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# Compaq Management Solutions for Linux

***Abstract:*** Compaq offers a wide range of products compatible with the Linux operating system including its ProLiant servers and the management software developed for both the enterprise and small-to-medium-sized businesses. These solutions provide assistance in administering your network and remotely managing your systems.

This document describes the solutions available for network management and remote management of your Linux system.

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: [Linux.feedback@compaq.com](mailto:Linux.feedback@compaq.com)

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## Network Management

Compaq pioneered Intelligent Manageability in the early 1990s and has led the industry since that time, developing and driving industry standards and standards-based systems management. From the foundation of hardware instrumentation, Intelligent Manageability solutions surpass industry-standard minimum requirements and enhance existing management functionality to provide you with the best-managed systems. Intelligent Manageability includes leading hardware features, software, tools and utilities, services, and partnerships

Network management is an integral part of the Compaq Intelligent Manageability strategy providing a comprehensive set of products to simplify and improve how enterprises of all size manage their network resources. Network management tools include the Compaq Management Agents, Compaq Insight Manager XE, and the Compaq Health and Wellness Driver for Linux.

### Compaq Management Agents for Red Hat Linux 7.0

Compaq Management Agents, an important component of the Compaq Intelligent Manageability strategy, make virtual presence possible. Compaq Management Agents provide the instrumentation to enable fault, performance, and configuration management, as well as reduce down time by providing predictive fault management. Compaq Management Agents for Linux install as four separate components: Compaq Foundation Agents, Compaq Server Agents, Compaq NIC Agents, and Compaq Storage Agents. At publication, the management agents only support Red Hat Linux 7.0.

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Download Compaq Management Agents from  
<http://www.compaq.com/support/files/server/us/>.

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Once installed, the agents seamlessly manage the platform. The built-in intelligence of the agents provides valuable information alone or as part of comprehensive enterprise management strategy. Access the web-enabled Compaq Management Agents

either directly through a browser or through a management application. The agents communicate via industry standard protocols such as SNMP, DMI, and HTTP with management applications, such as Compaq Insight Manager XE and third party management applications.

The agents perform in-depth monitoring of a device by collecting and measuring critical parameters. These parameters indicate the current state of subsystems by counting the occurrence of particular events (for example, the number of read operations performed on a disk drive) or by monitoring the state of a critical function (for example, whether or not the cooling fan is operating).

Over 1,000 parameters are proactively monitored by Compaq Management Agents. The Management Agents provide information to the management application, which generates alarms whenever significant changes occur in system operation. These agents provide real time warning by providing quick notification whenever an important event occurs, including deteriorating health and/or performance of the system. Whenever the system exceeds a critical threshold, the agents provide a warning. Compaq Insight Manager XE interprets the alarms and management information and provides a real time warning by forwarding the alarms and critical management information to a pager, e-mail, or designated wireless device.

## Key Features

Some of the key features for Compaq Management Agents:

- **Industry standard**  
Compaq Management Agents for Servers use the industry-standard Simple Network Management Protocol (SNMP) and the Hypertext Transfer Protocol (HTTP) for communicating management information.
- **Built-in intelligence**  
With intelligence built-in, the agents track their own condition and know where the fault lies in the subsystems.
- **Web-enabled**  
The agents render information dynamically in HTML so that data can be viewed from a standard browser located anywhere on the network.
- **Predictive alerting**  
Predictive parameters generated by the agents for disk drives, memory and CPU form the basis for the Compaq pre-failure warranty.
- **Online help**  
Context sensitive help offers quick and accurate access to help information.

## Benefits

Some of the benefits of using Compaq Management Agents

- **Greater system control**  
The agents monitor over 1,000 parameters in the system and generate alerts in the event of a fault. Any fault, and in some cases, impending faults are communicated to the designated administrator.
- **Ease of use**  
The Compaq Management Agents are easy to install and deploy and can also be installed silently while configuring the system using the SmartStart configuration process.
- **Infrastructure maintenance**  
Compaq Management Agents use industry standards to deliver alerts, configuration, and performance data facilitating reporting to any management application that uses industry-standard management protocols.
- **Heterogeneous environments**  
Compaq Management Agents provide access to management parameter values from a broad range of operating environments.
- **Basis for Pre-Failure Warranty**  
Predictive parameters generated by the Compaq Management Agents for Servers coupled with the trend analysis capabilities from Compaq Insight Manager XE actually predict impending component failures.

## Compaq Advantage

Compaq Management Agents for Linux offer several advantages to your network:

- Common foundation for management across all Compaq products
- Common foundation for all systems management products from Compaq and for integration into Enterprise management platforms
- Web-based management for anytime-anywhere access to management information
- Coverage for a broad range of operating systems
- Predictive fault management and pre-failure warranty for storage, memory, and CPU
- Extensive online help documentation

## Insight Manager XE

Compaq Insight Manager XE leverages the power of the Internet to provide web-based systems management, and enables the Compaq vision for virtual presence. Compaq Insight Manager XE reduces systems management cost, improves operational efficiency and effectiveness, and minimizes systems downtime. It provides device management capabilities that consolidate and integrate management data from Compaq and third-party devices using SNMP, DMI, and HTTP. With Compaq Insight Manager XE, you can monitor and manage groups of servers, clients, clusters, and networking products anywhere, anytime from a standard web browser.

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*Check out Compaq Insight Manager XE at <http://www.compaq.com/products/servers/management/cim-xe.html>.*

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## Key Features

Key features of Compaq Insight Manager XE:

- Industry standard  
Because Compaq Insight Manager XE is based on industry standards, it offers consistent management of Compaq and third party devices using DMI V2, SNMP, or HTTP protocols.
- Virtual presence  
The web-based browser provides full access from anywhere on the Intranet, eliminating the need for a dedicated management console.
- Automatic discovery  
Compaq Insight Manager XE automatically discovers Compaq servers, clients and clusters, third party devices, and devices containing internal HTTP web servers.
- Manual discovery  
You can identify and define device types.
- Pre-defined queries and management tasks  
Compaq Insight Manager XE offers queries and tasks right out-of-the-box to enable immediate access to management information.
- Comprehensive event management  
Compaq Insight Manager XE manages over 5,000 devices and 50,000 events.

- System-wide disk threshold setting
- Paging and scheduling

The integrated alphanumeric paging and task scheduling increases mobility while allowing the administrator to respond quickly to alerts and alarms generated by the Compaq Management Agents.
- Historical data collection

Insight Manager XE collects and stores selected information independent of source (DMI, SNMP).
- ODBC Database Support
- Cluster Events Prioritization
- Version Control

This feature checks versions of software and firmware and indicates whether you should upgrade and why.
- Password authentication
- SNMP Extensions Toolkit

The toolkit contains SNMP MIB Registration, SNMP MIB Upload, Trap Editor, Trap Categories Editor, and Command Line Utility to support the management of new devices without having to upgrade management application.

## Benefits

Some of the benefits of using Compaq Insight Manager XE:

- SNMP Extension Tool

The SNMP Extension Tool provides the ability to add, discover, and identify new devices. It updates the MIB database to the latest MIB revisions allowing you to discover and identify new devices.
- Version Control

Version Control compares system software and firmware against a current database and indicates whether you should upgrade, and why. It checks versions of Compaq drivers, Management Agents, Compaq Utilities, and firmware.
- Reduced system management cost

You use one tool for the monitoring of Compaq and non Compaq systems regardless of management protocol. The information is consistently represented to the user and stored in a common database. Compaq Insight Manager XE provides HTTP services as part of the management application.
- Improved efficiency and effectiveness

Manage your business—how you want, when you want, where you want—with web browser access to the management application. Compaq Insight Manager XE also provides web access to systems without web-enhanced agents, permitting the user to view real-time system data—SNMP or DMI—via a browser.

Additionally, it provides configuration information, centralized events, and the ability to perform management operations across groups of Compaq systems.

Integration of Compaq Intelligent Cluster Administrator with the Cluster Monitor in Compaq Insight Manager XE provides a single interface to monitor, modify, and deploy clusters throughout the enterprise.

- Decreased downtime

Compaq Management Agents provide status information on subsystems and components to the Systems Manager in addition to sending SNMP traps. This useful information, along with the extensive context-based help information assists the user in quickly diagnosing the problem. Compaq also provides a pre-failure warranty on disks, memory, and CPU.

Insight Manager XE even decreases cluster downtime through proactive fault management and performance threshold controls, which can be customized to meet specific cluster processing needs and help eliminate hung systems.

- Ease of use

Right out of the box, Compaq Insight Manager XE provides common system views with one-click access from the main page. With the first use, the application knows how to discover and report on your systems. Additional queries and events can be customized and defined by you without programming.

- Automated device discovery

Insight Manager XE automatically discovers devices with internal HTTP web servers. Links are provided directly to web servers used for configuring the device or for monitoring status (networking devices, printers, or third-party devices with web agents).

## Compaq Health and Wellness Driver for Linux

The Compaq Health and Wellness Driver (Health Driver) collects and monitors important operational data on your server. It includes the Information Management Log (IML) Viewer. Any abnormal conditions are logged into a non-volatile health log and can be inspected with the IML Viewer. Compaq servers include hardware sensors and firmware to monitor certain conditions, such as temperature readings, fans, ECC memory errors, etc. The driver monitors these conditions and reports them to the administrator by printing messages on the console and by logging the condition into the server's health log.

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*More information on using the Compaq Health and Wellness Driver can be found through <http://www.tru64unix.compaq.com/linux/linuxhealth.html>.*

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The IML Viewer records system events, critical errors, power-on messages, and other catastrophic hardware or software errors that could cause the system to fail.

The Health Driver lists events in a log residing in a Compaq internal area of non-volatile memory (NVRAM). This health log is exposed through the Compaq Health Driver into the /proc filesystem.

Monitored events:

- System temperature

A Compaq server may contain several temperature sensors. If the normal operating range is exceeded for any of these sensors, the Health Driver

- ◆ Displays a message to the console stating the problem
- ◆ Makes an entry in the system health log
- ◆ Shuts the system down (optionally) to avoid hardware damage

Use the Compaq System Configuration Utility to control the shutdown option.

- System fans

If a cooling fan fails, the Health Driver

- ◆ Displays a message to the console stating the problem
- ◆ Makes an entry in the system health log
- ◆ Shuts the system down (optionally) to avoid hardware damage

Use the Compaq System Configuration Utility to control the shutdown option.

- System fault tolerant power supply

If a primary power supply fails, the server automatically switches over to a backup power supply. The Health Driver

- ◆ Displays a message to the console stating the problem
- ◆ Makes an entry in the system health log

- ECC memory

If a correctable ECC memory error occurs, the driver logs the error in the health log including the memory address causing the error. If too many errors occur at the same memory location, the driver disables the ECC error interrupts to prevent flooding the console with warnings (the hardware automatically corrects the ECC error).

- Automatic Server Recovery (ASR)

Automatic Server Recovery uses a heartbeat timer that continually counts down. The driver frequently reloads the counter to prevent it from counting down to zero. If the ASR counts down to 0, it assumes that the operating system is locked up and the system automatically attempts to reboot. Before rebooting, the driver does the following:

- ◆ Displays a message on the console stating the problem
- ◆ Makes an entry in the system health log

This server feature is configured using the Compaq System Configuration Utility

## Remote Management

The Remote Insight Lights-Out Edition is an optional management PCI card with a dedicated LAN connection. It provides full access and control of servers even when the server is in a failed state.

The key features of Remote Insight Lights-Out Edition:

- Self-contained with on-board processor, memory, NIC, and ROM
- External power adapter ensures continuous server access



- Headless server deployments in data centers
- Virtual Floppy Drive allows host server to remotely boot from a standard 1.44 MB floppy diskette in a network client, enabling remote OS installation from a network drive, and remote server ROM updates
- Full control of your server with browser-based, virtual graphical remote console
- No additional software required for Compaq ProLiant servers - the client just requires a browser that supports Java.
- Virtual Power Button provides full control of remote server power state - turn your server on or off remotely
- Remote Reboot allows cold reboot when system is not responding.
- SSL encryption of HTTP data before transmitting over the network
- Dedicated, low-bandwidth network connection provides secure access over LAN
- Group administration for user accounts

To get more information about the Remote Insight Lights-Out Edition, see the Compaq web page at <http://www.compaq.com/lights-out>.

## Appendix A, Helpful Compaq Websites

This section lists all the websites mentioned in the document and provides additional sites that can provide additional information on Compaq management products.

Compaq Linux website	<a href="http://www.compaq.com/linux">http://www.compaq.com/linux</a>
Compaq Open Source Software Project	<a href="http://www.opensource.compaq.com">http://www.opensource.compaq.com</a>
Compaq Health and Wellness Driver	<a href="http://www.compaq.com/support/files/server/us/">http://www.compaq.com/support/files/server/us/</a>
Compaq Health and Wellness Driver How-To	<a href="http://www.tru64unix.compaq.com/linux/linuxhealth.html">http://www.tru64unix.compaq.com/linux/linuxhealth.html</a>
Compaq Insight Manager XE	<a href="http://www.compaq.com/support/files/server/us/">http://www.compaq.com/support/files/server/us/</a>
Compaq Management Agents	<a href="http://www.compaq.com/support/files/server/us/">http://www.compaq.com/support/files/server/us/</a>
Compaq Management Agents How-To	<a href="http://www.tru64unix.compaq.com/linux/documentation.htm">http://www.tru64unix.compaq.com/linux/documentation.htm</a>
Compaq Remote Insight Lights-Out Edition	<a href="http://www.compaq.com/manage/remote-lightsout.html">http://www.compaq.com/manage/remote-lightsout.html</a>
Compaq Remote Insight Lights-Out Edition How-To	<a href="http://www.tru64unix.compaq.com/linux/compaq-remote-insight-board.htm">http://www.tru64unix.compaq.com/linux/compaq-remote-insight-board.htm</a>
Installing Linux on Compaq ProLiant Servers	<a href="http://www.compaq.com/products/servers/linux/compaq-howto.html">http://www.compaq.com/products/servers/linux/compaq-howto.html</a>