# WHITE PAPER

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Compaq Computer Corporation

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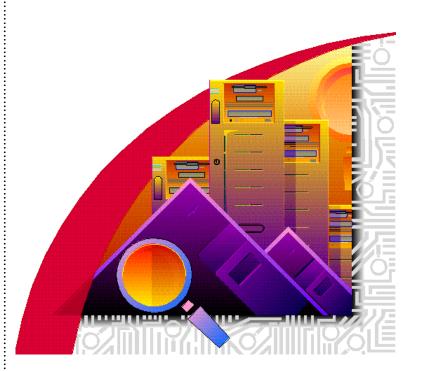
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# Compaq Insight Manager

This positoning paper provides information regarding the technology, features, and use of Compaq Insight Manager



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### White Paper: Compaq Insight Manager

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#### Introduction

As PC networks have become a critical resource, ensuring high performance and reliable operation is key to smooth business operations. Efficiently managing PC networks can make the difference between success and failure. Today's networks are growing at a rapid pace, and network administrators need the right tools to manage this rapidly expanding environment.

Recognizing this need, Compaq Computer Corporation developed Compaq Insight Manager. No other systems management tool provides the depth of information and control you require to successfully manage your Compaq servers and desktops.

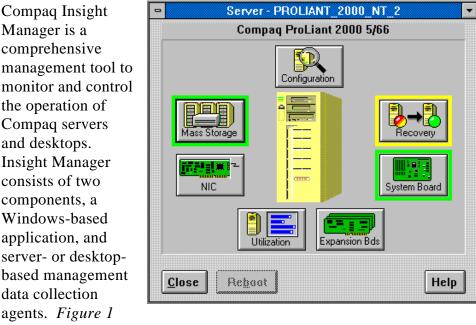
Insight Manager delivers intelligent monitoring and alerting, remote maintenance, and visual control of the desktops and servers in *your* network environment.

#### Why Manage Servers and Desktops?

In today's rapidly expanding networks, administrators are faced with growing numbers of desktops, servers, applications, and network problems. Support for new hardware, tracking physical assets, and managing the daily changes of a network are a daunting task.

Organizations have attacked the problem by investing in more personnel to handle a growing population of networked devices spread over increasing distances. Manufacturers of these products have recognized that one way to address rising personnel costs has been to design manageable products. Just as hubs, routers, and other internetworking devices have long required manageability, critical servers and desktop clients now increasingly require management as well.

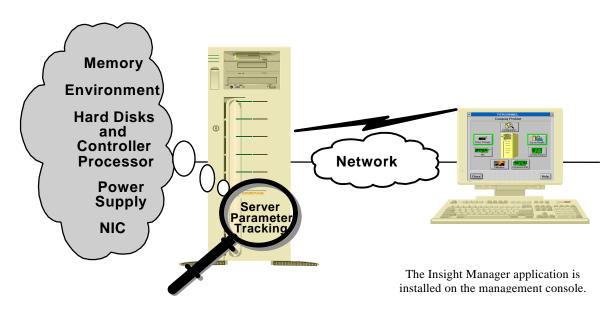
Effective, economical systems management tools are available that can identify, and even predict, faults before they can cause disruption. Configurations can be changed to meet the needs of a growing business, and performance can be measured, enhanced, and optimized. These tools can perform their tasks remotely, which lowers costs by reducing the need for on-site personnel. By proactively managing servers and desktops, greater network reliability can be achieved for users, and companies can enjoy overall improvements in productivity.

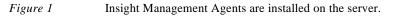


#### What is Compaq Insight Manager?

illustrates this structure.

The collection agents gather information describing the state of the server or desktop. The application then acts upon that data, either by initiating an alarm in the event of a fault, or by providing updated management information, such as network interface or drive array statistics. Working in conjunction with the hardware and firmware, the data collection agents monitor over 800 separate management parameters.





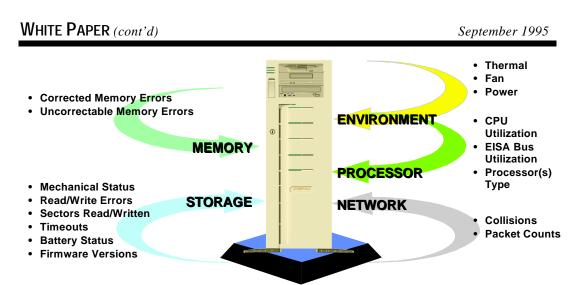


Figure 1-Compaq server hardware includes comprehensive hardware manageability features

The integration of firmware and hardware data collection capabilities is called Server Parameter Tracking. As shown in *figure 2*, key server subsystems are instrumented to make health and performance data available to the agent software.

Similarly, desktop components are instrumented to make health and performance data available from the Compaq Deskpro PC.

Insight Manager can help you manage hardware performance. Alarms can be initiated based upon a broad range of server performance thresholds such as processor or EISA bus utilization. Detailed fault information is immediately communicated to the console, enabling administrators to respond quickly and correctly. Configurations can be changed, diagnostics run, remote consoles activated, and systems rebooted when needed, all from the remote Insight Manager console.

With Compaq Insight Manager, administrators have *real control* over their servers, as well as alerting and monitoring capabilities for the critical desktops in their environment.

#### Why Was Insight Manager Developed?

With the advent of the SystemPro server line, customers began to use PC servers in more mission critical environments. These users were migrating from mini and mainframe environments that offered a great deal of systems manageability. Consequently, to close the hardware management gap and increase system reliability, Compaq began to integrate management features directly into the server hardware. When the Server Manager/R product was introduced, Compaq extended the manageability story further with out-of-band management capabilities. Shortly thereafter, Insight Manager 1.0 was introduced to deliver the benefits of integrated management functionality.

When the ProSignia and ProLiant product lines were developed, more manageability and fault tolerance features were built in to the server hardware. In fact, the wealth of performance, operational and fault information now available to the administrator was reaching into the *hundreds* of data items(figure 2)! Insight Manager has evolved over time to take advantage of this growing hardware manageability. Today, Insight Manager continues to meet the growing needs of administrators by delivering comprehensive server and desktop management functionality.

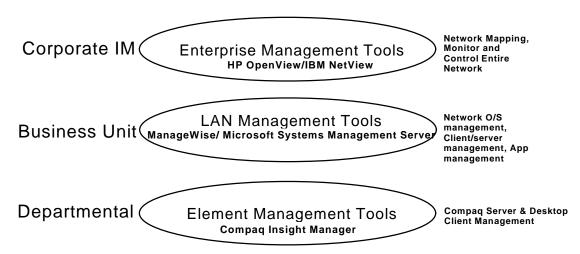
#### Insight Manager Lowers Costs

The most costly component of network management is personnel. As servers and desktops are deployed into more mission critical environments and are being used in more remote areas, the human resources required to manage this network also continues to grow.

Insight Manager helps reduce the costs of network management by providing centralized configuration, fault, and performance information to administrators *wherever they are.* By centralizing the management of Compaq servers and desktops, personnel costs are lowered and administrator efficiencies are improved. This allows administrators the freedom to perform network management duties remotely, getting the most out of personnel investments.

#### The Role of Insight Management

Insight Manager is designed to be a key component in the network management environment. Network administrators utilize a number of tools to address the specific needs of the networks they manage. Figure 3 illustrates the hierarchical structure of management tools.



#### Figure 3- Management Tools Segmentation

*Enterprise Managers* are management tools for the monitoring and control of entire networks, including internetworking devices and communications hardware. They provide the means to discover, map, and monitor the network environment. Examples of Enterprise Managers are HP OpenView and IBM NetView for AIX. These management platforms are capable of managing very large networks and are generally resourced at the corporate IM level.

LAN Managers provide a higher degree of control over local area networks than enterprise managers generally offer. LAN Manager typically monitor and control the network operating system and client and server hardware and software. They are generally used for managing at the business unit level. Examples of LAN managers are ManageWise and Microsoft Systems Management Server.

Insight Manager is a management application designed to help you manage particular *elements* within the network framework, namely, Compaq servers and desktops. As an *element manager*, Insight is set apart from other types of management tools. It is a key component in the management of departmental LANs. Products like ManageWise or HP OpenView provide a framework in which element managers such as Insight Manager operate.

The key component in this overall hierarchy is the data collection agent software. These agents run on the server or desktop, perform data collection, and initiate traps in the case of a hardware or software problem. Insight Management Agents are capable of communicating directly with the Insight Manager application and with Enterprise Managers such as HP OpenView, IBM NetView for AIX, and Sunsoft SunNet Manager.

#### Key Features of Insight Manager

The strength of Insight Manager lies in its ability to give administrators <u>real</u> control. A visual interface, comprehensive fault and configuration management, and industry-leading remote management are key features of Insight Manager that put administrators in command of Compaq hardware.

Insight Management Agents support the entire ProSignia and ProLiant family of servers, in addition to the new Compaq Deskpro logged into a Compaq server. The server agents support a broad range of network operating systems including NetWare, Microsoft Windows NT, OS/2, UnixWare, SCO UNIX and OpenServer. Desktop client agents are pre-installed on the new Compaq Deskpro, and are supported under Microsoft Windows 95.

NOTE: When running Insight Manager console application under Windows 95, the Novell TCP/IP stack will be installed. Applications that require the native

Microsoft stack will not be supported. A dedicated Insight Manager console is recommended when running Windows 95. Additionally, a Compaq Deskpro functioning as a management console is not supported in Insight Manager as a desktop client.

#### **Intuitive Graphical Interface**

Insight Manager provides an intuitive graphical interface for the visual control needed to manage servers and desktops. Key management information is available "at-a-glance," while more detailed information, such as system configuration and can be quickly obtained. Detailed graphics accurately portray the physical makeup of the server or desktop hardware. As shown in *figure 4*, specific server information such as drive type, capacity, model, service hours, and condition are all displayed in one easy to read screen.

#### **Configuration Management**

PROLIANT\_2000\_NT\_2 Slot 5 SMART Physical Drives Channel 1 Channel 2 Channel 1 Drive 1 Condition: OK Action: No Action Required Logical Drive: 1 Capacity: N/A Firmware Ver: 0BC4 Θ Service Hours: 519 Drive Model COMPAQ C2247 Close Indicators Statistics Error Log Help

Configuration management is key to successful server management. In order to

Figure 4-Detailed graphics provide instant information

solve problems, improve server performance, and manage growth, administrators must be able to obtain detailed configuration information and effect change in configurations when required. Insight Manager allows server configurations to be displayed, printed, and changed via a network link or a modem.

#### Fault Management

Ensuring network dependability is of the utmost importance in today's mission critical environments. Now network administrators have the information needed to proactively manage the server or desktop.

Compaq systems offer a breakthrough in managing faults: they prevent them from occurring! For example, predictive parameters generated by the Compaq SMART SCSI Array Controller (*figure 5*) coupled with Insight Manager's trend analysis capabilities actually *predict* impending component failures. In the

Predictive Indicators	Status	Fa <u>i</u> lure Indicators
Func Test 2: 100% C Func Test 3: 100% C Used Realloc: 0 C	ОК ОК ОК ОК ОК	Spinup Errors: 0 Aborted Cmds: 0 Realloc Aborts: 0 Media Failures: 0 Format Errors: 0
Problem Indicators Fail Recov Reads: 0 Other Timeouts: 0 SCSI Bus Faults: 0 IRQ Deglitch: N/A		Hardware Errors: 0 Not Ready Errors: 0 Bad Target Errors: 0 Fail Recov Writes: 0 Self Test Errors: N/A

Figure 5 -Predictive Indicators help spot potential problems before they occur.

event of a predicted failure, administrators are immediately notified of these potential problems, allowing preventive maintenance to be performed to maximize network uptime. In addition, on the basis of a recommendation in Insight Manager,

Compaq will replace free-of-charge any components under Compaq pre-failure warranty.

And with support for Intelligent Manageability features of the new Compaq Deskpro, Insight Manager also receives alerts for impending failure of the IntelliSafe hard drive, and for potentially system-damaging internal temperatures of the managed desktop client (*figure 6*). In order to provide alerts to the Insight Manager console application, the managed desktop client must be installed with Insight Agents for Windows 95, and must be connected to a Windows NT or NetWare server. [NOTE: Management of desktop clients is not extended to the Compaq Deskpro XL].

In addition, desktop client NIC statistics can be monitored for signs of performance degradation. This feature allows the administrator to schedule maintenance downtime to address potential problems before a critical failure occurs on the managed desktop.

	Date/Time	Server/Client	Description	
60	7/18/95 10:27	ACCOUNTING	UPS Battery Low	
&^	7/18/95 10:24	ACCOUNTING	UPS Shutdown	
සං 🖿	7/18/95 10:23	ACCOUNTING	UPS Line Failed	
& <mark>‡</mark>	7/18/95 10:19	CLIENT_1	Thermal Temperature Degraded	
& <mark>‡</mark>	7/18/95 10:17	CLIENT_2	IDE Drive Degraded	
62	7/18/95 10:14	ACCOUNTING	Logical Drive Status Change	
ራ 🚊	7/18/95 10:13	CLIENT_1	Thermal Temperature OK	
&^	7/18/95 10:10	MAIL	Server Inaccessible	
ራ^ 📳	7/18/95 09:18	ACCOUNTING	Physical Drive Status Change	
&^	7/18/95 08:58	ACCOUNTING	Server Inaccessible	Ŧ
View	Delete Print	Launch		elp

Figure 6 - Insight Manager receives alerts on servers and desktops.

If system faults do occur, Insight Manager immediately provides a visual representation of the fault location, while delivering specific fault information to

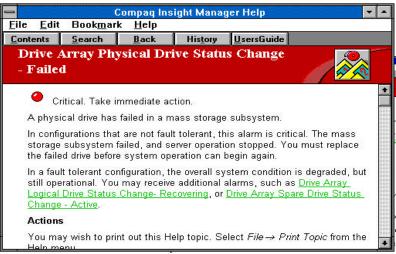


Figure 7 - Online help is instantly available

assist administrators in performing corrective actions. Insight Manager fault management capability also provides detailed corrective action information. Each alert delivered to the management console is thoroughly explained in a comprehensive online help file.

For example, should a storage subsystem failure occur, Insight Manager's analysis capabilities provide action-oriented text (*figure 7*) that describe the problem and what to do about it—taking the guesswork out of problem resolution, and minimizing unplanned downtime.

#### Deskpro AssetControl

AssetControl information from a managed Compaq Deskpro is available at the Insight Manager console, and may be conveniently viewed or printed out for desktop identification and configuration information. AssetControl provides the serial number, model, and manufacturer of the PC, monitor and hard drive; and revision levels for the system ROM and system board.

#### Performance Management

With Insight Manager ensuring network dependability, administrators can focus their efforts on maximizing the server's performance. Insight Manager delivers the critical information needed to tune the server's performance and plan for future network

EISA Bus	26%	Ģ		
PENTIUM /66Mhz	64%	₽		
PENTIUM /66Mhz	<mark>64%</mark>	Ģ		
<u>C</u> lose		Неір		

*Figure 8 - Measure and respond to changes in processor or bus performance.* 

growth. Utilization monitoring of storage and network interfaces, as well as CPUs and EISA bus (*figure 8*) remove the guesswork from capacity planning. Administrators can set thresholds on these parameters, to ensure immediate notification of impending performance issues.

#### **Insight Version Control**

The intelligent subsystems and sophisticated software of today's servers are posing a new challenge for LAN administrators - how to manage server firmware and software components to ensure on-going, proper operation? To meet this challenge, Compaq provides Insight Version Control. This powerful Insight Manager feature helps administrators track installed version levels, provides detailed information on needed and recommended upgrades and even helps produce the needed diskettes to perform the upgrades.

With Insight Version Control, each server's drivers and firmware version can be inspected to determine whether changes are required. Insight Version Control provides information on conflicts that may exist between drivers, and provides a mechanism for creating diskettes (from the SmartStart CD or Support Software CD) of the desired software updates. This minimizes problems associated with replicating new server installations and helps maintain peak performance in existing server environments.

#### How Insight Version Control Works

Insight Version Control compares the currently installed releases of server

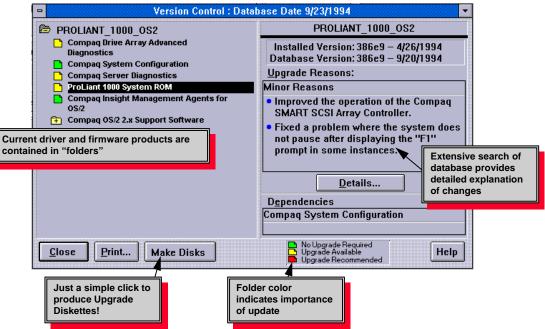


Figure 8- Insight Version Control helps administrators keep track of system software.

firmware and software against a Version Control Data Base which is distributed on Compaq SmartStart, the Compaq Support Software CD, and as a downloadable SoftPaq file (SPO965). If the Version Control Data Base indicates an updated version of server firmware or software is available, the user is notified with information describing the update and recommendations on upgrading the server. At the user's option, the update can then be placed on diskettes for installation on the server. The Version Control Data Base can be accessed directly from a management workstation CD-ROM drive, a networked CD-ROM drive, or can be loaded directly to the fixed disk drive of the management workstation or a network drive.

#### **Remote Management**

Insight Manager minimizes costly downtime by supporting a full complement of remote server maintenance and control facilities that assist in quick recovery from critical server failures—remote diagnostics to analyze the condition of the server, remote system configuration, and remote restart. Administrators can perform these tasks on off-line servers either in-band over a network connection (via IP or IPX), or out-of-band using a modem connection. For out-of-band management of on-line servers, Insight Asynchronous Management is available, using the industry standard Point-to-Point Protocol (PPP). A remote console connection may also be established (via IP, IPX) to servers that offer Telnet or NVT remote services.

#### **Insight Asynchronous Management**

Insight Asynchronous Management supports the out-of-band management of remote online servers via modem. For users of NetWare, Microsoft Windows NT, SCO UNIX, and UnixWare, servers connected by a modem and telephone line can be managed with the same ease as LAN and WAN-connected servers.

Insight Asynchronous Management support for Microsoft Windows NT 3.5 and NT 3.51, SCO UNIX 3.x, and UnixWare is standard; support for NetWare is provided with the purchase of Insight Asynchronous Management for NetWare.

#### Technology

Insight Asynchronous Management relies upon the industry-standard Point-to-Point Protocol (PPP) to provide remote access to managed servers. PPP allows Insight Manager and the Insight Management Agents a reliable, standard protocol to exchange management data and deliver alerts. Security of modem access is provided with multi-level passwords, standard CHAP and PAP authentication, optional dial-back operation and access logging.

#### Ease-Of-Management In Your Network Environment

Insight Manager has been designed with your network in mind working with the leading network operating systems and strictly adhering to network management standards. Insight Manager's breadth allows it to fit into a wide range of network environments.

#### **Strict Adherence To Standards**

Insight Management Agents provide SNMP-based management applications, such as Insight Manager, with a rich collection of server and desktop information. Insight Manager and management agents embrace standards

defined by the network management industry, delivering standard MIB support for RFC 1213, RFC 1398, RFC 1231, RFC 1398 for Ethernet network interfaces, and RFC 1231 for Token Ring interfaces.

#### **Network Management Integration**

Data and alerts collected by Insight can be displayed on a range of popular network management platforms, including HP OpenView for Unix, IBM NetView for AIX, and SunNet Manager, maximizing flexibility of management choices.

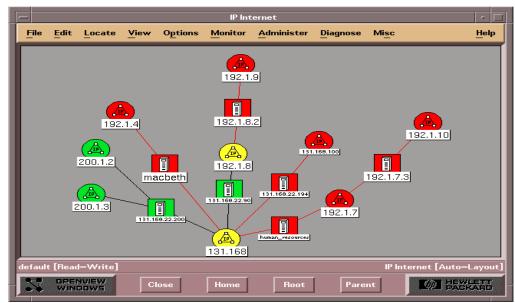


Figure 9- Integration capabilities maximize flexibility of management platform choices.

Insight Management MIBs and Management Integration TechNotes provide all the information needed to easily integrate Insight Manager and Insight Agents into a variety of SNMP-based management environments.

Insight Manager v2.30 (or later) can also be launched from ManageWise to provide a seamless management solution for NetWare networks, while users of Microsoft Systems Management Server can integrate Compaq Insight Manager 2.30 (or later) into the Systems Management Server Personal Computer properties window. Detailed integration information is available via Compaq Technotes.

- Integrating Compaq Insight Manager with ManageWise 182074-001
- Integrating Compaq Insight Manager with Microsoft Server Systems Management 184720-001
- Integrating Compaq Insight Manager with

*Enterprise Management Platforms* 145806-003

TechNotes may be downloaded from www.compaq.com. To order printed TechNotes by credit card, call 1-800-952-7589 in the U.S., 1-800-263-5868 in Canada, or 1-317-0364-7281 Worldwide. TechNotes are also available on the SmartStart CD and on the Support Software CD.

#### **Insight Agent Volume Licenses**

The license to use Compaq Insight Manager on one or more consoles and an Insight Agent on a single server is standard with the purchase of a Compaq Server or with the purchase of an operating system from SmartStart. Volume Licenses provide customers with Insight Manager and Management Agent updates for multiple servers for one year. Discounted pricing is provided for volume purchases. Licenses are available in the following increments: up to 25, 50, and 100 servers, or as an unlimited Corporate License. These volume licenses are applicable to any version of Insight Agents.

#### **Operating Systems Support**

Compaq Insight Manager is supported on the leading industry network operating systems, protocols, and enterprise management platforms.

#### Supported Network Operating Systems

- Server
  - NetWare 3.X, 4.X
  - Microsoft NT 3.5, 3.51
  - SCO UNIX, SCO OpenServer 5
  - IBM OS/2 2.X, Warp version 3
  - UnixWare 2
- Desktop Client
  - Microsoft Windows 95
- Console
  - Microsoft Windows 3.1
  - Microsoft Windows for Workgroups 3.11
  - Microsoft Windows NT 3.5, 3.51
  - Microsoft Windows 95

#### Supported Protocols

- SPX/IPX
- TCP/IP
- PPP

#### Supported SNMP Management Platforms

- ManageWise
- HP OpenView for Unix
- IBM NetView for AIX
- SunNet Manager
- Microsoft Systems Management Server

#### **Product Distribution**

Insight Manager comes standard on Compaq SmartStart with every Compaq ProLiant and ProSignia 300 and 500 server. It is also available via the SmartStart Subscription Service, or as packaged product (3.5 inch diskettes).

Compaq Insight Manager is installable directly from the SmartStart CD. Updates to the Version Control database are distributed regularly on the SmartStart CD via the SmartStart Subscription Service, and on the Compaq Support Software CD. The SmartStart Subscription Service also includes delivery of the Compaq Support Software CD between SmartStart releases for the latest Version Control database and server firmware, drivers and utilities from Compaq.

#### What's New for Compaq Insight Manager 2.60

Compaq Insight Manager, the Compaq application for easily managing servers, is now enhanced to support the Intelligent Manageability of the new Compaq Deskpro, and also delivers support for new Compaq servers and options.

Insight Manager comes standard on Compaq SmartStart with every Compaq ProLiant and ProSignia 300 and 500 server. It is also available via the SmartStart subscription service and as packaged product.

Users of previous versions of Insight Manager can upgrade to the latest version in one of two ways: purchase a Volume License (delivers all upgrades for one year), or purchase the packaged product of the current version. The Insight Agent Volume License Program has been redesigned with additional flexibility and discounted pricing.

Insight Manager 2.60 New Feature Summary:

- Management of new Compaq ProLiant 4500 5/133 and ProLiant 1500 5/133 servers; and the FlexSMP 5/133 Dual Processing Board and 5/120 System Processor Board options
- Management of Compaq Deskpro with support of Intelligent Manageability, featuring:
  - Pre-failure alerting on IntelliSafe hard drive
  - Pre-failure alerting on potentially system-damaging internal temperature
  - NIC statistics
  - AssetControl information
- Insight Agents for SCO OpenServer Release 5
- Enhanced Insight Agent Volume Licenses

#### **New Hardware Support**

Insight Manager 2.60 and Insight Management Agents 2.60 support the new Compaq ProLiant 4500 5/133 and ProLiant 1500 5/133 servers, and the new system processor board options.

#### New Operating System Support

Insight Manager 2.60 now supports SCO OpenServer Release 5, the major revision of SCO's core operating system. Insight Management agents for SCO OpenServer Release 5 will be automatically installed via a SmartStart installation of that operating system. Alternatively, a diskette of these agents may be created from the SmartStart CD.

#### **Support of Intelligent Manageability Features**

With release 2.60, Compaq Insight Manager goes beyond comprehensive server management to include management of the new Compaq Deskpro as a desktop

client. Desktop clients must be installed with Insight Agents for Windows 95, and must be connected to a Compaq server running either NetWare or Windows NT. At the Insight Manager console, the following features are available:

#### • Pre-failure Alerting

In the case of a degraded IntelliSafe IDE hard drive or thermal warning at the managed desktop, an alert will be generated at the Insight Manager console, allowing administrators to respond to pre-failure conditions before they become critical problems.

#### • AssetControl

From the Insight Manager console, administrators can easily view and print the serial number, manufacturer, and model of the system, monitor and hard drive, as well as system ROM and system board revision levels.

#### • NIC Monitoring

NIC statistics are available for proactive management of the Compaq Deskpro. Awareness of NIC performance degradation allows the administrator to address potential problems by scheduling maintenance before unplanned downtime occurs.

#### **Enhanced Insight Agent Volume Licenses**

The Volume License program has been enhanced in direct response to customer demands for increased flexibility in the licensing of Insight Agents. Changes from the previous volume licensing program include:

- All upgrades for one year are now included.
- A corporate license option now provides customers unlimited access to Insight Management agents for installation on an unspecified number of servers, including remote sites.
- Complimentary SmartStart Subscription Service is now included with the purchase of an Insight Agent Volume License. Customers will receive each new release of Compaq Insight Manager and Management Agents, as well as interim releases of the Version Control database via the Support Software CD.
- Significant discount from previous pricing levels.
- Volume Licenses are available in the following newly defined increments: for up to 25, up to 50, up to 100 servers, or as an unlimited Corporate License.

#### Summary

Compaq Insight Manager version 2.60 extends management to desktops with support for the Intelligent Manageability features of the new Compaq Deskpro, and provides support for new Compaq hardware. These enhancements are

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designed to make using Compaq Insight Manager the Compaq hardware administrator's tool of choice.

COMPAQ INSIGHT MANAGER	FEATURE	REQUIREMENT
Management PC Requirements	СРИ	386/25 or higher
	Memory Free Disk Space	8 MB minimum; 16 MB recommended
	- Insight Manager application	8 MB minimum
	- Version Control	1.7 MB
	- Automatic Data Collection	18 MB
	- Asynchronous Management Graphics	0.8 MB VGA color or higher resolution
	Network Interface Card Interface (ODI)	NIC driver that is compatible with NetWare Ope Data Link
	Supported Operating Systems	Microsoft Windows 3.1 Microsoft Windows for Workgroups Microsoft Windows 95 Microsoft Windows NT 3.5, 3.51
	Network Software	NetWare DOS Shell or NetWare DOS Requestor
	Mouse	Microsoft Windows compatible
	Printer	Microsoft Windows compatible
COMPAQ INSIGHT MANAGEMENT AGENTS	FEATURE	REQUIREMENT
Managed Server Requirements	CPU	386 or higher
I	CPU utilization	Less than five percent
	Management Protocol	Simple Network Management Protocol (SNMP)
	Free disk space	At least 2 MB
	Memory	At least 512 Kbytes to load agents
For NetWare	NetWare versions	NetWare 3.1x and 4.x
	Network Protocols	IP, IPX
For Microsoft Windows NT	Windows NT versions	Windows NT 3.5 and 3.51
	Network Protocols	IP, IPX
For SCO	SCO versions	SCO OpenServer Release 5, SCO UNIX 3.2.4, Open Desktop 3.0
For IBM OS/2	Network Protocols IBM OS/2 versions	IP IBM OS/2 2.11, Warp version 3
	Network Protocols	IP
For UNIXWARE	UnixWare versions	UnixWare 2
	Network Protocols	IP
Managed Desktop Client Requirements	CPU	Compaq Deskpro
For Microsoft Windows 95	Windows 95 Network Protocols	Windows 95 IP, IPX
	REQUEST FOR COMMENT	DESCRIPTION
STANDARDS	RFC 1212	Concise MIB definitions
SUPPORTED	RFC 1215	A convention for defining traps for use with SN
	RFC 1213	Management Information Base (MIB II)
	RFC 1398	Ether-Like Interface Type MIB
	RFC 1231	IEEE 802.5 Token Ring Interface Type MIB
MANAGEMENT MIBS	Server Management Parameters	Over 800
	Server Management Traps	Over 60
	Desktop Client Management Parameters	Over 160

Desktop Client Management Traps 4