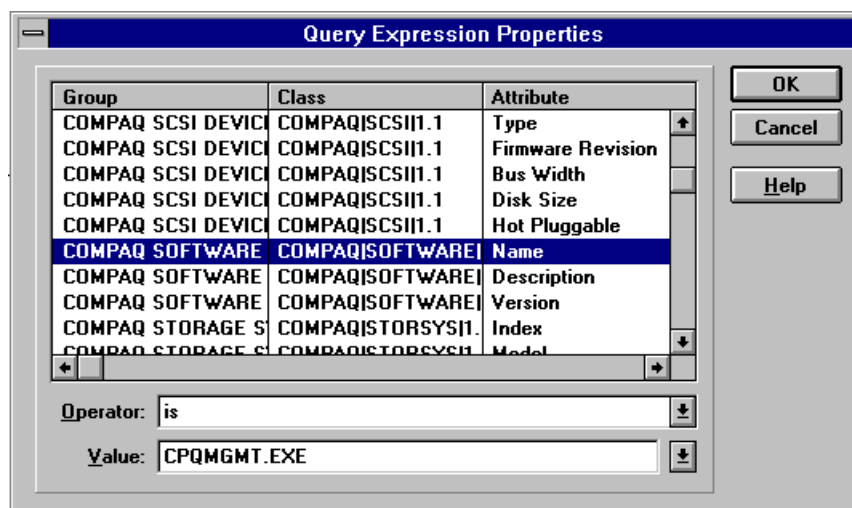

Figure 6-7. Finding the Name attribute

Single-click on this line to select it.

11. Select *is* for Operator from the Query Expression Properties window.

12. Type *CPQMGMT.EXE* for the Value from the Query Expression Properties window and press *OK*. The Queries Properties window is displayed.

13. Type the Query name from the Queries Properties window, (for this scenario, the Query name is *Latest Version-Agents*) and press *OK*. This saves the query in the database. The Queries window is displayed.

14. Scroll through the list to find the query named "Latest Version-Agents" and highlight it.

15. Select *File → Execute Query* from the File menu. The Execute Query window is displayed.

16. Press *OK* to execute the query. The Query Results - Latest Version - Agents window is displayed with the results of the query.

    This window displays a list of servers that have out-of-date Insight Agents. It shows the name, ID, site, domain, and location of the servers.

Summary

Using Insight Manager and Systems Management Server, you can find out the versions of software using Version Control. This feature can make the task of upgrading your servers quick and easy. See the *Compaq Insight Manager User Guide* for more detailed information on the Version Control feature.

How do I find the ASR-2 status and remotely access a Compaq server?

Network servers are expected to work correctly, 100 percent of the time. Unfortunately, this is not always the case. A server can sometimes lock up or crash completely. To help you rapidly recover from these types of problems, Compaq has built in to each server Automatic Server Recovery-2 (ASR-2). This causes a locked up or crashed server to restart itself and either boot into the operating system or into the Compaq Utilities. From the utilities program, the server can be remotely controlled from Insight Manager.

With the Inventory Collector information, you can create a query to see the ASR Reboot status of Compaq Windows NT servers. This status will either be "Boot to utilities" or "Boot to OS." This is useful to set a standard ASR configuration across all Windows NT servers. This scenario demonstrates creating a query from the Query window of Systems Management Server and obtaining remote access of the server with Insight Manager.

Querying the Database

This example queries for all Compaq Windows NT servers on a network. To use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows: Queries* icon from the SMS Administrator in Systems Management Server. The Queries window is displayed.

3. Press **Ctrl**+**N** to add a new query. The Query Properties window is displayed.

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *ASR Status* attribute. An example of the Query Expression Properties window is shown in Figure 6-8.
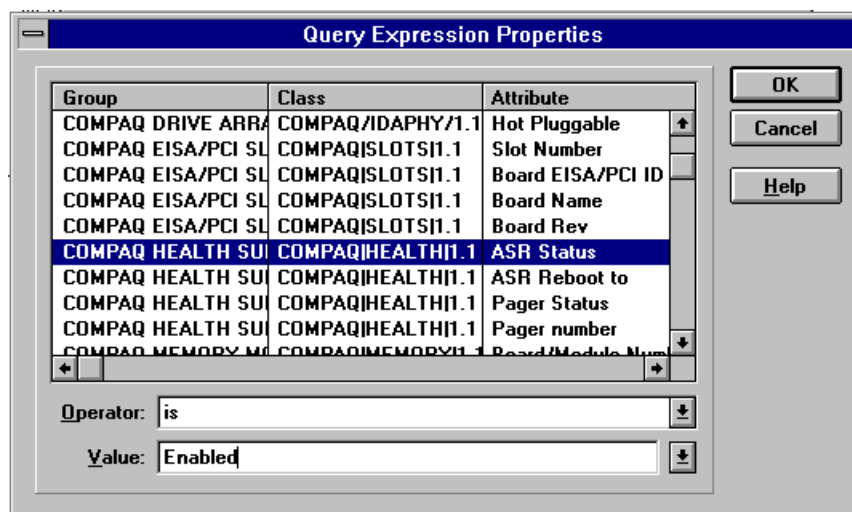

Figure 6-8. Finding the ASR Status attribute

Single-click on this line to select it.

7. Select *is* for Operator from the Query Expression Properties window.

8. Type *Enabled* for Value from the Query Expression Properties window and press *OK*. The Query Properties window is displayed.

9. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

10. Scroll through the list until you find the *ASR Reboot to* attribute. An example of the Query Expression Properties window is shown in Figure 6-9.
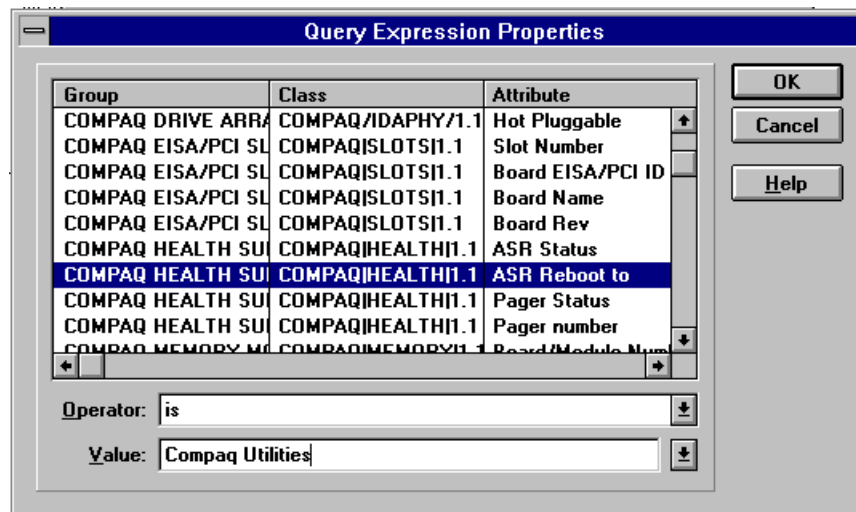

Figure 6-9.   Finding the ASR Reboot to attribute

Single-click on this line to select it.

11. Select *is* for Operator from the Query Expression Properties window.

12. Type *Compaq Utilities* for Value from the Query Expression Properties window and press *OK*. The Query Properties window is displayed.

13. Type the Query name, (for this scenario, the Query name is as *Find All ASR Utility Machines*) and press *OK*. This saves the query in the database. The Queries window is displayed.

14. Scroll through the list to find the query named "Find All ASR Utility Machines" and highlight it.

15. Select *File → Execute Query* from the File menu. The Execute Query window is displayed.

16. Press *OK* to execute the query. The Query Results - Find All ASR Utility Machines window is displayed with the results of the query.

    The resulting list now shows all machines that restart to utilities. This window shows the name, ID, site, domain, and location of each machine in the list.

Getting Remote Control Access

If an ASR-2 event occurs on one of these machines, the server pages the administrator and restarts to the utilities. To use Insight Manager to get remote control access, follow these steps:

1. Start Insight Manager. Insight Manager launches and the Server List window is displayed for the server in question.

2. Press the *Tasks* button from the Server window. A Server Task List window is displayed with four options.

   ```
   View Server Data
   Server Setup
   Remote Console
   Version Control
   ```

3. Select *Remote Console* from the Server Task List window. This launches a window from which you can remote control the server.

4. Read the information screen and press **Enter** to continue.

5. Enter the password, if any, for the session. You now have control of the server. You can perform all diagnostic and configuration activities as if you were physically in front of the server.

6. Press the *Close* button to end the session.

Summary

Using Systems Management Server and the Inventory Collector, you can set configurations for all servers on the network. Using Insight Manager, you can monitor the network by remote control access, which can be convenient when problems occur.

How can I manage disk usage on all servers?

With many servers on a network, it can be difficult to keep track of disk space usage. Fortunately, Systems Management Server takes a snap-shot of disk usage during its inventory procedure. You can use this information to write a database alert telling you when a drive is nearing capacity. Once you know a server's drive space is becoming low, you can launch Insight Manager and run Automatic Data Collection (ADC) to collect a history of drive space usage to assist you in determining when to add additional space to the server.

This scenario involves creating a query from the Query window and setting an alert from the Alert Query window of Systems Management Server, then using Insight Manager's ADC.

Querying the Database

This example queries for all Compaq servers on a network. To use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows: Queries* icon in Systems Management Server.

3. Press **Ctrl**+**N** to add a new query. The Query Properties window is displayed.

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *% Disk Full* attribute. An example of the Query Expression Properties window is shown in Figure 6-10.
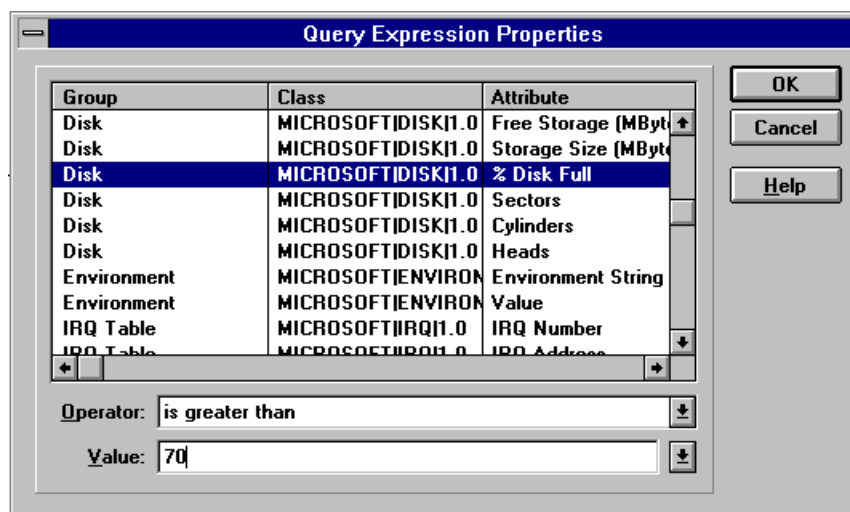

Figure 6-10. Finding the % Disk Full attribute

Single-click on this line to select it.

7. Select i*s greater than* for Operator from the Query Expression Properties window.

8. Type *70* for Value and press *OK*. The Queries Properties window is displayed.

A value of 70% should give you enough lead time to perform several days worth of ADC on a server. If you feel drive usage is being used up at a faster rate in your setup, set this value lower.

9. Select the *Add AND...* button. The Query Expression Properties window is displayed.

10. Scroll through the list until you find the *SystemRole* attribute. An example of the Query Expression Properties window is shown in Figure 6-11.
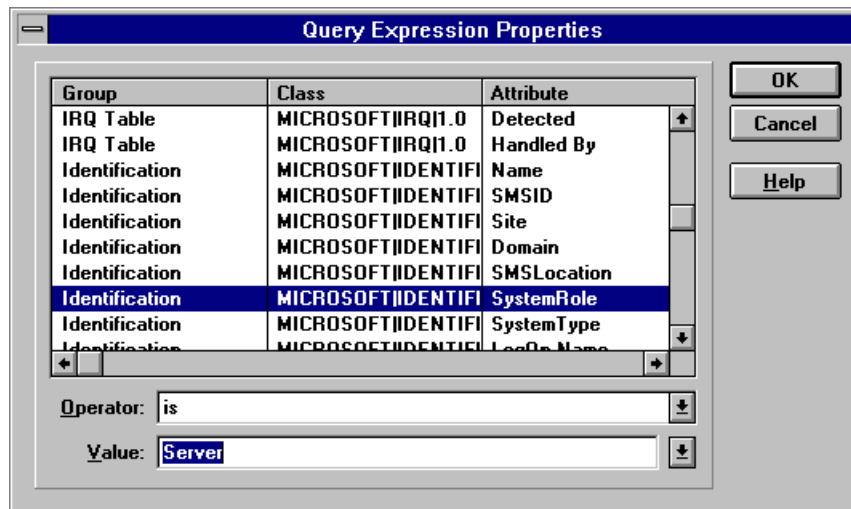

Figure 6-11. Finding the SystemRole attribute

Single-click on this line to select it.

11. Select *is* for Operator from the Query Expression Properties window.

12. Type *Server* for Value and press *OK*. The Queries Properties window is displayed.

This limits the query to only servers.

13. Type the Query name, (for this scenario, the Query name is as *Available Drive Space*) and press *OK*. This saves the query in the database. The Queries window is displayed.

Once the query has been saved to the database, an alert needs to be set.

Setting an Alert

To use Systems Management Server to set an alert, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows:Alerts* icon from the SMS Administrator in Systems Management Server.

3. Press **Ctrl**+**N** to start a new alert. The Alert Properties window is displayed.

4. Give this alert a name then press the *Query* button. For this scenario, name the alert *Space*. The Alert Query window is displayed.

5. Select the query you just saved from the drop down menu for the Query box (in this scenario, the name of the query is *Available Drive Space*).

6. Take the defaults for everything else and press the *OK* button. This will cause the alert query to be run every 2 hours.

    NOTE: The default variance is 2 hours. This variance can be changed to meet your specific needs.

    See the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information on alerts.

7. Press the *Actions* button. The Alert Actions window is displayed.

8. Select the *Notify Computer or Username* box from the Alert Actions window.

9. Enter the computer name of the Systems Management Server machine and press the *Add* button.

10. Press *OK* and the Alert Properties window is displayed.

11. Press *OK* again to save the alert. The Alerts window is displayed.

Systems Management Server now runs the alert every two hours checking for any machines that have greater than 70% drive usage on any drive.

Using Automatic Data Collection

A pop-up dialog box on the Systems Management Server computer is displayed to notify you of an alert. To use Compaq Insight Manager's ADC, follow these steps:

1. Run the query to get a list of machines with high drive usage using Systems Management Server.

2. Select the machine about which you want more information. The Personal Computer Properties window is displayed.

3. Scroll through the icon list until you see the Compaq Insight Manager icon and single-click to select it. The Start Insight Manager button is displayed.

4. Press the *Start Insight Manager* button. Insight Manager starts if it is not already running and opens the Server window for the selected server from Systems Management Server.

5. Press the *Server Tasks* button and select *Server Setup*. The Server Setup window is displayed as shown in Figure 6-12.
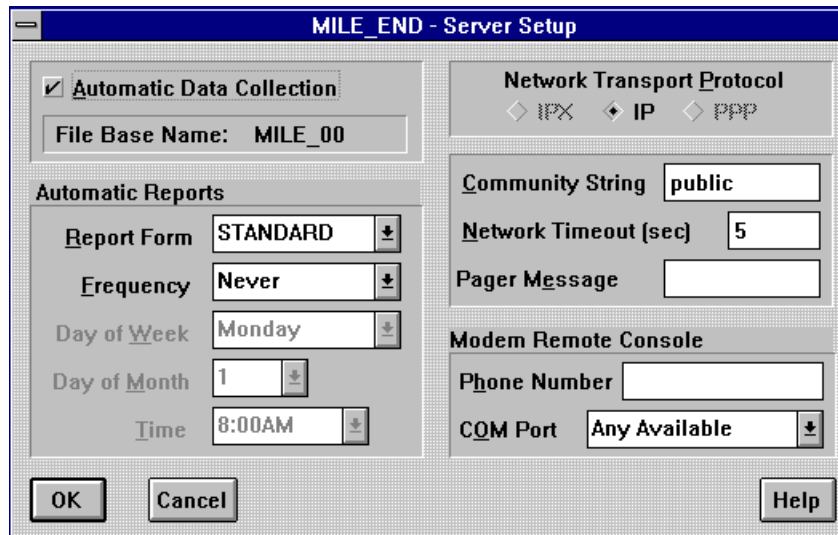

Figure 6-12. Selecting ADC in the Server Setup window

6. Select the *Automatic Data Collection* box to enable ADC.

   For ADC to work properly, you must leave Insight Manager running in the background. You can then monitor data using Insight Manager, which will have a history of information on the server from which you can create graphs.

To examine ADC information, follow these steps:

1. Select the server you want to look at from the Server List window. The Server Tasks window is displayed.

2. Select *View Server Data* from the Server Tasks window.

3. Select the *Mass Storage* button.

4. Right-click once on the volume that is heavily used and select the *Graph* option. This will launch a graph window showing the disk usage as collected by ADC, which is shown in Figure 6-13.
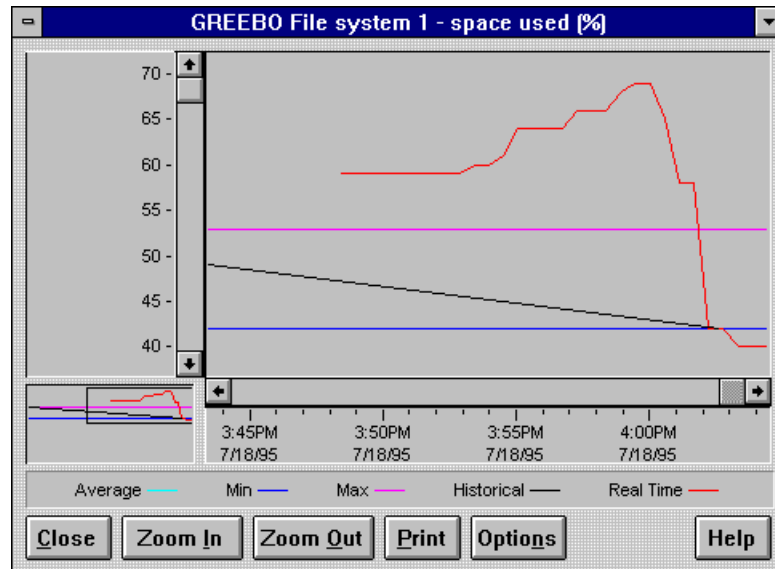
Figure 6-13.   Example of disk usage

This graph gives you a trend over time that can help you determine the rate of increase in used disk space. You can then determine when to expand your disk space.

You can print out this graph or otherwise manipulate the data as you see fit. You can also generate reports on disk usage, see the *Compaq Insight Manager User Guide* for more information on generating reports and graphs.

Summary

Using Systems Management Server and Insight Manager, you can query disk usage, set an alert for when a certain percentage is reached, and use ADC to determine how quickly a drive is reaching full capacity.
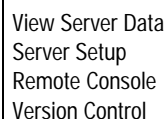
How can I set a server threshold for network monitoring?

The combination of Insight Manager and Systems Management Server creates an effective means to troubleshoot problems regarding the network . For example by setting a threshold in Insight Manager, you can be notified when a particular server is being monopolized by a client machine. This condition is usually signaled by a large number of unicast packets between the server and the client machine. Systems Management Server gives you the ability to determine which client is at fault and what data is being transmitted.

Selecting Server Data

To configure Compaq Insight Manager and Systems Management Server to analyze the network, follow these steps:

1. Start Insight Manager. The Server List window is displayed.

2. Select the server for which you want to set a unicast packet threshold. A Server Task List window is displayed with four options.

    > View Server Data
    > Server Setup
    > Remote Console
    > Version Control

3. Select the *View Server Data* option from the Server Task List window. The Server window for that particular server is displayed.

4. Press the NIC button from the Server window. The NIC Overview window is displayed, which shows all NICs installed in the server by slot number.

5. Select the NIC you are interested in and single-click on it. The window for that particular NIC is displayed.

6. Select the interface for that particular NIC.

    NOTE: Most NICs will only have one interface; however, Compaq does have NICs with two interfaces (Token Ring and Ethernet).

7. Press *View Interface* button. The Statistics window is displayed for that particular NIC as shown in Figure 6-14. It shows statistics on network packets received and transmitted.
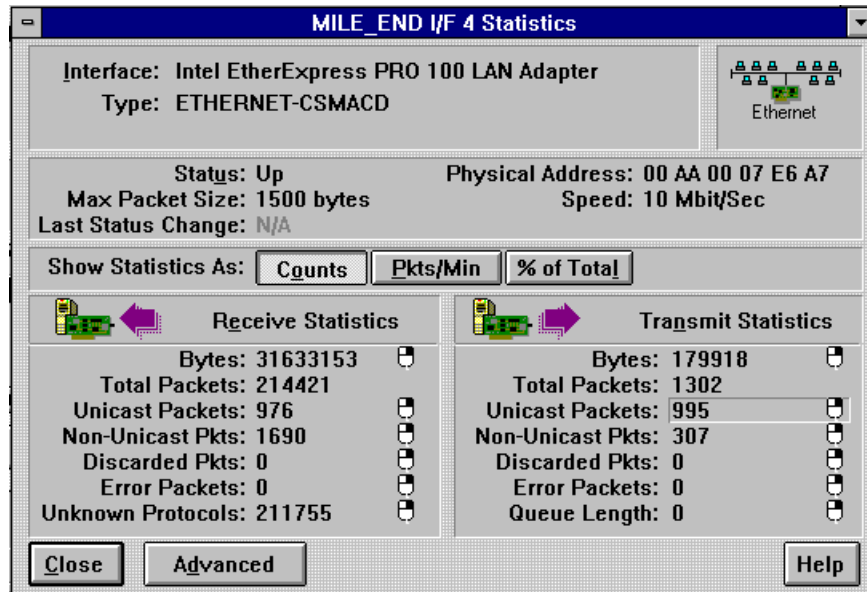

Figure 6-14. Finding the statistics for a particular NIC

8. Look in the Transmit Statistics box in the lower right of the window. Right click on the space next to Unicast Protocol. A pop-up window is displayed with three options.

```
Set Threshold
Graph
Help
```

9. Select *Set Threshold* from the pop-up window. The Thresholds window is displayed.

10. Select the *New* button to enter a new threshold. The Set Threshold window is displayed.

11. Change the alarm type to *Delta* for this scenario from the Set Threshold window.

12. Enter *30,000* in the Threshold Top box for this scenario from the Set
    Threshold window as shown in Figure 6-15.

    NOTE: This averages to 500 packets per second (30,000 divided by the 60
    second poll cycle) between the server and the client. You will want to adjust
    this number to suit your network environment.

    This generates an alarm when the number of unicast packets increase by
    at least 30,000 packets during a poll cycle. The number of unicast
    packets must then drop below the Threshold Bottom value for a polling
    period, default of 60 seconds, before Insight Manager will generate
    another alert. See the *Compaq Insight Manager User Guide* for more
    information on thresholds.

Figure 6-15.   Changing the Set Threshold attributes

13. Enter 10,000 in the Threshold Bottom box for this scenario from the Set
    Threshold window as shown in Figure 6-15.

14. Select the *Set* button from the Set Threshold window. The new threshold
    appears in the window with a status of "Setting." After a few seconds,
    the status clears and the threshold is set.

15. Select the *Close* button from the Threshold window. The Statistics window is displayed.

Insight Manager will now generate an alarm when either of these thresholds is crossed.

Starting Network Monitoring

When you receive an alarm from Insight Manager for this threshold, use Systems Management Server to start network monitoring. Systems Management Server will automatically configure the filters in Network Monitor for the server in question.

To start network monitoring, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the server which indicated the alarm. The Personal Computer Properties window is displayed.

3. Find the *Network Monitor* icon by scrolling through the list of icons and select it. The Start Network Monitor button is displayed along with some detailed information on the server.

4. Press the *Start Network Monitor* button. This launches the Network Monitor application with a filter set to show all frames to and from the server selected in Systems Management Server. The Network Monitor window is displayed.

5. Select the *Filter* icon from the Network Monitor window. The Capture
   Filter window is displayed as shown in Figure 6-16. This completely
   configures the monitor to capture all packets originating from the server
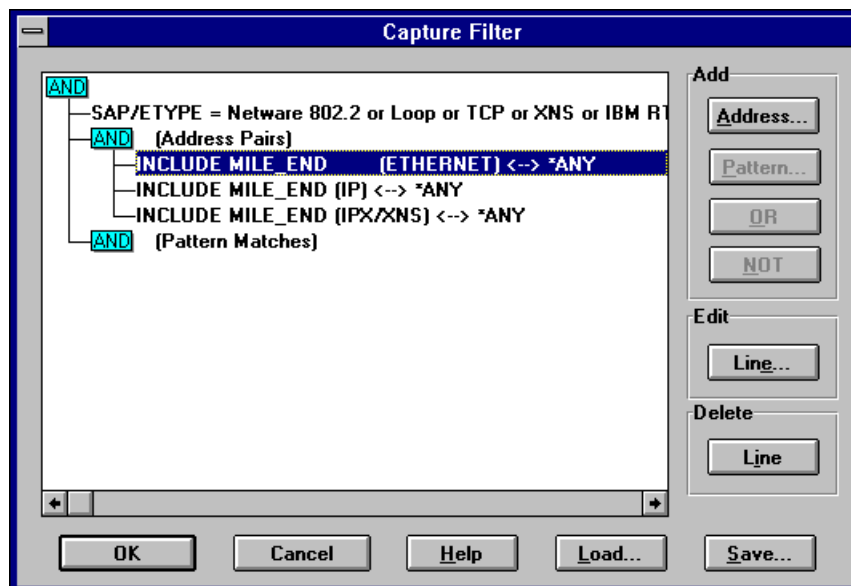   in question.

Figure 6-16. Configuring the Network Monitor to capture packets

6. Double-click on the first entry in the Address Pairs section of
   the display. The Address Expression window is displayed.

7. Select the -> option from the Direction box and select *OK*. This will limit Network Monitor to only packets originating from the server as shown in Figure 6-17.
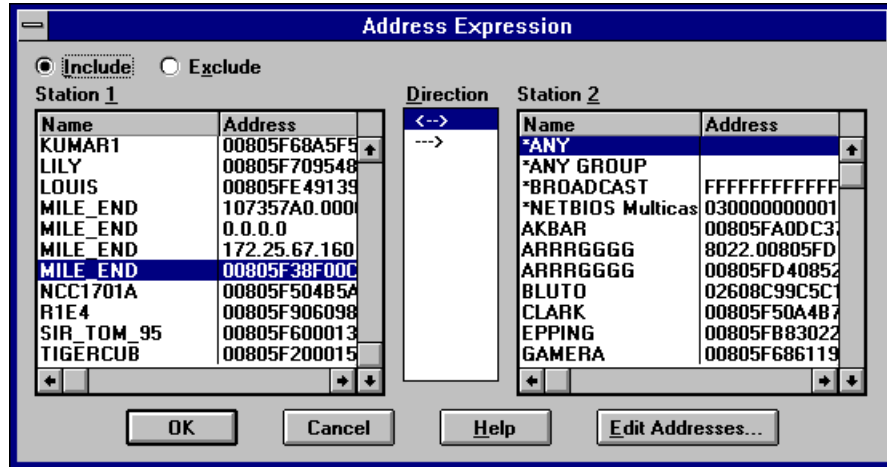

Figure 6-17. Setting the Address Expression

8. Delete any other address pairs following the first pair by highlighting them and press the **Delete** key.

9. Repeat step 8 and select *OK*.

10. Select the *Start Capture* icon to start capturing packets. Allow the machine to capture packets for as long as you feel necessary to get a decent sample of packets.

11. Select the *Stop* icon.

12. Double click on the 1->2 box in the middle left of the window. This will order the pair by packets sent from 1 to 2 in decreasing order. This will tell you the alias or MAC address of the client machine that is monopolizing the server as shown in Figure 6-18.
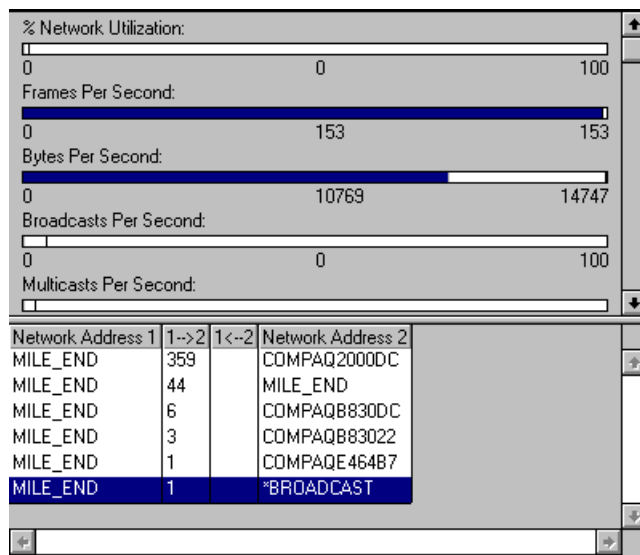
Figure 6-18. Setting the order of packets sent

13. Select the *View* icon. The Capture:Summary window is displayed. It shows a list of the captured packets, their source and destination addresses, and their protocol type.

14. Select a packet to look at. An informational window is displayed giving details on that particular packet.

    From this window you can see the protocol, type, the frame type, and the data being transmitted. By looking a several packets, you might be able to determine what data is being transmitted. This will then allow you to intelligently decide on how to deal with the client machine.

See the *Microsoft Systems Management Server for Windows NT Administrator's Guide* for more information on how to use the Network Monitor feature.

Summary

Using Insight Manager and Systems Management Server, you can collect data on particular unicast packets and start network monitoring to save time when servers are being overloaded.

How can I find all Compaq Deskpros with 8 megabyte memory chips installed?

The Compaq Inventory Collector, in conjunction with Systems Management Server, gives administrators the ability to view the memory modules located in Compaq Deskpros. This allows administrators to see what memory chips a particular machine has installed in it and if there are any open modules.

Querying the Database

This example queries for all Compaq Deskpros with at least one 8 megabyte memory module on a network. To use Systems Management Server to query the database, follow these steps:

1. Start SMS Administrator, if not already running.

2. Select the *Open Windows: Queries* icon in Systems Management Server.

3. Press **Ctrl**+**N** to add a new query. The Query Properties window is displayed.

4. Select *Personal Computer* for Architecture from the Query Properties window.

5. Select the *Add AND...* button from the Query Properties window. The Query Expression Properties window is displayed.

6. Scroll through the list until you find the *Module Size* attribute. An example of the Query Expression Properties window is shown in Figure 6-19.
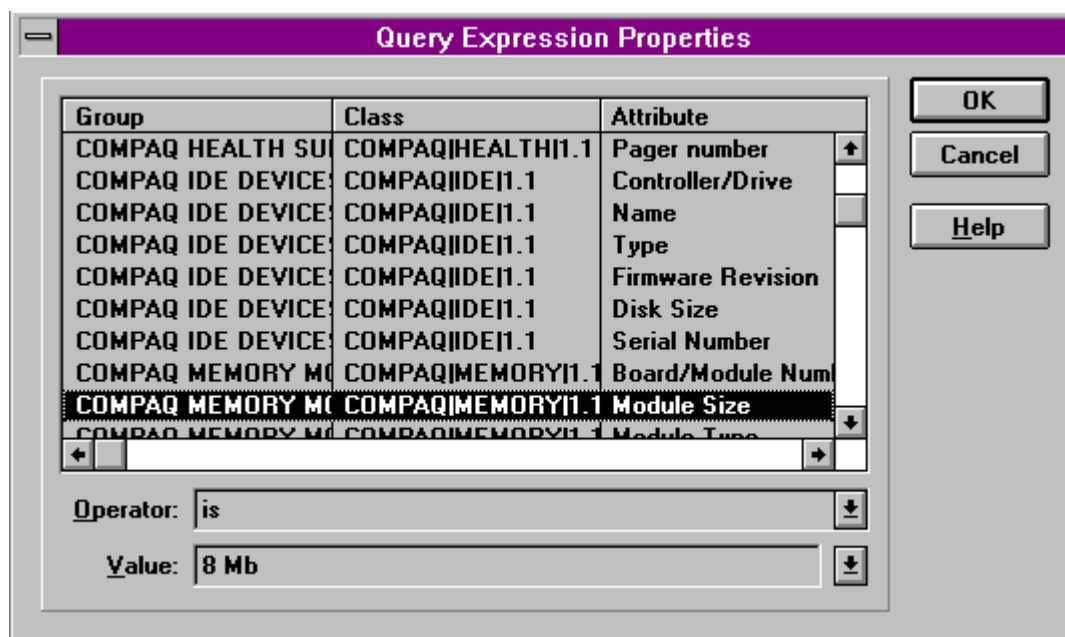

Figure 6-19.   Finding the Module Size attribute

Single-click on this line to select it.

7. Select the *is* Operator from the Query Expression Properties window.

8. Type *8 Mb* for Value and press *OK*. The Queries Properties window is displayed.

9. Select the *Add AND...* button. The Query Expression Properties window is displayed.

10. Scroll through the list until you find the *System Name* attribute. An example of the Query Expression Properties window is shown in Figure 6-20.
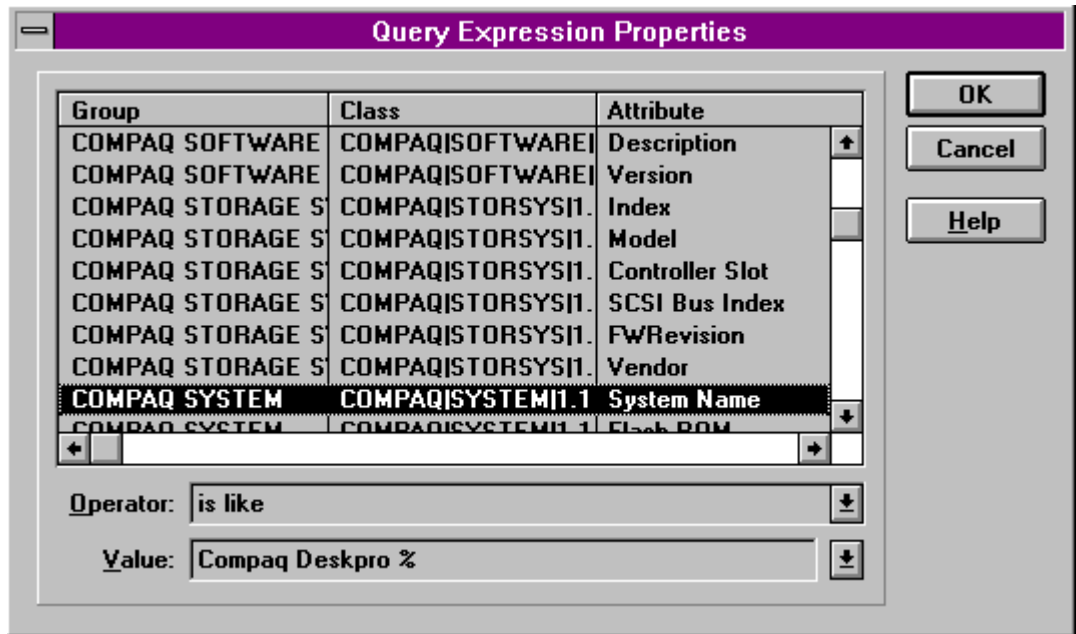

Figure 6-20.   Finding the System Name attribute

Single-click on this line to select it.

11. Select *is like* for Operator from the Query Expression Properties window.

12. Type *Compaq Deskpro %r* for Value and press *OK*. The Queries Properties window is displayed.

13. Type the Query name, (for this scenario, the Query name is *Compaq Deskpros with 8Mb Memory*) and press *OK*. This saves the query in the database. The Queries window is displayed. The query is now saved in the database.

14. Scroll through the list to find the query named "Compaq Deskpros with 8Mb Memory" and highlight it.

    Select *File → Execute Query* from the File menu. The Execute Query window is displayed.

15. Press *OK* to execute the query. The Query Results - Latest Version - Agents window is displayed with the results of the query.

    This window displays a list of Deskpros that have 8 megabyte memory modules installed.

Summary

Using the Compaq Inventory Collector with Systems Management Server can give you a better idea of what type of memory modules are installed on Compaq Deskpros without having to physically visit the machine and open the cover.

How can I use the SNMP traps received by SMS?

Systems Management Server stores all SNMP traps it receives in the SQL database. This means there is a history of all traps generated by devices kept in the database, provided that the traps aren't deleted once received. These traps can be used in the same manner as any other piece of information kept in the Systems Management Server database. The following scenarios are some possible solutions for using the trap data.

Finding all SNMP Traps for a Particular Machine

It can be useful to periodically check each machine to see what SNMP traps have been generated. This allows you to see if there are any recurring problems. The following example uses the Windows NT Events that have been translated to SNMP traps. These events are easier to read than the raw SNMP traps generated by the Insight Agents. These steps can be modified to use the raw SNMP traps by querying on the Trap ID of the trap you are interested in. See Appendix A for a complete list of the traps and their accompanying trap IDs.

To check a particular machine, follow these steps:

1. Open the Query Window and press **Ctrl+N** to start a new query.

2. Enter a name, such as Find All Traps by IP Address, select SNMP Traps from the Architecture list box and press the *Add And* button. An example of the Query Properties window is shown in Figure 6-21.
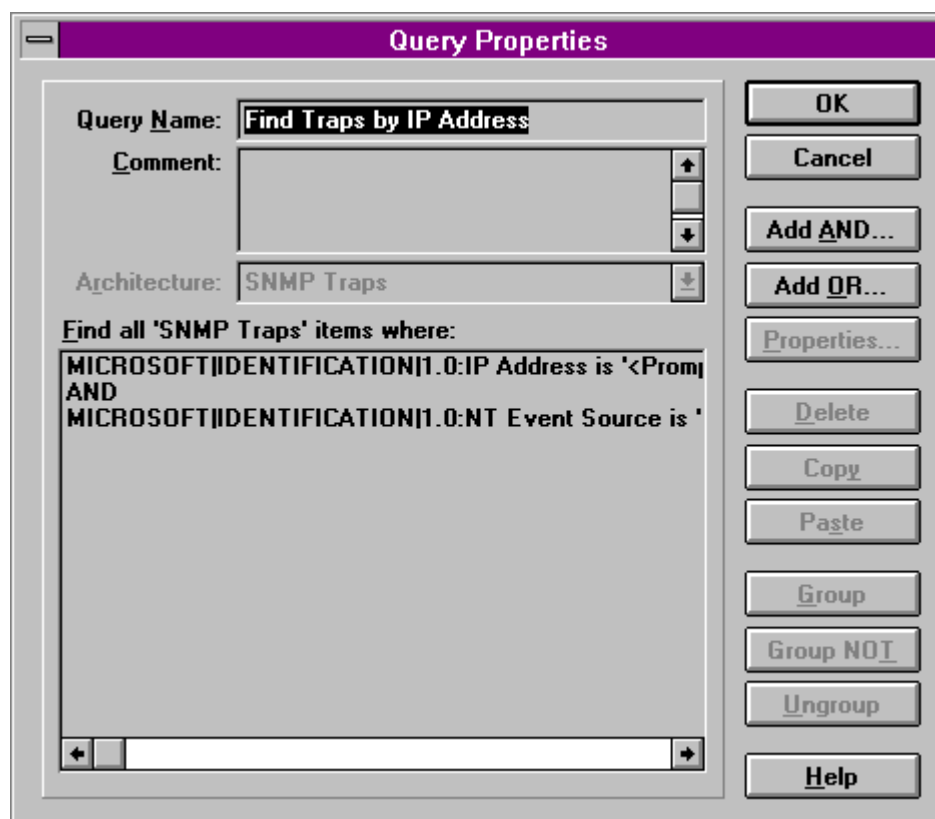
Query Properties

Query **N**ame: Find Traps by IP Address
Comment:
A**r**chitecture: SNMP Traps

Find all 'SNMP Traps' items where:

MICROSOFT|IDENTIFICATION|1.0:IP Address is '<Promp
AND
MICROSOFT|IDENTIFICATION|1.0:NT Event Source is '

OK
Cancel
Add **A**ND...
Add **O**R...
Properties...
Delete
Cop**y**
Pa**s**te
Group
Group NO**T**
Ungroup
Help

Figure 6-21. Using the Query Name attribute

3. Select the IP Address attribute, select 'is' for the Operator and select the <Prompt(Identification - IP Address)> as the value. This prompts you for the IP address each time the query is run. Select 'OK'

4. Press the *Add And* button, select the Windows NT Event Source attribute, select 'is' as the Opertator and enter 'Insight Agents' as the value. Press 'OK' twice.

5. Execute the query and enter the IP address when prompted. Be sure to enter three numerals for each part of the IP address (IE. - 172.016.001.012 not 172.16.1.12).

6. All traps associated with that machine are now displayed. They can be
    sorted by single clicking on a column name. To sort the Insight Agents
    traps, click on the Variable 1 Data column. This sorts by the type of event
    that generated the trap.

Figure 6-22.   Using the Query Results

With these results, you can now see if there have been several traps of a
particular type received and can take appropriate action to resolve them.

Conclusion

Systems Management Server and Insight Manager working together can give
you a more complete system and network management solution. As the
scenarios in this chapter demonstrate, using Insight Manager with Systems
Management Server can help with monitoring, upgrading, and configuring your
network, plus allowing remote access to your servers.

The overall benefit to using Compaq Insight Manager with Microsoft Systems
Management Server is a lower cost of system ownership, which saves time,
money, and is easy to use.

See the *Microsoft Systems Management Server for Windows NT
Administrator's Guide* for more information on Systems Management Server.
See the *Compaq Insight Manager User Guide* for more information on
Insight Manager.

Appendix A
Trap Overview

Insight Agents generate traps to notify you of events that require action. Some traps enable you to be proactive by warning you of status changes or degraded states. Others require immediate attention.

Depending on the version of Insight Agents loaded on a particular server, you could receive a version 1.*x* type trap or a version 2.*x* type trap.

The version 1.*x* traps defined in the MIBs have a different base identifier, called the *enterprise ID*, for each MIB file (Intelligent Drive Array, SCSI Devices, and so on). The MIB enterprise IDs are the "Object ID" items in the descriptions of the MIBs shown in Table 4-1. For example, the version 1.*x* trap for Intelligent Drive Array is 1.3.6.1.4.1.232.3. The version 2.*x* traps have the same enterprise ID (1.3.6.1.4.1.232) for all traps defined in all of the MIBs.

The enterprise ID combined with the specific trap ID uniquely identify the trap.

NOTE: Insight Agents for NetWare prior to version 2.60 may generate both version 1 and version 2 trap formats. Beginning with version 2.60, all Insight Agents generate version 2 trap formats.

Each trap message lists the trap name, the identification number, the description, and the values for the trap variables. The trap variables appear in alphabetical order with a descriptive title indicating an important event has occurred. Immediately following the title is the numerical equivalence for the trap variable listed. By providing you with this message, you can quickly and easily translate the trap variables you receive from your management platform to determine if the trap requires immediate attention.

Beginning with version 2.60, two additional variables are included in all
Insight Agent traps: The first variable is the originating system's hostname
and the second variable identifies the system as either a server or client. The
remaining variables are identical to those generated by previous versions. To
maintain compatibility with older agents, the updated traps were added as
"new" traps in the Compaq MIB. For example, Trap 3008, an IDA Logical
Drive Status Change trap, supersedes Trap 3001. Version 2.6 and later agents
will generate a 3008 trap for this event instead of a 3001 trap.

The Compaq traps described in the following tables are grouped by subject as
well as Trap IDs. The subjects are as follows:

■   Drive Array

■   SCSI

■   System Health

■   Storage Systems

■   Remote Insight Board

■   User Threshold

■   Host Operating System

■   Uninterruptible Power Supply

■   Standby Recovery Server

■   Manageable IDE Drive

■   Server Manager/R

■   System Information

The Trap ID listed in parentheses is the identifier for the superseded
(pre-2.60) trap.

Drive Array Traps

Table A-1
Drive Array Traps

Trap Name: cpqDa3LogDrvStatusChange
Trap ID: 3008 (3001)
Description:
A logical drive status change has occurred. The current status is indicated by the included
status variable.
"Bad Connection" status (9) - The physical drive in a Compaq Drive Array is not responding
to commands from the array controller. Several causes are possible:

- A drive was removed from the system.

- The data cable connecting the drive to the array has failed.

IMPORTANT: Do not attempt to re-seat any cables while the server is on. Damage to the
drives or array controller will result.

- The cable connecting the drive to the array has become loose at
  either end and must be reseated.

- The cable connecting an external storage subsystem to the server
  has become loose.

- The power to the drive has been interrupted. This can be caused by
  a loosened drive power supply cable or a failed power supply in the
  server or disk subsystem.

---

continued

Drive Array Traps   *continued*

"Failed" status (3) - One or more physical drives have failed. Data is no longer protected on the drive array.

"OK" status (2) - This alarm is typically issued upon completion of repairs to a Compaq Drive Array logical drive. This alarm occurs whenever the logical drive status has returned to a normal state from any other state. In fault tolerant configurations, it is issued following the resolution of the Drive Array Logical Drive Status Change - Rebuilding alarm. In non-fault tolerant configurations, it is issued following the Drive Array Logical Drive Status Change - Failed alarm, after the failed drive has been replaced.

"Overheating" status (10) - The temperature inside an external drive array enclosure has risen above factory preset levels. If the temperature continues to rise, damage to the drives within the enclosure may result. Elevated temperatures may cause erratic operation of a physical drive within the array, causing data loss. This alarm may be caused by the removal of the enclosure cover, which impairs the cooling system performance significantly, or by a cooling fan failure in the drive array enclosure.

NOTE: Do not operate Compaq server and storage products with the chassis covers removed. Airflow inside the unit is interrupted, and proper cooling is not possible. Removing the chassis covers also violates the FCC certification and UL listing.

Drive Array Traps *continued*

"Ready for Rebuild" status (6)-A failed drive has been replaced, and the system is ready to begin Automatic Data Recovery on the logical drive. This alarm is issued after a failed drive has been replaced or if a drive that previously failed appears to work again after the power is turned on.

NOTE: The system is ready to begin Automatic Data Recovery. Perform an orderly shutdown of the operating system and server, and turn the server off. Turn it on again to begin Automatic Data Recovery.

"Rebuilding" status (7) - Automatic Data Recovery is underway.
"Recovering" status (5) - A physical drive failed within the Compaq Drive Array. The drive array is in a recovery mode. No data has been lost, due to the fault tolerant mode currently in use.

NOTE: At the first available opportunity, replace the failed drive.

"Wrong Drive" status (8) - During remedial hardware maintenance, the incorrect physical drive was replaced in an array.

IMPORTANT: Do not return the removed drive or the drive indicated as "wrong" for repair. Perform an orderly shutdown of the system, and run Compaq Drive Array Advanced Diagnostics if you need further assistance in identifying failed drives and/or drives installed in the wrong location. You must bring the system down, turn it off, and return the removed drive to its original location. Turn the system back on. After you reinstall the removed drive, identify the correct failed drive.

Drive Array Traps *continued*

"Inactive" status (4) - This alarm signifies that the spare is in a ready state. This alarm is typically issued if you install or replace a spare drive in a Compaq Drive Array. It is issued after you replace a failed spare drive with a new one. This alarm may also occur when a drive fails and the spare becomes active, the failed drive is replaced, and the spare eventually becomes inactive again. In fault tolerant configurations, when a drive fails and a spare drive is available, the storage subsystem begins building data onto that spare. If the failed drive is replaced before restoration has completed, the process halts and the data is restored to the replacement drive instead. If the failed drive is replaced after the build process is complete, the system reconstructs the data to the replacement drive, and the spare reverts to its original inactive state. This keeps a spare drive available. If you have installed or replaced a failed drive in the drive array, this alarm is to be expected.

"Expanding" status (12) - This alarm indicates that the logical drive is currently doing Automatic Data Expansion. During Automatic Data Expansion, fault tolerance algorithms redistribute logical drive data to the newly added physical drive.

"Not Available" status (13) - This alarm indicates that the logical drive is currently unavailable. If a logical drive is expanding and the new configuration frees additional disk space, this free space can be configured into another logical volume. If this is done, the new volume will be set to "not available."

"Queued For Expansion" status (14) - This alarm signifies that the logical drive is ready for Automatic Data Expansion. The logical drive is in the "queue for expansion."

Drive Array Traps *continued*

Trap Name: cpqDa3SpareStatusChange
Trap ID: 3009   (3002)
Description:
A spare drive status change has occurred. The current status is indicated by the included status variable.

"Active" status (6) - A physical drive failed. The array successfully restored data onto a spare. That spare drive has now become active and replaces the failed drive. In fault tolerant configurations, when a spare drive is available, the storage subsystem begins building data onto that spare. If the failed drive is replaced before restoration has completed, the process halts, and the data is restored to the replacement drive instead. If the failed drive is replaced after the build process is complete, the system reconstructs the data to the replacement drive, and the spare reverts to its original inactive state. This keeps a spare drive available.

"Building" status (5) - This alarm is issued when a spare drive is brought online to replace a failed drive and the drive array subsystem begins to build data onto the spare. In fault tolerant configurations, when a spare drive is available, the storage subsystem begins building data onto that spare. If the failed drive is replaced before restoration has completed, the process halts, and the data is restored to the replacement drive instead. If the failed drive is replaced after the build process is complete, the system reconstructs the data to the replacement drive, and the spare reverts to its original inactive state. This keeps a spare drive available. When a spare drive is available, this alarm is usually issued after the Drive Array Physical Drive Status Change - Failed alarm. This alarm indicates that a drive has failed. When the building is complete, the Drive Array Spare Drive Status Change - Active alarm is issued, indicating that the drive array is utilizing the spare drive in the array in place of a failed drive. Replace the failed physical drive as soon as possible. WARNING: Do not interrupt the drive building process.

"Failed" status (3) - This alarm indicates that a spare drive in a drive array failed. Replace the spare as soon as possible. Until you replace it, no spare is available in case of array failure.

Drive Array Traps *continued*

"Inactive" status (4) - This alarm signifies that the spare is in a ready state. This alarm is typically issued if you install or replace a spare drive in a Compaq Drive Array. It is issued after you replace a failed spare drive with a new one. This alarm may also occur when a drive fails and the spare becomes active, the failed drive is replaced, and the spare eventually becomes inactive again. In fault tolerant configurations, when a drive fails and a spare drive is available, the storage subsystem begins building data onto that spare. If the failed drive is replaced before restoration has completed, the process halts and the data is restored to the replacement drive instead. If the failed drive is replaced after the build process is complete, the system reconstructs the data to the replacement drive, and the spare reverts to its original inactive state. This keeps a spare drive available. If you installed or replaced a failed drive in the drive array, this alarm is to be expected.

Trap Name:	cpqDa3PhyDrvStatusChange
Trap ID:	3010 (3003)

Description:
A physical drive status change has occurred. The current status is indicated by the included status variable.

"Failed" status (3) - A physical drive has failed in a mass storage subsystem. In configurations that are not fault tolerant, this alarm is critical. The mass storage subsystem failed, and server operation stopped. You must replace the failed drive before system operation can begin again. In a fault tolerant configuration, the overall system condition is degraded, but still operational. You may receive additional alarms, such as Drive Array Logical Drive Status Change - Recovering, or Drive Array Spare Drive Status Change - Active.

"OK" status (2) - This alarm indicates an improving condition and is issued after a physical drive fault has been corrected or when you add a new hot pluggable physical drive.

Drive Array Traps *continued*

Trap Name:	cpqDa3PhyDrvThreshPassedTrap
Trap ID:	3011 (3004)

Description:

The server issuing this alarm has a drive that exceeded one or more factory preset thresholds for functional degradation. Many Compaq high performance drive array hard drives are "stamped" by the drive manufacturer with minimum functional characteristics. As a result of normal wear and tear, the operation of a hard drive may gradually deteriorate. If certain thresholds are exceeded, the drive may not perform to specified levels and may be subject to hardware failure sometime in the future. Drives that exceed these thresholds are considered "failed," although true catastrophic failure has not yet occurred. Compaq will replace drives that have exceeded these thresholds if these drives are still under warranty.

continued

Drive Trap Arrays *continued*

Trap Name:	cpqDa3AccelStatusChange
Trap ID:	3012 (3005)

Description:

This trap indicates a status change event concerning the drive array accelerator. The current status is indicated by the included status variable.

"Enabled" status (3) - This alarm typically occurs when a Compaq Array Accelerator battery set has fully recharged from a discharged condition. The array accelerator is ready to accept posted writes.

"Permanently Disabled" status (5) - The write cache operations of the Array Accelerator are permanently disabled. Consult the cpqDaAccelErrCode MIB item for further information about why this trap occurred. You can perform an orderly shutdown and run Compaq Drive Array Advanced Diagnostics if you need further information.

"Temporarily Disabled" status (4) - The Array Accelerator on the drive array controller has been temporarily disabled, due to one of the following reasons:

- The accelerator is holding data and is configured for a different Drive Array Controller. Make sure the accelerator is installed on the original controller.
- Battery charge level is below 75 percent.
- Sufficient resources to perform posted writes are not available. This may be due to a current rebuilding process.
- The accelerator has failed or has been detached from the IDA-2 Controller.
- The host operating system has temporarily disabled posted writes. Consult the cpqDaAccelErrCode MIB item for further information about why this trap occurred.

Drive Array Traps *continued*

Trap Name:	cpqDa3AccelBadDataTrap
Trap ID:	3013 (3006)

Description:

This trap indicates an event concerning the contents of the drive array accelerator. The current accelerator data status is indicated by the included status variable.

"None" status (2) - A power loss to the server occurred. The battery-backed Array Accelerator functioned properly and saved all data stored in the cache. When the system is restarted, the stored data will be written to disk.

"Possible" status (3) - When the system was powered up, the battery set was not sufficiently charged. When the batteries are not sufficiently charged, and the system resumes power, the board does not retain stored data. If no data was stored, no data was lost. Several causes of this alarm are possible:

- If the system was without power for eight days, and the battery packs were on (battery sets activate only if the system loses power unexpectedly), any data stored in the cache was lost.
- The battery set may have a problem. Check the Battery Status for more information.
- The Array Accelerator board has been replaced with a new board that has discharged batteries. No data is lost, and the Array Accelerator will automatically be enabled when the batteries reach full charge.

Drive Trap Arrays *continued*

Trap Name:	cpqDa2AccelBatteryFailed
Trap ID:	3014 (3007)

Description:

This trap signifies that the Insight Agent has detected a battery status change associated with the array accelerator. The current battery status is indicated by the included status variable.

"Charging" status (3) - The battery set power is below 75% of nominal and is being charged.

"Degraded" Status (5) - The battery set in the Array Accelerator is operating, but one of the batteries has failed to recharge correctly. This condition jeopardizes the integrity of the battery-backed cache. Replace the Array Accelerator as soon as possible. If allowed to continue, the battery set might fail, and the drive array controller will no longer write data to the Array Accelerator. Server performance may be affected during this time. After the Array Accelerator is replaced, the Drive Array Accelerator Battery Status - Recharging alarm is issued. Once recharged, the alarm Drive Array Accelerator Battery Status - OK is issued, indicating that the array accelerator subsystem is operational.

"Failed" Status (4) - The Array Accelerator can no longer protect data in the cache in the event of a power interruption to the server. Replace the Array Accelerator as soon as possible. The replaced Array Accelerator batteries must reach full charge before the controller will allow data to be written to the Array Accelerator subsystem. Server performance may be affected during this time.

"OK" status (2) - The battery set has reached a fully charged condition.

SCSI Traps

Table A-2
SCSI Traps

Trap Name: cpqScsi3CntlrStatusChange
Trap ID: 5005   (5001)
Description:
A SCSI controller status change has occurred. The current status is indicated by the
included status variable.

"Failed" status (3) - A SCSI Controller failed. This alarm may be issued with physical
drive alarms if the controller cannot communicate with the system.

"OK" status (2) - A SCSI Controller has been replaced. This alarm indicates an improving
condition.

continued

SCSI Traps *continued*

Trap Name: cpqScsi3PhyDrvStatusChange
Trap ID: 5006 (5003)
Description:

A status change has occurred to a physical drive attached to the SCSI controller. The current status is indicated by the included status variable.

"Failed" status (3) - A physical drive failed in a SCSI mass storage subsystem. Replace the drive.

"OK" status (2) - This alarm indicates an improving condition. When a physical drive error is corrected, this alarm is issued.

"Removed while Failed" status (7) - A SCSI drive installed in the mass storage subsystem has been removed. The removed drive has failed and must be replaced to restore the system to its original configuration. This alarm may be issued if the removed drive was not replaced prior to the time the status was polled by the software.

"Removed while OK" status (6) - A SCSI drive installed in the mass storage subsystem has been removed while operating properly. If the drive was inadvertently removed, return it to its original position.

"Predictive Failure" status (8) - A SCSI drive installed in the mass storage subsystem has exceeded a threshold value for one of it's predictive indicators. When convenient, you should bring down the server and run Compaq Diagnostics to help identify the problem. The drive may need to be replaced.

"Removed while Predictive Failure" status (9) - A SCSI drive installed in the mass storage subsystem has been removed while operating with a status of PREDICTIVE FAILURE. If the drive was inadvertently removed, return it to its original position.

SCSI Traps *continued*

Trap Name:	cpqTapePhyDrvStatusChange
Trap ID:	5007 (5004)

Description:

A status change has occurred to a tape drive attached to the SCSI controller. The current status is indicated by the included status variable.

"Degraded" status (3) - This alarm indicates that a reread or rewrite threshold has been exceeded; backup integrity might have been compromised. Follow steps listed under "Failed" status.

"Failed" status (4) - A SCSI tape drive failed. For additional details, check the error status of the backup application. Follow these steps:

1. Clean the tape drive head and try the backup again (refer to your tape hardware user manual for more details on this procedure).
2. If step #1 fails, replace the tape media with new tape media and try the backup again.
3. If step #2 fails, cycle the power on the tape drive and try the backup again.
4. If the above steps fail, replace the drive.

"OK" status (2) - A SCSI tape drive has been replaced. This alarm indicates that the tape drive is now ready for operation.

Trap Name:	cpqTape3PhyDrvCleaningRequired
Trap ID:	5008

Description:

The Insight Agent has detected a tape drive that needs to have a cleaning tape inserted and run. This will cause the tape drive heads to be cleaned.

Trap Name:	cpqTape3PhyDrvCleanTapeReplace
Trap ID:	5009

Description:

The Insight Agent has detected that an autoloader tape unit has a cleaning tape that has been fully used and therefore needs to be replaced with a new cleaning tape.

System Health Traps

Table A-3
System Health Traps

Trap Name: cpqHe3CorrectableMemoryError
Trap ID: 6015   (6001)
Description:

This alarm indicates that a block of memory has failed or is failing and must be replaced soon. This condition is not generally critical since the memory controller is able to correct the problem; however, an error of this type indicates that a memory component is failing or has failed in the server issuing the alarm. The system continues to correct any errors it can. Correct the problem as soon as possible. Further degradation of the memory components may occur, and then errors may no longer be correctable.

Trap Name: cpqHe3CorrectableMemoryLogDisabled
Trap ID: 6016   (6002)
Description:

Correctable memory error tracking has been disabled due to excessive alerts. Logging of correctable memory errors ceases when the error count exceeds a factory preset value since continuing to log errors after the preset number is reached affects performance of the server. This alarm indicates a failing or failed memory module. Though this alarm is not critical, an error of this type indicates that a memory component is failing or has failed in the server issuing the alarm. The system continues to correct any errors it can.

System Health Traps *continued*

Trap Name:	cpqHe3ThermalTempFailed
Trap ID:	6017 (6003)

Description:

The temperature status has been set to "Failed." The server will be gracefully shut down. You should monitor the room temperature and air conditioning. Verify that the covers to the servers are properly installed as this ensures proper air flow within the server box. Verify that all fans within the server unit are operational.

Trap Name:	cpqHe3ThermalTempDegraded
Trap ID:	6018 (6004)

Description:

The temperature status has been set to "Degraded." The server's temperature is outside of the normal operating range. The included status variable indicates how the system will react to this temperature degradation.

"Continue" status (2) - The system is configured to continue operation when this alarm is received. **NOTE:** If the system continues to operate in this degraded condition, the hardware may initiate an immediate and unexpected shutdown.

"Shutdown" status (3) - The system has been configured to initiate a system shutdown when this alarm is received to protect hardware and data from damage or loss.

Trap Name:	cpqHe3ThermalTempOk
Trap ID:	6019 (6005)

Description:

Previously abnormal temperatures have returned to a normal state. This is an improving condition.

System Health Traps *continued*

Trap Name:	cpqHe3ThermalSystemFanFailed
Trap ID:	6020 (6006)

Description:

A required system fan status has been set to "Failed." The included status variable indicates how the system will react to this failure.

"Continue" status (2) - The system is configured to continue operation when this alarm is received.

NOTE: If the system continues to operate in this degraded condition, the hardware might initiate an immediate and unexpected shutdown.

"Shutdown" status (3) - The system has been configured to initiate a system shutdown when this alarm is received to protect hardware and data from damage or loss.

System Health Traps *continued*

Trap Name:	cpqHe3ThermalSystemFanDegraded
Trap ID:	6021 (6007)

Description:

The system fan status has been set to "Degraded." An optional system fan is not operating properly.

Trap Name:	cpqHe3ThermalSystemFanOk
Trap ID:	6022 (6008)

Description:

A system fan returned to a normal state from a failed state. This alarm is to be expected after you replace a failed system fan.

Trap Name:	cpqHe3ThermalCpuFanFailed
Trap ID:	6023 (6009)

Description:

A system CPU fan failed. The system is configured to continue operation when this alarm is received.

Trap Name:	cpqHe3ThermalCpuFanOk
Trap ID:	6024 (6010)

Description:

The CPU fan status has been set to OK. Any previous non-operational processor fans have returned to normal operation.

Trap Name:	cpqHe3AsrConfirmation
Trap ID:	6025 (6011)

Description:

This alarm indicates a return to normal operation. Automatic Server Recovery (ASR) shut the system down and then restarted the server, which has returned to normal operation. Other alarms that were issued before this alarm may require action.

NOTE: An ASR reboot does not mean the system is free of faults. The server may be running in a degraded condition, and the condition must be corrected soon to prevent the fault condition from escalating into a critical event. If the fault is not corrected, expect another Automatic Server Recovery reboot at any time.

System Health Traps   *continued*

Trap Name:	cpqHe3ThermalConfirmation
Trap ID:	6026 (6012)

Description:

This alarm is issued when server temperature has returned to acceptable levels and the server automatically resumed operation. Ensure that you have corrected the problem that caused the elevated temperature.

Trap Name:	cpqHe3PostError
Trap ID:	6027 (6013)

Description:

A Power-On Self Test error occurred during a reboot of the server. This error may have been noted during the Automatic Server Recovery reboot. The subsystem responsible for the error may also be responsible for the ASR reboot. The error might include non-correctable memory errors, fatal hard drive and/or controller failures, and system board failures. It may not be possible to view the server issuing the alarm, as the network operating system may have failed to load properly.

Trap Name:	cpqHe3FltTolPwrSupplyDegraded
Trap ID:	6028 (6014)

Description:

The redundant power supply subsystem has become degraded. Although the server will continue to operate, take corrective action soon to restore power redundancy.

System Health Traps   *continued*

Trap Name:	cpqHe3CorrMemReplaceMemModule
Trap ID:	6029

Description:

This alarm indicates that the number of correctable memory errors for a particular memory module on the server has crossed a set threshold, indicating that the module needs to be replaced. This condition is generally noncritical since the memory controller is able to correct the problem; however, it should be corrected as soon as possible. Although the system continues to correct any errors it can, an error of this type indicates that a memory component is failing or has failed in the server issuing the alarm. Further degradation of the memory components may occur, and then errors may no longer be correctable.

Storage System Traps

Table A-4
Storage Systems Traps

Trap Name: cpqSs3FanStatusChange
Trap ID: 8008   (8001)
Description:
The status of a storage system fan has changed. The current status is indicated by the included status variable.

"Failed" status (3) - The storage subsystem's internal fan(s) failed. The temperature may soon rise beyond factory preset levels. The storage system may shut down automatically to prevent damage to hardware and data loss.

"OK" status (2) - This alarm is issued when a change occurs in the operating condition of a monitored server's external storage system fan. A fan has been replaced, or has otherwise returned to normal operation. This alarm typically follows the Storage System Fan Status Change - Failed alarm.

Trap Name: cpqSs3TempFailed
Trap ID: 8009   (8002)
Description:
The internal temperature has risen beyond factory preset levels and the storage system may shut down automatically to prevent damage to hardware and data loss. One or more fans may have failed, or a cover is off the storage system issuing the alarm.

NOTE: This alarm is unlikely to occur. If temperatures rise beyond factory preset safety levels, the storage system may shut down. In this case, no data is available to view.

continued

Storage System Traps *continued*

Trap Name:	cpqSs3TempDegraded
Trap ID:	8010 (8003)

Description:

The temperature inside a storage subsystem is outside normal operating range. A fan may have failed. If a fan failed, an additional alarm, Storage System Fan Status Change - Failed may also be issued. The storage subsystem is operating without the proper cooling capacity, and internal unit temperatures may soon rise beyond safe levels.

Trap Name:	cpqSs3TempOk
Trap ID:	8011 (8004)

Description:

Previously abnormal temperatures inside a storage subsystem returned to a normal state. This is an improving condition, and generally requires no further action.

Trap Name:	cpqSs3SidePanelInPlace
Trap ID:	8012 (8005)

Description:

The side panel status has been set to "In Place." The storage system's side panel has returned to a properly installed state.

continued

Storage System Traps   *continued*

Trap Name: cpqSs3SidePanelRemoved

Trap ID: 8013   (8006)

Description:

The side panel status has been set to "Removed." The storage system's side panel is not in a properly installed state. This situation may result in improper cooling of the drives in the storage system due to air flow changes caused by the missing side panel.

Trap Name: cpqSs3PwrSupplyDegraded

Trap ID: 8014   (8007)

Description:

The storage system redundant power supply subsystem has become degraded. Although the storage system will continue to operate, take corrective action soon to restore power redundancy.

Remote Insight Board Traps

Table A-5
Remote Insight Board Traps

Trap Name:	cpqSm2ServerReset
Trap ID:	9001
Description:	
The Remote Insight firmware has detected a server reset.	

Trap Name:	cpqSm2ServerPowerOutage
Trap ID:	9002
Description:	
The Remote Insight firmware has detected server power failure.	

Trap Name:	cpqSm2UnauthorizedLoginAttempts
Trap ID:	9003
Description:	
The Remote Insight firmware has detected unauthorized login attempts.	

Trap Name:	cpqSm2BatteryFailed
Trap ID:	9004
Description:	
The Remote Insight battery has failed and needs to be replaced.	

Trap Name:	cpqSm2SelfTestError
Trap ID:	9005
Description:	
The Remote Insight firmware has detected a board self test error.	

continued

Remote Insight Board Traps   *continued*

Trap Name:	cpqSm2InterfaceError
Trap ID:	9006

Description:

The host OS has detected an error in the Remote Insight board interface. The firmware is not responding.

Trap Name:	cpqSm2BatteryDisconnected
Trap ID:	9007

Description:

The Remote Insight battery cable has been disconnected.

Trap Name:	cpqSm2KeyboardCableDisconnected
Trap ID:	9008

Description:

The Remote Insight keyboard cable has been disconnected.

User Threshold Traps

Table A-6
User Threshold Traps

Trap Name: cpqMeFallingAlarm
Trap ID: 10002
Description:
Falling threshold passed. One of the monitored objects has passed the falling threshold.
The instances of those objects contained within the variable list are those of the alarm
entry that generated this trap.

Trap Name: cpqMe2RisingAlarm
Trap ID: 10003 (10001)
Description:
Rising Threshold passed. One of the monitored objects has passed the rising threshold.
The instances of those objects contained within the variable list are those of the alarm
entry that generated this trap.

Trap Name: cpqMe2FallingAlarm
Trap ID: 10004 (10002)
Description:
Falling threshold passed. One of the monitored objects has passed the falling threshold.
The instances of those objects contained within the variable list are those of the alarm
entry that generated this trap.

Host Operating System Traps

<div align="center">

Table A-7
Host Operating System Traps

</div>

Trap Name: cpqHo2GenericTrap
Trap ID: 11003
Description:
A generic trap used to test Insight Agents. A text message is generally passed with this
trap.

Trap Name: cpqHo2AppErrorTrap
Trap ID: 11004
Description:
An application has generated an exception. Specific error information is contained in the
variable cpqHoSwPerfAppErrorDesc which is passed with this trap.

Trap Name: cpqHo2NicStatusOk
Trap ID: 11005
Description:
This trap is sent any time the status of a Network Interface Card changes to the OK
condition. Slot information for the card is passed as a variable in the trap.

Trap Name: cpqHo2NicStatusFailed
Trap ID: 11006
Description:
This trap is sent any time the status of a Network Interface Card changes to the Failed
condition. Slot information for the card is passed as a variable in the trap.

continued

Host Operating System Traps   *continued*

Trap Name:	cpqHo2NicSwitchoverOccurred
Trap ID:	10007

Description:

This trap is sent any time the configured redundant network interface card becomes the active card. The data passed with this trap is the slot information for the active and inactive cards.

Uninterruptible Power Supply Traps

**Table A-8
Uninterruptible Power Supply Traps**

Trap Name: cpqUps2LineFailed
Trap ID: 12006   (12001)
Description: The AC power has failed. Once this alarm is issued, power to the server is provided by the Compaq Uninterruptible Power Supply (UPS). Depending on the capacity, the load, and the battery charge level of the UPS, the amount of time the UPS can supply conditioned AC power will vary. If you have enabled Automatic Shutdown, the UPS support software will begin an automatic orderly shutdown of the system when the UPS batteries reach the Shutdown Threshold limit. At this time, the UPS Shutdown in Progress alarm is issued to indicate the shutdown process has begun. If Automatic Shutdown is not enabled, the UPS continues to operate until the power returns or the battery power is exhausted.

Trap Name: cpqUps2LineOk
Trap ID: 12007   (12002)
Description: The AC line is now active. All electrical devices previously supported by the Compaq Uninterruptible Power Supply (UPS) are now reconnected to the main AC line. The Compaq UPS indicates that it is no longer operating on internal batteries.

Trap Name: cpqUps2Shutdown
Trap ID: 12008   (12003)
Description: This alarm is the result of an extended power loss. The Compaq Uninterruptible Power Supply (UPS) is about to shut down. If the operating system is configured for automatic shutdown, this process has begun and should be inspected to make sure it will complete prior to the shutdown of the UPS.

---

continued

Uninterruptible Power Supply Traps   *continued*

Trap Name: cpqUps2Confirmation

Trap ID: 12009   (12004)

Description: The Compaq Uninterruptible Power Supply (UPS) has returned to normal operation. A power failure occurred, and the system was shut down. Commercial power was restored, and the network operating system restarted.

Trap Name: cpqUpsBatteryLow

Trap ID: 12010   (12005)

Description: The battery set in the UPS is getting low.

Standby Recover Server Traps

Table A-9
Standby Recovery Server Traps

Trap Name:	cpqRsPartnerFailed
Trap ID:	13001

Description:

The Recovery Agent reports that the partner server has failed. This server has taken over the operations of the partner server.

One of the two servers of a Recovery Server pair has failed. The surviving server has assumed the role of the failed server. A service event should be scheduled to repair the failed server and to restore the Recovery Server pair to its original configuration.

Trap Name:	cpqRsStandbyCableFailure
Trap ID:	13002

Description:

The Primary server in a Standby Recovery Server configuration has detected a cable fault condition. This can be caused by disconnecting the serial interconnect cable from the Primary server. Other causes may include failure of the serial port in the Primary server.

Disconnecting the serial cable from the Primary server will cause loss of the heartbeat message at the recovery server. The loss of heartbeat will cause the recovery server to assume that the Primary server has failed. The recovery server will then switch the disks from the Primary server to the recovery server. The recovery server will then boot from the disks. In anticipation of this event, the Primary server operating system will be shutdown in an orderly fashion to prepare for the switchover to the recovery server. A service event should be scheduled to repair the failure and to restore the Recovery Server pair to its original configuration.

Standby Recovery Server Traps   *continued*

Trap Name: cpqRsStandbyFailure
Trap ID: 13003
Description:
The Recovery Server Option Driver reports that the Standby server has failed or the serial interconnect cable to the Standby server is not connected.

This trap indicates that the Primary server is no longer receiving an acknowledgment message from the Standby server. This error indicates one of the following possible conditions:

   A.   The recovery server has failed.
   B.   The recovery server has been powered off.
   C.   The serial interconnect cable has been disconnected from the recovery server.

A service event should be scheduled to repair the failure condition and to restore the Recovery Server pair to its original configuration.

Trap Name: cpqRsOnlineCableFailure
Trap ID: 13004
Description:
The On-Line Recovery Server Agent reports that the local serial interconnect is not connected or has failed. However, network operations confirm that the partner is still operating correctly.

The serial interconnect cable has been disconnected from one of the servers in an On-Line Recovery Server configuration or the serial interconnect has failed. Since the network confirmation option was selected, the partner server has been successfully contacted over the network. A service event should be scheduled to repair the failure condition and to restore the Recovery Server pair to its original configuration.

Standby Recovery Server Traps *continued*

Trap Name:	cpqRsFailoverFailed
Trap ID:	13005

Description:

The On-Line Recovery Server Agent reports that an attempt to take on the operations of the partner server was made and failed.

One of the two servers in an On-Line Recovery Server configuration has failed. The surviving server of the pair has generated this trap message. The surviving server of the pair has generated this Insight Manager alarm. The surviving server attempted a switchover of the disks of the failed server but the switchover did not complete successfully. It was not possible to mount the switched disks. Most likely, this failure was due to problems encountered by the operating system. System failures in the other server may have corrupted the file system. Often, such problems are corrected by use of utilities such as NetWare VREPAIR and Microsoft CHKDSK. A service event should be scheduled to repair the failed server, to restore the disks in question, and to restore the Recovery Server pair to its original configuration.

Manageable IDE Drive Traps

Table A-10
Manageable IDE Drive Traps

Trap Name:	cpqIdeDriveDegraded
Trap ID:	14001

Description:

The IntelliSafe Hard Drive predicts imminent failure. Follow these steps:

1. Back up the affected drive.

2. Replace the drive and restore data.

Trap Name:	cpqIdeDriveOk
Trap ID:	14002

Description:

This alarm indicates an improving condition. This alarm is issued after a physical drive fault has been corrected, or when you have added a new physical drive.

Server Manager/R Traps

Table A-11
Server Manager/R Traps

Trap Name: cpqSmBoardFailed
Enterprise ID: 1.3.6.1.4.1.232.4
Trap ID: 1
Description:
Server Manager/R board failure. Schedule maintenance time to run Compaq Diagnostics
to determine the problem.

Trap Name: cpqSmBoardReset
Enterprise ID: 1.3.6.1.4.1.232.4
Trap ID: 2
Description:
Server Manager/R board reset. If the board and the software were not able to recover,
schedule maintenance time to run the Compaq EISA Configuration Utility to ensure the
proper board configuration.

Trap Name: cpqSmServerManagerAlert
Enterprise ID: 1.3.6.1.4.1.232.4
Trap ID: 3
Description:
Threshold exceeded on Server Manager/R monitored item. Monitor which threshold is
exceeded to determine what actions to take.

Trap Name: cpqSmCommFailed
Enterprise ID: 1.3.6.1.4.1.232.4
Trap ID: 4
Description: Server Manager/R asynchronous communications failure.

continued

Server Manager/R Traps   *continued*

Trap Name:	cpqSmBatteryFailed
Enterprise ID:	1.3.6.1.4.1.232.4
Trap ID:	5

Description: Server Manager/R battery failure. Schedule maintenance time to replace the failed battery or to replace the board.

Trap Name:	cpqSmBoardTimeout
Enterprise ID:	1.3.6.1.4.1.232.4
Trap ID:	6

Description:
Server Manager/R board time-out. If the problem persists, run Compaq Diagnostics at the next scheduled maintenance down time.

Trap Name:	cpqSmAlertDestinationBlacklisted
Enterprise ID:	1.3.6.1.4.1.232.4
Trap ID:	7

Description:
The Server Manager/R is unable to complete a call to a designated alert phone number. Verify the proper Server Manager/R alert configuration.

NOTE: Server Manager/R trap IDs 1 to 7 apply only to Compaq Insight Agents for NetWare.

System Information Traps

Table A-12
System Information Traps

Trap Name:	cpqSiHoodRemoved
Trap ID:	2001

Description:

The hood status has been set to "removed." The system's hood is not in a properly installed state. This situation may result in improper cooling of the system due to air flow changes caused by the missing hood.

See the *README.TXT* file in the *\MIBS* directory in the Compaq Systems Management Toolkit for more details on traps.

Appendix B
Multivendor Integration
From Compaq

To help you successfully integrate and optimize your network or multivendor system, Compaq has developed a library of systems integration TechNotes for the NetWare, Microsoft Windows NT, SCO UNIX, and OS/2 operating system environments. TechNotes provide you with important information on topics such as network performance management, server management, and operating system interconnectivity.

To get a copy of a particular TechNote in electronic format, you can access:

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Current TechNotes

The current TechNotes available and their part numbers are listed in the
following table.

Table B-1
Compaq TechNotes

TechNote Name	Part Number
Compaq Insight Management	
Integrating Compaq Insight Manager with Microsoft Systems Management Server (11/96)	184720-003
Integrating Compaq Insight Manager with Enterprise Management Platforms (11/96)	145806-005
Integrating Compaq Insight Manager with ManageWise (6/96)	182074-002
Microsoft	
Sizing Microsoft BackOffice 1.5 on Compaq Servers (2/96)	185496-001
Migrating to Microsoft Windows NT Server 3.51 on Compaq Servers (12/95)	185026-001
Implementing Microsoft Windows NT Server RAS, DHCP, and WINS on Compaq Servers (9/95)	184488-001
Configuration and Tuning of Oracle7 for Windows NT on Compaq Servers (7/95)	184853-001
Configuration and Tuning of Microsoft SQL Server for Windows NT on Compaq Servers (4/96)	184207-002
Compaq Backup and Recovery for Microsoft SQL Server (3/95)	184489-001
Migrating from Microsoft Windows NT Advanced Server 3.1 to Microsoft Windows NT Server 3.5 (2/95)	184669-001

Compaq TechNotes **Continued**

TechNote Name	Part Number
Microsoft (continued)	
Drive Subsystem Performance with Microsoft LAN Manager 2.1 (11/92)	145517-001
Implementing Lotus Notes on Compaq Servers with Microsoft LAN Manager (9/92)	145201-001
Microsoft SQL Server and Novell NetWare Requester for OS/2 (9/92)	145376-001
NetWare	
SYBASE SQL Server 4.2.2 for NetWare: Tuning and Performance (2/95)	184429-002
NetWare 4 Performance Management (9/95)	137989-002
Compaq Answers to Technical Support Questions for NetWare Environments (2/95)	145710-002
Performance of Lotus Notes 3.1 on Compaq ProLiant Servers with NetWare 3.1x (2/95)	184430-001
NetWare Migration from 3.12 to 4 (11/94)	181152-001
Configuration and Tuning of Oracle7 for NetWare on Compaq Servers (11/94)	electronic format only
NetWare Migration from 2.x to 3.12 (6/94)	181069-001
Tape Backup Using ARCserve v5.01 - Windows Edition from Compaq (1/94)	137672-001
NetWare SFT III v3.11 Installation (9/93)	145905-001
ORACLE Server Planning in a NetWare v3.11 Environment (5/93)	145143-001

continued

Compaq TechNotes **Continued**

TechNote Name	Part Number
NetWare (continued)	
Performance Management in a NetWare v3.1x Environment (4/93)	133399-002
NetWare Tape Backup Management Using ARCserve from Compaq (4/93)	137535-001
Compaq IDA-2 Configuration for NetWare (12/92)	145536-001
Compaq ProSignia Configuration Guidelines for NetWare v3.x (12/92)	145537-001
NetWare Server Management (9/92)	145231-001
UNIX	
Configuration and Tuning of Sybase System 10 for SCO UNIX Open Server 3.0 on Compaq Servers (9/95)	185111-001
Configuration and Tuning of Sybase System 10 for Novell UnixWare 2.0 on Compaq Servers (7/95)	184-942-001
Configuration and Tuning of Oracle7 for SCO UNIX on Compaq Servers (11/94)	184329-001
Disk Mirroring with VERITAS VxMirror (12/93)	145656-001
The Compaq, SCO UNIX, and ORACLE7 Database Server (9/93)	195818-001
Performance Tuning for SCO UNIX on Compaq Systems (5/93)	145730-001
SCO UNIX IP Routing Over X.25 Networks (4/93)	145711-001

continued

Compaq TechNotes **Continued**

TechNote Name	Part Number
UNIX (continued)	
Printing in SCO UNIX and NetWare Integrated Environments (3/93)	145538-002
SCO UNIX Connectivity to SNA Environments Over X.25 Networks (1/93)	145583-001
SCO UNIX Database Servers in Novell Networks (10/92)	145402-001
SCO UNIX in an SNA Environment Using Computone LYNX (7/92)	145116-001
SCO UNIX in an SNA Environment Using CLEO DataTalker U/X (5/92)	145081-001
IBM	
Performance of Lotus Notes 3.1.5 on Compaq ProLiant Servers with OS/2 2.11 (3/95)	electronic format only
Compaq Answers to Technical Support Questions for OS/2 Environments (11/94)	electronic format only
Technology Overview	
Updating Compaq System Software From an Integration Server (11/96)	219467-002
Configuring Compaq RAID Technology for Database Servers (7/94)	184206-001

Glossary

Advanced Error Checking and Correcting (ECC) Memory	A fault tolerance feature that detects and corrects all single-bit memory parity errors, as well as detecting 2-bit and 3-bit memory errors. Ensures that common memory errors including the failure of an entire DRAM can be corrected without interrupting system operation.
Alarm	Notification that Compaq Insight Manager displays when certain events happen. For instance, if a monitored item changes, Insight Manager displays an alarm to notify you of the change. Insight Manager stores alarms in the Alarm Log. Alarm is synonymous with Trap.
Alarm Forwarding Destination	The pager that you configured to receive the alarms using the alarm forwarding feature. The alarm forwarding feature sends Compaq Insight Manager alarms to an alarm forwarding destination pager.
Alarm Log	A log file of all the alarms received at this workstation. If the Alarm Log is full and another alarm occurs, Compaq Insight Manager adds the alarm to the Alarm Log and deletes the oldest entry from the list.
American National Standards Institute (ANSI)	An organization that acts as a national clearing house and coordinator for voluntary standards in the United States.
ANSI	*See* American National Standards Institute.
ASR-2	*See* Automatic Server Recovery-2.
AssetControl	A set of hardware and software component information reported through integrated hardware, firmware, software, and third-party management tools. AssetControl provides detailed component information including manufacturer, model, and serial number for system, monitor, and hard drive(s). Also provides revision level information for system board, system ROM, Compaq option ROM, and device drivers developed by Compaq.

Asset Tag	A file with detailed information about a particular piece of hardware.
Asynchronous Management	The use of modems and Point-to-Point Protocol (PPP) to communicate with a management PC. Compaq Insight Manager can use PPP to dial into a server and manage it as if it were part of the local network. The Compaq Insight Management Agents can be configured to send traps through a point-to-point connection to allow complete remote management.
Automatic Server Recovery-2 (ASR-2)	Feature designed to restart a server automatically after a critical hardware or software error has occurred. If a critical error occurs, the server records the error in the Server Health Logs, reboots the system, and issues a pager message.
Bridge	A device that connects LANs with compatible addressing scheme, which usually means LANs of the same technology type; for example, Ethernet-to-Ethernet, Token Ring-to-Token Ring, Ethernet-to-Token Ring.
CCITT	*See* Consultative Committee For International Telegraph and Telephone.
Central Site	A primary site that functions as a parent only in Systems Management Server architecture.
Child Site	A secondary site that automatically reports pertinent site information to its respective parent site in Systems Management Server architecture.
Consultative Committee For International Telegraph and Telephone	An international organization that develops communications standards such as recommendation X.25.
Community String	A string similar to a password, offering a limited amount of protection for the server's SNMP data.

Compaq Insight Management Agents	Compaq specific software that can query a manageable device and provide information that responds to SNMP requests for data. *See also* SNMP.
Compaq Insight Management MIB	Vendor MIB that describes the fault, performance, and configuration aspects of Compaq products. *See also* MIB.
Corrected Memory Log	A list of corrected memory errors which is stored in non-volatile RAM.
Critical Error Log	A file of catastrophic errors, such as noncorrectable memory, expansion board, and expansion bus arbitration errors. This file is stored in non-volatile RAM.
Corrected Error Log	A log file that contains the date, time, frequency, and unique information about errors that the various subsystems have automatically corrected, such as Advanced ECC Memory errors stored in non-volatile RAM.
DHCP	*See* Dynamic Host Configuration Protocol.
Distribution Server	A server that acts as a software repository for the client agents when they execute software distribution and shared application packages in Systems Management Server architecture. It can be either a Windows NT, LAN Manager, or NetWare server.
Domain	Organizational unit made up of servers and workstations in Systems Management Server architecture. The three types of Domains are Windows NT, LAN Manager, and NetWare.
Dynamic Host Configuration Protocol	A client-server model based on leases for IP addresses. It simplifies assigning and maintaining the IP address information and databases.
ECC	*See* Advanced Error Checking and Correcting Memory.
EISA	*See* Extended Industry Standard Architecture.
End-User Desktop Management	Tools which allow a user to view critical system information at the desktop (on the PC).

Enterprise Management	Management of a geographically distributed network containing a wide range of network devices such as computers, bridges, routers, gateways, and modems.
Element Manager	A software component that monitors and controls a particular type of device on the network, such as a hub.
Enterprise MIB	*See* Vendor MIB.
Ethernet	Network technology consisting of the CSMA/CD network access method and a bus network topology.
Extended Industry Standard Architecture (EISA)	Open extension to the industry-standard expansion bus architecture, allowing the use of 8-/16-bit peripherals as well as 32-bit devices.
Gateway	Computer that controls the exchange of information between a LAN and a "foreign" computing environment such as a mini-computer or mainframe.
Hub	A device used to connect several network interface controllers (NICs) to a network. The hub is also called a Multi-Access Unit (MAU).
IDA	*See* Intelligent Drive Array.
IETF	*See* Internet Engineering Task Force.
Insight Server Agent	A software component that prepares, accumulates, and remotely communicates information to a management software component.
Intelligent Drive Array (IDA)	Compaq Drive Array Controllers, including the Compaq 32-Bit Intelligent Drive Array Controller-2, the Compaq 32-Bit Intelligent Drive Array Controller, and the Compaq 32-Bit Intelligent Drive Array Expansion Controller.
Intelligent Manageability	Compaq implementation of desktop PC management; provides AssetControl, fault management, and security management features. *See also* AssetControl.

IntelliSafe Hard Drives	Compaq hard drives which use a combination of hardware and firmware to predict hard-drive failures before they occur. These drives issue a warning to the user when a drive is likely to fail.
International Organization for Standardization	*See* International Standards Organization.
International Standards Organization (ISO)	An organization which coordinates national standards bodies to promote standardization worldwide. ISO develops and publishes international standards.
Internet Engineering Task Force (IETF)	The standards-oriented group which, under the direction of the Internet Architecture Board, develops the specifications which becomes Internet standards.
Internet Packet Exchange (IPX)	NetWare LAN communication protocol; moves data between server and/or workstation running on different network nodes.
Internet Protocol (IP)	The connectionless datagram delivery protocol used by the upper layers of the suite of Internet protocols. *See also* Transmission Control Protocol and Internet Protocol.
IP	*See* Internet Protocol.
IPX	*See* Internet Packet Exchange.
ISO	*See* International Standards Organization.
LAN	*See* Local Area Network.
Local Area Network (LAN)	A communications network that serves users within a confined geographical area. A LAN can consist of servers, workstations, a network operating system, and a communications link.

Logon Server	A server that supports the Systems Management Server clients within its domain. It is a repository of instructions for the client agents, as well as the initial point of collection for Systems Management Server client inventory information. Each domain must contain at least one Logon Server. It can be either a Windows NT, LAN Manager, or Novell NetWare server.
Managed Device	Any network device (router, hub, server) that provides management data; typically one or more management agents execute on the device.
Managed Object	Component of a device that is manageable (for example, network interface, storage subsystem, operating system, active applications, or hardware configuration).
Managed Server	A server with the Compaq Insight Management Agents installed.
Management Agent	Software (for example, Compaq Insight Management Agents) that executes on the managed device, which allows management information to be retrieved or modified by a management application.
Management Application	Software (for example, Compaq Insight Manager) that executes within the context of a management platform, or the native operating system of the management PC, that interacts with management agents.
Management Information Base (MIB)	A set of items that management applications and management agents use to monitor, analyze, and control the operation of managed devices.
Management Information Format (MIF)	A standard format for accessing desktop computer components (hardware and software) across multiple platforms. This format was designed by the Desktop Management Task Force.

Management Information Format (MIF) File	A management information format (MIF) file is an ASCII text file that contains information about a computer component. A MIF is a description of the component that is available to other applications through a standard management interface.
Management PC	Network device on which a management platform and management applications execute.
Management Platform	Software providing an open environment for multiple management applications to execute simultaneously; for example, NetView for AIX, ManageWise, HP OpenView, and SunConnect SunNet Manager.
Management Protocol	A set of rules for the network that defines a format and procedures for data transfer.
MAU	*See* Multi-Access Unit.
MIB	*See* Management Information Base.
Microsoft Systems Management Server	A Windows NT-based management system that enables you to inventory and support computers on a corporate network.
MIF	*See* Management Information Format.
Monitored Item	A unique attribute that describes a fault, performance, configuration, or security aspect of a component of the managed device, for example, Read Error Count or I/O Bus Utilization.
Multi-Access Unit (MAU)	A central hub in a token ring local area network. *See* Hub.
Network Interface Controller (NIC)	A controller installed in a PC, workstation, or server that allows the PC or workstation to communicate with other devices connected to the same network. This term usually implies a local area network (LAN) controller.
Network Management	A term describing the monitor and control of the network infrastructure (wire and internetwork devices).

Network Transport Protocol	The network protocol used for communicating management information.
NIC	*See* Network Interface Controller.
Object	An item (whose structure is defined by its architecture) stored in the site database. For example, a Compaq computer is an object with the Personal Computer architecture. *See also* Architecture.
Open Systems Interconnection (OSI)	An internationally accepted framework of standards for communication between different systems made by different vendors. OSI was developed by the International Standards Organization.
OSI	*See* Open Systems Interconnection.
Out-of-Band	Refers to the capability to deliver information via a modem or other asynchronous connection.
Packet-Switching Network	Group of interconnected computers acting as packet switches and routing packets from sender to receiver.
Parent Site	A site contains all the pertinent information about its child sites; also has the ability to control many operations at the child sites in Systems Management Server architecture.
PCI	*See* Peripheral Component Interconnect.
Peripheral Component Interconnect.	A system bus architecture specification that supports 32-bit bus-mastered data transfer. It is designed to support plug-and-play configuration of optional peripherals.
Physical Layer	Hardware, wiring, and cabling that connect devices on the network.
Point-to-Point Protocol (PPP)	A set of industry standard framing and authentication protocols which operate over asynchronous or synchronous serial links.
POST	*See* Power-On Self-Test.

Power-On Error Log	A log file that records any errors that occur during Power-On Self Test (POST) errors. This file is stored in non-volatile RAM. *See also* Power-On Self-Test.
Power-On Self-Test (POST)	A set of tests that compares hardware versions of the server and its options to the stored configuration and tests the hardware. POST runs each time the server is turned on.
PPP	*See* Point-to-Point Protocol.
Primary Site	A site has an associated Systems Management Server database in which it stores its system, inventory, package, job, and status information. It can be a parent only, a parent and child simultaneously, or a child site only. A site of this type is created by running the Systems Management Server setup application off the Systems Management Server CD.
Proactive Tape Backup	Tape backup that is initiated by a hard drive failure alert.
Rapid Recovery Engine	The term used to describe the diagnostic and recovery capabilities built into Compaq servers and some Compaq desktop units.
Revision History Table	Board revision information stored in nonvolatile memory. It logs the system board revision first and then logs other boards that support the Revision History Table.
Router	Interconnecting device that selects the appropriate communication path and routes a message accordingly. The router examines the destination address and determines the most efficient route.

Secondary Site	A site that performs the same functions as a primary site except that it does not have an associated Systems Management Server database that controls it. The site information is stored in the Systems Management Server database of its immediate parent site. Since it does not have an associated Systems Management Server database, a Secondary Site cannot have any child sites. It is created by its immediate parent site.
Serial Line IP (SLIP)	A simple form of encapsulation for IP datagrams on serial lines.
Simple Network Management Protocol (SNMP)	Industry-standard protocol for the exchange of management data between management applications and management agents.
Site Server	A server that controls the Systems Management Server site. It handles the coordination of information and services within the site. Each site has one and only one site server. It must be a Windows NT server v3.5 or greater.
SLIP	*See* Serial Line IP.
SQL	*See* Structured Query Language.
Snap-In Application	Third-party management application that integrates with a management platform.
SNMP	*See* Simple Network Management Protocol.
SNMP Trap	*See* Trap.
Subsystem	Major component of a device (for example, disk subsystem, storage subsystem, memory subsystem, or processor subsystem).
Systems Management Server Hierarchy	Structure of the Systems Management Server made up of one or more sites that are organized in an inverted tree structure.

Systems Management Server Site	The basic organizational unit of the Systems Management Server hierarchy. It can be made up of one or more Domains.
TCP	The part of TCP/IP protocol set that controls the transfer data. *See also* Transmission Control Protocol and Internet Protocol.
TCP/IP	*See* Transmission Control Protocol and Internet Protocol.
Terminate-and-Stay-Resident (TSR)	A term for loading a software program in an MS-DOS computer in which the program loads into memory and is always ready for running by using a combination of keys.
Threshold	A limit that you can set to produce an alarm if it is reached or exceeded.
Token Ring	Networking topology that uses a token-passing scheme. A logical token passes from a station to its nearest neighbor, and stations can send data only when they have the token.
Topology	The physical layout of network components (cables, stations, gateways, hubs, and so on). The three basic interconnection topologies include star, ring, and bus networks. On a star network, workstations are connected directly to a file server but not to each other. On a ring network, the file server and workstations are cabled in a ring; however, a workstation's messages might have to pass through several other workstations before reaching the file server. On a bus network, all workstations and the file server are connected to a central cable, usually called a trunk or bus.
Transmission Control Protocol and Internet Protocol	Protocol that manages the transmission of packets on a network and checks for errors.

Trap	Unsolicited message generated by the management agent that indicates that an important event has occurred; either a monitored item exceeded a set threshold or changed status. Trap is synonymous with alarm. *See also* Alarm.
TSR	*See* Terminate-and-Stay-Resident.
Vendor MIB	Management objects that are unique to an individual vendor's product or product line.
Version Control	A database of Compaq software products provided on the Compaq SmartStart CD and the Compaq Support Software CD. The code queries servers for the software version levels to see if an upgrade is needed.
WAN	*See* Wide Area Network.
Wide Area Network (WAN)	Network of LANs connected by routers or bridges, usually covering a large geographic area.
X.25	Network that implements the internationally accepted CCITT standard governing the operation of packet-switching networks.

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