



COMPAQ

**Integrating Compaq Insight
Manager with Computer
Associates Unicenter TNG**

Compaq TechNote

**First Edition (October 1997)
Part Number 276463-001
Compaq Computer Corporation**



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Integrating Compaq Insight Manager with Computer Associates Unicenter TNG

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Contents

Chapter 1

About This TechNote

| | |
|-----------------------------------|-----|
| Additional Resources to Use | 1-1 |
| Document Conventions | 1-4 |

Chapter 2

Unicenter TNG Overview

| | |
|---------------------------|-----|
| Introduction | 2-1 |
| Auto Discovery | 2-1 |
| Monitoring Views | 2-2 |
| Agent and Node View | 2-3 |
| Event Browser | 2-8 |
| 2D and 3D Maps | 2-9 |

Chapter 3

| | |
|--|------------|
| Integration Feature Summary | 3-1 |
|--|------------|

Chapter 4

Pre-Installation Requirements

| | |
|---|-----|
| Minimum Recommended Hardware Requirements | 4-1 |
| Supported Hardware and Software | 4-2 |
| Pre-Installation Configuration | 4-3 |

Chapter 5

Installation and Integration

| | |
|---|-----|
| Unzipping the Integration Files | 5-1 |
| Unicenter TNG Enterprise Management Integration | 5-2 |

Installation and Integration (continued)

Unicenter TNG Agent Technology Integration 5-3
Unicenter TNG Worldview Integration..... 5-5

Chapter 6
Using the Integration

How the Integration Works 6-1
Network Discovery 6-1
TNG Maps..... 6-2
Node View..... 6-2
Node View Options..... 6-3
Event Browser 6-4
Unicenter TNG’s Business Process Views 6-5
3D Map 6-6
Launching Compaq Insight Manager from TNG 6-8

Chapter 7
Management Solution Scenarios

Using TNG and the Integration Kit for Compaq Insight Manager to
Monitor Compaq Systems 7-2
Using Compaq Professional Workstations as Unicenter TNG Consoles..... 7-5
Enhancing TNG Message Actions for Compaq Specific Messages 7-8

Chapter 8
Distribution and Support 8-1

Index

Chapter 1

About This TechNote

This TechNote provides Compaq systems management integration guidelines for the Unicenter TNG management suite from Computer Associates International.

Customers who want to integrate the functionality of Compaq Insight Manager into the Unicenter TNG environment may use this document to walk through the installation and configuration of the integration modules. The integration feature summary outlines the integration points.

This document is intended for System Administrators who have a working knowledge of Unicenter TNG and Compaq Insight Manager.

This TechNote provides the following:

- Overview of the CA Unicenter product.
- Discussion of the Integration points between Unicenter TNG and Compaq Insight Manager.
- Installation information for the Unicenter TNG policy definitions for Compaq Insight Manager.
- Sample Management Solutions using Unicenter TNG and Compaq systems and Compaq Insight Manager.
- Product Distribution information for the TNG Integration Module for Compaq Insight Manager.

Additional Resources to Use

The following list of resources, used throughout this TechNote, provides additional information on Compaq Insight Manager and Unicenter TNG.

- Compaq Management CD (The Compaq Management CD is included with all Compaq Server Products)

This CD contains the Compaq Insight Manager Online User Guide that explains how to use Compaq Insight Manager.

■ *Computer Associates Documentation Set*

Computer Associates provides an extensive library of documentation for the installation, configuration, administration, and operation of Unicenter TNG. "Books Online" is a collection of many useful documents, some of which are listed below. The following documents contain reference information relevant to this TechNote:

□ *TNG Concepts Guide*

Provides an overview of the TNG paradigm and infrastructure, Business Process Views, agent extensibility, TNG Enterprise Management, and TNG Software Development Kit.

□ *TNG Message Guide*

Outlines the system messages for the TNG WorldView and Enterprise Management modules.

□ *TNG Reference Guide*

Provides information about all TNG executables, configuration files, environment variables, and Enterprise Management shell scripts.

□ *TNG Release Guide*

Provides a release summary for TNG WorldView, Agent Technology, and Enterprise Management.

□ *Windows NT Agent Configuration Guide*

Contains information for installing, configuring, and administering the TNG NT system agent, and the NT system agent MIB.

- Computer Associates Home Page: <http://www.cai.com>

Additional information is available through the Computer Associates Home Page.

- Compaq Home Page: <http://www.compaq.com>

Additional information on Compaq Insight Manager and other Compaq products is available through the Compaq Home Page.

Document Conventions

Table 1-1 lists the conventions used to distinguish elements of text in this document:

| Table 1-1 | |
|----------------------------------|--|
| Document Conventions | |
| Convention | Use |
| OK, CANCEL | Window command button labels appear in bold caps. |
| CTRL + DEL | Keyboard keys appear in bold caps. When you see a plus sign (+) between two keys, hold down the first key while you simultaneously press the second key. |
| <i>c:\dirname\filename.exe</i> | Path Names of items such as files, directories, resources, groups, and services appear in bold italics. |
| Select Item → Item | Items you select from a pull-down menu appear in bold initial caps, separated by arrows for each submenu item. |
| SMALL CAPITALS | Represent key names such as CTRL. |
| Bold | Represents system stored procedures and user-entered text. |
| <i>Italics</i> | Represents database names, table names, column names, index names and variables. |
| Monospace | Represents examples, displayed text, and error messages. |
| [brackets] | Identify optional items in syntax. Type only the information within the brackets; do not type the brackets. |
| {braces} | Identify required items in syntax. Type only the information within the braces; do not type the braces. |
| ... (ellipsis) | Indicates that you can repeat the previous syntax item. |
| (vertical bar) | Means "or" and signifies that you can choose only one of the items within the brackets or braces. |
| <i>USER INPUT</i> | Information to be entered by the user is shown in uppercase and in a different typeface. |

Chapter 2

Unicenter TNG Overview

Introduction

Unicenter TNG from Computer Associates International is an enterprise and systems management product suite designed to manage systems, networks, databases, and applications. Each of the modules in Unicenter TNG (The Next Generation) addresses a different aspect of enterprise management.

The Unicenter TNG architecture follows the agent/manager paradigm. Unicenter TNG agents can be installed on managed nodes for monitoring those systems and reporting performance, event, and fault-management information to the Unicenter TNG console. Integration with Compaq Insight Manager adds another level of management to the Unicenter TNG list of capabilities; the ability to monitor hardware-level components. The Compaq Insight Management Agent complements the functionality provided by the Unicenter TNG NT System Agent, giving the administrator a much more in-depth and complete view of managed systems.

Auto Discovery

Unicenter TNG first requires that the administrator initiate a Network Discovery, so TNG can identify the machines it needs to monitor. The Network Discovery is simple and straightforward to use. It discovers all IP and IPX devices as defined in the discovery configuration. The initial discovery process does not include the agent discovery; the domain manager finds the agents (i.e. the Unicenter TNG NT System Agent and the Compaq Insight Management Agent). For example, since the TNG Integration Kit for Compaq Insight Manager defines what a Compaq Insight Management Agent "looks" like, the Compaq Insight Management Agent is "recognized" during the discovery, just as the Unicenter TNG NT System agent is "recognized". All agents known to TNG are discovered during the Auto Discovery Process and are then displayed from the Unicenter Console in either the 2D or 3D modes.

Monitoring Views

Once the Auto Discovery is complete and the administrator displays the Unicenter TNG 2D or 3D map, there are two different types of views that the administrator can use to see the status of a monitored system: the Node view and the Agent view. The integration with Compaq Insight Manager has integration points in both of these views.

The rest of this chapter describes the Node View and the Agent View. The special integration points with Compaq Insight Manager are discussed in Chapter 3, "Integration Feature Summary".

Agent and Node View

The Agent View is shown in Figure 2-1. The Node view is shown in Figure 2-2. The Agent View, whether it is for the Unicenter TNG NT System Agent or the Compaq Insight Management Agent, is a view of that agent only. The Node View provides a collective view of the entire managed node and all the agents.

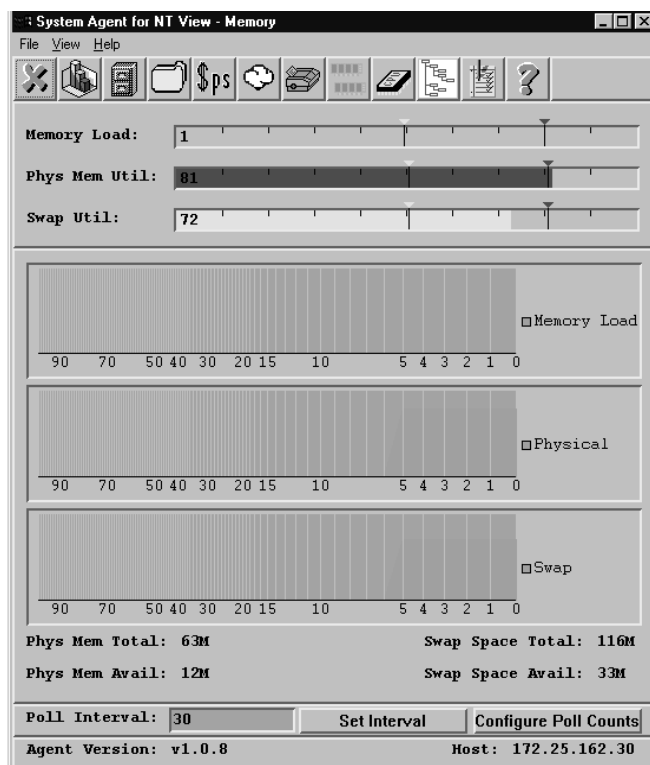


Figure 2-1. Sample Agent View for Unicenter TNG NT System Agent

2-4 Unicenter TNG Overview

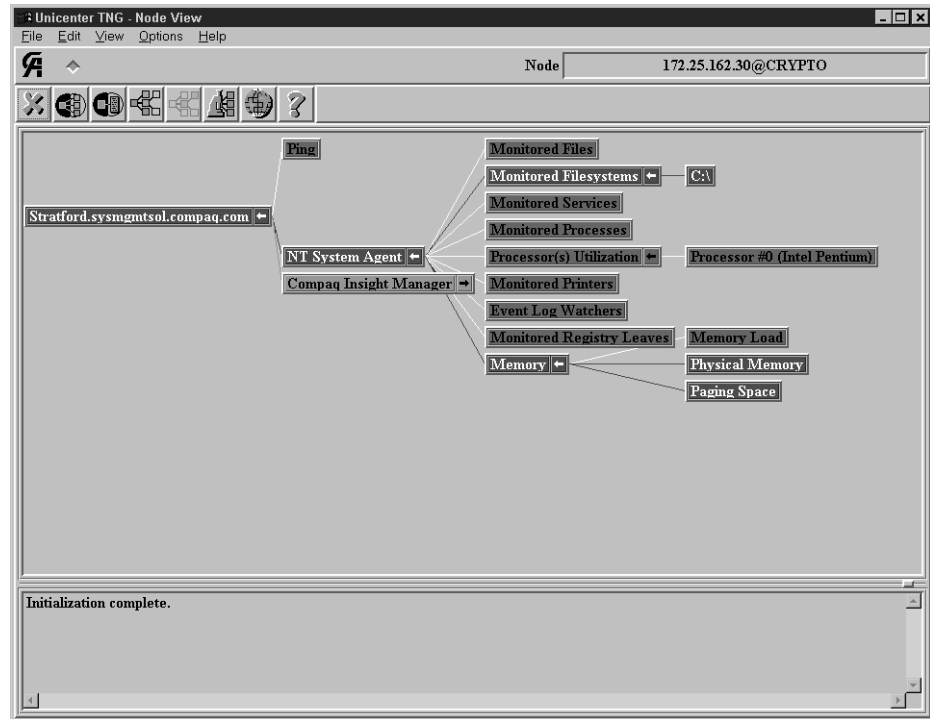


Figure 2-2. Node View Window showing a sample Unicenter TNG System Agent View

Unicenter TNG NT System Agent

Like many other enterprise and system management systems, Unicenter TNG has an agent for managing NT systems. It is called the Unicenter TNG NT System Agent. This agent can be configured with thresholds to alert the administrator when these thresholds are violated. There are nine components that the Unicenter TNG NT System Agent monitors:

- File Systems
- Files
- Processes
- Services
- Printers
- Memory
- Processor Utilization
- NT Registry
- NT Event log

File Systems

The Unicenter TNG NT System Agent monitors file systems, as identified by the administrator, for total utilization and growth. Once thresholds are configured, the Unicenter TNG NT System Agent sends an SNMP trap to the Unicenter TNG Console, alerting the administrator when these thresholds are exceeded.

The administrator sets warning and critical thresholds for the space utilization of the file system. Also, the rate of growth can be monitored. Unicenter calculates the growth rate by comparing the size of the file system between polls. If the growth rate exceeds the established growth thresholds, an SNMP trap is then sent to the console.

Files

The Unicenter TNG NT System Agent can be configured to monitor files for size, growth, and timestamp changes.

The file size is monitored based on warning and critical thresholds specified by the administrator. Growth is calculated using the size on successive polls. A file's timestamp can be monitored to detect whether changes are made to the file. When a timestamp change occurs, an administrator defined warning or critical alert can be generated. This is forwarded to the Unicenter TNG Console. The overall status of the file is the highest severity of the three file conditions: size, growth, and timestamp status.

Processes

The Unicenter TNG NT System Agent can be configured to monitor for the existence of critical processes as defined by the administrator. In addition, the number of instances and the number of threads can be monitored. Thresholds are established for the allowable number of instances of each critical process being monitored. Exceeding these thresholds is detected by the agent, and in turn results in a trap being sent to the console. At the most detailed level of monitoring for critical processes, the administrator can establish thresholds on the number of threads of the critical processes. The overall status of each monitored process is the highest severity of all of these aspects being monitored.

Services

The Unicenter TNG NT System Agent can monitor NT services as specified and configured by the administrator. Once the administrator identifies which critical services need to be managed and then configures the agent to manage them, the Unicenter TNG NT System Agent will detect if a service is active or inactive. When a service's status changes, an alert is then sent to the Unicenter TNG Console.

Printers

The availability of a printer (local, not network) and the length of the print queue can be monitored. Alerts are generated when a printer changes status from available to unavailable, and also when the number of jobs in the print queue exceeds the threshold. The overall status of the printer is a reflection of the highest severity of all the aspects of the printer being monitored.

Memory

Three aspects of the systems memory can be monitored:

- Overall memory load
- Physical memory
- Swap space

In addition to specifying utilization thresholds for each of these areas of memory, the administrator can specify how many successive polls returning values that exceed the threshold are required to generate an alert. This allows the administrator to configure the thresholds and avoid short-lived spikes of memory utilization.

Processors

Just as the administrator can configure thresholds for monitoring a system's memory, he/she can configure monitoring of the processor utilization. Also, the administrator can specify how many successive polls over the threshold are required to generate an alarm. It is important to avoid generating alarms for spikes of usage, as opposed to persistent usage.

NT Registry

The Unicenter TNG NT System Agent can be configured to monitor any number of important Registry value entries. Integer values can be monitored for a simple, absolute change, or monitored for a change in value against the warning and critical thresholds. String values can be monitored for a change in contents. When a Registry value entry changes or exceeds a threshold, an SNMP trap is sent to the Unicenter Console.

NT Event Log

The Unicenter TNG NT System Agent can be configured to monitor the Application, System, and Security event logs. These logs are monitored for the existence of administrator defined events. Event Log monitoring can be used for general auditing purposes or for monitoring for the existence of a specific event. SNMP traps are generated and sent to the Unicenter TNG Console when a warning or critical event occurs.

Event Browser

Unicenter TNG has an event browser window to allow the administrator to view all the warnings and alarms that are initiated by the Compaq Insight Management Agent and the Unicenter TNG NT System Agent. This event browser can be initiated from the Node View window.

2D and 3D Maps

Unicenter TNG offers two styles of maps: a 2D-map view (shown in Figure 2-3), and a 3D-map view (shown in Figure 2-4).

Functionality for the 3D-map is the same as the 2D-map. When TNG is started for the 3D-map, the 2D-map is brought up and processed in the background. The core 2D-map functionality drives the 3D-map; the only difference is the presentation layer for the 3D effect.

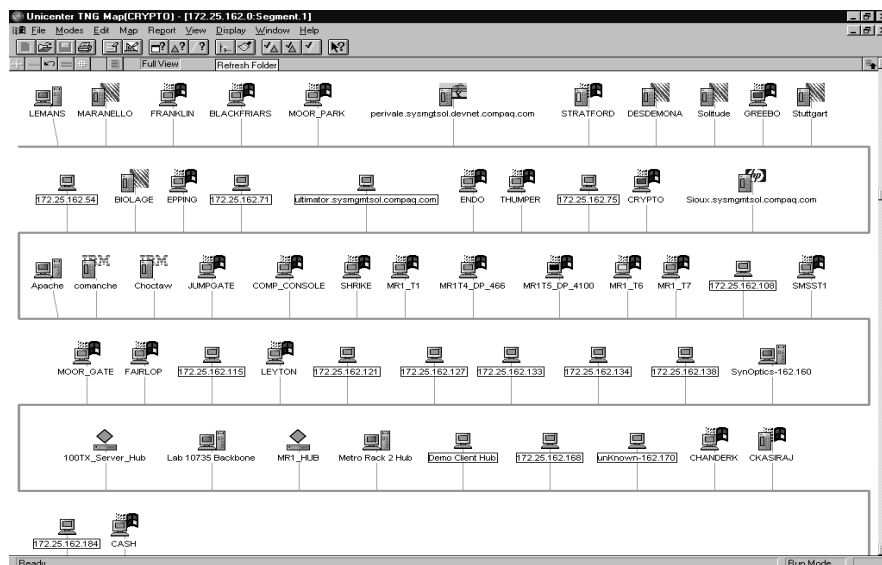


Figure 2-3. Unicenter TNG 2D map

2-10 *Unicenter TNG Overview*

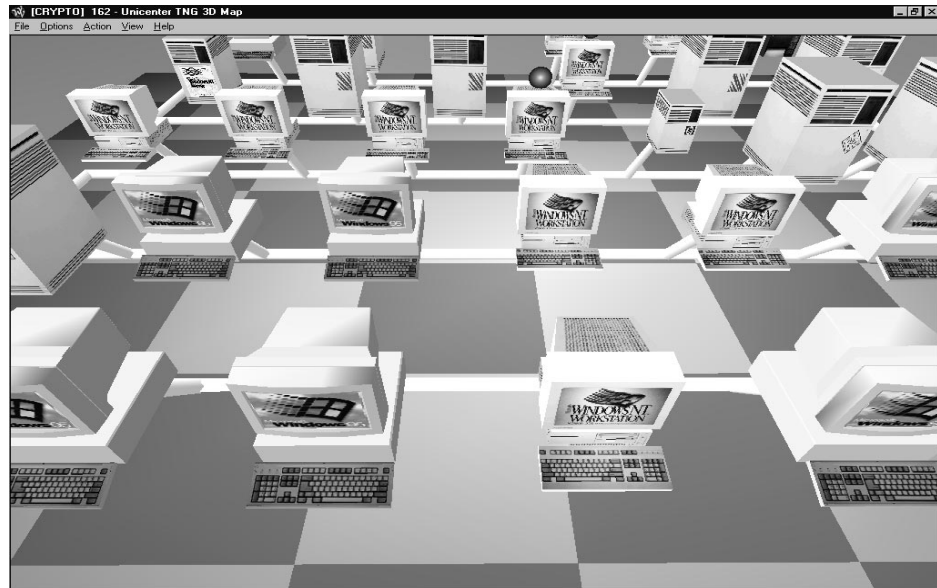


Figure 2-4. Unicenter TNG 3D map

Chapter 3

Integration Feature Summary

To complement all the operating system and application-level parameters monitored by Unicenter TNG, hardware-level component information for Compaq systems can be monitored and managed using the Unicenter TNG Integration Module for Compaq Insight Manager. This integration module monitors and manages the Compaq Management Information Base (MIB) variables, which are updated and maintained by the Compaq Insight Management Agents. This data is also available from the Compaq Insight Manager console. The Compaq MIB definitions are compiled into Unicenter TNG; therefore, Unicenter can monitor all variables, not just a subset of the MIB. The following categories are represented in the Compaq MIB and can be viewed graphically on the Node View:

- Intelligent Drive Array
- SCSI Sub System
- System Health
- SCSI Storage System
- System Utilization
- Uninterruptible Power Supply

The Unicenter TNG Integration Module for Compaq Insight Manager is designed to manage hardware features that are specific to Compaq servers and workstations. Although Compaq Insight Management Agents on Compaq desktops and portables can be discovered and viewed from the Unicenter TNG console, there is a very limited amount of data that is relevant to desktop and portable hardware. The Unicenter TNG Integration Module for Compaq Insight Manager is not intended for management of Compaq desktops and portables at this time.

The Unicenter TNG Integration Module for Compaq Insight Manager includes:

1. Creation of the 'InsightManager' class inside the Unicenter TNG repository.



Figure 3-2. Window Showing the Insight Manager Sub Class under the Agent Class

2. Discovery and population of all Compaq Insight Management Agents (Version 3.00 and greater) into Unicenter TNG's repository.

- The detection and update of current statuses discovered by a Compaq Insight Management Agent. This is accomplished with the use of policy files provided with the integration.

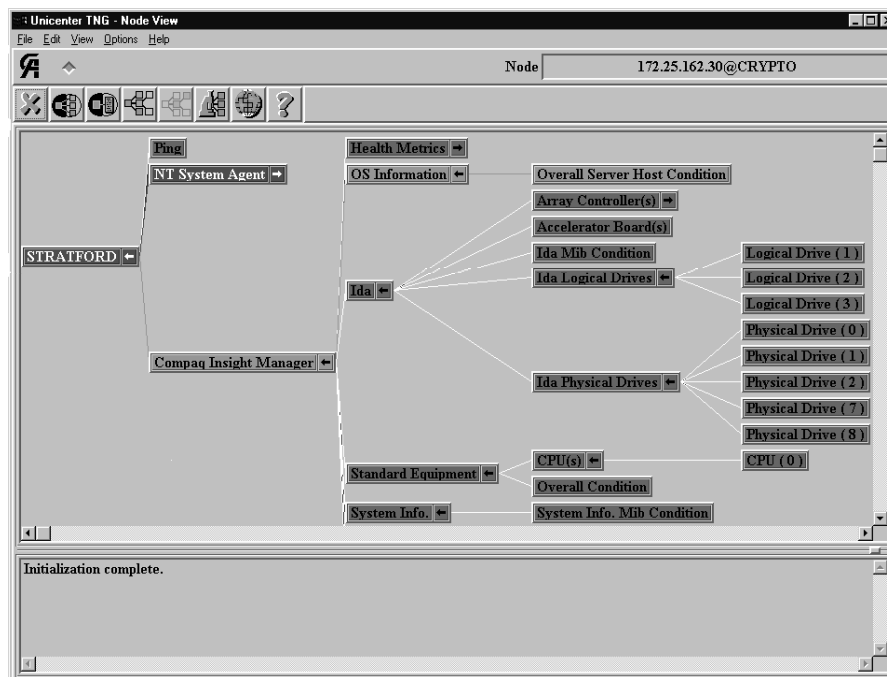


Figure 3-3. Node View Window Showing some of the Compaq MIBs

3-4 Integration Feature Summary

4. Event notification and correlation inside Unicenter TNG's Enterprise Management Console.

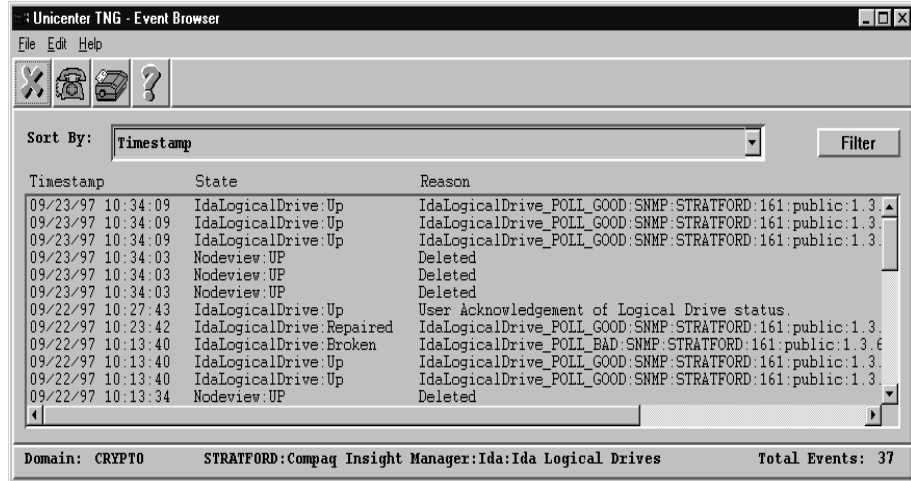


Figure 3-4. Unicenter TNG Event Browser Window

5. Launch, in context, of Compaq Insight Manager.

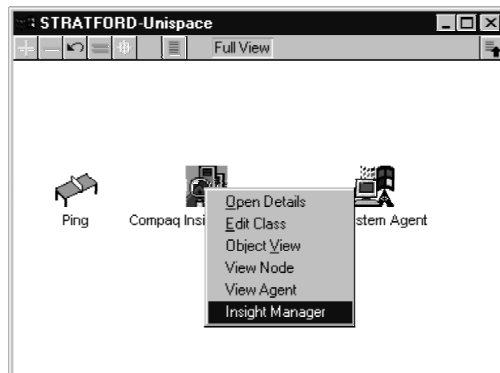


Figure 3-5. Compaq Insight Manager Agent Showing Launch Command for Compaq Insight Manager Console

6. Compaq Insight Manager Agent View showing detailed information on hardware-level system status.

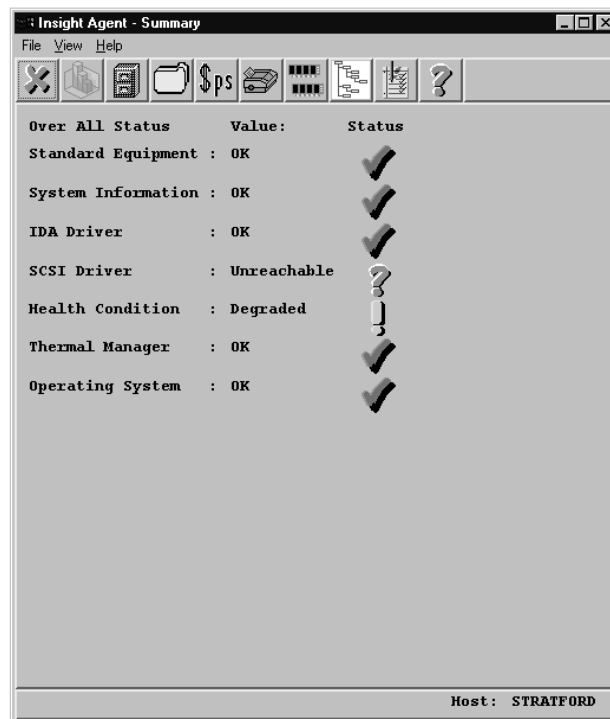


Figure 3-6. Agent View of Compaq Insight Manager Agent showing System Summary Status

Chapter 4

Pre-Installation Requirements

The recommended hardware and software requirements for supporting the Unicenter TNG integration with Compaq Insight Manager are based on testing performed in a controlled lab environment. The test environment included the following:

- Microsoft NT Workstation 4.0 with Service Pack 3
- Unicenter TNG, release 2.0, Genlevel 209703
- Compaq Insight Manager 3.4
- Microsoft SQL Server 6.5
- Compaq Professional Workstation 5000
 - Single Pentium Pro 200 Processor
 - 160 MB memory
 - Elsa Gloria M/L 3D Graphics Controller, 10 MB Video Memory

Minimum Recommended Hardware Requirements

The minimum recommended hardware requirements for the Unicenter TNG console, based on Compaq's experience with the product in a lab environment, are listed below. They are higher than the hardware requirements recommended in the Unicenter documentation in order to improve system performance:

- Memory - 128 MB
- Processor - Single Intel-based Pentium Pro - 200 MHz or greater CPU (Compaq Professional Workstation 5000 or greater)
- Disk
 - Agent – 43 MB
 - Console – 149 MB
 - Enterprise Management: 34 MB
 - WorldView: 115 MB
 - Documentation (Books Online) – 34 MB

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4-2 Pre-Installation Requirements

- Monitor - 17-inch (or larger) color monitor
- Video Graphics Card
 - Elsa Gloria M/L 3D Graphics Controller, 10 MB Video Memory
 - Diamond Fire GL 4000 Graphics Controller, 10 MB Video Memory

Supported Hardware and Software

Compaq Insight Manager

- Compaq Insight Manager 3.00 or greater
- Compaq Insight Management Agents on the following platforms:
 - Microsoft Windows NT Server and Workstation 3.51 or greater

Unicenter TNG

- Unicenter TNG WorldView - Release 2.0 (Genlevel 209703 or greater)
- Unicenter TNG Agent Works - Release 2.0 (Genlevel 209703 or greater)
- Unicenter TNG Enterprise Management - Release 2.0 (Genlevel 209703 or greater)

Microsoft SQL Server

Version 6.5 or greater

Compaq Systems

- Compaq Professional Workstations
 - Compaq Servers
-

Pre-Installation Configuration

Video Graphics Controllers

The ELSA Gloria 3D Graphics Controller and the Diamond Fire GL 4000 Graphics Controller should be configured to support the graphics requirements of Unicenter TNG. These settings are configured under the Control/Display Preferences. Tables 4-1 and 4-2 outline the recommended settings for these controllers.

Table 4-1

ELSA Gloria M/L 3D Graphics Settings

| Category | Setting |
|------------------------------|--------------|
| Enable 3D Extensions | Yes |
| DMA Buffers | 8 |
| DMA Buffer Size | 64 KB |
| Texturing Quality | 50% |
| Double Buffer | Yes |
| GDI in single buffered modes | Yes |
| Enable Fast Clear Planes | Yes |
| Graphics Driver Version | 5.22.00.0142 |
| OPEN_GL Driver Version | 2.00.10.0015 |
| Resolution | 1024x768 |

Table 4-2

Diamond Fire GL 4000 Graphics Settings

| Category | Setting |
|-----------------------------|----------|
| Graphics Driver Version | 1.2.27.7 |
| Configuration Profile | Default |
| Frame Buffer Options | |
| Gamma Correction | No |
| Visual 4-bit Overlay Planes | No |
| Stencil Planes | Yes |
| Texel 32-bit | Default |
| Minimize Tearing | No |
| Forced Hardware Cursor | Yes |

Common problems with the video options are due to incorrect DMA buffer settings or DMA Buffer size settings. If there are video compatibility problems, check these two settings first.

Microsoft SQL Server 6.5

SQL Server 6.5 must be installed prior to the installation of Unicenter TNG. Follow the standard installation for SQL Server. The only requirement for TNG is to enable the **Sort Order** option for **Dictionary Order, Case-sensitive**.

Chapter 5

Installation and Integration

Installation and integration of Compaq Insight Manager and Unicenter TNG covers three distinct integration modules:

- Unicenter TNG Enterprise Management Integration
- Unicenter TNG Agent Technology Integration
- Unicenter TNG Worldview Integration

These three integration modules are described below.

Unzipping the integration files

There are three integration files provided by Computer Associates:

- CIM_TNGWV.zip
- CIM_TNGE.zip
- CA_USD.zip

Note: Although included in the integration kit, the software delivery scripts (CA_USD.zip) are not presently supported.

If you are using **pkunzip.exe** to unzip the integration files, be aware of the following items:

First, you should create three sub-directories, one for each of the zip files. (Remember to use the “-d” option for pkunzip). You can create these in your temp directory. It is easier to keep these in three separate directories, as opposed to unzipping them all into the same subdirectory.

If you are running an older version of **pkzip.exe** that only gives you the "8.3" naming format and does not support extended file names, you must recreate three file names. After you have unzipped the files, perform the following:

1. Rename browser.ins to browser.insightmanager.ins
2. Rename insightm.cnf to insightmanager.cnf
3. Rename insightm.dat to insightmanager.dat

Unicenter TNG Enterprise Management Integration

Messages and Message Actions

The Enterprise Management Integration is comprised of the files used to populate the Event Management databases with pre-defined messages and message actions for Compaq Insight Management Agent SNMP trap messages. These files are ASCII text files with a ".txt" extension. All these files are located in the **CIM_TNGE.zip** file.

There is a batch file that can be used to load all the files at once. Use the CPQLOAD.BAT command:

CPQLOAD <machine_where_DB_resides>

Note: If the machine name is not used, an error message is displayed on the screen stating that since a server machine name was not stated, the command will default to the machine executing the command

To install these files individually, independent of the batch file, the following command can be used:

cautil -s=<machine_name_where_DBs_reside> -f <file_name>

Unicenter TNG Agent Technology Integration

Policy definition for Agent status detection

The policy definition for the Compaq Insight Management Agent is used by the Unicenter TNG Agent Works component. Status changes are detected by polling the Insight Management Agent. Once the polling has gathered information on the agent, this information is translated into policy. This policy can be viewed through the Unicenter Event Management Console in real-time. In addition, this policy sets the status for each of the discovered Insight Management Agents inside the Unicenter TNG Repository.

All files for the agent technology integration are located in the **CIM_TNGWV.zip** file.

To install the policy definition for Compaq Insight Manager, perform the following steps:

1. Add the following line to the **gwfilter.dat** file in the **%AGENTWORKS_DIR%\SERVICES\CONFIG\AWS_WVGATE** directory (**%AGENTWORKS_DIR%** is the home directory of the Unicenter TNG Agentworks sub system):

Software:InsightManager:Compaq|InsightManager|

2. Add the following line to the **aws_nsm.cfg** file in the **%AGENTWORKS_DIR%\SERVICES\CONFIG\AWS_NSM** directory:

LOAD aws_nsm/dm/InsightManager.cnf

3. Add the filename **InsightManager.dat** as the last argument in the **classd.bat** file in the **%AGENTWORKS_DIR%\SERVICES\TOOLS** directory.

.....

5-4 *Installation and Integration*

4. The installation uses the "C" drive as the default drive for the location of the Unicenter TNG World View component. If this is not true for your implementation, edit the line in the **insight.bat** file as necessary:

Call copy %1\icons*. * X:\tngwv\icons

(where **X** is the drive letter (i.e. c, d, e, etc.))

5. Run **insight.bat** with the location of the Compaq integration directory, the current Worldview path, and the current agent technology path. This script also loads the TNG Worldview integration described in the next section.

**C:\>insight.bat c:\compaq\cim_tngwv\Insight c:\compaq\cim_tngwv
d:\tngwv d:\tngws**

NOTE: This batch file runs some configuration tools with updated files. The details for manual configuration without the use of this batch file can be found in the README.insight file provided with this integration.

Unicenter TNG Worldview Integration

Class definition for Unicenter TNG Repository

The class definition is configured inside a file named INSIGHT.DAT. All the properties, menus, statuses, and methods for the Compaq Insight Manager agent class are defined here. To load this integration outside of the provided script, switch to the directory where INSIGHT.DAT is located and issue the following command:

```
Awwwcfg -c insight.dat
```

All files for the WorldView integration are located in the **CIM_TNGWV.zip** file.



Figure 5-7. Window showing the Insight Manager Sub Class under the Agent Class

NOTE: This loads the entire definition. If this class is already defined, you will not receive an error message, even though the command has done nothing. It will not destructively overlay the previous installation of this class. If it is necessary to reload this class, first delete the class using the Unicenter TNG Class Wizard. The class 'Insight Manager' is found under the Agent subclass as shown in Figure 5.1.

Method for Compaq Insight Manager Launch in Context

This capability is automatically configured when the Compaq Insight Manager class is installed (make sure the Path environment variable contains the location of the Compaq Insight Manager executable). It allows the administrator to launch Compaq Insight Manager in context for those systems that were discovered with the Compaq Insight Management Agents.

Chapter 6

Using the Integration

How the Integration Works

The Compaq integration is defined in the policy definition for Compaq Insight Manager. This definition is specifically kept in two files:

- Insightmanager.cnf
- Insightmanager.dat

The policy definition for the Compaq Insight Management Agent is used by the Unicenter TNG Agent Works component. Status changes are detected by polling the Insight Management Agent. Once the polling has gathered information on the agent, this information is translated into policy. Note that traps will also trigger policy. This policy can be viewed through the Unicenter Event Management Console in real-time. In addition, this policy sets the status for each of the discovered Insight Management Agents inside the Unicenter TNG Repository.

Network Discovery

The first process that must take place is the discovery of all the IP and IPX addressable devices on your network (as defined in the discovery configuration). First, determine the subnets you want discovered by Unicenter TNG and configure this into the auto discovery windows under TNG WorldView. Network activity and traffic in an enterprise is often carefully monitored and controlled. Keep this in mind when determining whether the discovery should be automated or initiated manually by the administrator.

To configure the auto discovery settings, start the auto discovery program under TNG WorldView. Under advanced features, enter the appropriate subnet filter and subnet mask. If you have already completed an initial auto discovery and want to rediscover some subnets, use the options under Subnet Management. In this window, you can "move" subnets from the left panel to the right panel to add them to the discovery list. Once you have finished listing the subnets for discovery, start the discovery process to update the Unicenter TNG map of your subnet(s).

TNG Maps

Once your network has been "discovered," the managed nodes discovered through the TNG discovery appear on both the 2D and 3D maps. Both the Compaq Insight Management Agent and the Unicenter TNG NT System Agent are recognized during the discovery process; icons that represent each agent appear in a window logically below the machine icon. You can get to this window by double-clicking the machine in the 2D or 3D map.

Node View

The hierarchical tree display of the Compaq Insight Manager and Unicenter TNG agents is referred to as the Node View. (See to Figure 6-1). The Node View is available as a selection when clicking the right mouse button on any agent icon. The user can expand or "fan-out" the nodes to display lower level objects. This drill-down capability allows the user to view Compaq Insight Manager MIB icons at the variable level.

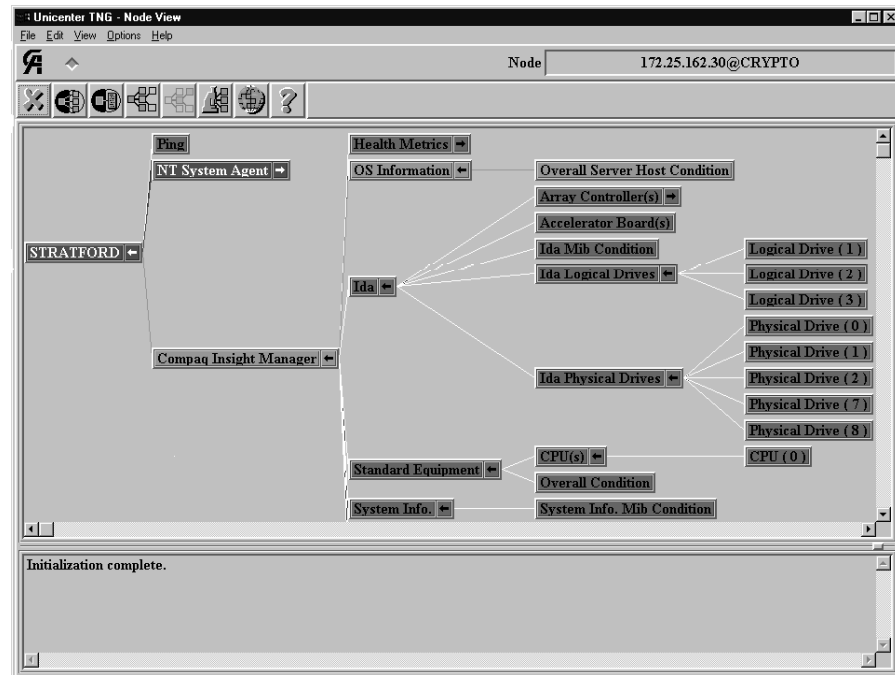


Figure 6-1. TNG Node View showing expanded Compaq Insight Manager objects

All icons on the Node View are color-coded to reflect the node's current status (See Table 6-1).

Table 6-1

Color Mapping for Node View Status

| Color | Status | Description |
|--------------|--------------|--|
| Red | Broken | The object (or one or more of its subordinate objects) has reported a problem. |
| Orange | Acknowledged | An administrator has acknowledged the broken status of this object, but the problem has not yet been corrected. |
| Bright Green | Repaired | The object is no longer reporting a problem or it has been repaired, but no administrator has acknowledged the repair yet. |
| Dark Green | Up | There is no current problem with this object or any of its subordinates. All previous problems have been repaired and acknowledged. |
| Blue | Unknown | The Distributed State Machine (DSM) knows of the object, but has not yet translated its state information into one of the previously defined statuses. |
| Gray | Deleted | The object has been deleted from the DSM's database of managed objects. It will soon be removed from the Agent View display. |

Node View Options

Several options can be used in the Node View window to provide more information. There are options to show the object class along with an associated icon for that object class. Figure 6-1 does not show these options. The information shown in Figure 6-1 is only the instance name of the object. Although showing the object class and the object class icon adds significant visual variety to the screen, displaying only the instance name allows you to show more objects on the screen. Administrators may find this simplified view more usable in a production environment.

Event Browser

The Event Browser operates for objects monitored by the Compaq Insight Management Agent in the same way as objects monitored by the Unicenter TNG NT System Agent. From the Node View window, right click on an object, then pick the event browser selection. This brings up the Event Browser window, as shown in Figure 6-2.

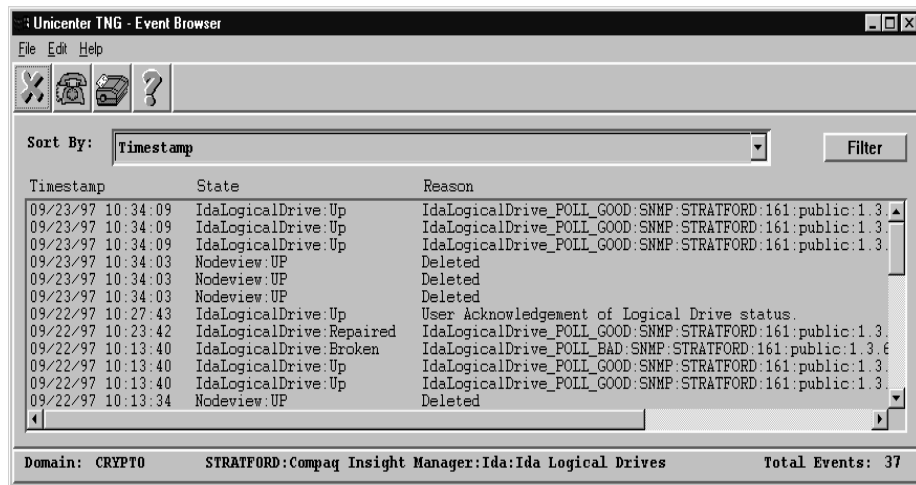


Figure 6-2. Unicenter TNG Event Browser Window

On the Event Browser window, events generated by Compaq Insight Management Agents can be identified by the Object Name. The Object Name column can be displayed by specifying this column under the Filter option on the default Event Browser window. Events from Compaq Insight Management Agents have Object Names beginning with "Compaq Insight Manager". For example, an event in the Event Browser relating to Overall Thermal Condition would appear as:

Compaq Insight Manager: Health Metrics: Overall Thermal Condition

Unicenter TNG's Business Process Views

The ability to create logical node groupings is available in Unicenter TNG. This is referred to in TNG terminology as Business Process Views. The administrator can create the logical icon groups while in "design mode." Machine icons are then "clicked and dragged" from the main machine map into the logical group icon.

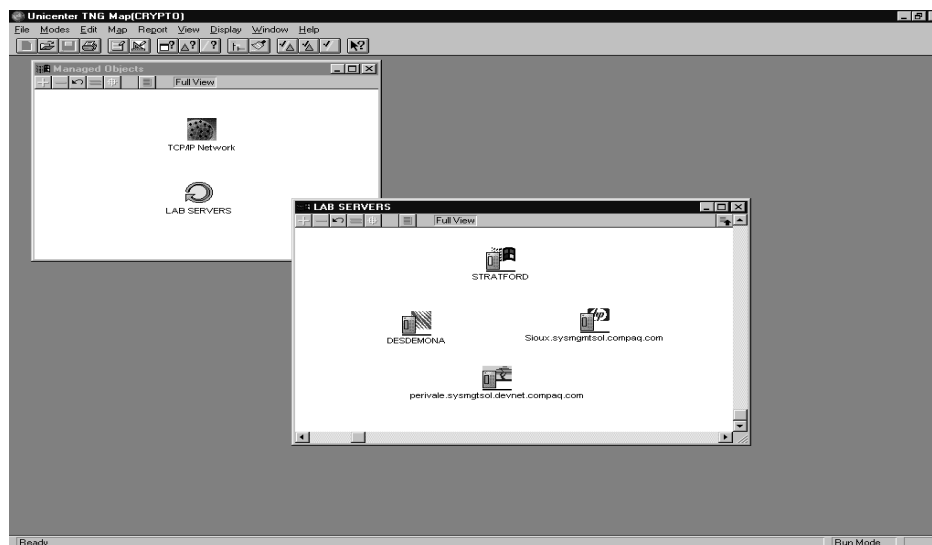


Figure 6-3. Unicenter TNG's Business Process View hierarchy example -The "Lab Servers" icon contains the four machines as shown in the lower window.

3D Map

Functionality for the 3D-map is the same as the 2D-map. When Unicenter TNG is started for the 3D-map, the 2D-map is brought up and processed in the background. The core 2D-map functionality drives the 3D-map; the only difference is the presentation layer for the 3D effect. Administrators set up the 3D-map indirectly by first configuring the 2D-map. Specific 3D images can later be configured while in 3D mode. An example of a 3D images that could be automatically created from a 2D map is shown in Figure 6-4. Figure 6-5 is the 3D image of a view inside a machine.

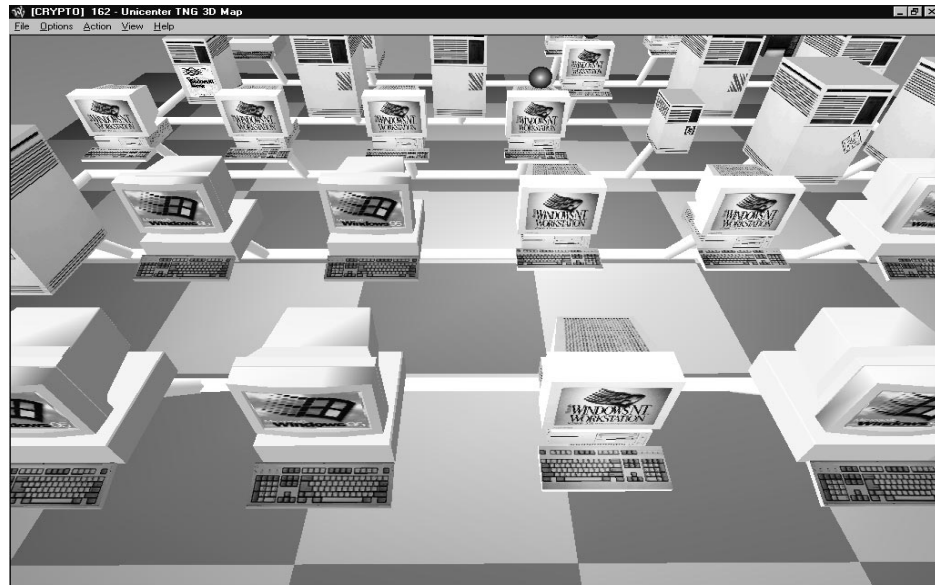


Figure 6-4. TNG 3D-map (3D image equivalent to the 2D image in Figure 2-3)



Figure 6-5. 3D Image of the Inside of a Server

Launching Compaq Insight Manager from TNG

For machines with the Compaq Insight Management Agent installed, the Compaq Insight Manager console icon appears under the node container and can be launched from Unicenter TNG. Clicking the right mouse button brings up the selection list, where you can select an option to launch, in context, Compaq Insight Manager. The Compaq Insight Manager console launches directly to the device list window for the machine highlighted on the Unicenter TNG map.

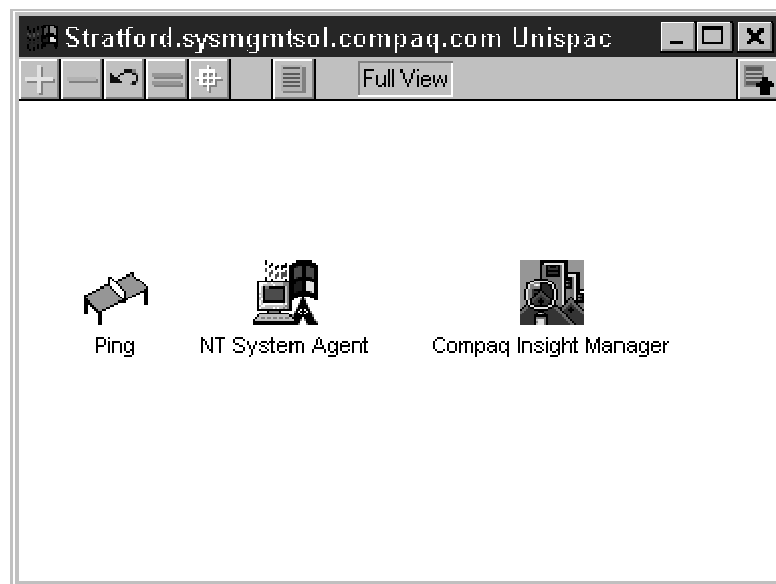


Figure 6-6. Window showing Compaq Insight Manager Agent Icon

Chapter 7

Management Solution Scenarios

This chapter provides several scenarios illustrating how Compaq systems, Compaq Insight Manager, and Unicenter TNG work together to provide solutions for Enterprise Management. The following solution scenarios are discussed in this chapter:

- Using TNG to monitor Compaq Systems
- Using Compaq Professional Workstations as Unicenter TNG Consoles
- Enhancing TNG Message Actions for Compaq Specific Messages

These scenarios for NT systems are only suggestions on how to use Compaq Insight Manager with Unicenter TNG. There are many other ways the two can be used together. For more information, refer to the documentation for Compaq Insight Manager, Unicenter TNG, and the Unicenter TNG Integration Kit for Compaq Insight Manager listed in Chapter 1 of this TechNote.

Using TNG and the Integration Kit for Compaq Insight Manager to Monitor Compaq Systems

In a typical Unicenter TNG environment, a heterogeneous set of hardware and operating system platforms must be monitored. If an administrator could distinguish one machine class from another, he/she could use a console operations strategy that matched operator skill sets to the machine classes they could administer. Operator consoles must be managed and configured to facilitate detection and ultimately resolution of alarms and events that are reported to the TNG console. Structuring the operator console requires knowledge of the customer's operational processes. The TNG Integration Kit for Compaq Insight Manager facilitates the configuration of TNG operator consoles in this type of functional alignment.

TNG AutoDiscovery

The initial TNG AutoDiscovery of the customer network will identify all IP and IPX-addressable devices for the network as configured by the administrator. Unicenter TNG will recognize and distinguish the different operating systems for each system discovered, and identifies the Compaq Insight Management Agents on each system that has them installed. This is usually one of the major issues an administrator must resolve: the ability to automatically identify the machine class and the installed agents for machines in the monitoring environment. The TNG Integration Kit for Compaq Insight Manager includes TNG polices (or definitions) that identify the distinct characteristics that define the different types of Compaq machines along with the characteristics that indicate if a machine is running Compaq Insight Management Agents.

Once the auto discovery has completed, the Unicenter TNG 2D and 3D maps will show all the systems that have been discovered, along with their operating system type (as long as the operating system is known to TNG - this includes Microsoft Windows NT, SCO UNIX, Novell IntranetWare, and others). The administrator may then structure the map using Business Process Views.

Unicenter TNG's Business Process Views

The administrator can use Unicenter TNG's Business Process Views to structure the operator console. If the customer environment calls for monitoring to be organized by machine class (i.e. the Compaq machine class), the administrator could set up a Business Process View representing Compaq class machines. Sub-level Business Process Views could then separate Compaq Professional Workstations from Compaq Desktops and Compaq Servers.

Figure 7-1 shows an example of a Unicenter TNG map showing a Business Process View named "Test Servers" on the large map, with the United States as the background. Logically under "Test Servers" is a sub Business Process View name "Houston Servers" (the window with the Texas map). Logically inside this Business Process View are two servers (named Stratford and Crypto). This example in Figure 7-1 shows how the administrator can nest Business Process views to create whatever hierarchy is needed to represent his/her environment.

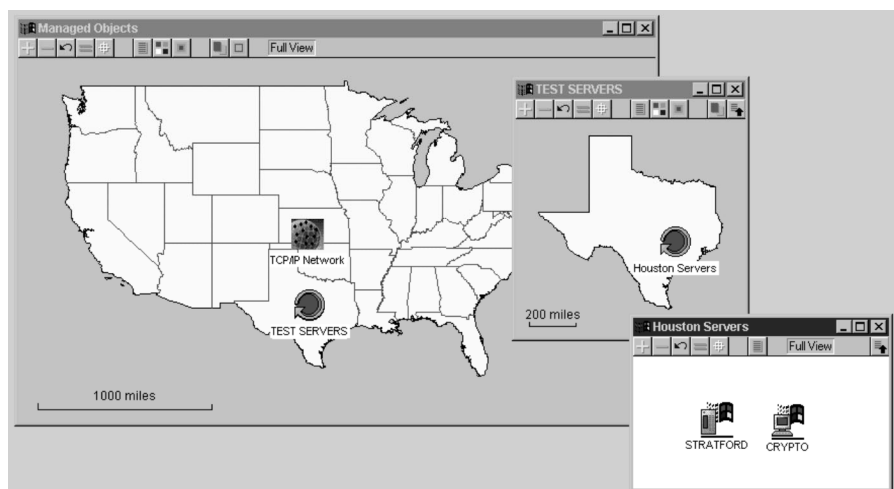


Figure 7-1. Example of Unicenter TNG's Business Process Views

Launching the Compaq Insight Manager Console

The operator who monitors the enterprise will probably use several tools to do his/her job. Unicenter TNG may be the core tool, and Compaq Insight Manager may be the supporting tool. In large environments, this is a likely scenario. In this situation, operators typically will use the Unicenter TNG console most of the time for monitoring faults and events. When an event occurs, the operator may need to find more information regarding the system in question. In this event, Compaq Insight Manager might be launched to further diagnose a problem.

Advanced Warning of Compaq Events

With the integration of Compaq Insight Manager, the operator can be alerted to hardware-related problems before impacts occur at an application level. The integration between Unicenter TNG and Compaq Insight Manager allows for Compaq Insight Management Agents to detect a fault, report the fault to TNG, and have TNG scripts initiate a corrective action before an application outage occurs (discussed in more detail later in this chapter). Without the Compaq Insight Management Agents, faults could go undetected until another agent detected the fault at a more severe level.

The key here is to exploit the advantages of the early warning hardware-monitoring capabilities of the Compaq Insight Management Agents with the automated event recovery scripts that can be configured in Unicenter TNG. Defining and configuring automated event recovery scripts in Unicenter TNG is a significant effort for any operations environment. Whatever strategy is in place to develop automated scripts, the operations plan should take advantage of the types of early warning events that are captured by the Compaq Insight Management Agents, and how they can be resolved through the Unicenter TNG event recovery features.

Using Compaq Professional Workstations as Unicenter TNG Consoles

Architecting an Enterprise Management Solution begins with identifying the components that will make up the hardware platform for supporting the enterprise management software systems used. With Unicenter TNG, which follows the standard manager/agent paradigm, a management console(s) must be identified to accept event and fault management information from the remote managed nodes. This section describes how the Compaq Professional Workstation family provides a management console solution that can handle the processing, storage, and graphics requirements necessary to exploit the full advantages of a Unicenter TNG enterprise management platform.

Critical Success Factors for a Unicenter TNG Console

When architecting an enterprise management solution, one of the issues to consider is the hardware platform to be used as the management console. When using Unicenter TNG as the enterprise software environment, there are four critical success factors for determining the best platform for the console architecture:

- High end graphics capability to support Unicenter TNG
- Storage capacity to handle the SQL Server data repository for event and fault history
- CPU capacity to handle the sophisticated maps and event browsers without significant performance degradation
- Capability to run Compaq Insight Manager along with Unicenter TNG as the management software

A fully detailed outline of the solution to this scenario is beyond the scope of this TechNote. However, it is important to realize that the solution to the problem is a complex one. Coordinating the solution at the console level, agent level, and repository level, must be carefully architected.

Compaq Professional Workstations

As an alternative to a Sun, SGI, Intergraph, or IBM solution, the Compaq Professional Workstation family of products provides a solution that satisfies the success factors regarding the TNG console architecture.

Table 7-2
Compaq Professional Workstation as a Unicenter TNG Console

| Success Criteria | Description |
|--|---|
| 1. High end graphics capability | <ul style="list-style-type: none"> ▪ Supports Elsa Gloria XL 3D Open GL Graphics controller ▪ Supports Diamond Fire GL 4000 Graphics Controller |
| 2. Storage Capacity for Event Repository | <ul style="list-style-type: none"> ▪ Supports Wide-Ultra SCSI with 2GB, 4GB, or 9.1GB drives ▪ Supports up to 54.6GB of internal storage (depending on model) |
| 3. CPU Capacity for 2D and 3D maps and browsers | <ul style="list-style-type: none"> ▪ Support for 1 or 2 Pentium Pro 200/256 (Compaq Professional Workstation 5000), 1 or 2 Pentium II 266/512 and 300/512 (Compaq Professional Workstation 5100 and 6000), 1 to 4 Pentium Pro 200/256 (Compaq Professional Workstation 8000) |
| 4. Support to run Compaq Insight Manager and Unicenter TNG | <ul style="list-style-type: none"> ▪ Supports Compaq Insight Manager console and Agents ▪ Supports Unicenter TNG 2.0 or greater <p>Note: The Compaq Professional Workstations are shipped with Microsoft Windows NT 4.0.</p> |

Compaq Professional Workstation Configuration for a Unicenter TNG Console

The Compaq Professional Workstations would typically be configured with the following software when used as a console in a Unicenter TNG environment (version numbers are provided as an example and usually would be the latest available):

- Microsoft NT Server 4.0 (workstation)
- Microsoft SQL Server 6.5
- Compaq Insight Manager 3.0 or greater
- Unicenter TNG 2.0, Genlevel 9703 (or greater)
 - WorldView (for the 2D and 3D TNG maps)
 - Enterprise Management
- Unicenter TNG Integration Kit for Compaq Insight Manager

Enhancing TNG Message Actions for Compaq Specific Messages

Within Unicenter TNG, administrators can configure specific actions to take place in response to events that are received from managed nodes. Automated alarm and event recovery is the key to exploiting some of the more advanced capabilities of Unicenter TNG. With Unicenter TNG, this functionality is available through the Event Management subsystem. The step by step process is relatively simple and straightforward. This section outlines how to access the Compaq Messages and Message Actions and set the stage for administrators to begin the process of automating alarm and event recovery.

Event Management Subsystem

The Event Management subsystem has functionality that allows the administrator to identify specific messages from managed nodes and the actions to be performed when the message is received. Once a message and an associated message action are configured, that action will be automatically performed whenever the event occurs, thus automating the recovery (or partial recovery) of that event.

With the Compaq Integration Kit, 302 Compaq specific messages are configured in the Unicenter TNG environment. Under the Event Management Subsystem, the administrator should follow the following basic steps to view and/or customize these messages:

- Select Event from the Enterprise Management Main Window
 - Select Messages - this will bring up a window of all the Compaq messages already defined
-

- Select a Message to configure or customize and bring up the Message Record Detail Window
- Select Actions and specify the recovery action for the event

Associated with these messages, are message actions that currently pass the message to the Unicenter Console Logs (there is currently no specific event recovery). These can be viewed from the Message Action section of Event Management (see Figure 7-2).

The screenshot shows a window titled "Message Action Summary (CRYPTO)" with a menu bar (File, Selected, View, Options, Help) and a toolbar. Below the toolbar is a table with the following columns: Sequence, Token, Active, Simulate, Keyword, and Text. The table contains 24 rows of data, each representing a message action. The status bar at the bottom indicates "558 record(s), 1 selected" and the time "9:53:08 AM".

| Sequence | Token | Active | Simulate | Keyword | Text |
|----------|-------|--------|----------|----------|--|
| 10 | 11 | ACTIVE | N | SENDKEEP | Compaq Drive Array Logical drive has SHUTDOWN |
| 10 | 12 | ACTIVE | N | SENDKEEP | Compaq Drive Array Spare drive status: OTHER |
| 10 | 13 | ACTIVE | N | SENDKEEP | Compaq Drive Array Spare drive is INVALID |
| 10 | 14 | ACTIVE | N | SENDOPER | Compaq Drive Array Spare drive has FAILED |
| 10 | 15 | ACTIVE | N | SENDKEEP | Compaq Drive Array Spare drive has become INACTIVE |
| 10 | 16 | ACTIVE | N | SENDOPER | Compaq Drive Array Spare drive is BUILDING |
| 10 | 17 | ACTIVE | N | SENDOPER | Compaq Drive Array Spare drive is ACTIVE |
| 10 | 18 | ACTIVE | N | SENDOPER | Compaq Drive Array Physical drive status: OTHER |
| 10 | 19 | ACTIVE | N | SENDOPER | Compaq Drive Array Physical drive is OK |
| 10 | 20 | ACTIVE | N | SENDKEEP | Compaq Drive Array Spare drive has FAILED |
| 10 | 21 | ACTIVE | N | SENDKEEP | Compaq Drive Array Physical drive threshold has been EXCEEDED |
| 10 | 22 | ACTIVE | N | SENDKEEP | Compaq Drive Array Physical drive threshold is OK |
| 10 | 23 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache status: OTHER |
| 10 | 24 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache is INVALID |
| 10 | 25 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache is ENABLED |
| 10 | 26 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache is TEMPORARILY DISABLED |
| 10 | 27 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache is PERMANENTLY DISABLED |
| 10 | 28 | ACTIVE | N | SENDOPER | Compaq Array Accelerator Write Cache Battery status: OTHER |
| 10 | 29 | ACTIVE | N | SENDKEEP | Compaq Array Accelerator Write Cache Battery is OK, NO DATA LOSS |
| 10 | 30 | ACTIVE | N | SENDKEEP | Compaq Array Accelerator Write Cache Battery may have lost power, POSSIBLE DATA LOSS |
| 10 | 31 | ACTIVE | N | SENDOPER | Compaq 4MB Array Accelerator Write Cache Battery Failure status: OTHER |
| 10 | 32 | ACTIVE | N | SENDOPER | Compaq 4MB Array Accelerator Write Cache Battery Failure status is OK |
| 10 | 33 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache Battery Failure status is RECHARGING |
| 10 | 34 | ACTIVE | N | SENDKEEP | Compaq 4MB Array Accelerator Write Cache Battery Failure status has FAILED |

Figure 7-2. Message Action Summary Window

Message Action Example

Following is an example to illustrate how to enhance the message actions for Compaq specific messages. The example scenario includes a Compaq ProLiant server configured with a logical drive array of three physical drives. When one of the physical drives of this hypothetical system fails, the logical drive would change states from a ground state to a degraded state as the system recovers. In response to this event, the administrator would like to be paged to alert him/her to this event. To accomplish this, the following basic steps would be followed:

- From the Enterprise Management subsystem, select Messages to display the Compaq messages. Refer to Figure 7-3. Find the message that indicates the Logical Drive is recovering (a message indicating the physical drive failed could also have been used). Different sort options are available to sort this window by any column. For this example, sort by the message description, and select the message with the following description:

Compaq Logical Drive Array Status: RECOVERING

| Message id | Description | Domain Node | Domain User |
|--|---|-------------|-------------|
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*1* | Compaq Logical Drive Array Status: OTHER | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*10* | Compaq Logical Drive Array Status: OVERHEATING | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*6* | Compaq Logical Drive Array Status: READY FOR REBUILD | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*7* | Compaq Logical Drive Array Status: REBUILDING | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*5* | Compaq Logical Drive Array Status: RECOVERING | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*11* | Compaq Logical Drive Array Status: SHUTDOWN | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*4* | Compaq Logical Drive Array Status: UNCONFIGURED | | |
| *SNMPTRAP:****61****1.3.6.1.4.1.232.3.2.3.1.1.4.??*8* | Compaq Logical Drive Array Status: WRONG DRIVE | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*9* | Compaq Logical SCSI Drive Status(v1.0): BAD CONNECTION | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*3* | Compaq Logical SCSI Drive Status(v1.0): FAILED | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*2* | Compaq Logical SCSI Drive Status(v1.0): OK | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*1* | Compaq Logical SCSI Drive Status(v1.0): OTHER | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*6* | Compaq Logical SCSI Drive Status(v1.0): READY FOR REBUILD | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*7* | Compaq Logical SCSI Drive Status(v1.0): REBUILDING | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*5* | Compaq Logical SCSI Drive Status(v1.0): RECOVERING | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*4* | Compaq Logical SCSI Drive Status(v1.0): UNCONFIGURED | | |
| *SNMPTRAP:****62****1.3.6.1.4.1.232.5.2.3.1.1.5.??*8* | Compaq Logical SCSI Drive Status(v1.0): WRONG DRIVE | | |
| *SNMPTRAP:****65002****1.3.6.1.4.1.232.5.2.3.1.1.5.??*9* | Compaq Logical SCSI Drive Status(v2.0): BAD CONNECTION | | |
| *SNMPTRAP:****65002****1.3.6.1.4.1.232.5.2.3.1.1.5.??*3* | Compaq Logical SCSI Drive Status(v2.0): FAILED | | |
| *SNMPTRAP:****65002****1.3.6.1.4.1.232.5.2.3.1.1.5.??*2* | Compaq Logical SCSI Drive Status(v2.0): OK | | |
| *SNMPTRAP:****65002****1.3.6.1.4.1.232.5.2.3.1.1.5.??*1* | Compaq Logical SCSI Drive Status(v2.0): OTHER | | |

Double-click to set-up toolbar 10:45:47 AM

Figure 7-3. Message Record Window

- Select this message and open the Message Record Detail Window by double clicking on the message. (See Figure 7-4.)

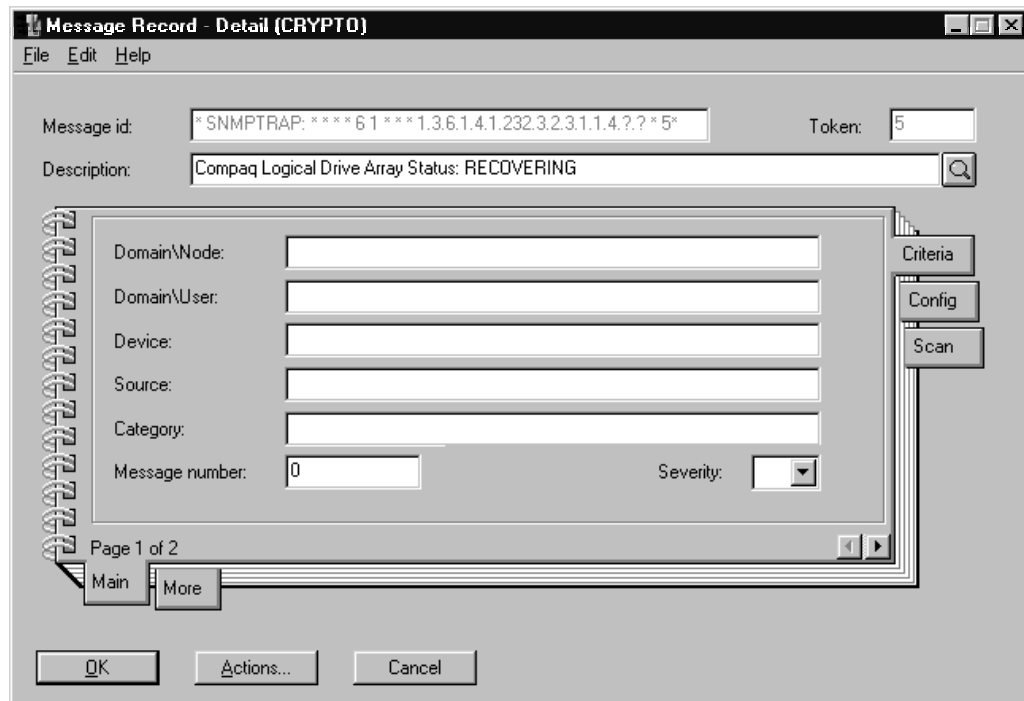


Figure 7-4. Message Record Detail Window

- From the Message Record Detail, select **Actions** to bring up the Message Action Summary for this message.

- From the menu bar select **Selected**, then **New** to define a new action. This brings up a new window, Message Record Action Detail. (See Figure 7-5.)

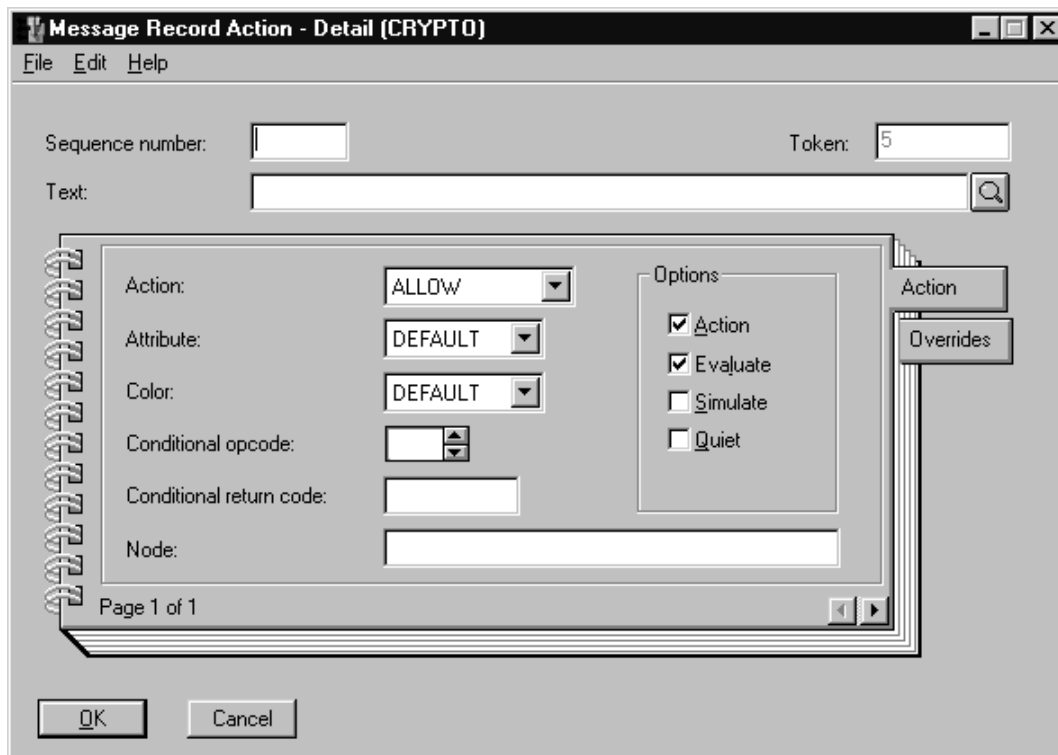
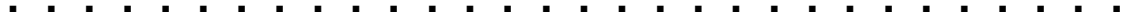


Figure 7-5. Message Record Action Detail Window

- On the Message Record Action Detail window, specify the action type to perform an administrator-specified program and then specify the program for Unicenter TNG to perform. In this example, since the administrator wishes to be paged when this event occurs, the paging software command would be entered on this window. There are many options that can be configured for this message action; the use of these options will vary depending on specific user requirements.
- Close all windows.



7-14 Management Solution Scenarios

These solutions just being to unveil the advantages of combining Computer Associates Unicenter TNG with Compaq Insight Manager. There are many issues an enterprise architect faces when putting together a solution to manage a complex environment end-to-end. Unicenter TNG is a very robust product suite; the addition of the integration with Compaq Insight Manager provides better management of the enterprise due to the advanced level of hardware management possible with Compaq systems.



Chapter 8

Distribution and Support

The TNG integration module for Compaq Insight Manager may be obtained in the U.S. by placing a call to Computer Associates (516) 342-4800.

Use this same number to get product support.

For ordering and support outside the U.S., contact your Computer Associates account representative.

Index

A

additional resources, 1-1
 Advanced Warning of Compaq Events,
 7-4
 agent view, 2-2, 2-3, 3-5
 alarms, 2-7, 2-8
 AutoDiscovery, 2-1, 6-1, 7-2

B

Business Process Views, 6-5, 7-3

C

Class definition for Unicenter TNG
 Repository, 5-5
 Color Mapping for Node View Status, 6-3
 Compaq
 Insight Management Agents, 2-1, 3-1,
 3-2, 5-3, 6-1, 6-2, 6-4, 6-8
 Insight Manager, 1-1, 2-1, 3-4, 4-1, 4-2,
 5-5, 6-1, 7-1
 Insight Manager components, 3-2
 Insight Manager console, 3-1
 Insight Manager Launch in context, 5-6
 Insight Manager objects, 6-2
 Management Information Base (MIB),
 2-4, 3-1, 3-3
 Professional Workstations, 4-1, 7-6, 7-7
 Servers, 7-3
 current statuses, 3-3

D

document conventions, 1-5
 disk requirement, 4-1

E

ELSA Video Graphics Card, 4-3
 enterprise management, 2-1
 enhancing TNG message actions, 7-1, 7-8

Event Browser, 2-8, 3-4, 6-4
 Event Management databases, 5-2
 Event Management Subsystem, 7-8

F

files, 2-6
 file systems, 2-5

H

hardware requirements, recommended, 4-1

I

Integration Feature Summary, 3-1
 Intelligent Drive Array, 3-1
 Installation and Integration, 5-1

L

Launching Compaq Insight Manager from
 TNG, 6-8
 Launching the Compaq Insight Manager
 Console, 7-4

M

maps, 2D and 3D, 2-2, 2-9, 6-6, 7-2
 memory, monitored, 2-7
 memory load, 2-7
 memory utilization, 2-7
 memory requirement, 4-1
 Microsoft
 NT Workstation 4.0, 4-1
 NT Server 4.0, 7-2, 7-8
 SQL Server, 4-1, 4-2, 4-4, 7-8
 Windows 95, 4-2
 Windows NT, 4-2
 monitor requirement, 4-1
 messages and message actions, 5-2
 Management Solution Scenarios, 7-1

N

Network Discovery, 2-1, 6-1
Node View, 2-2, 2-3, 2-7, 3-1, 3-3, 6-2,
7-5, 7-6
Node View Options, 6-3
Novell Netware, 4-2, 7-2
NT Event Log, 2-7
NT Registry, 2-7
NT System Agent, 2-5, 2-6

P

physical memory, 2-7
policy files, 3-3
policy definition for Agent status
detection, 5-3
polling, 6-1
pre-installation configuration, 4-3
pre-installation requirements, 4-1
printers, monitored, 2-7
processes, monitored, 2-6
processors, monitored, 2-7

R

recommended hardware requirements, 4-1
recommended software requirements, 4-1,
4-2

S

SCSI Storage System, 3-1
SCO Unix, 7-2
Server Health, 3-1
services, monitored, 2-6
SNMP trap messages, 2-5, 5-2
solution scenarios, 7-1
software requirements, recommended, 4-1,
4-2
success factors for a Unicenter TNG
console, 7-5
swap space, 2-7
system utilization, 3-1

T

thresholds, 2-5
TNG Integration Kit, 2-1, 7-1
TNG Maps, 6-2
TNG WorldView, 6-1

U

Unicenter TNG, 2-1, 4-1
Agent Technology Integration, 5-1, 5-3
Agent Works, 4-2
Enterprise Management Console, 2-1, 3-
4, 6-1
Enterprise Management, 4-2
Enterprise Management Integration, 5-1,
5-2
Integration Kit, 7-1, 7-2
Integration Module, 3-1
management suite, 1-1
message actions, enhancing, 7-1, 7-8
NT Agent, 6-2
Repository, 5-3, 6-1
WorldView, 4-2, 5-1, 5-5
Uninterruptible Power Supply, 3-1
unzipping the integration files, 5-1

V

Video Graphics Card requirement, 4-2

W

warnings, 2-8
