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HP Systems Insight Manager Agent

User Guide

1.6

VMC-Mxx

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VISUAL Message Center HP Systems Insight Manager Agent User Guide

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Appendix

How to Use this Guide

This chapter explains how to use Tango/04 User Guides and understand the typographical conventions used in all Tango/04 documentation.

Typographical Conventions

The following conventional terms, text formats, and symbols are used throughout Tango/04 printed documentation:

Convention	Description
Boldface	Commands, on-screen buttons and menu options.
Blue Italic	References and links to other sections in the manual or further documentation containing relevant information.
Italic	Text displayed on screen, or variables where the user must substitute their own details.
`Monospace`	Input commands such as System i commands or code, or text that users must type in.
UPPERCASE	Keyboard keys, such as CTRL for the Control key and F5 for the function key that is labeled F5.
	**Notes** and useful additional information.
	**Tips** and hints that will improve the users experience of working with this product.
	**Important** additional information that the user is strongly advised to note.
	**Warning** information. Failure to take note of this information could potentially lead to serious problems.

Chapter 1
Introduction

HP Systems Insight Manager ThinAgents check the errors produced in devices monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can start monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

Use the Health and Actions Wizard to create Health rules, configure actions to carry out and determine when and where to send Health event messages.

The HP Systems Insight Manager ThinAgents are part of VISUAL Message Center ThinkServer, a Tango/04 solution that enables companies to manage and control systems and applications, optimizing performance and reducing operating costs.

1.1 What you will find in this User Guide

This User Guide describes any variables that are pre-configured and the minimum configuration settings required to run the HP Systems Insight Manager ThinAgents. For a full description of VISUAL Message Center ThinkServer functionality see the *VISUAL Message Center ThinkServer User Guide*.

In this user guide you will find tables with variables that are specific to the HP Systems Insight Manager ThinAgents. You can use these variables to set Health conditions, configure actions, create templates, and send messages to the SmartConsole. There are also a number of generic variables available to all ThinAgents, which are described in the VISUAL Message Center ThinkServer User Guide.

Furthermore you will find a field map for each HP Systems Insight Manager ThinAgent describing the values as they appear in the SmartConsole and ThinkServer.

Chapter 2
Prerequisites

Before using the HP Systems Insight Manager ThinAgents with VISUAL Message Center it is important to first ensure that HP Insight Manager is correctly installed and Windows components are configured on the server. The following steps will explain how to do this.

To install Insight Manager:

Step 1. Install the program from disk.

Insert the HP Management CD into the drive.

Note
If the Installation program does not appear automatically, then double-click the `AUTORUN.EXE` file to manually begin the process.

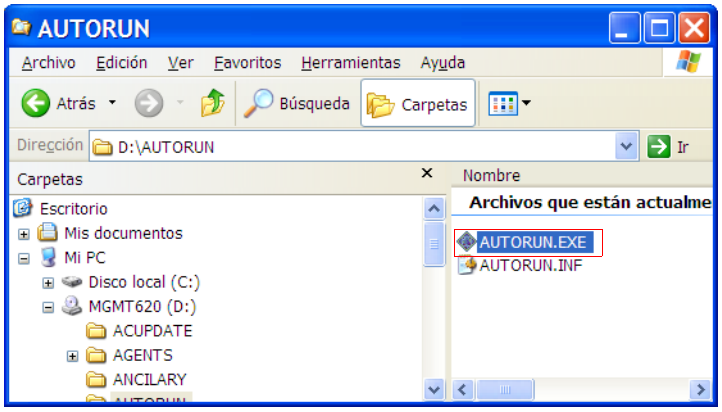

Figure 1 – Double-click the AUTORUN.EXE file to manually begin the process

The initial installation screen appears. Click the **Install software** option in the left column.

Figure 2 – Install the software

Step 2. Click **Install** next to the *Management Agents For Windows* option.

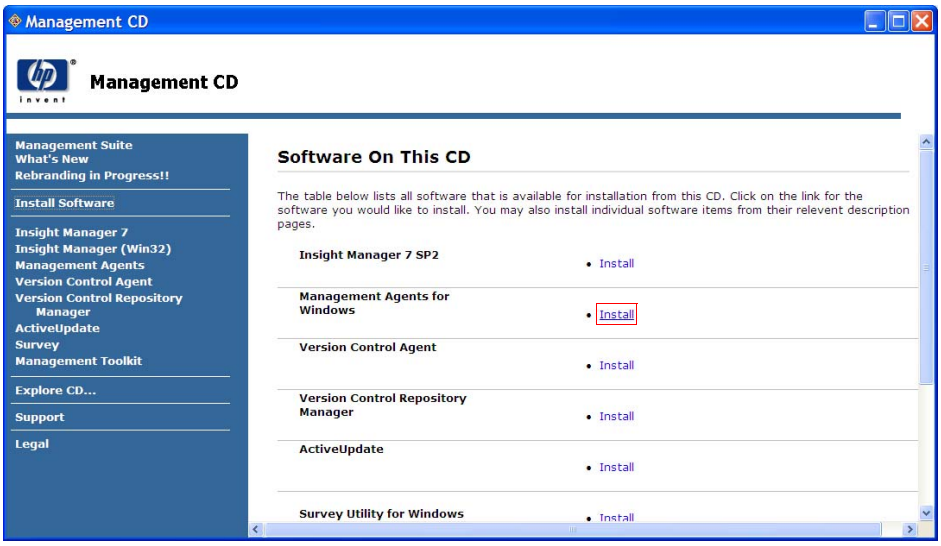

Figure 3 – Install Management Agents For Windows

Step 3. Select the **Express** check box and click **Next** and follow the instructions.

Note

The process may request that the server is restarted.

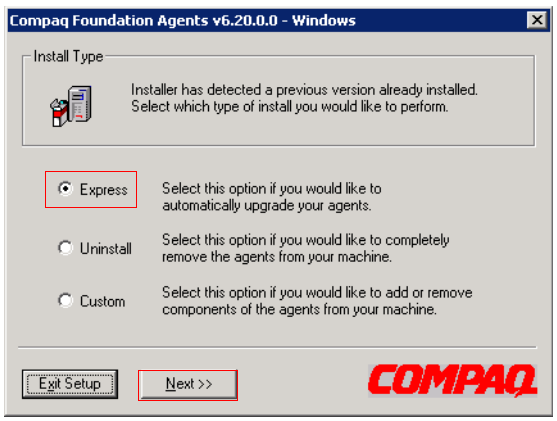

Figure 4 – Select the Express installation option

To configure the necessary Windows Components:

Step 1. After HP Insight Manager has correctly installed, Windows Components on the server need to be configured to work with VISUAL Message Center.

Open the **Control Panel** and double-click **Add/Remove Programs**.

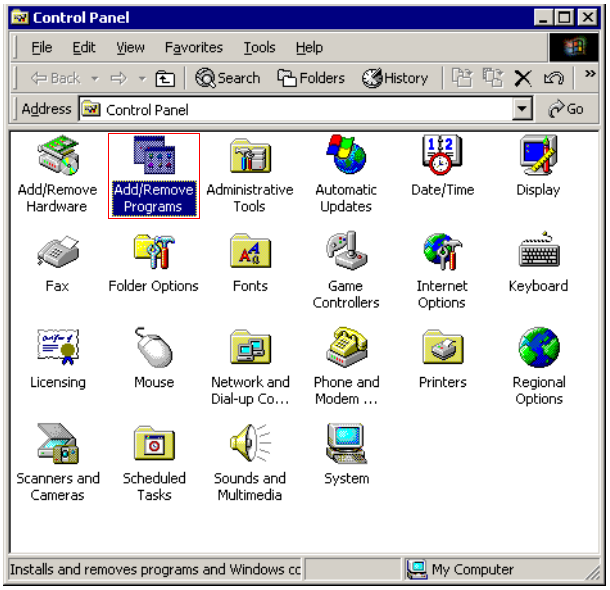

Figure 5 – Open the Control Panel and double-click Add/Remove Programs

Step 2. Click **Add/Remove Windows Components** in the left column.

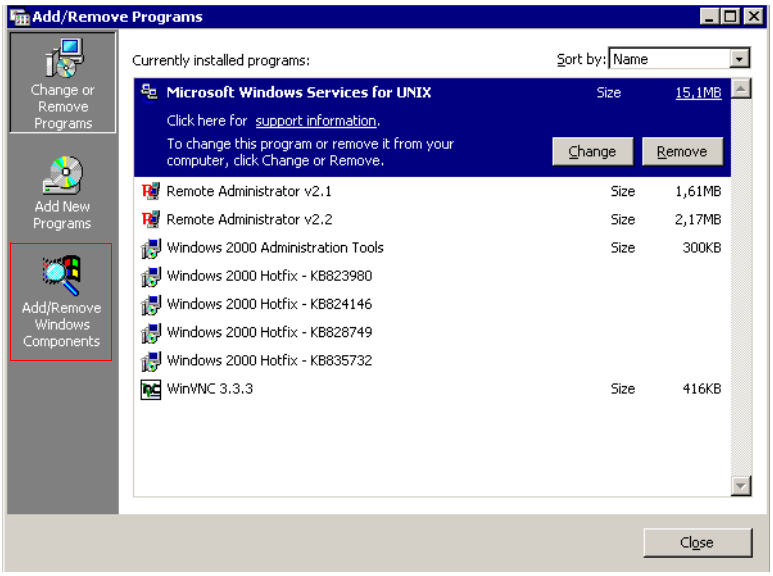

Figure 6 – Click Add/Remove Windows Components

Step 3. Select **Management and Monitoring Tools** in the list of Windows Components and click the **Details…** button.

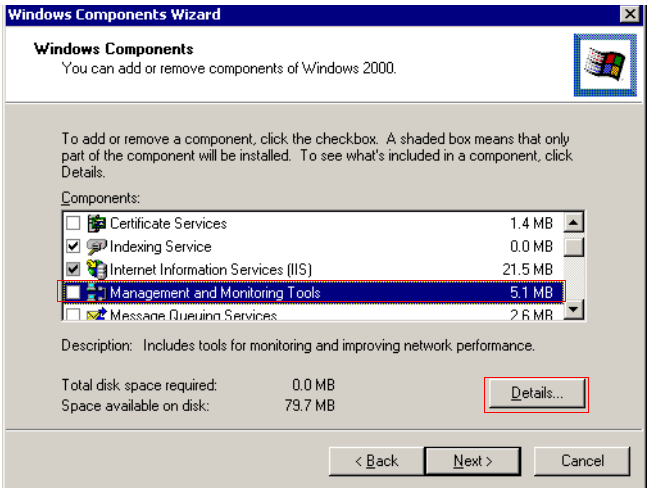

Figure 7 – Select Management and Monitoring Tools and click the Details button

Step 4. Select the **Simple Network Management Protocol** check box and click **OK**.

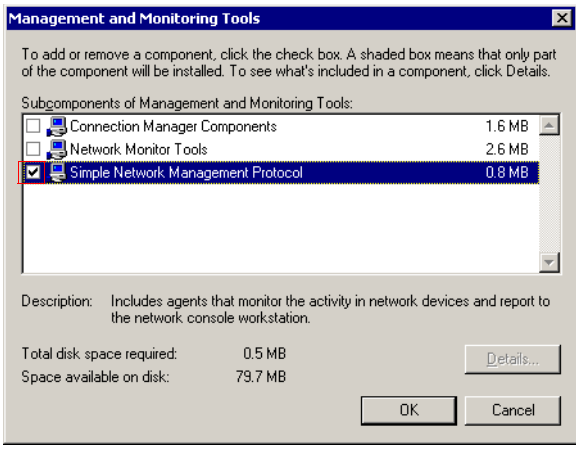

Figure 8 – Select the Simple Network Management Protocol check box

Click **Next** to continue with the installation.

Figure 9 – Click Next to continue once the Windows components have been selected

Step 5. The installation program may need some files from the *Windows CD*. In this case. insert the disk into the drive and select the *correct path* in the Copy files from field, or click **Browse** to navigate to the files required.

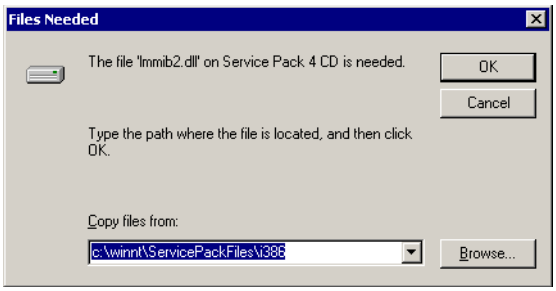

Figure 10 – Enter the correct path for the required files

Step 6. Once the installation has finished, the new SNMP service will appear in the services list.

Note

The process may request that the server is restarted.

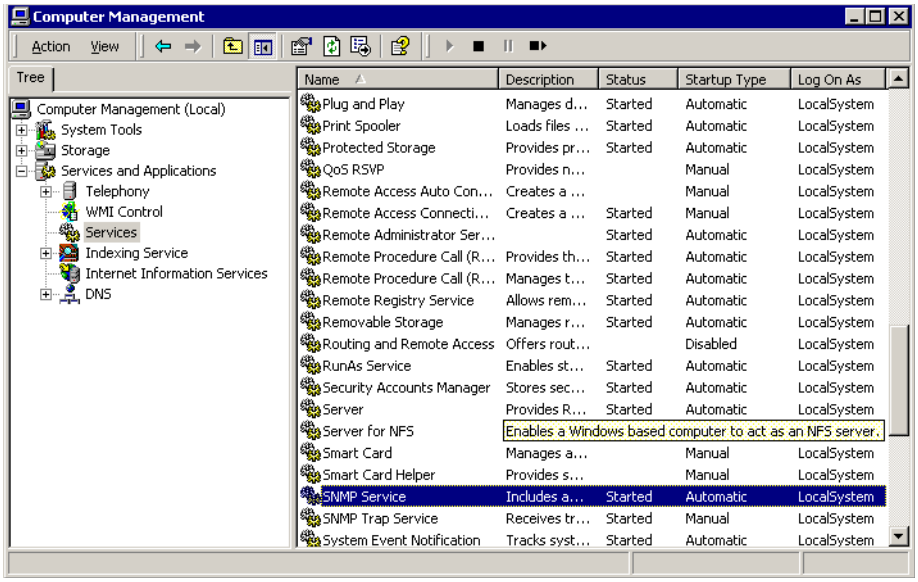

Figure 11 – SNMP Service in the Services list

Chapter 3
Common Configuration

3.1 Data Source

HP Insight Manager ThinAgents use a shared data source, this means that any changes made to the data source have immediate effect on all monitors connected to the data source.

3.1.1 General Settings

Configuration Variables & Values		Description
Refresh time	**180 seconds**	The data source will refresh the data state every 60 seconds
Number of tries	**2**	If we detect an error we determine that we will retry two times
Interval between tries	**10 seconds**	...and that we will retry after 10 seconds
Error retry time	**180 seconds**	In the case that errors exceed the number specified in Number of Tries (in this case more than 2 times), we will use this interval instead of the Refresh time before starting the cycle again
IPAddress/Host	**127.0.0.1**	IP Address or alias of the device
Description	**Localhost**	Description of the device
Port	**161**	Default SNMP port
Time out	**60**	Maximum amount of time we will wait to refresh the data state. The refresh will fail if the refresh cannot be completed within 1 minute
SNMP Version	**v1**	Device's SNMP version

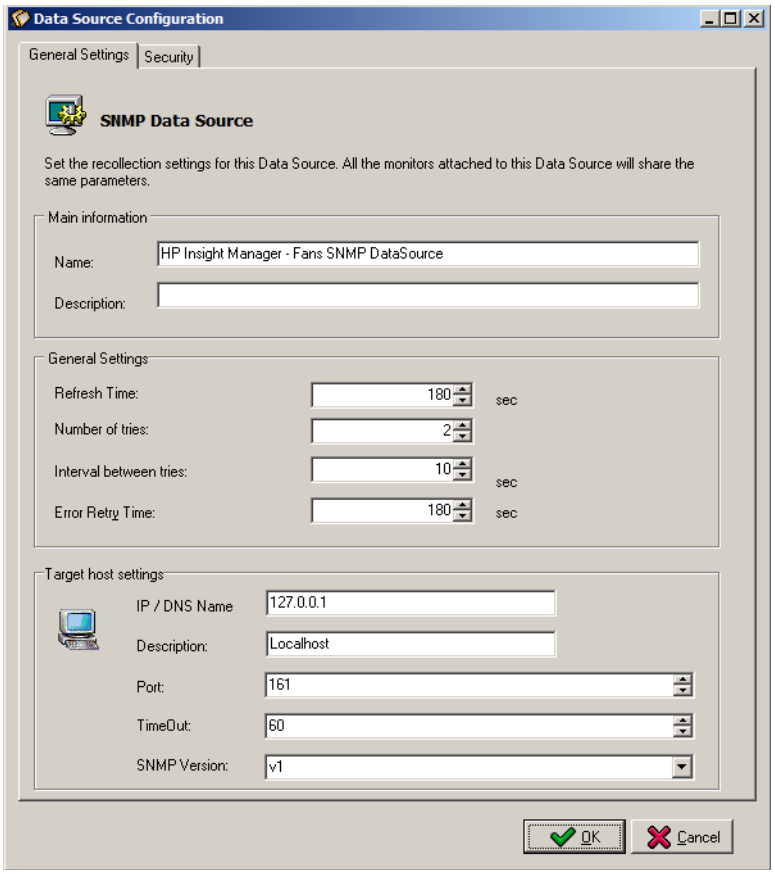

Figure 12 – Data source configuration - General Settings tab

3.1.2 Security Settings

Default configuration of the Security tab is the same for all SNMP data sources. Security settings differ depending on the SNMP version.

SNMP v1 and v2c

For *SNMP v1* and *v2c* it is only necessary to set the community to public to get read-only access to the SNMP data.

Configuration Variables & Values		Description
Community	**public**	Read only access to the SNMP data

SNMP v3

SNMP v3 offers more elaborate security. Three levels of security exist in SNMP v3 and SNMP Messages can be sent

- Not authenticated - `NoAuthNoPriv`
- Authenticated - `authNoPriv`
- Encrypted - `authPriv`

By default SNMP ThinAgents are configured to the lowest security level: `NoAuthNoPriv`.

Configuration Variables & Values		Description
Security Level	**NoAuthNoPriv**	Lowest security level (not authenticated, not private data)
Security Name		User name

SNMP v3 uses two authentication protocols:

- MD5.
- SHA

When using authentication in SNMPv3 the message is signed with a user Key. To read the message you must first select the appropriate protocol, then add the pass phrase which should contain at least 8 characters.

Configuration Variables & Values		Description
Authentication protocol	**None**	Not using any authentication. You can select the protocols MD5 and SHA.
Authentication pass phrase		Should be at least 8 characters

Privacy (encryption) in SNMP v3 works by encrypting data with a user Key. The default configuration of the privacy protocol is DES.

Configuration Variables & Values		Description
Privacy protocol	**DES**	Encription algorithm
Privacy Key		Private key

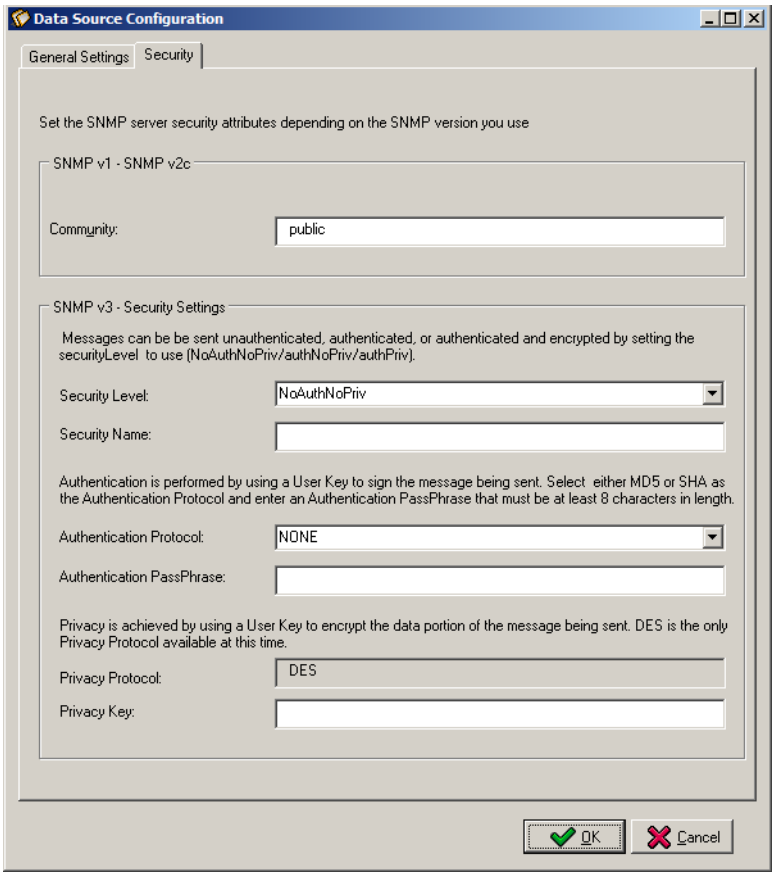

Figure 13 – Data source configuration - Security tab

Chapter 4
HP Insight Manager ThinAgents

4.1 HP SIM - Fans

HP SIM - Fans checks the errors produced in the fans monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.1.1 Default Health conditions

The HP SIM - Fans ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetrievalOK and VSMEventHasData and (cpqHeThermalFanStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the fan status is other than 2.
Minor if	`(not VSMDataRetrievalOK) or (not VSMEventHasData)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

However you can add, edit or remove Health conditions and actions as required.

4.1.2 Default messages

This ThinAgent generates multiple events for each data collection. It sends a message for each network interface and a global message for the recollection.

The information that is stored for each network interface is defined in the advanced tab in the post-health actions script. The script can be adjusted to your environment using Python scripting language.

For the global event message this ThinAgent uses templates. Click **Edit Templates** to see the available message templates.

4.1.3 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqHeThermalFanIndex	A number that uniquely specifies this fan description.
cpqHeThermalFanRequired	This specifies if the fan described is required for proper operation of the system
cpqHeThermalFanPresent	This specifies if the fan described is present in the system
cpqHeThermalFanCpuFan	This specifies if the described fan is intended specifically to cool the CPU(s)
cpqHeThermalFanStatus	This specifies if the fan described is operating properly. This value will be one of the following: `other(1)` - Fan status detection is not supported by this system or driver. `ok(2)` - The fan is operating properly. `failed(4)` - The fan is not operating properly.

4.1.4 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and then select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDevice-Count`	Number of devices with critical status
Var06	`CriticalDeviceL-ist`	Names of the devices with critical status

4.2 HP SIM - Logical Disk

HP SIM - Logical Disk checks for errors that are produced in any logical disk that is monitored by HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.2.1 Default Health conditions

The HP SIM - Logical Disk ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetrievalOK and VSMEventHasData and (cpqDaLogDrvStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the disk status is other than 2.
Minor if	`(not VSMDataRetrievalOK) or (not VSMEventHasData)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

However you can add, edit or remove Health conditions and actions as required.

4.2.2 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqDaLogDrvCntlrIndex	The *Drive Array Logical Drive Controller Index* maps the logical drives into their respective controllers. Controller index 'i' under the controller group owns the associated drives in the logical drive group which use that index.
cpqDaLogDrvIndex	The *Drive Array Logical Drive Index* is a logical drive number that keeps track of multiple instances of logical drives which are on the same controller. For each controller index value, the logical drive index starts at 1 and increments for each logical drive.

Variable	Description
cpqDaLogDrvFaultTol	The *Logical Drive Fault Tolerance* shows the fault tolerance mode of the logical drive. To change the fault tolerance mode, run the Compaq EISA Configuration Utility. The following values are valid for the Logical Drive Fault Tolerance: `None(2)` - Fault tolerance is not enabled. If a physical drive reports an error, the data cannot be recovered by the Compaq Drive Array Controller. `Mirroring(3)` - For each physical drive, there is a second physical drive containing identical data. If a drive fails, the data can be retrieved from the mirror drive. `Data Guard(4)` - One of the physical drives is used as a data guard drive and contains the exclusive OR of the data on the remaining drives. If a failure is detected, the Compaq Drive Array Controller rebuilds the data using the data guard information plus information from the other drives. `Distributed Data Guard(5)` - Distributed Data Guarding, sometimes referred to as RAID 5, is similar to Data Guarding, but instead of storing the parity information on one drive, the information is distributed across all of the drives. If a failure is detected, the Compaq Drive Array Controller rebuilds the data using the data guard information from all the drives. `Advanced Data Guarding(7)` - Advanced Data Guarding (RAID ADG) is the fault tolerance method that provides the highest level of data protection. It 'stripes' data and parity across all the physical drives in the configuration to ensure the uninterrupted availability of uncorrupted data. This fault-tolerance method is similar to distributed data guard (RAID 5) in that parity data is distributed across all drives in the array, except in RAID ADG the capacity of multiple drives is used to store parity data. Assuming the capacity of 2 drives is used for parity data, this allows continued operation despite simultaneous failure of any 2 drives in the array, whereas RAID 4 and RAID 5 can only sustain failure of a single drive.

Variable	Description
cpqDaLogDrvStatus	*Logical Drive Status*. The logical drive can be in one of the following states: `Ok(2)` - Indicates that the logical drive is in normal operation mode. `Failed(3)` - Indicates that more physical drives have failed than the fault tolerance mode of the logical drive can handle without data loss. `Unconfigured(4)` - Indicates that the logical drive is not configured. `Recovering(5)` - Indicates that the logical drive is using Interim Recovery Mode. In Interim Recovery Mode, at least one physical drive has failed, but the logical drive's fault tolerance mode lets the drive continue to operate with no data loss. `Ready Rebuild(6)` - Indicates that the logical drive is ready for Automatic Data Recovery. The physical drive that failed has been replaced, but the logical drive is still operating in Interim Recovery Mode. `Rebuilding(7)` - Indicates that the logical drive is currently doing Automatic Data Recovery. During Automatic Data Recovery, fault tolerance algorithms restore data to the replacement drive. `Wrong Drive(8)` - Indicates that the wrong physical drive was replaced after a physical drive failure. `Bad Connect(9)` - Indicates that a physical drive is not responding. `Overheating(10)` - Indicates that the drive array enclosure that contains the logical drive is overheating. The drive array is still functioning, but should be shutdown. `Shutdown(11)` - Indicates that the drive array enclosure that contains the logical drive has overheated. The logical drive is no longer functioning. `Expanding(12)` - Indicates that the logical drive is currently doing Automatic Data Expansion. During Automatic Data Expansion, fault tolerance algorithms redistribute logical drive data to the newly added physical drive. `Not Available(13)` - Indicates that the logical drive is currently unavailable. If a logical drive is expanding and the new configuration frees additional disk space, this free space can be configured into another logical volume. If this is done, the new volume will be set to not available. `Queued For Expansion(14)` - Indicates that the logical drive is ready for Automatic Data Expansion. The logical drive is in the queue for expansion.

Variable	Description
cpqDaLogDrvAutoRel	*Compaq Array Controller Logical Drive Auto-Reliability Delay* indicates how many seconds the logical drive will wait with no requests before beginning Auto-Reliability monitoring. For example, the default value is `5`, so the logical drive will begin Auto-Reliability monitoring if it receives no requests for five seconds. If the value is zero, the logical drive will not perform Auto-Reliability monitoring. Auto-Reliability only operates if the logical drive is configured in one of the fault tolerance modes. If the logical drive receives a request while performing Auto-Reliability monitoring, the drive will stop monitoring to process the request. Once it has satisfied all incoming requests, the drive will wait for the Auto-Reliability delay to expire before returning to Auto-Reliability monitoring. Auto-Reliability monitoring is a process to insure the highest level of data reliability. In this process each disk is scanned to verify that all of the sectors in the drive array are readable. If the Auto-Reliability monitoring process detects any bad sectors on the drives, it automatically remaps these bad sectors where possible.
cpqDaLogDrvRebuildBlks	*Logical Drive Rebuild Blocks Remaining.* After a failed physical drive has been replaced, the physical drive must have its data rebuilt. This value shows how many blocks of data still need to be rebuilt. When the value reaches zero, the rebuilding process is complete. The drive array continues to operate in interim recovery mode while a drive is rebuilding. When a logical volume is Expanding, the drive must redistribute the logical volume data across the physical drives. This value shows how many blocks of data still need to be redistributed.When the value reaches zero, the expand process is complete. The drive array continues to operate normally while the drive is expanding. *This value is only valid if the Logical Drive Status is* `rebuilding(7)` *or* `expanding(12)`
cpqDaLogDrvHasAccel	*Logical Drive Has Array Accelerator Board* indicates whether the logical drive has an Array Accelerator board configured and enabled. The following values are valid: `Other(1)` - Indicates that the instrument agent does not recognize the Array Accelerator board. You may need to upgrade your software. `Unavailable(2)` - Indicates that there is no Array Accelerator board configured for this logical drive. `Enabled(3)` - Indicates that the Array Accelerator board is configured and enabled for this logical drive. Run the Compaq EISA Configuration Utility to change this value. `Disabled(4)` - Indicates that the Array Accelerator board is configured but not enabled for this logical drive. Run the Compaq EISA Configuration Utility to change this value.

Variable	Description
cpqDaLogDrvAvailSpares	*Drive Array Logical Drive Available Spares* indicates if this logical drive has one or more spares designated for it that are not currently in use by another drive. Each octet present will be a physical drive ID that is an available spare for this logical drive. These are the same ID's which can be used as indexes into the physical drive table. An octet string of length zero indicates that there are no available spares for this logical drive.
cpqDaLogDrvSize	*Logical Drive Size* is the size of the logical drive in megabytes. This value is calculated using the value 1,048,576 (2^20) as a megabyte. Drive manufacturers sometimes use the number 1,000,000 as a megabyte when giving drive capacities so this value may differ from the advertised size of a drive.
cpqDaLogDrvPhyDrvIDs	*Drive Array Logical Drive Physical Drive IDs* lists the physical drive IDs which are associated with this logical drive. These are the same IDs which can be used as indices into the physical drive table. Each byte of the string is an index
cpqDaLogDrvCondition	The *Logical Drive condition* represents the overall condition of this logical drive and any associated physical drives.
cpqDaLogDrvPercentRebuild	*Logical Drive Percent Rebuild.* After a failed physical drive has been replaced, the physical drive must have its data rebuilt. This value is the percent complete of the rebuild. When the value reaches 100, the rebuilding process is complete. The drive array continues to operate in interim recovery mode while a drive is rebuilding. When a logical volume is Expanding, the drive must redistribute the logical volume data across the physical drives. This value shows how many blocks of data still need to be redistributed. When the value reaches one hundred (100), the expand process is complete. The array continues to operate normally while the drive is expanding. *This value is only valid if the Logical Drive Status is rebuilding (7) or expanding (12).* If the value cannot be determined or a rebuild is not active, the value is set to 4,294,967,295.
cpqDaLogDrvStripeSize	*Logical Drive Stripe Size* is the size of a logical drive stripe in kilobytes.
cpqDaLogDrvOsName	*Logical Drive OS Name* indicates the OS name for this array logical drive. This field will be a null (size 0) string if the agent does not support OS name.

4.2.3 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDevice-Count`	Number of devices with critical status
Var06	`CriticalDeviceL-ist`	Names of the devices with critical status

4.3 HP SIM - Memory Module

HP SIM - Memory Module checks the errors produced in the memory modules monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.3.1 Default Health conditions

The HP SIM - Memory Module ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetriev-alOK and VSMEven-tHasData and (cpqHeResMemMod-uleStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the memory module status is other than `2`.
Minor if	`(not VSMDataRe-trievalOK) or (not VSMEventHas-Data)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

However you can add, edit or remove Health conditions and actions as required.

4.3.2 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqHeResMemBoardIndex	The slot in which the memory board or cartridge is installed. A value of `0` indicates memory installed directly on the system board.
cpqHeResMemModuleIndex	The memory module number.
cpqHeResMemModuleSparePartNo	The memory module's manufacturer part number. This field will be a null (size 0) string if the manufacturer part number is not available.
cpqHeResMemModuleCondition	This provides the current status of the correctable memory errors for this memory module. The following status values are supported: `other(1)` - ECC is not supported on this memory module or the condition could not be determined. `ok(2)` - The memory module is operating normally. `degraded(3)` - The memory module is correctable error count has exceeded threshold or a configuration error has been detected
cpqHeResMemModuleStatus	This provides the current status of the correctable memory errors for this memory module. The following status values are supported: `other(1)` - The status is unknown or could not be determined. `notPresent(2)` - The memory module is not present or is un-initialized. `present(3)` - The memory module is present but not in use. `good(4)` - The memory module is present and in use. The corrected error threshold has not been exceeded. `add(5)` - The memory module has been added, but is not yet in use. `upgraded(6)` - The memory module has been upgraded, but the memory is not yet in use. `missing(7)` - An expected memory module is missing. `doesNotMatch(8)` - The memory module does not match the other memory modules within the bank. `notSupported(9)` - The memory module is not supported. `badConfig(10)` - The memory module violates the add/upgrade configuration rules. `degraded(11)` - The memory module's correctable error count has exceeded threshold.
cpqHeResMemModuleSpd	This is the raw Serial Presence Detect information contained in the memory module. If the SPD information is not available, this item will be empty.

4.3.3 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDevice-Count`	Number of devices with critical status
Var06	`CriticalDeviceL-ist`	Names of the devices with critical status

4.4 HP SIM - Network Interfaces

HP SIM - Network Interfaces checks the errors produced in the network adapters monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.4.1 Default Health conditions

The HP SIM - Network Interfaces ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetriev-alOK and VSMEven-tHasData and (cpqNicIfPhys-AdapterStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the Network Interface status is other than 2.
Minor if	`(not VSMDataRe-trievalOK) or (not VSMEventHas-Data)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

Remember that you can add, edit or remove Health conditions and actions as required.

4.4.2 Default messages

This ThinAgent generates multiple events for each data collection. It sends a message for each network interface and a global message for the recollection.

The information that is stored for each network interface is defined in the advanced tab in the post-health actions script. The script can be adjusted to your environment using Python scripting language.

For the global event message this ThinAgent uses templates. Click **Edit Templates** to see the available message templates. For example the critical message template reads:

```
There were &CriticalDevicesCount network adapters in error state:
&CriticalDevicesList
```

4.4.3 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the VISUAL Message Center ThinkServer User Guide.

Variable	Description
cpqNicIfPhysAdapterIndex	An index that uniquely specifies this entry.
cpqNicIfPhysAdapterIfNumber	An `OCTET STRING` representing an array of MIB II Interface Numbers implemented by this physical adapter. Each entry is a 32-bit value, represented by 4 octets in LSB...MSB (Little-Endian) order. There may be 0 or more Interface Numbers on a particular physical adapter, depending on the operating system's assignment of Interface Numbers. There is also an Interface Number field in the `cpqNicIfLogMapTable` which may contain one or more Interface Numbers. For logical adapters with one Physical Adapter, the same Interface Number(s) appear in both tables.

Variable	Description
cpqNicIfPhysAdapterRole	The role this physical adapter has in the logical group. The following values are valid: `unknown(1)` - The role of the adapter could not be determined. This indicates a problem with the instrument agent. A new agent may need to be installed. `primary(2)` - The adapter is the primary adapter in the group, or the group consists of a single adapter. The primary adapter in a Single Pair or NFT group handles all the network traffic unless it fails. The primary adapter in an ALB group receives all traffic. The physical address of this adapter is the default address of the group. In a FEC group, an arbitrary adapter is designated as primary, but all adapters are equal and participate fully on the network. `secondary(3)` - In Single Pair and NFT groups, this adapter functions as a hot standby. No network traffic is handled by this adapter other than periodic test packets. In an ALB group, this adapter is in a secondary role and transmits packets to increase bandwidth. In an FEC group, this adapter participates fully in network traffic. `member(4)` - The adapter is a member of a Switch Assisted Load Balancing Team. The adapter participates fully in network traffic.The slot in which the memory board or cartridge is installed. A value of 0 indicates memory installed directly on the system board.The memory module number.
cpqNicIfPhysAdapterMACAddress	The physical (MAC) address of the adapter. In some configurations this may be a null length octet string.
cpqNicIfPhysAdapterSlot	The number of the slot containing the physical hardware that implements this interface. The number `zero (0)` indicates an embedded interface (on the system board). A value of `-1` indicates an interface whose slot is unknown. Values may be `unknown` if the physical hardware has not been configured using the System Configuration Utility
cpqNicIfPhysAdapterIoAddr	The base I/O address of the physical adapter. The number zero (0) indicates that the device does not use I/O mapped addresses or this information is unavailable
cpqNicIfPhysAdapterIrq	The number of the IRQ (interrupt) used for this physical hardware interface. The number zero (0) indicates that this device does not use an IRQ or this information is unavailable
cpqNicIfPhysAdapterDma	The number of the DMA channel used for this physical hardware interface. The number -1 indicates that this device does not use a DMA channel or this information is unavailable
cpqNicIfPhysAdapterMemAddr	The base memory address used by this physical hardware interface. The number zero (0) indicates that this device does not use system memory or this information is unavailable.

Variable	Description
cpqNicIfPhysAdapterPort	The port number of the interface for multi-port NICs. A port number of `-1` indicates that the port could not be determined
cpqNicIfPhysAdapterDuplexState	This variable describes the current duplex state of the adapter. A value of unknown indicates that the duplex state could not be determined
cpqNicIfPhysAdapterCondition	The condition of this physical adapter. This value is driven by the `cpqNicIfPhysAdapterStatus` object as follows: `other(1)` - Indicates that the value of the Physical Adapter Status is `unknown(1)`. `ok(2)` - Indicates that the value of the Physical Adapter Status is `ok(2)`. `degraded(3)` - Defined for all condition variables, but is not applicable for single adapters. `failed(4)` - Indicates that the value of the Physical Adapter Status is `generalFailure(4)` or `linkFailure(5)`.
cpqNicIfPhysAdapterState	The fault tolerant state of this adapter. Although this value is valid for adapters that are not part of a fault tolerant group, it only provides additional information when the adapter participates in a group. The following values are valid: `unknown(1)` - The fault tolerant state could not be determined. The instrument agent may need to be upgraded. `active(2)` - The adapter is actively participating in the network. This state is displayed for adapters that are not part of a fault tolerant group and for adapters in a fault tolerant group that are not in the standby state. `standby(3)` - The adapter is ready to assume network activity in case of a failure of the active adapter. `failed(4)` - The adapter has failed and cannot participate on the network.
cpqNicIfPhysAdapterStatus	The physical adapter status. The following values are valid: `unknown(1)` - The instrument agent was not able to determine the status of the adapter. The instrument agent may need to be upgraded. `ok(2)` - The physical adapter is operating properly. `generalFailure(3)` - The physical adapter has failed. `linkFailure(4)` - The physical adapter has lost link. Check the cable connections to this adapter.
cpqNicIfPhysAdapterStatsValid	This value indicates whether the following statistics in the table are accurate. Some adapters may not be able to report the statistics accurately, and the statistics should not be reported for these adapters. The following values are valid: `true(1)` - The statistics are accurate. `false(2)` - The statistics are not accurate and should not be used.
cpqNicIfPhysAdapterGoodTransmits	A count of frames successfully transmitted by the physical adapter

Variable	Description
cpqNicIfPhysAdapterGoodReceives	A count of frames successfully received by the physical adapter
cpqNicIfPhysAdapterBadTransmits	A count of frames that were not transmitted by the adapter because of an error. This counter is the sum of MIB items `cpqNicIfPhysAdapterDeferredTransmissions` `cpqNicIfPhysAdapterLateCollisions`, `cpqNicIfPhysAdapterExcessiveCollisions`, `cpqNicIfPhysAdapterCarrierSenseErrors`, and `cpqNicIfPhysAdapterInternalMacTransmitErrors`. If this counter increments frequently, check the more detailed error statistics and take appropriate action.
cpqNicIfPhysAdapterBadReceives	A count of frames that were received by the adapter but which had an error. This counter is the sum of mib items `cpqNicIfPhysAdapterAlignmentErrors`, `cpqNicIfPhysAdapterFCSErrors`, `cpqNicIfPhysAdapterFrameTooLongs`, and `cpqNicIfPhysAdapterInternalMacReceiveErrors`. If this counter increments frequently, check the more detailed error statistics and take appropriate action.

Variable	Description
cpqNicIfPhysAdapterAlignmentErrors	A count of frames received on a particular interface that are not an integral number of octets in length and do not pass the FCS check. The alignment of a frame is checked by the receiver after the packet has failed the Cyclical Redundancy Check (CRC). Misaligned packets do not end on an 8-bit boundary. All packets contain a set number of bytes and must end after a defined number of bytes. Packets that do not end on a byte boundary fail the alignment check. Faulty components may be the cause of alignment errors. Check the following: *Segment too long*: Nodes at the far end of the cabling system transmit, unaware that a station at the other end has already gained control of the medium by transmitting the first 64 bytes of a frame. *Failing cable*: Packet data traveling through shorted or damaged cabling may become corrupt before reaching the destination station. Segment not grounded properly: Improper grounding of a segment may allow ground-induced noise to corrupt data flow. *Improper termination*: If a cable segment is not properly terminated, allowing the signal to be absorbed upon reaching the end of the segment, a partial signal will bounce back and collide with existing signals. *Noisy cable*: Interference or noise produced by motors or other devices can distort the signals and cause CRC/Alignment errors. *Deaf/partially deaf node*: A faulty station that cannot hear the activity is considered a deaf node. If you suspect a deaf node, replace the NIC. *Failing repeater, transceiver, or controller*: Repeaters, transceivers, and controllers can disrupt the network signal, transmit erroneous signals on the wire, or ignore incoming packets. Perform the following steps: 1. If your NIC is continuously transmitting, it causes erroneous signals, or 'jabber'. Replace a jabbering transmitter to ensure proper network performance. 2. Check your hub or switch. This component may be at fault. Use the diagnostics from the component manufacturer to help you determine if a problem exists

Variable	Description
cpqNicIfPhysAdapterFCSErrors	A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check. Faulty components may be the cause of FCS errors. Check the following: *Segment too long*: Nodes at the far end of the cabling system transmit, unaware that a station at the other end has already gained control of the medium by transmitting the first 64 bytes of a frame. *Failing cable*: Packet data traveling through shorted or damaged cabling may become corrupt before reaching the destination station. *Segment not grounded properly*: Improper grounding of a segment may allow ground-induced noise to corrupt data flow. *Improper termination*: If a cable segment is not properly terminated, allowing the signal to be absorbed upon reaching the end of the segment, a partial signal will bounce back and collide with existing signals. *Noisy cable*: Interference or noise produced by motors or other devices can distort the signals and cause CRC/Alignment errors. *Deaf/partially deaf node*: A faulty station that cannot hear the activity is considered a deaf node. If you suspect a deaf node, replace the NIC. *Failing repeater, transceiver, or controller*: Repeaters, transceivers, and controllers can disrupt the network signal, transmit erroneous signals on the wire, or ignore incoming packets. Perform the following steps: 1. If your NIC is continuously transmitting, it causes erroneous signals, or 'jabber'. Replace a jabbering transmitter to ensure proper network performance. 2. Check your hub or switch. This component may be at fault. Use the diagnostics from the component manufacturer to help you determine if a problem exists.
cpqNicIfPhysAdapterSingleCollisionFrames	The number of single collision packets is a counter containing the number of packets that are involved in a single collision and are subsequently transmitted successfully. These errors show that the network has light to moderate traffic. If single collisions become more frequent, the count for multiple collisions escalates.
cpqNicIfPhysAdapterMultipleCollisionFrames	The number of multiple collision packets: This counter contains the number of packets that are involved in multiple collisions and are subsequently transmitted successfully. These errors mean that the network is experiencing moderate to heavy traffic. If multiple collisions become more frequent, the count for excessive collisions escalates.

Variable	Description
cpqNicIfPhysAdapterDeferredTransmissions	The number of packets deferred before transmission: This counter contains the number of packets whose transmission was delayed on its first attempt because the medium was busy. Packets involved in any collisions are not counted. Frames that wait before transmission are counted. This statistic will be incremented often during normal operation on a busy network. Deferred transmissions occur when the network is extremely busy; so busy that the NIC did not try to transmit. High counts of multiple collisions and excessive collisions also occur. Deferred transmissions indicate that this segment of the LAN is overcrowded. Reduce the traffic by reorganizing the LAN. For example, if you have 100 stations on one Ethernet bus, break it into two Ethernet segments by adding a NIC to your server. In this way you can balance the load by putting 50 stations on one segment and 50 on the other. If a few isolated stations create the traffic, put them on a separate segment.
cpqNicIfPhysAdapterLateCollisions	Late collisions may be a symptom of cabling problems. A late collision is one that occurred 64 bytes or more into the packet. Late collisions may be an indication that a segment is longer than allowed by the wiring specifications. A station will believe it has control of the cable segment if it has already transmitted 64 bytes. If another node at the far end of the segment has not yet seen the packet, and transmits, this packet will collide with the first transmission after the first 64 bytes have been sent. Ensure that your segment length does not exceed the maximum length allowed. Because the location of cabling problems can be very difficult to detect on an Ethernet network, you may want to 'shorten' an Ethernet segment (remove portions of the network to isolate problems) until the problems are no longer seen, and then expand the network until the problem recurs. If this counter increments quickly in a short period of time, it may mean that the network card is running in half duplex mode, but your hub or switch port is configured for full duplex mode. Compare your network card's configuration with the port's configuration. Late collisions are also incuded in other collision-related statistics.

Variable	Description
cpqNicIfPhysAdapterExcessiveCollisions	The number of packets aborted during transmission due to excessive collisions contains the number of packets that, due to excessive collisions, are not transmitted successfully. A station may attempt to transmit up to 16 times before it must abort the attempt. Once the abort occurs, this counter increments. If you see an increase in deferred transmissions as well as excessive collisions, the network is extremely busy and this segment of the LAN is overcrowded. Reduce the traffic by reorganizing your LAN or adding a NIC to the server. For example, if you have 100 stations on one Ethernet bus, break it into two Ethernet buses by adding a NIC to your server. In this way you can balance the load by putting 50 stations on one bus and 50 on the other. If there are a few isolated stations creating the traffic, try placing them on a separate bus. Faulty components may be the cause of excessive collisions. Check the following: *Segment too long*: Nodes at the far end of the cabling system transmit, unaware that a station at the other end has already gained control of the medium by transmitting the first 64 bytes of a frame. *Failing cable*: Packet data traveling through shorted or damaged cabling may become corrupt before reaching the destination station. *Segment not grounded properly*: Improper grounding of a segment may allow ground-induced noise to corrupt data flow. *Improper termination*: If a cable segment is not properly terminated, allowing the signal to be absorbed upon reaching the end of the segment, a partial signal will bounce back and collide with existing signals. *Noisy cable*: Interference or noise produced by motors or other devices can distort the signals and cause CRC/Alignment errors. *Deaf/partially deaf node*: A faulty station that cannot hear the activity is considered a deaf node. If you suspect a deaf node, replace the NIC. *Failing repeater, transceiver, or controller*: Repeaters, transceivers, and controllers can disrupt the network signal, transmit erroneous signals on the wire, or ignore incoming packets. Perform the following steps: 1. Replace a jabbering transmitter 2. Check your hub or switch.
cpqNicIfPhysAdapterInternalMacTransmitErrors	A count of frames for which transmission on a particular interface fails due to an internal MAC sublayer transmit error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of either the `cpqNicIfPhysAdapterLateCollisions` object, the `cpqNicIfPhysAdapterExcessiveCollisions` object, or the `cpqNicIfPhysAdapterCarrierSenseErrors` object. The precise meaning of the count represented by an instance of this object is implementation- specific. In particular, an instance of this object may represent a count of transmission errors on a particular interface that are not otherwise counted.

Variable	Description
cpqNicIfPhysAdapterCarrierSenseErrors	The number of packets transmitted with carrier sense errors: This counter contains the number of times that the carrier sense signal from the physical layer interface was not asserted or was de-asserted during transmission of a packet without collision. The carrier sense signal is an ongoing activity of a data station to detect whether or not another station is transmitting. Carrier sense errors are detected when a station transmits a frame and does not detect its own signal on the wire. If you receive carrier sense errors, check the following: *Failing cable*: Packet data traveling through shorted or damaged cabling may cause a signal loss. Ensure that your cable is working and plugged in properly. *Segment not grounded properly*: Improper grounding of a segment may allow ground-induced noise to interrupt the signal. Ensure that you have properly grounded all segments. *Noisy cable*: Interference or noise produced by motors or other devices can interrupt the signals. *Deaf/partially deaf node*: A faulty station that cannot hear the activity is considered a deaf node. If you suspect a deaf node, the network interface card should be replaced. *Failing hub, switch, or controller*: Repeaters, switches and controllers can disrupt the network signal, transmit erroneous signals on the wire, or ignore incoming packets. Perform the following steps: 1. Swap out the adapter, adapter cable, and adapter attachment point, one at a time. If you find a faulty component, replace it. 2. If none of the items listed above help you isolate the problem, you may need to replace the switch or hub. Use a network analyzer to isolate the problem area
cpqNicIfPhysAdapterFrameTooLongs	A count of frames received on a particular interface that exceed the maximum permitted frame size
cpqNicIfPhysAdapterInternalMacReceiveErrors	A count of frames for which reception on a particular interface fails due to an internal MAC sublayer receive error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of either the `cpqNicIfPhysAdapterStatsFrameTooLongs` object, the `cpqNicIfPhysAdapterStatsAlignmentErrors` object, or the `cpqNicIfPhysAdapterStatsFCSErrors` object. The precise meaning of the count represented by an instance of this object is implementation-specific. In particular, an instance of this object may represent a count of receive errors on a particular interface that are not otherwise counted
cpqNicIfPhysAdapterHwLocation	A text description of the hardware location, on complex multi SBB hardware only, for the physical adapter. A `NULL` string indicates that the hardware location could not be determined or is irrelevant.
cpqNicIfPhysAdapterPartNumber	A text description of the hardware part number.

Variable	Description
cpqNicIfPhysAdapterSpeed	An estimate of the interface's current bandwidth in bits per second. For interfaces which do not vary in bandwidth or for those where no accurate estimation can be made, this object should contain the nominal bandwidth
cpqNicIfPhysAdapterConfSpeedDuplex	The physical adapter configured speed and duplex. The following values are valid: `other(1)` - The configured speed and duplex are unknown. `autoAuto(2)` - Auto negotiate both speed and duplex. `ethernetHalf(3)`, `ethernetFull(4)`, `fastEthernetHalf(5)`, `fastEthernetFull(6)`, `gigEthernetFull(8)` Speed and duplex forced to the given value.

4.4.4 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDeviceCount`	Number of devices with critical status
Var06	`CriticalDeviceList`	Names of the devices with critical status

4.5 HP SIM - Physical Disk

HP SIM - Physical Disk checks the errors produced in the physical disks monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.5.1 Default Health conditions

The HP SIM - Physical Disk ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetrievalOK and VSMEventHasData and (cpqDaPhyDrvStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the Physical Drive status is not working properly (status is other than 2 (OK)).
Warning if	`VSMDataRetrievalOK and VSMEventHasData and (cpqDaPhyDrvSmartStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the Physical SMART Drive is nt working properly (the status is other than 2 (OK)).
Minor if	`(not VSMDataRetrievalOK) or (not VSMEventHasData)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

Remember that you can add, edit or remove Health conditions and actions as required.

4.5.2 Default message templates

This ThinAgent generates multiple events for each data collection. It sends a message for each network interface and a global message for the recollection.

The information that is stored for each network interface is defined in the advanced tab in the post-health actions script. The script can be adjusted to your environment using Python scripting language.

For the global event message this ThinAgent uses templates. Click **Edit Templates** to see the available message templates. For example the warning message template reads:

```
There were &WarningDevicesCount physical disks in S.M.A.R.T. predictive
failure state: &
```

4.5.3 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqDaPhyDrvCntlrIndex	The *Drive Array Physical Drive Controller Index* maps the physical drive back to the controller to which it is attached. The value of this index is the same as the one used under the controller group.
cpqDaPhyDrvIndex	The *Drive Array Physical Drive Index* used for selecting the physical drive table entry. This number, along with the `cpqDaPhyDrvCntlrIndex` uniquely identify a specific physical drive.

Variable	Description
cpqDaPhyDrvModel	*Physical Drive Model* is a text description of the physical drive. The text that appears depends upon who manufactured the drive and the drive type. If a drive fails, note the model to identify the type of drive necessary for replacement. If a model number is not present, you may not have properly initialized the drive array to which the physical drive is attached for monitoring.
cpqDaPhyDrvFWRev	*Physical Drive Firmware Revision* shows the physical drive revision number. If the firmware revision is not present, you have not properly initialized the drive array.
cpqDaPhyDrvBay	*Physical Drive Bay Location* matches the bay location where the physical drive has been installed. For a SCSI drive, this is the SCSI ID of the drive.
cpqDaPhyDrvStatus	*Physical Drive Status* shows the status of the physical drive. The following values are valid for the physical drive status: `other(1)` - Indicates that the instrument agent does not recognize the drive. You may need to upgrade your instrument agent and/or driver software. `ok(2)` - Indicates the drive is functioning properly. `failed(3)` - Indicates that the drive is no longer operating and should be replaced. `predictiveFailure(4)` - Indicates that the drive has a predictive failure error and should be replaced
cpqDaPhyDrvFactReallocs	This shows the number of spare sectors available for remapping at the time the physical drive was shipped. The physical drive will use these spare sectors for remapping bad sectors that exist on the drive. Not all drives support factory reallocation
cpqDaPhyDrvUsedReallocs	*Physical Drive Used Reallocated Sectors* shows the number of sectors of the reallocation area that have been used by the physical drive. To see how many sectors were originally available for use in the reallocation area, refer to the factory reallocation information if it exists. Not all drives support factory reallocation. Because of the nature of magnetic disks, certain sectors on a drive may have media defects. The reallocation area is part of the disk drive that the drive manufacturer sets aside to compensate for these defects. The drive array controller writes information addressed from these unusable sectors to available sectors in the reallocation area. If too many sectors have been reallocated, there may be a problem with the drive. If you suspect a problem, schedule server down time to run diagnostics to verify that a problem exists
cpqDaPhyDrvRefHours	*Reference Time in hours* shows the total number of hours that a physical drive has been spinning since the drive was stamped. The drive will have either been stamped when it left the factory or when you ran diagnostics on your new drive. You can use the reference time to calculate rates for other physical drive events.

Variable	Description
cpqDaPhyDrvHReads	***Sectors Read (high).*** The phyDrvHReads and the phyDrvReads together show the total number of sectors read from the physical disk drive during the reference time (`phyDrvRefHours`). The actual number of sectors read equals the `phyDrvHReads` times 2^32 plus the phyDrvReads. This information may be useful for determining rates. For instance, if you wanted to calculate the average number of reads per hour of operation, divide this number by the reference hours
cpqDaPhyDrvReads	*Sectors Read (low).* The `phyDrvHReads` and the `phyDrvReads` together show the total number of sectors read from the physical disk drive during the reference time (`phyDrvRefHours`). The actual number of sectors read equals the `phyDrvHReads` times 2^32 plus the phyDrvReads. This information may be useful for determining rates. For instance, if you wanted to calculate the average number of reads per hour of operation, divide this number by the reference hours.
cpqDaPhyDrvHWrites	*Sectors Written (high).* The `phyDrvHWrites` and the `phyDrvWrites` together show the total number of sectors written to the physical disk drive during the reference hours (`phyDrvRefHours`). The actual number of sectors written equals the `phyDrvHWrites` times 2^32 plus the `phyDrvWrites`. This information may be useful for determining rates. For instance, if you wanted to calculate the average number of writes per hour of operation, divide this number by the reference hours.
cpqDaPhyDrvWrites	*Sectors Written (low).* The `phyDrvHWrites` and the `phyDrvWrites` together shows the total number of sectors written to the physical disk drive during the reference hours (`phyDrvRefHours`). The actual number of sectors written equals the `phyDrvHWrites` times 2^32 plus the `phyDrvWrites`. This information may be useful for determining rates. For instance, if you wanted to calculate the average number of writes per hour of operation, divide this number by the reference hours
cpqDaPhyDrvHSeeks	*Total Seeks (high).* The `phyDrvHSeeks` and the `phyDrvSeeks` together shows the total number of seek operations performed by the physical disk drive during the reference hours (`phyDrvRefHours`). The actual number of seeks equals the `phyDrvHSeeks` times 2^32 plus the `phyDrvWriteSeeks`

Variable	Description
cpqDaPhyDrvSeeks	*Total Seeks (low).* The `phyDrvHSeeks` and the `phyDrvSeeks` together shows the total number of seek operations performed by the physical disk drive during the reference hours (`phyDrvRefHours`). The actual number of seeks equals the `phyDrvHSeeks` times 2^32 plus the `phyDrvWriteSeeks`
cpqDaPhyDrvHardReadErrs	*Hard Read Errors* shows the number of read errors that have occurred on a drive that could not be recovered by a physical drive's Error Correction Code (ECC) algorithm or through retries during the reference time (`phyDrvRefTime`). Over time, a disk drive may produce these errors. If you receive these errors, a problem may exist with your drive. The value increases every time the physical drive detects another error. The severity of these errors depends on whether the monitored system is running in a fault tolerant mode. With fault tolerance, the controller can remap data to eliminate the problems caused by these errors. In either case, if you see an increase in these errors, schedule server down time to run diagnostics to verify that a problem exists.
cpqDaPhyDrvRecvReadErrs	*Recovered Read Errors* shows the number of read errors corrected through physical drive retries during the reference time (`phyDrvRefTime`). Over time, all disk drives produce these errors. If you notice a rapid increase in the value for Recovered Read Errors (or Hard Read Errors), a problem may exist with the drive. The value increases every time the physical drive detects and corrects another error. Expect more Recovered Read Errors than Hard Read Errors. If you suspect that a problem may exist with the drive, schedule server down time to run diagnostics
cpqDaPhyDrvHardWriteErrs	*Hard Write Errors* shows the number of write errors that could not be recovered by a physical drive during the reference time (`phyDrvRefTime`). Over time a disk drive may detect these errors. If you notice an increase in the value shown for Hard Write Errors or Recovered Write Errors, a problem may exist with the drive. The value increases every time the physical drive detects another error. On average, these errors should occur less frequently than read errors. If you see an increase in these errors, schedule server down time to run diagnostics to verify that a problem exists

Variable	Description
cpqDaPhyDrvRecvWriteErrs	*Recovered Write Errors* shows the number of write errors corrected through physical drive retries or recovered by a physical drive during the reference time (`phyDrvRefTime`). Over time a disk drive may produce these errors. If you notice an increase in the value shown for Hard Write Errors or Recovered Write Errors, a problem may exist with the drive. The value increases every time the physical drive detects and corrects an error. Only an unusually rapid increase in these errors indicates a problem. On average, these errors should occur less frequently than hard read errors. If you suspect that a problem may exist with the drive, schedule server down time to run diagnostics
cpqDaPhyDrvHSeekErrs	*Seek Errors (High).* The `phyDrvHSeekErrs` and the `phyDrvSeekErrs` together shows the total number of times that the physical disk drive detected a seek error during the reference hours (`phyDrvRefHours`). The actual number of seek errors equals the `phyDrvHSeekErrs` times 2^32 plus the `phyDrvWriteSeekErrs`. Over time, a disk drive usually produces these errors. If you notice a rapid increase in the value shown for Seek Errors, this physical drive may be failing. The value increases every time the physical drive produces another error. Only an unusually rapid increase in these errors indicates a problem. If you suspect that a problem exists, schedule server down time to run diagnostics.
cpqDaPhyDrvSeekErrs	*Seek Errors (low).* The `phyDrvHSeekErrs` and the `phyDrvSeekErrs` together shows the total number of times that the physical disk drive detected a seek error during the reference hours (`phyDrvRefHours`). The actual number of seek errors equals the `phyDrvHSeekErrs` times 2^32 plus the `phyDrvWriteSeekErrs`. Over time, a disk drive usually produces these errors. If you notice a rapid increase in the value shown for Seek Errors, this physical drive may be failing. The value increases every time the physical drive produces another error. Only an unusually rapid increase in these errors indicates a problem. If you suspect that a problem exists, schedule server down time to run diagnostics.

Variable	Description
cpqDaPhyDrvSpinupTime	*Spin up Time in tenths of seconds* is the time it takes for a physical drive to spin up to full speed. Disks require time to gain momentum and reach operating speed. As cars are tested to go from 0 mph to 60 mph in x number of seconds, drive manufacturers have preset expectations for the time it takes the drive to spin to full speed. Drives that do not meet these expectations may have problems. The value may be zero (0) under one of the following conditions: * If you are monitoring a physical drive that is part of the monitored system's internal drive array storage, and you use a warm boot to reset the monitored system. During a warm boot, the drives continue to spin. * If you are monitoring a physical drive in an ProLiant Storage System and you reset the monitored system but not the ProLiant Storage System.
cpqDaPhyDrvFunctTest1..3	*Functional Test 1..3.* These variables provide information about a series of tests that indicate how well a physical drive works. These tests compare the way the physical drive currently operates when performing various tasks with the way it worked when it was new. A percent value is displayed that represents how the drive works currently when compared to how the drive worked when new. New drives operate at the 100 percent level. By default, if the current value is less than or equal to 80 percent, a problem may exist. If you suspect a problem, schedule server down time to run diagnostics to verify that a problem exists. If the value cannot be determined, it is set to 4,294,967,295
cpqDaPhyDrvDrqTimeouts	*DRQ Timeouts* are the number of times that a physical drive continued to request data, but did not get a command completion during the reference time (`phyDrvRefTime`). This value increases every time a DRQ timeout occurs for the physical drive. A defective drive or cable may cause DRQ timeouts to occur. If you see an increase in these errors, complete the following steps for the monitored system: 1. Check the cables connecting the drive to ensure that they are intact. 2. If the cables are properly connected, schedule server down time to run diagnostics to verify that a problem exists. If the value is not supported, it is set to 4,294,967,295

Variable	Description
cpqDaPhyDrvOtherTimeouts	*Other Timeouts* represents the number of times that a physical drive did not respond with an interrupt within a controller-defined period of time after a command had been issued during the reference time (`phyDrvRefTime`). *This does not include DRQ timeouts.* If you suspect a problem, complete the following steps for the monitored system: 1. Check the cables connecting the drive to ensure that they are intact. 2. If the cables are properly connected, schedule server down time to run diagnostics to verify that a problem exists
cpqDaPhyDrvSpinupRetries	*Spin up Retries* - the number of times that a physical drive had to retry to spin up before successfully achieving operating speed during the reference time (`phyDrvRefTime`). This value represents the spin-up retries that occurred since the last time you turned on the monitored system. If you suspect a problem, schedule server down time to run diagnostics verify that a problem exists
cpqDaPhyDrvBadRecvReads	*Recovery Failed (Bad) Read Error.* The number of times a read error occurred while performing Automatic Data Recovery from this physical drive to another drive during the reference time (`phyDrvRefTime`). If a read error occurs, Automatic Data Recovery stops. These errors indicate that the physical drive has failed. If you suspect a problem, schedule server down time to run diagnostics to verify that a problem exists
cpqDaPhyDrvBadRecvWrites	*Recovery Failed (Bad) Write Error.* The number of times a write error occurred while performing Automatic Data Recovery from another drive to this physical drive during the reference time (`phyDrvRefTime`). If a write error occurs, Automatic Data Recovery stops. These errors indicate that the physical drive has failed. If you suspect a problem, schedule server down time to run diagnostics to verify that a problem exists
cpqDaPhyDrvFormatErrs	*Format Error.* The number of times a format operation failed when the controller attempted to remap a bad sector during the reference time (`phyDrvRefTime`). Zero indicates that no format errors have occurred. The value increases each time a format error occurs. A failed format operation may cause the controller to mark a drive failed. If you suspect a problem, schedule server down time to run diagnostics verify a problem exists
cpqDaPhyDrvPostErrs	*Power On Self Test (Post) Error.* The number of times that a physical drive failed its self test during the reference time (`phyDrvRefTime`). The physical drive does a self test each time power is applied to the system. If the value is not supported, it is set to 4,294,967,295.

Variable	Description
cpqDaPhyDrvNotReadyErrs	*Drive Not Ready Errors* represents the number of times the physical drive failed after the spin up command was issued during the reference time (`phyDrv-RefTime`). When the spin up command was issued, the drive failed to reach its ready state. If the current value is zero, the drive has not failed. If the current value is greater than zero, at least one failure occurred. This error could be caused because the physical drive has failed to spin. If you suspect a problem: 1. Check the cables connecting the drive to ensure that they are intact. 2. If the cables are properly connected, schedule server down time to run diagnostics to verify that a problem exists
cpqDaPhyDrvReallocAborts	*Physical Drive Reallocation Aborts* represents the number of times the physical drive has failed due to an error that occurred when the controller was trying to reallocate a bad sector during the reference time (`phyDrvRefTime`). Zero (0) indicates that no Reallocation Abort errors have occurred. The value increases each time a Reallocation Abort error occurs. Because of the nature of magnetic disks, certain sectors on a drive may have media defects. The reallocation area is part of the disk drive that is set aside to compensate for these defects. The array controller writes information addressed from unusable sectors to available sectors in the reallocation area. If you suspect a problem, schedule server down time to run diagnostics verify a problem exists
cpqDaPhyDrvThreshPassed	*Physical Drive Factory Threshold Passed (Exceeded).* When the drive is shipped, certain thresholds have been set to monitor performance of the drives. For example, a threshold might be set for Spin up Time. If the time that it takes the drive to spin up exceeds the factory threshold, there may be a problem with one of the drives. If you suspect a problem, schedule server down time to run diagnostics. Note: These thresholds may be under warranty under certain conditions
cpqDaPhyDrvHasMonInfo	*Physical Drive Has Monitor Information.* All of the physical disk table fields except for the physical disk status (`phyDrvStatus`) and the bay location (`phyDrvBayLocation`) are invalid, unless this field has a value of true(2)
cpqDaPhyDrvCondition	The condition of the device. This value represents the overall condition of this physical drive.

Variable	Description
cpqDaPhyDrvHotPlugs	*Physical Drive Hot Plug Count* indicates the number of times this physical drive was hot-plugged (removed) from a ProLiant Storage System. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers.
cpqDaPhyDrvMediaErrs	*Physical Drive Media Failure Count* indicates the number of times this physical drive was failed due to unrecoverable media errors. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvHardwareErrs	*Physical Drive Hardware Error Count* indicates the number of times this physical drive returned a bad hardware status. The drive may be failed if retries do not work. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvAbortedCmds	*Physical Drive Aborted Command Failures* indicates the number of times this physical drive was failed due to aborted commands that could not be retried successfully. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvSpinUpErrs	*Physical Drive Spin-Up Failure Count* indicates the number of times this physical drive was failed due to a failure of a spin-up command. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers.
cpqDaPhyDrvBadTargetErrs	*Physical Drive Bad Target Count.* This value indicates the number of times this physical drive performed some action that did not conform to the SCSI-2 bus protocol. These actions will cause the SCSI bus to be reset. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvLocation	*Drive Physical Location.* This is the physical location of where the drive is located. The following values are defined: `other(1)` - The location of the drive is not known. `internal(2)` - The drive is located inside of the computer system box. `external(3)` - The drive is located outside of the computer system box. `proLiant(4)` - The drive is located outside of the computer system box in a ProLiant Storage System
cpqDaPhyDrvSize	*Physical Drive Size in MB* is the size of the physical drive in megabytes. This value is calculated using the value 1,048,576 (2^20) as a megabyte. Drive manufacturers sometimes use the number 1,000,000 as a megabyte when giving drive capacities so this value may differ from the advertised size of a drive. This field is only applicable for controllers which support SCSI drives, and therefore is not supported by the IDA or IDA-2 controllers. The field will contain 0xFFFFFFFF if the drive capacity cannot be calculated or if the controller does not support SCSI drives

Variable	Description
cpqDaPhyDrvBusFaults	*Physical Drive Bus Fault Count* indicates the number of times that a bus fault was detected for the drive by the controller. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvIrqDeglitches	*Physical Drive IRQ Deglitch Count.* This is not supported by the IDA, IDA Expansion, or IDA-2 controllers
cpqDaPhyDrvHotPlug	*Physical Drive Hot Plug Support Status.* The following values are defined: `other(1)` - The Insight Agent is unable to determine if this drive supports hot plug replacement. `hotPlug(2)` - The drive supports hot plug replacement. `nonhotPlug(3)` - The drive does not support hot plug replacement
cpqDaPhyDrvPlacement	*Physical Drive Placement.* The following values are defined: `other(1)` - The agent is unable to determine if the drive is internal or external to the system chassis. `internal(2)` - The drive is located in the system chassis. `external(3)` - The drive is located outside the system chassis in an expansion box
cpqDaPhyDrvBusNumber	*Physical Drive SCSI Bus Number* indicates to which SCSI bus this physical drive is attached. The first instance is one and increments for each SCSI bus on a controller. A value of -1 will be returned if the physical drive is attached to a controller that does not support multiple SCSI busses. This is not supported by the IDA, IDA Expansion, or IDA-2 controllers.
cpqDaPhyDrvSerialNum	*Physical Drive Serial Number* is the serial number assigned to the physical drive. This value is based upon the serial number as returned by the SCSI inquiry command but may have been modified due to space limitations. This can be used for identification purposes
cpqDaPhyDrvPreFailMonitoring	*Drive Array Physical Drive Predictive Failure Monitoring*. The following values are defined: `other(1)` - The agent is unable to determine if the drive supports predictive failure monitoring. `notAvailable(2)` - This drive does not support predictive failure monitoring. `available(3)` - This drive supports predictive failure monitoring.
cpqDaPhyDrvCurrentWidth	*Drive Array Physical Drive Current Width.* The following values are defined: `other(1)` - The agent is unable to determine the current negotiated data transfer width for this drive. `narrow(2)` - The negotiated data transfer width for this drive is narrow (8 data bits). `wide16(3)` - The negotiated data transfer width for this drive is wide (16 data bits)

Variable	Description
cpqDaPhyDrvCurrentSpeed	*Drive Array Physical Drive Current Data Transfer Speed.* The following values are defined: `other(1)` - The agent is unable to determine the current negotiated data transfer speed for this drive. `asynchronous(2)` - The negotiated data transfer speed for this drive is asynchronous. `fast(3)` - The negotiated data transfer speed for this drive is 10 million transfers per second). `ultra(4)` - The negotiated data transfer speed for this drive is 20 million transfers per second. `ultra2(5)` - The negotiated data transfer speed for this drive is 40 million transfers per second. `ultra3(6)` - The negotiated data transfer speed for this drive is 80 million transfers per second. `ultra320(7)` - The negotiated data transfer speed for this drive is 160 million transfers per second
cpqDaPhyDrvFailureCode	*Drive Array Physical Drive Failure Code* is the drive failure reason code returned by the array firmware. It is valid only when the drive is failed. If the drive is not failed, 0 is returned
cpqDaPhyDrvBlinkTime	*Physical Drive Blink Time Count* indicates the amount of time, in tenths of a second, that the physical drive LEDs will continue to blink. A value of zero indicates the drive LEDs are not blinking. If the value cannot be determined or the drive is not in a hot plug tray, 4,294,967,295 is returned. To blink the drive LEDs, set this value to the time to blink in tenths of seconds. To stop the drive LEDs from blinking, set this value to 0
cpqDaPhyDrvSmartStatus	*Physical Drive S.M.A.R.T Status.* The following values are defined: `other(1)` - The agent is unable to determine if the status of S.M.A.R.T predictive failure monitoring for this drive. `ok(2)` - Indicates the drive is functioning properly. `replaceDrive(3)` - Indicates that the drive has a S.M.A.R.T predictive failure error and should be replaced.
cpqDaPhyDrvConfigurationStatus	*Physical Drive Configuration Status.* The following values are defined: `other(1`**)** - The agent is unable to determine the configuration status of this physical drive. `configured(2)` - Indicates the drive is configured to be part of a logical drive as either a member drive or a spare drive. `notConfigured(3)` - Indicates the drive is not configured to be part of a logical drive as either a member drive or a spare drive

Variable	Description
cpqDaPhyDrvRotationalSpeed	*Drive Array Physical Drive Rotational Speed.* The following values are defined: `other(1)` - The agent is unable to determine the rotational speed for this drive. `rpm7200(2)` - The rotational speed for this drive is 7200 rpm. `rpm10K(3)` - The rotational speed for this drive is 10000 rpm. `rpm15K(4)` - The rotational speed for this drive is 15000 rpm

4.5.4 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDeviceCount`	Number of devices with critical status
Var06	`CriticalDeviceList`	Names of the devices with critical status
Var07	`WarningDevicesCount`	Number of devices with warning status
Var08	`WarningDevicesList`	Names of the devices with warning status

4.6 HP SIM - Power Supply

HP SIM - Power Supply checks the errors produced in the fault tolerant power supplies monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. Of course you can change the configuration to suit your needs.

4.6.1 Default Health conditions

The HP SIM - Power Supply ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetrievalOK and VSMEventHasData and (cpqHeFltTolPowerSupplyStatus <> 1)`	The monitor is able to retrieve data and that data is consistent, and when the Power Supply status is other than 1.
Minor if	`(not VSMDataRetrievalOK) or (not VSMEventHasData)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

4.6.2 Default message templates

This ThinAgent generates multiple events for each data collection. It sends a message for each network interface and a global message for the recollection.

The information that is stored for each network interface is defined in the advanced tab in the post-health actions script. The script can be adjusted to your environment using Python scripting language.

For the global event message this ThinAgent uses templates. Click **Edit Templates** to see the available message templates. For example the success message template reads:

```
All power supplies are OK.
```

Remember, you can add, edit or remove Health conditions and actions as required.

4.6.3 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqHeFltTolPowerSupplyChassis	The system chassis number
cpqHeFltTolPowerSupplyBay	The bay number to index within this chassis
cpqHeFltTolPowerSupplyPresent	Indicates whether the power supply is present in the chassis
cpqHeFltTolPowerSupplyCondition	The condition of the power supply. This value will be one of the following: `other(1)` - The status could not be determined or not present. `ok(2)` - The power supply is operating normally. degraded(3) - A temperature sensor, fan or other power supply component is outside of normal operating range. `failed(4)` - A power supply component detects a condition that could permanently damage the system
cpqHeFltTolPowerSupplyStatus	The status of the power supply

Variable	Description
cpqHeFltTolPowerSupplyMainVoltage	The input main voltage of the power supply in volts
cpqHeFltTolPowerSupplyCapacityUsed	The currently used capacity of the power supply in watts
cpqHeFltTolPowerSupplyCapacityMaximum	The maximum capacity of the power supply in watts
cpqHeFltTolPowerSupplyRedundant	The redundancy state of the power supply. This value will be one of the following: `other(1)` - The redundancy state could not be determined. `notRedundant(2)` - The power supply is not operating in a redundant state. `redundant(3)` - The power supply is operating in a redundant state.
cpqHeFltTolPowerSupplyModel	The power supply model name
cpqHeFltTolPowerSupplySerialNumber	The power supply serial number
cpqHeFltTolPowerSupplyAutoRev	The power supply auto revision number
cpqHeFltTolPowerSupplyHotPlug	This indicates if the power supply is capable of being removed and/or inserted while the system is in an operational state. If the value is `hotPluggable(3)`, the power supply can be safely removed if and only if the cpqHeFltTolPowerSupplyRedundant field is in a `redundant(3)` state. This value will be one of the following: `other(1)` - The state could not be determined. `nonHotPluggable(2)` - The power supply is not hot plug capable. `hotPluggable(3)` - The power supply is hot plug capable and can be removed if the system is operating in a redundant state. A power supply may be added to an empty power supply bay
cpqHeFltTolPowerSupplyFirmwareRev	The power supply firmware revision. This field will be left blank if the firmware revision is unknown
cpqHeFltTolPowerSupplyHwLocation	A text description of the hardware location, on complex multi SBB hardware only, for the power supply. A `NULL` string indicates that the hardware location could not be determined or is irrelevant
cpqHeFltTolPowerSupplySparePartNum	The power supply spare part number

4.6.4 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click **Set Health and Actions** and then select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDevice-Count`	Number of devices with critical status
Var06	`CriticalDeviceL-ist`	Names of the devices with critical status

4.7 HP SIM - Processors

HP SIM - Processors checks the errors produced in the processor(s) monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. The next section will explain further configuration required to run this HP Systems Insight Manager ThinAgent.

Of course you can change the configuration to suit your needs. For details about the functions of the ThinkServer please see the *VISUAL Message Center ThinkServer User Guide*.

4.7.1 Default Health conditions

The HP SIM - Processors ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetriev-alOK and VSMEven-tHasData and (cpqSeCpuStatus <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the CPU is functionaing normally (status is other than 2).
Warning if	`VSMDataRetriev-alOK and VSMEven-tHasData and (cpqSeCpuThresh-Passed == 3)`	The monitor is able to retrieve data and that data is consistent, and when the CPU threshold has been passed (Exceeded).
Minor if	`(not VSMDataRe-trievalOK) or (not VSMEventHas-Data)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

Remember, you can add, edit or remove Health conditions and actions as required.

4.7.2 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqSeCpuUnitIndex	This is a number that uniquely specifies a processor unit. A processing unit may be a set of processing chips that are on the same board or for other reasons work together as a unit. The main processor unit (if such a concept is valid for this machine) will always have the lowest (first) index
cpqSeCpuSlot	This value represents this processor's slot. If the slot cannot be determined the value of zero (0) will be returned.
cpqSeCpuName	The name of this processor. For example: `80386`
cpqSeCpuSpeed	This is the internal speed in megahertz of this processor. Zero (0) will be returned if this value is not available.
cpqSeCpuStep	This step of the processor. This will be zero (0) if the step cannot be determined
cpqSeCpuStatus	The status of the processor. The following values are valid for CPU status: `Unknown(1)` - The status of the CPU could not be determined. `OK(2)` - The CPU is functioning normally. `Degraded(3)` - The CPU is in a pre-failure warrantee state. `Failed(4)` - The CPU is in a failed state. `Disabled(5)` - The CPU has been disabled during power-on-self-test.
pqSeCpuExtSpeed	This is the external frequency in megahertz of the processor bus. Zero (0) will be returned if this value is not available.
cpqSeCpuDesigner	This attribute specifies the manufacturer which designs this CPU.
cpqSeCpuSocketNumber	The physical socket number of the CPU chip. This number helps to identify CPUs on processor boards that contain multiple CPU chips. In most cases the CPU Socket number should be specified on the boards silk screen or in product documentation. A 0 socket number means undetermined

Variable	Description
cpqSeCpuThreshPassed	CPU threshold passed (Exceeded). When this attribute is set to true, it identifies a pre-failure error condition. Processors like the Intel Pentium Pro have the capability built into them to correct internal error conditions. Excessive corrected internal errors can predict future hard processor failures. Agent instrumentation will set this attribute to true if an internal processor error threshold is passed. It is recommended that the user replace the CPU in this case. If the processor does not support monitoring internal corrected errors, this value will be set to unsupported
cpqSeCpuHwLocation	A text description of the hardware location, on complex multi SBB hardware only, for the CPU. A `NULL` string indicates that the hardware location could not be determined or is irrelevant.

4.7.3 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name
Var05	`CriticalDeviceCount`	Number of devices with critical status
Var06	`CriticalDeviceList`	Names of the devices with critical status
Var07	`WarningDevicesCount`	Number of devices with warning status
Var08	`WarningDevicesList`	Names of the devices with warning status

4.8 HP SIM - Temperature

HP SIM - Temperature checks the errors produced in the temperature sensors monitored with HP Systems Insight Manager.

This ThinAgent comes preconfigured so that you can get started monitoring in a matter of seconds. This section explains the preconfigured values. The next section will explain further configuration required to run this HP Systems Insight Manager ThinAgent.

Of course you can change the configuration to suit your needs. For details about the functions of the ThinkServer please see the *VISUAL Message Center ThinkServer User Guide*.

4.8.1 Default Health conditions

The HP SIM - Temperature ThinAgent comes pre-configured with best practice Health rules:

Configuration Variables & Values		Description
Critical if	`VSMDataRetrievalOK and VSMEventHasData and (cpqHeTemperatureCondition <> 2)`	The monitor is able to retrieve data and that data is consistent, and when the Temperature status is other than 2.
Minor if	`(not VSMDataRetrievalOK) or (not VSMEventHasData)`	The monitor was not able to retrieve information or there are inconsistencies in the retrieved data.
Success if	`true`	Otherwise, set Health to success

Remember, you can add, edit or remove Health conditions and actions as required.

4.8.2 ThinAgent-specific variables

Variables specific to this ThinAgent. You can use these variables when setting Health conditions, configuring actions, creating templates and in the messages you send to the SmartConsole. For a full description of these functions please consult the *VISUAL Message Center ThinkServer User Guide*.

Variable	Description
cpqHeTemperatureChassis	The System Chassis number
cpqHeTemperatureIndex	A number that uniquely specifies this temperature sensor description.
cpqHeTemperatureLocale	This specifies the location of the temperature sensor present in the system.
cpqHeTemperatureCelsius	This is the current temperature sensor reading in degrees celsius. If this value cannot be determined by software, then a value of `-1` will be returned.
cpqHeTemperatureThreshold	This is the shutdown threshold temperature sensor setting in degrees celsius. This is the temerature in which the sensor will be considered to be in a failed state thus causing the system to be shutdown. If this value cannot be determined by software, then a value of `-1` will be returned. Only the Ambient zone type allows setting of the threshold temperature.

Variable	Description
cpqHeTemperatureCondition	The Temperature sensor condition. This value will be one of the following: `other(1)` - Temperature could not be determined. `ok(2)` - The temperature sensor is within normal operating range. `degraded(3)` - The temperature sensor is outside of normal operating range. `failed(4)` - The temperature sensor detects a condition that could permanently damage the system. The system will automatically shutdown if the `failed(4)` condition results, so it is unlikely that this value will ever be returned by the agent. If the `cpqHeThermalDegradedAction` is set to `shutdown(3)` the system will be shutdown if the `degraded(3)` condition occurs.
cpqHeTemperatureThresholdType	This specifies the type of this instance of temperature sensor. This value will be one of the following: `other(1)` - Temperature threshold type could not be determined. **blowout(5)** - If a `blowout(5)` temperature sensor reaches its threshold, the fan or fans in the area of the temperature sensor will increase in speed in an attempt to reduce the temperature before a caution or critical threshold is reached. **caution(9)** - If a `caution(9)` temperature sensor reaches its threshold, the `cpqHeTemperatureCondition` will be set to `degraded(3)` and the system will either continue or shutdown depending on the setting of `cpqHeThermalDegradedAction`. **critical(15)** - If a `critical(15)` temperature sensor reaches its threshold, the `cpqHeTemperatureCondition` will be set to `failed(4)` and the system will shutdown
cpqHeTemperatureHwLocation	A text description of the hardware location, on complex multi SBB hardware only, for the temperature sensor. A `NULL` string indicates that the hardware location could not be determined or is irrelevant.

4.8.3 Field map SmartConsole - ThinkServer

In the ThinkServer Configurator you will find these variables in the Event Variables tab of the Change Default Messages window. To access the Event Variables click the **Set Health and Actions** button and select **Edit Templates**. You can change the default configuration to suit your needs.

SmartConsole	ThinkServer	Description
Var01	`Set Health Wizard`	Script name
Var02	`Host`	IP address or host name
Var03	`Host Description`	Description of the host
Var04	`sysName`	An administratively assigned name for this managed node. By convention this is the node's fully-qualified domain name

SmartConsole	ThinkServer	Description
Var05	`CriticalDevice-Count`	Number of devices with critical status
Var06	`CriticalDeviceL-ist`	Names of the devices with critical sta-tus

Appendix A
Contacting Tango/04

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About Tango/04 Computing Group

Tango/04 Computing Group is one of the leading developers of systems management and automation software. Tango/04 software helps companies maintain the operating health of all their business processes, improve service levels, increase productivity, and reduce costs through intelligent management of their IT infrastructure.

Founded in 1991 in Barcelona, Spain, Tango/04 is an IBM Business Partner and a key member of IBM's Autonomic Computing initiative. Tango/04 has more than a thousand customers who are served by over 35 authorized Business Partners around the world.

Alliances

Partnerships

IBM Business Partner

IBM Autonomic Computing Business Partner

IBM PartnerWorld for Developers Advanced Membership

IBM ISV Advantage Agreement

IBM Early code release

IBM Direct Technical Liaison

Microsoft Developer Network

Microsoft Early Code Release

Awards

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