Third Party System Management Integration Software

Monitoring Sun Servers in an IBM Tivoli Monitoring Environment

Servers supported:

- Sun SPARC Enterprise Servers

A complete and current list of supported Sun servers, service processors, and service processor firmware is available at http://www.sun.com/system-management/tools.jsp. Please consult this web site before installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

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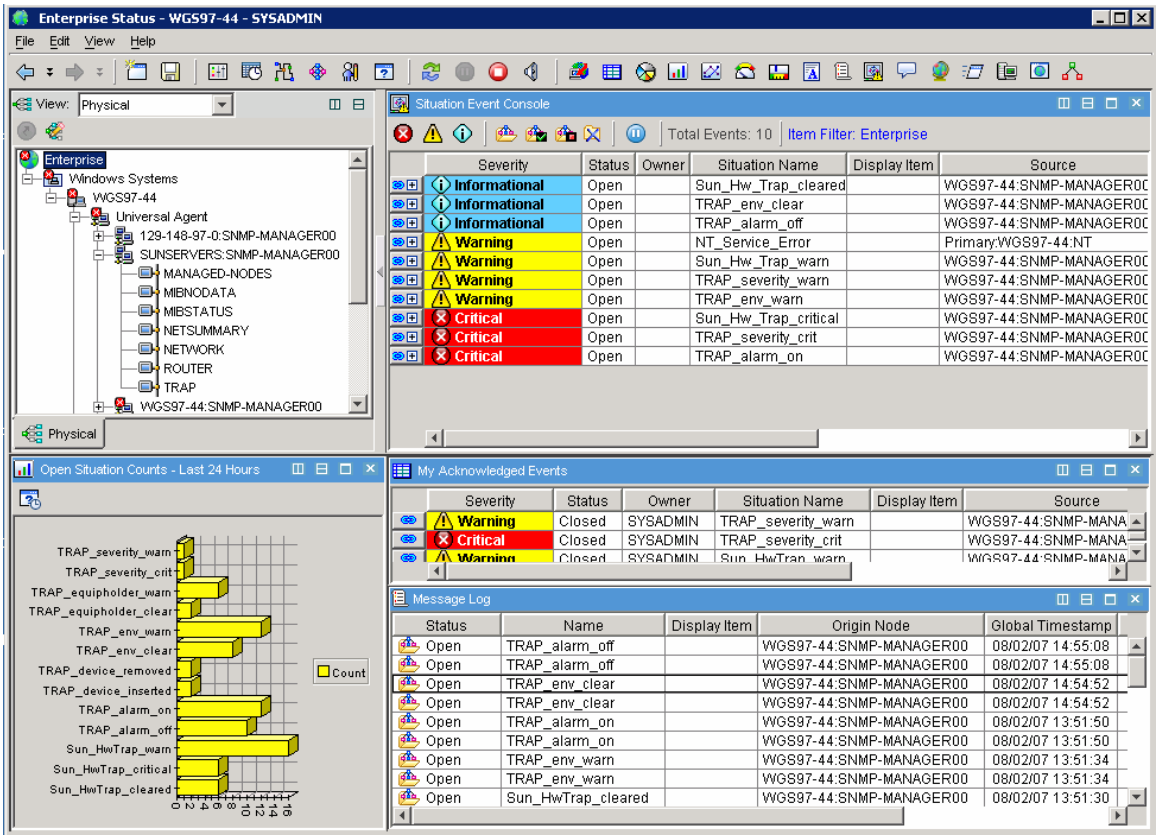
CHAPTER 1

Introduction

IBM Tivoli Monitoring™ (hereafter ITM) is an enterprise management application that uses protocols such as the Simple Network Management Protocol (SNMP) to monitor the performance and availability of networked devices.

Once you have installed and configured the Sun Servers Integration 1.0 for IBM Tivoli Monitoring, you will be able to take advantage of the following Sun-specific features in ITM.

- Alerts from Sun servers and service processors clearly identified by source.
- Sun-specific rules for displaying and prioritizing alerts received from multiple sources.
- New SUN-HW-TRAP-MIB (available for ILOM 2.0 service processors) provides more robust support for reporting device names and changes to device status.
- Updated Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems provides support for additional varbinds (variable binding pairs consisting of OIDs and values).



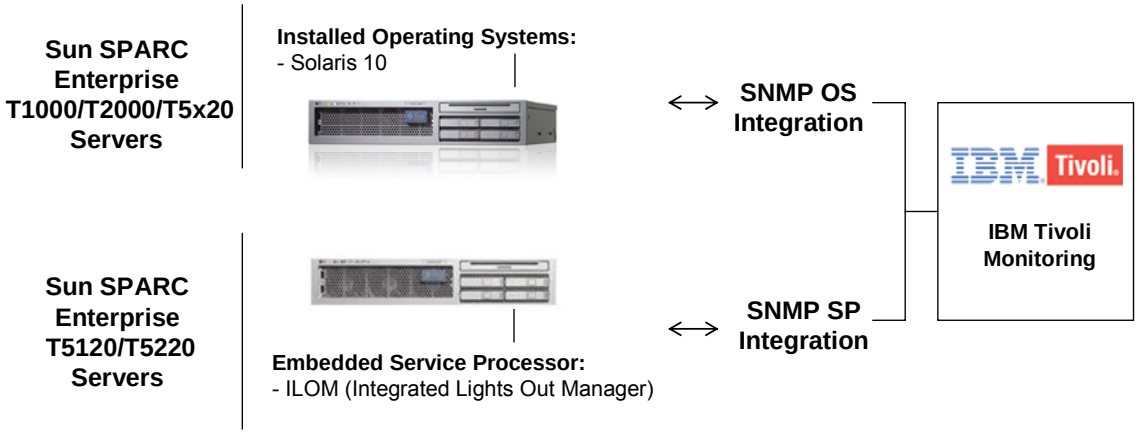
Levels of Integration with ITM

The Sun Servers Integration 1.0 for IBM Tivoli Monitoring uses SNMP as its integration protocol at both the operating system and service processor level. Your options for integration derive from the types of Sun servers that you plan to integrate with ITM.

Servers	Integration	Description
Sun SPARC Enterprise T1000/T2000/T5x20	SNMP OS	The Solaris operating system sends the ITM SNMP Universal Agent SNMP Manager alerts generated by the following SNMP MIBs and agents: - `SUN-PLATFORM-MIB` - `ENTITY-MIB` - `Sun Management (MASF) Agent` To enable this integration, you do not need to install any ITM-specific agents on the monitored devices. You are, basically, configuring the Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems to forward traps from the `SUN-PLATFORM-MIB` and `ENTITY-MIB` to the ITM server.

Servers	Integration	Description
Sun SPARC Enterprise T5x20 Servers	SNMP SP	The ILOM 2.x service processor sends the ITM Universal Agent SNMP Manager alerts generated by the following SNMP MIB: - SUN-HW-TRAP-MIB To enable this integration, you do not need to install any ITM-specific agents on the monitored devices.

To implement SNMP integration at either the operating system or service processor level, you must verify that SNMP is enabled on the monitored devices and is configured to communicate with the ITM Universal SNMP Manager running on a central server.



This Manual

This manual contains the following chapters:

- Chapter 1 “Introduction”
- Chapter 2 “Installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring”
- Chapter 3 “Configuring ITM to Monitor Sun Devices”
- Chapter 4 “Configuring Sun Devices to be Monitored by ITM”
- Chapter 5 “Monitoring Sun Devices in ITM
- Chapter 6 “Troubleshooting”
- Appendices:
  - Appendix A “Installed and Modified Files”
  - Appendix B “Sun System Management MIBs”
  - Appendix C “Glossary”

This manual is intended for experienced ITM administrators, field sales representatives, and support engineers.

Supported Servers

This manual describes how to configure ITM to monitor the following Sun servers:

- Sun SPARC Enterprise Servers

A complete and current list of supported Sun servers, service processors, and service processor firmware is available at http://www.sun.com/system-management/tools.jsp. Please consult this web site before installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

Requirements

The managed devices and the ITM server software have different software requirements.

Managed Devices

Managed devices (servers and service processors) must have the following software installed and configured properly.

A complete and current list of supported Sun servers, service processors, and service processor firmware is available at http://www.sun.com/system-management/tools.jsp. Please consult this web site before installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

Device	Software Requirement
Sun SPARC Enterprise T1000/T2000/T5x20 Servers	Supported operating systems: - Solaris 10 (see product documentation for versions) Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems installed and configured
Sun SPARC Enterprise T5x20 Service Processor	Sun Integrated Lights Out Manager (ILOM) firmware at 2.0 or higher

ITM Server Software

Integration between ITM and Sun devices has been tested with the following versions of ITM 6.1 software.

Component	Version	Operating System and Software
IBM Tivoli Enterprise Monitoring Server (TEMS)	Release 6.1	Microsoft Server Windows 2003 ITM 6.1 Fixpack 05 or higher
IBM Tivoli Enterprise Portal Server (TEPS)	Release 6.1	Microsoft Server Windows 2003 ITM 6.1 Fixpack 05 or higher

With the exception of some Visual Basic scripts, the Sun Servers Integration 1.0 for IBM Tivoli Monitoring uses configuration files and rule definition files to achieve integration with ITM.

Related Documentation

For information about Sun Server Management Solutions, Sun servers, and IBM Tivoli, consult the following related documentation:

- *Introducing IBM Tivoli Monitoring* (GI11-4071)
- *IBM Tivoli Monitoring Installation and Setup Guide* (GC32-9462)
- *IBM Tivoli Monitoring User's Guide* (SC32-9409)
- *IBM Tivoli Monitoring Administrator's Guide* (SC32-9408)
- *IBM Tivoli Monitoring Universal Agent User's Guide* (SC32-9459)
- *Sun™ SNMP Management Agent Administration Guide for Sun Fire™ and Netra™ Servers* (819-7978)
- *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188)

CHAPTER 2

Installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring

This chapter describes how to perform the following tasks:

- Download the Sun Servers Integration 1.0 for IBM Tivoli Monitoring
- Unpack the Sun Servers Integration 1.0 for IBM Tivoli Monitoring
- Install the Sun Servers Integration 1.0 for IBM Tivoli Monitoring on your ITM host server
- Verify successful installation of the Sun Servers Integration 1.0 for IBM Tivoli Monitoring
- Uninstall the Sun Servers Integration 1.0 for IBM Tivoli Monitoring from your ITM host server

Pre-installation Checklist

Before you download and install the Sun Servers Integration 1.0 for IBM Tivoli Monitoring, collect the following information.

☐	**ITM version**: Release 6.1 with Fixpack 3 or higher is required and is the version tested here.	_____
☐	**ITM Server Name**: The name of the host server on which ITM has been installed and configured.	_____
☐	**ITM Enterprise Portal userid and password:** The userid and the password required to log in to the Tivoli Enterprise Portal with administrative privileges.	_____
☐	**Java Runtime:** The installation wizard requires Java to be installed and configured on the management server. To download the version of Java appropriate for your system, see the InstallAnywhere services available at http://java.sun.com/.	_____

Downloading the Sun Servers Integration 1.0 for IBM Tivoli Monitoring

To install the most current version of the Sun Servers Integration 1.0 for IBM Tivoli Monitoring, download it from the following URL:

```
http://www.sun.com/system-management/tools.jsp
```

Note: As updated versions of the Sun Management Pack get posted to the web, the name of the compressed archive to download will change. For this release, download the following:

```
SUN-ITM-1.0-INTEGRATION.zip
```

Save the Sun Servers Integration 1.0 for IBM Tivoli Monitoring to a working directory on the local system from which you plan to perform the installation and uncompress it.

Unpacking the Sun Servers Integration 1.0 for IBM Tivoli Monitoring

Before you can install files in the Sun Servers Integration 1.0 for IBM Tivoli Monitoring to your ITM server, you must first unpack the distribution archive that you downloaded earlier in this chapter.

To unpack the distribution archive, do the following:

1. **Download the distribution archive to a local temp directory on the system (server or workstation) from which you plan to install the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.**

   Suppose that the local directory and the most current distribution package are named the following:

   ```
   /tmp/sun/SUN-ITM-1.0-INTEGRATION.zip
   ```

2. **Unpack the downloaded distribution archive:**

   For example, to unpack the distribution archive to a temporary directory on Solaris, enter the following commands:

   ```
   # cd /tmp/sun
   ```

   ```
   # unzip SUN-ITM-1.0-INTEGRATION.zip .
   ```

The unpacked distribution archive contains the following installation executable:

```
Sun-ITM6-1.0.exe
```

The following sections explain how to use this file to install Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

Installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring

Once you have unpacked the distribution archive, you must run the Install Wizard. The wizard handles most of the installation and configuration work required to get the Sun Servers Integration 1.0 for IBM Tivoli Monitoring working with ITM.

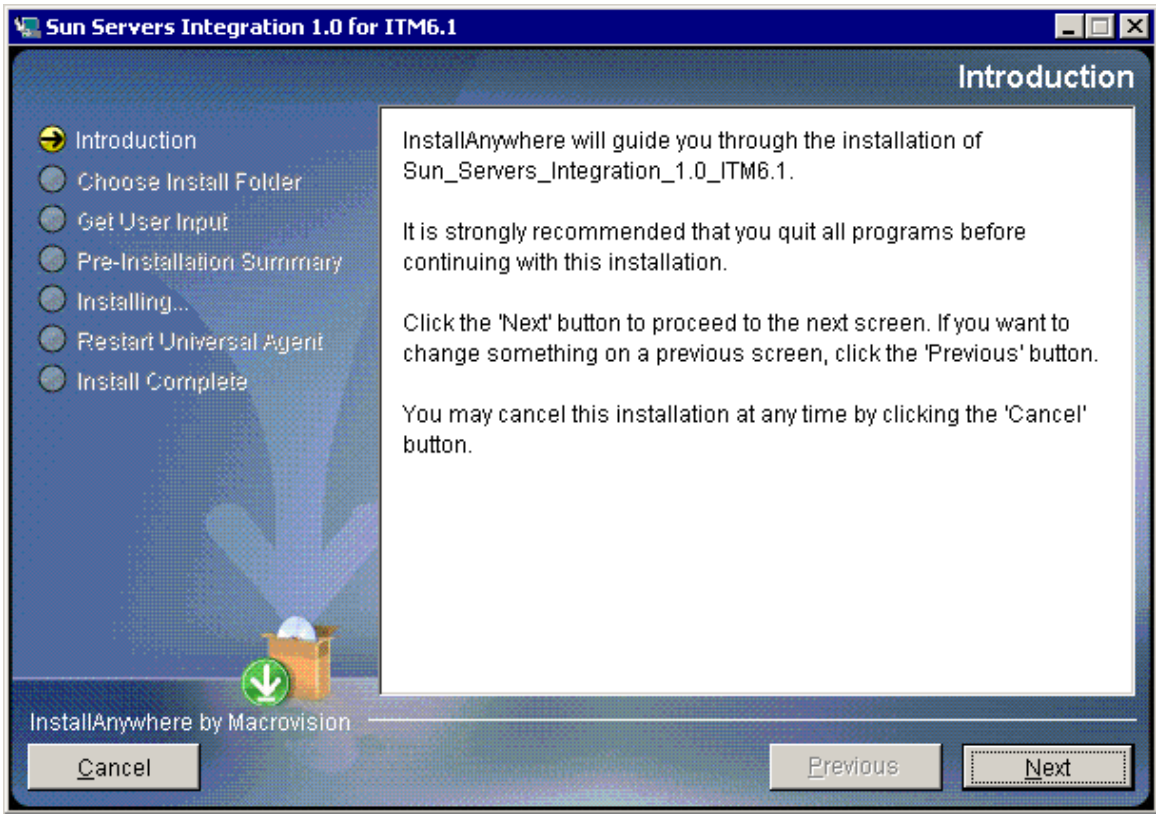
To install the Sun Servers Integration 1.0 for IBM Tivoli Monitoring, do the following:

1. **Double-click the executable file appropriate for your version of the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.**

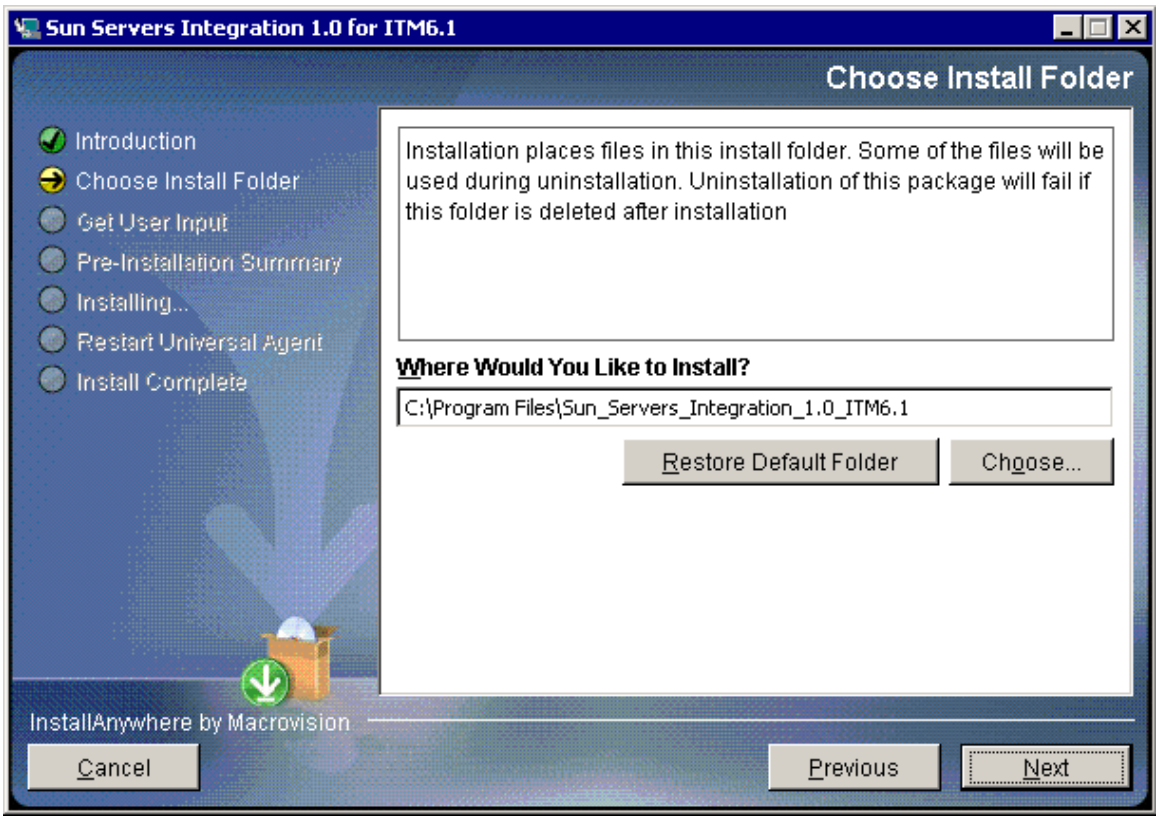
   For the version of the Sun Servers Integration 1.0 for IBM Tivoli Monitoring documented in this manual, the executable file is named:

   `Sun-ITM6-1.0.exe`

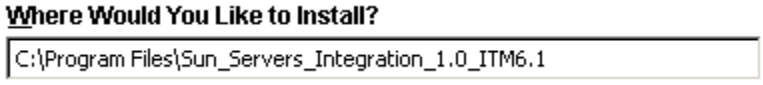
   The Install Wizard displays its opening screen.



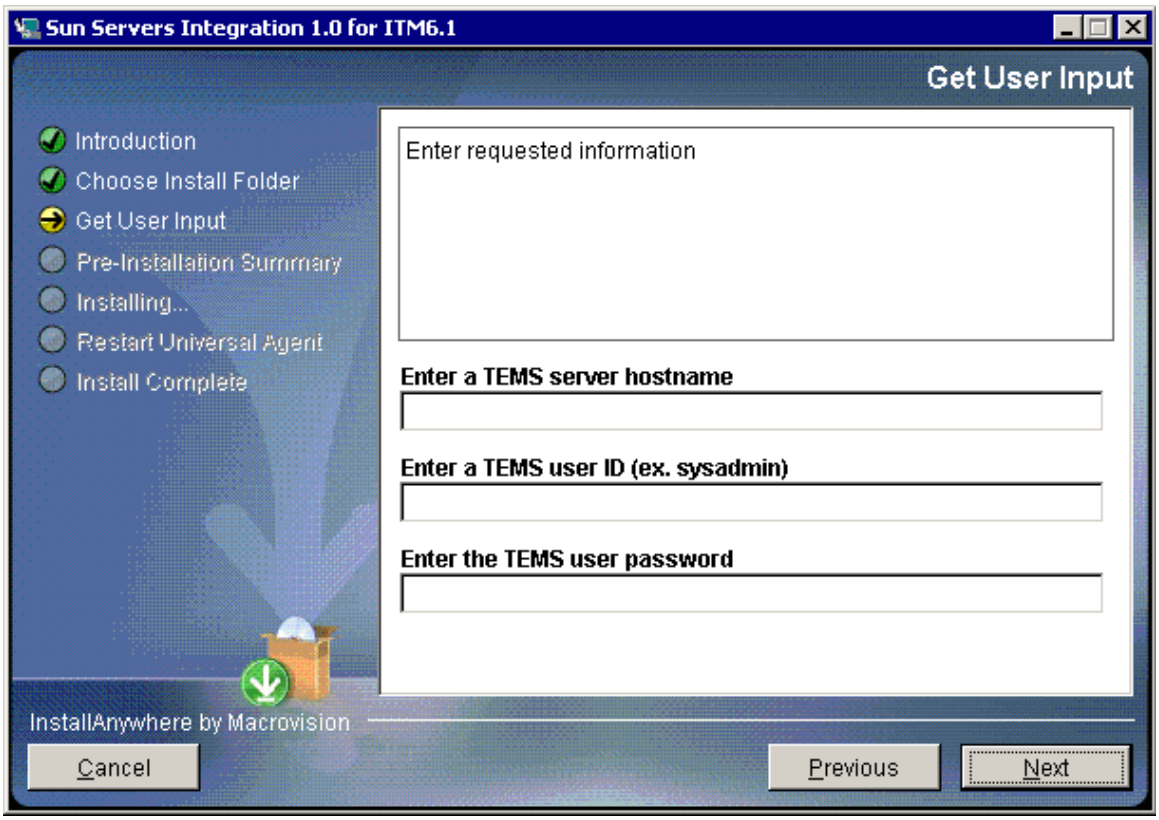
2. **Click the Next button to display the following screen.**



3. **Specify the name of the target installation directory or click the Choose … button to browse for a target installation directory.**



4. **Click the Next button to display the following screen.**

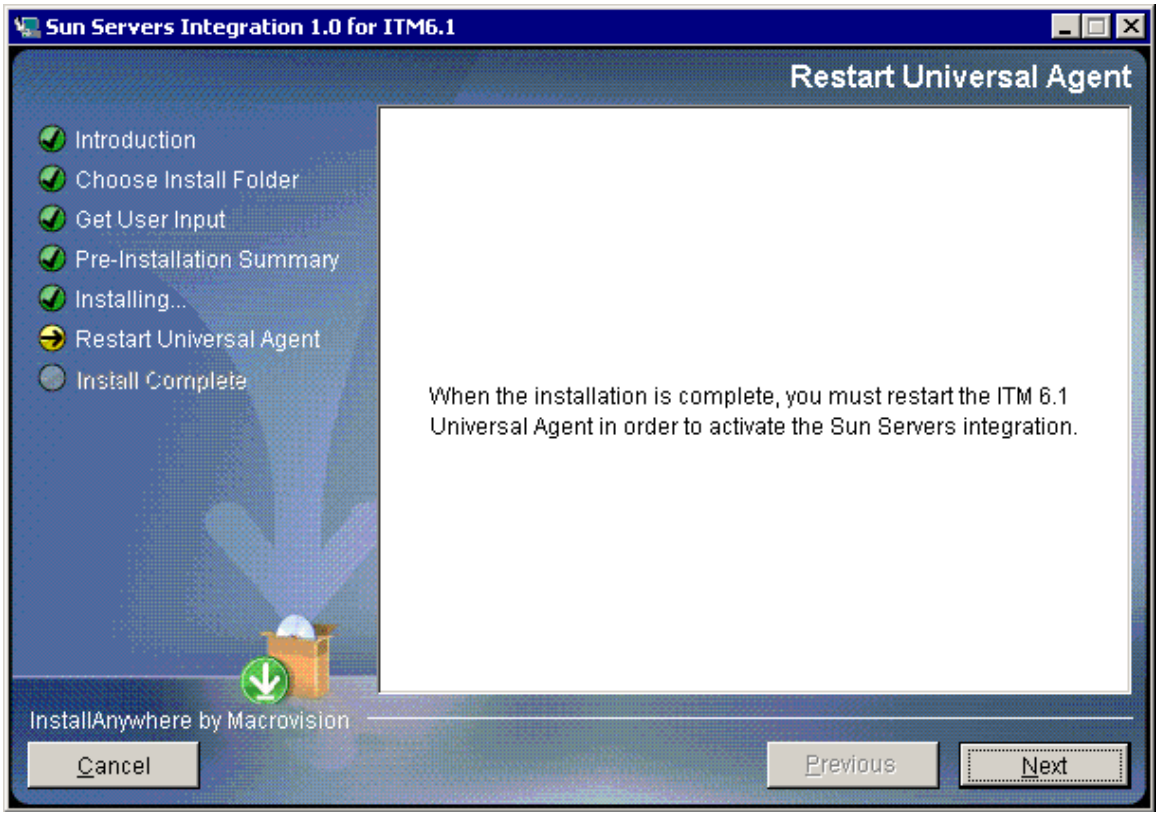


5. **Enter the appropriate values and click the Next button.**

Field	Field Value(s)
TEMS server hostname	Enter the DNS-qualified name or IP address of the server hosting ITM.
TEMS user ID	Enter the user ID for an ITM administrator account.
TEMS user password	Enter the user password for that same ITM administrator account.

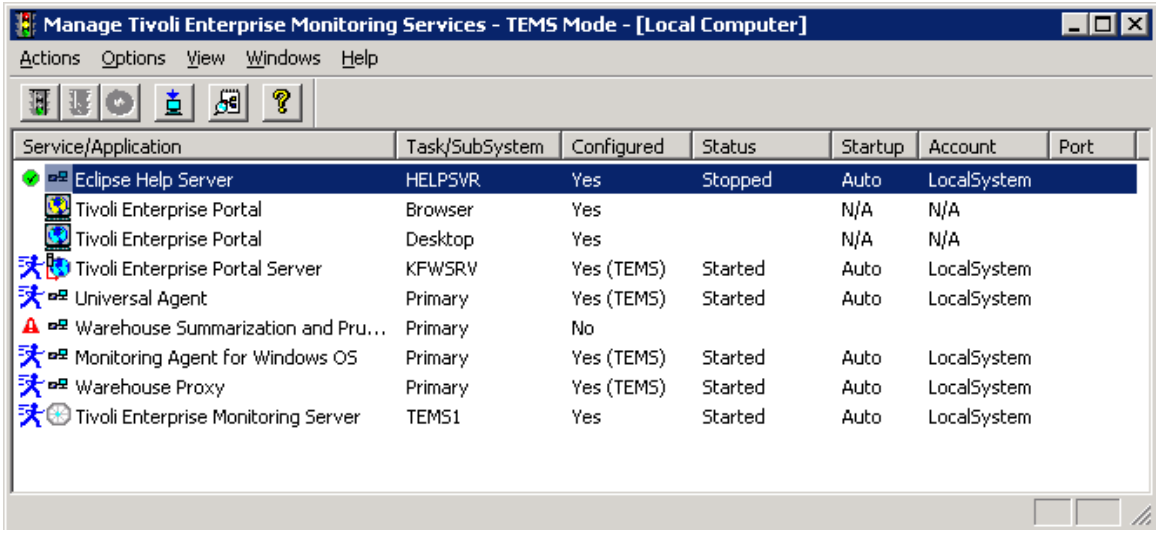
6. **Click the Next button to continue installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.**

   After a few moments, the Install Wizard displays the following screen.



7. **Click the Next button to complete the Install Wizard procedure.**

8. **From the Tivoli Enterprise Monitoring Services console, right-click Universal Agent entry and choose Restart.**



Once the ITM Universal Agent has been restarted, the Sun Servers Integration 1.0 for IBM Tivoli Monitoring should be visible to ITM and ready for further configuration.

Verifying Successful Installation

The best way to verify that the Sun Servers Integration 1.0 for IBM Tivoli Monitoring has been successfully installed on your ITM server is to confirm the presence of the files that the Install Wizard has installed in the target installation directory that you specified during installation.

See Appendix A for a listing of installed files.

Uninstalling the Sun Servers Integration 1.0 for IBM Tivoli Monitoring

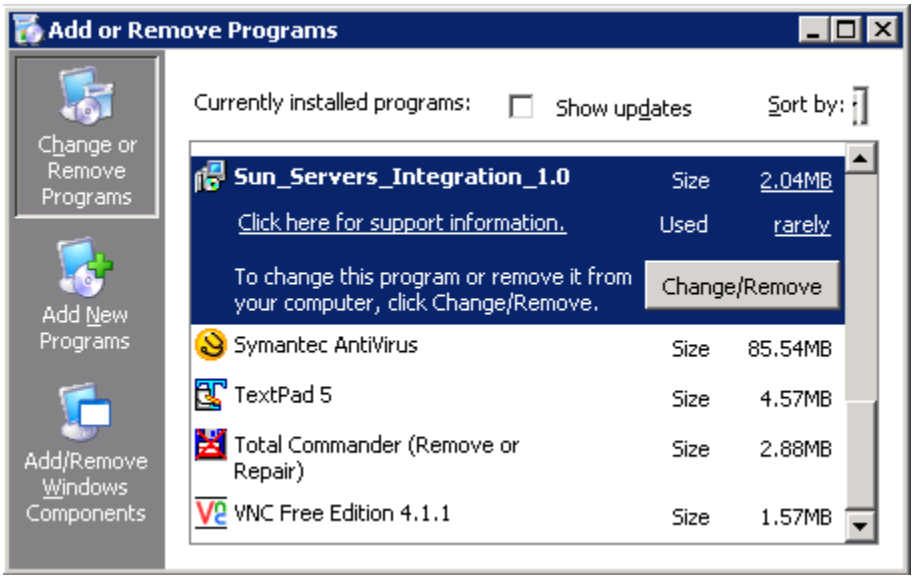
Uninstalling the Sun Servers Integration 1.0 for IBM Tivoli Monitoring uses a variation of the same Install Wizard that you used to install the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

To uninstall the Sun Servers Integration 1.0 for IBM Tivoli Monitoring in Windows, do the following:

1. **From the Windows desktop, choose Start – All Programs – Add or Remove Programs.**

   Windows displays a list of installed programs on your server.

2. **Scroll down the list to display the Sun_Servers_Integration item.**



3. **Select that item and click the Change/Remove button.**
4. **Complete the instructions to uninstall the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.**
5. **On the same server, remove select configuration entries from the following ITM configuration files.**

ITM File	Entries to Remove
\IBM\ITM\TMAITM6\work\KUMSLIST	SUNSERVERS
\IBM\ITM\TMAITM6\work\KUMPCNFG	SNMP_sunPoll.mdl
\IBM\ITM\TMAITM6\work\TRAPCNFG	petTrap* sunPlat* sunHwTrap*

6. **Save each of these configuration files.**

CHAPTER 3

Configuring ITM to Monitor Sun Devices

Before ITM can process and display traps from Sun servers correctly, you must perform the following configuration tasks on the ITM server:

- Configure the ITM Universal Agent.
- Enable SNMP polling in the Tivoli Enterprise Portal.
- Activate the Sun-specific Situations.
- Configure custom workspaces for Sun-specific situations.

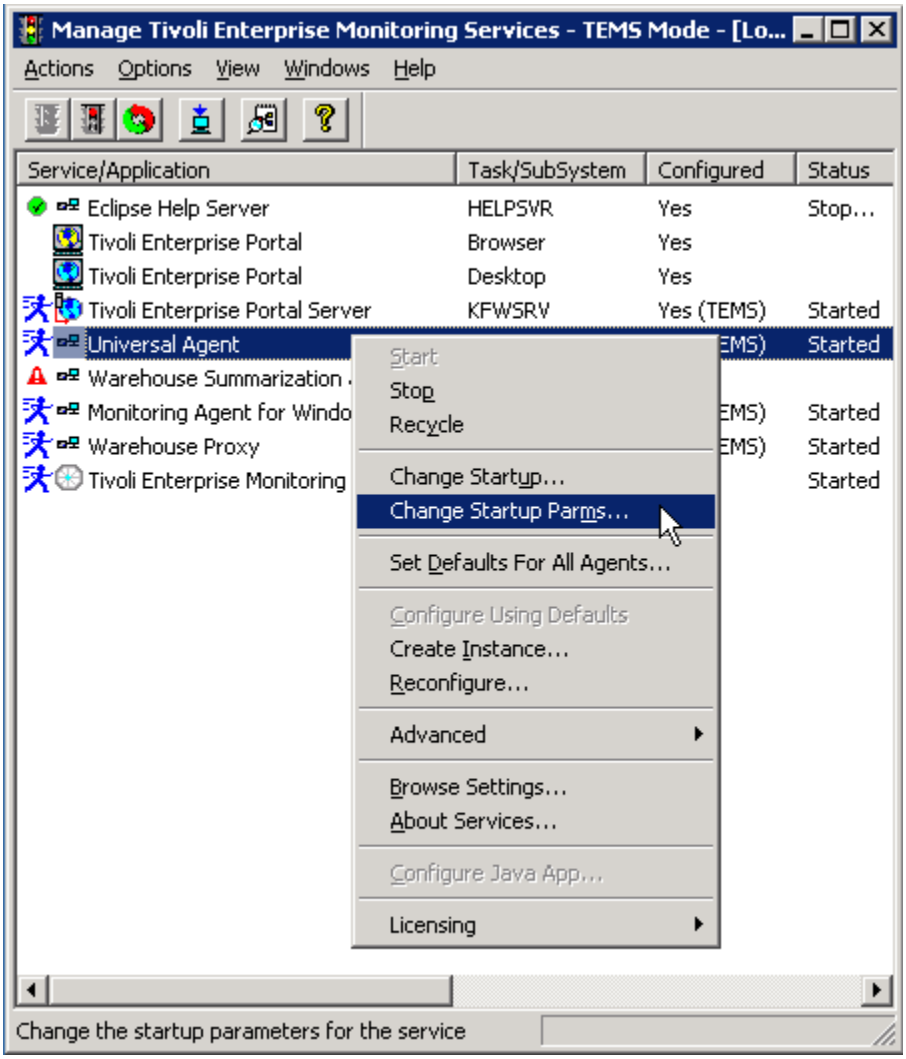
The following sections of this chapter provide instructions about completing these tasks.

Configuring the ITM Universal Agent

For the Sun Servers Integration 1.0 for IBM Tivoli Monitoring to operate correctly, you must verify that two of the variables associated with the ITM Universal Agent are set correctly. Specifically, you must configure the Universal Agent so that it loads the appropriate SNMP and POST Data Providers each time that it starts up.

To set these variables, do the following:

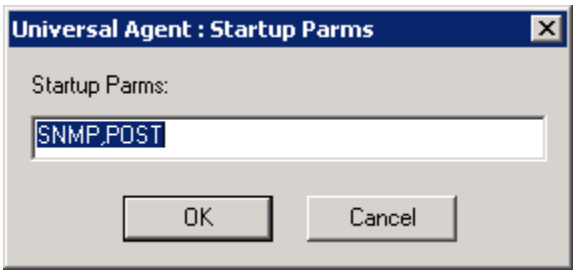
1. **From the Windows desktop, choose IBM Tivoli Monitoring - Manage Tivoli Monitoring.**
2. **Right-click the Universal Agent entry to display a pop-up menu.**



3. **Choose Change Startup Parms … to display the Universal Agent: Startup Parms dialog box.**

4. **Enter the following string in that dialog box:**

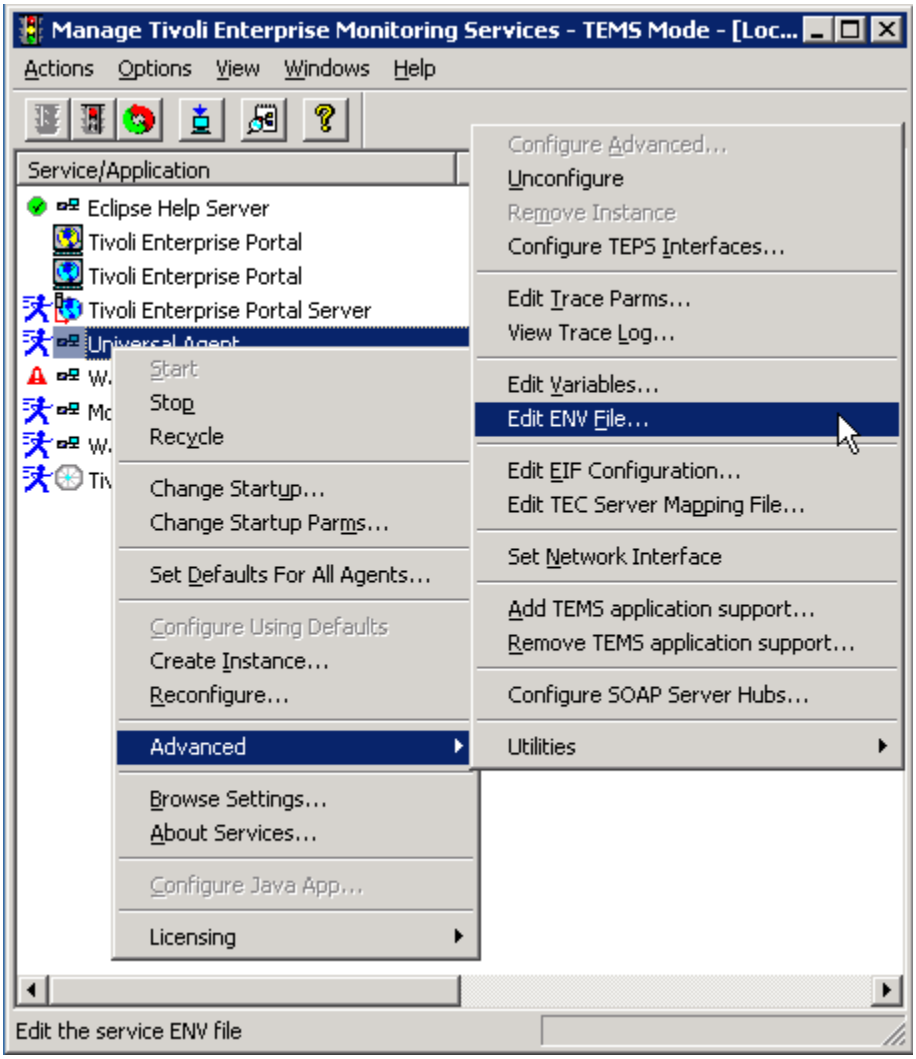
   ```
   SNMP,POST
   ```



5. **Click OK to submit that change.**

6. **Right-click the Universal Agent entry again to display a pop-up menu.**

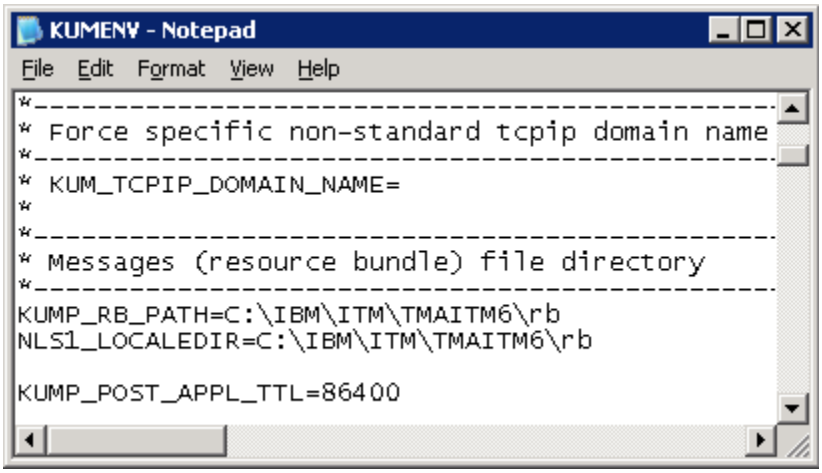
7. **Choose Advanced – Edit ENV File … .**



ITM launches your default Windows text editor and displays the file named KUMENV.

8. **Scroll down that file until you locate the line containing the following variable:**

   KUMP_POST_APPL_TTL



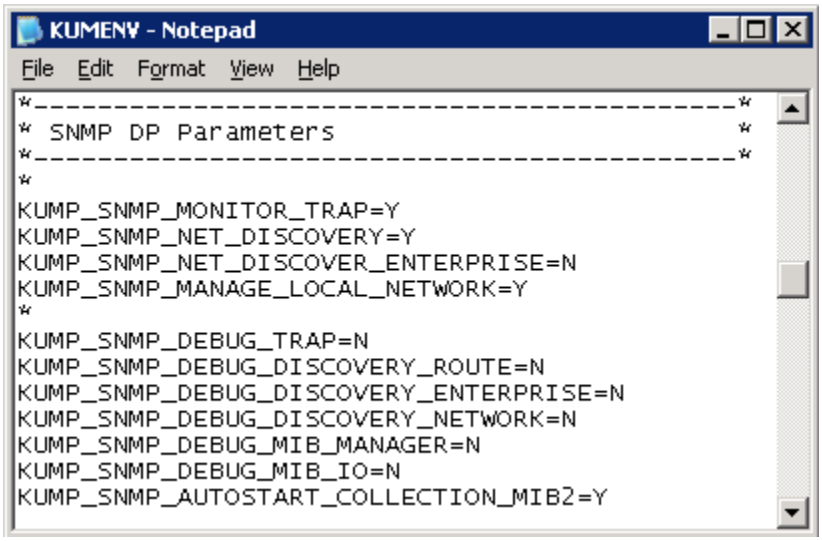
9. **Edit that line to set the value of that variable to 86400 or higher.**

   This sets the interval within which messages persist. 86400 or higher sets that interval to at least 24 hours.

   Note: If the `KUMP_ POST_APPL_TTL` line is not present, add it.

10. **Scroll further down that file until you locate the line containing the following variable:**

    `KUMP_SNMP_AUTOSTART_COLLECTION_MIB2`

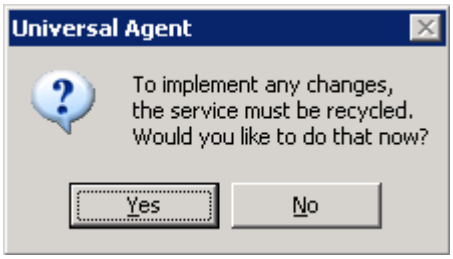


11. **Edit that line to set the value of that variable to Yes (Y).**

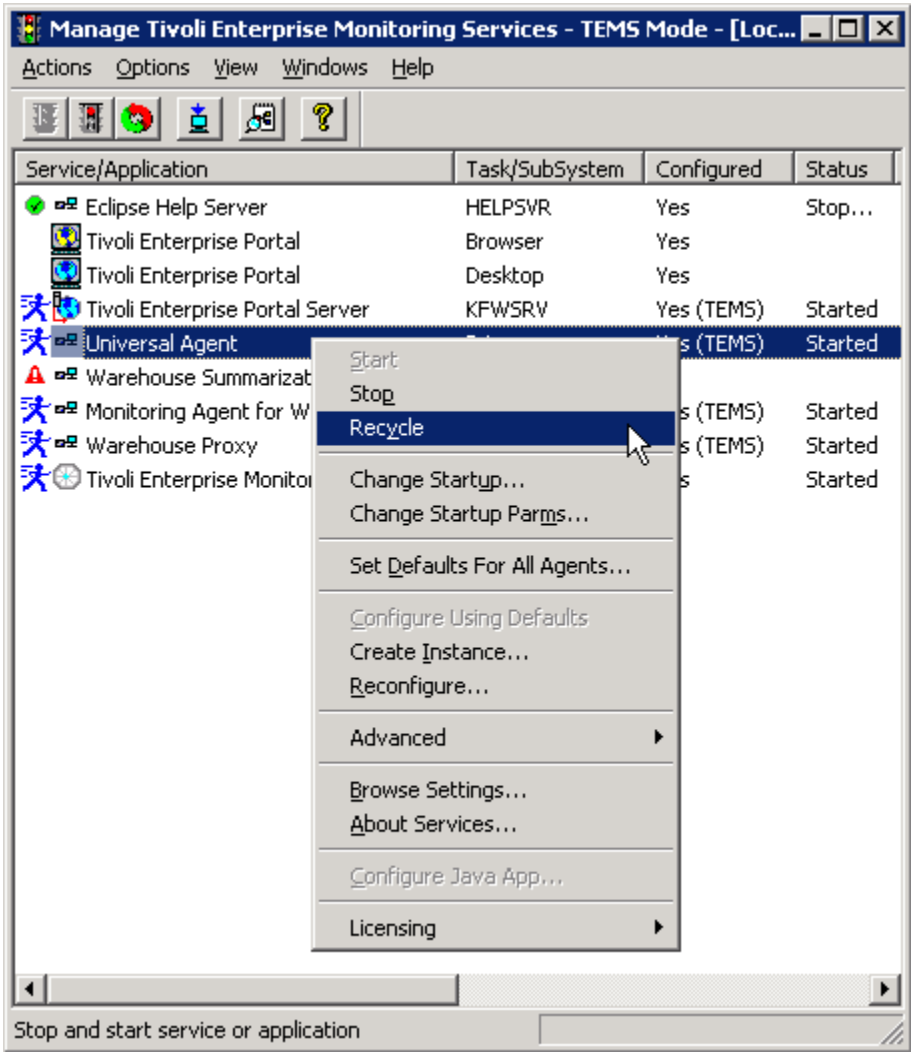
    Note: If the `KUMP_SNMP_AUTOSTART_COLLECTION_MIB2` line is not present, add it.

12. **Save the file.**

    ITM may prompt you at this time to recycle the Universal Agent.



13. **Click Yes (if you receive this command box) or right-click the Universal Agent and choose Recycle to recycle the agent and apply these configuration changes.**



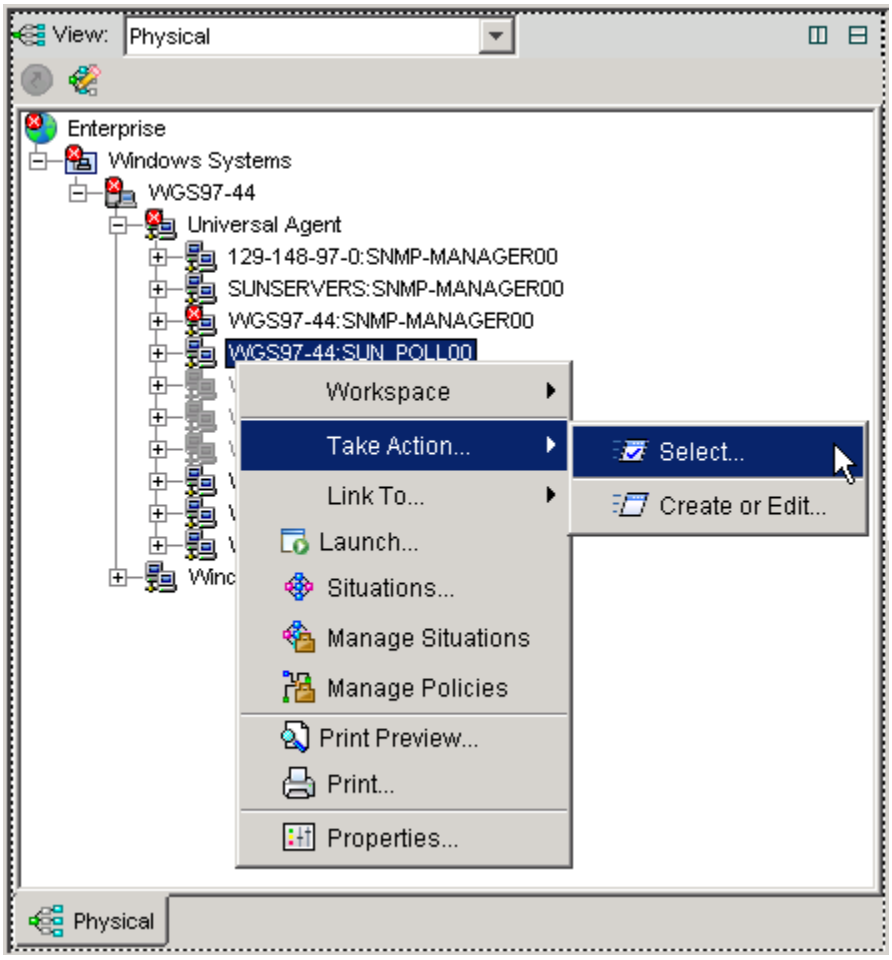
Restarting will cause the Agent to load the SUNSERVERS managed node list and the SNMP_sunPoll application.

Enabling SNMP Polling in the Tivoli Enterprise Portal

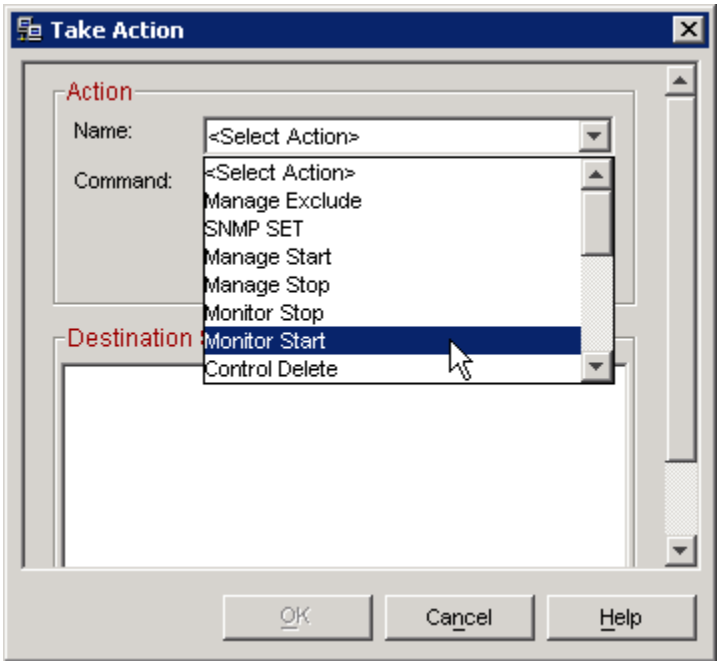
The Sun Servers Integration 1.0 for IBM Tivoli Monitoring includes an SNMP polling application. Before you can poll Sun servers, you must perform some configuration on the Universal Agent.

To configure the Universal Agent to support SNMP polling, do the following:

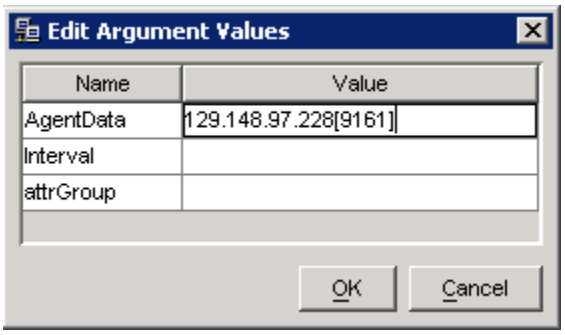
1. **Launch the ITM Enterprise Portal.**
2. **Expand the Universal Agent entries in the navigation pane.**
3. **Right-click the *[SERVER]*:SUN-POLL00 entry to display a pop-up menu.**



4. **Choose Take Action … - Select to display the Take Action dialog box.**
5. **Choose Monitor Start from the Name: drop-down box in the Action control group.**

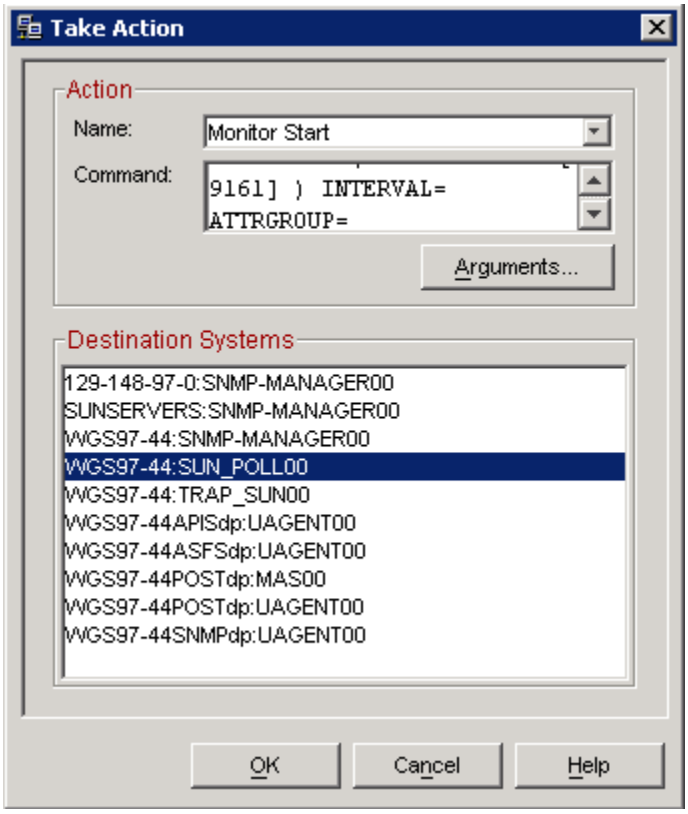


6. **In the AgentData field, enter the IP address and SNMP listening port number of the Sun server on which you wish to perform polling.**



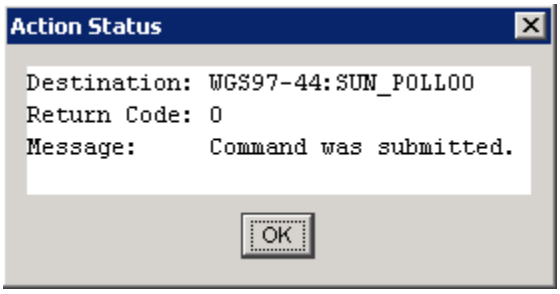
For example, if the Sun SNMP Hardware Agent is listening on a port other than 161 (the default), enter port number 9161 in square brackets after the IP address in the dialog box.

7. **In the Destination Systems list, click the *[SERVER]*:SUN-POLL00 entry.**



8. **Click OK to confirm these changes.**

   ITM displays a message box.



Activating the Sun-specific Situations

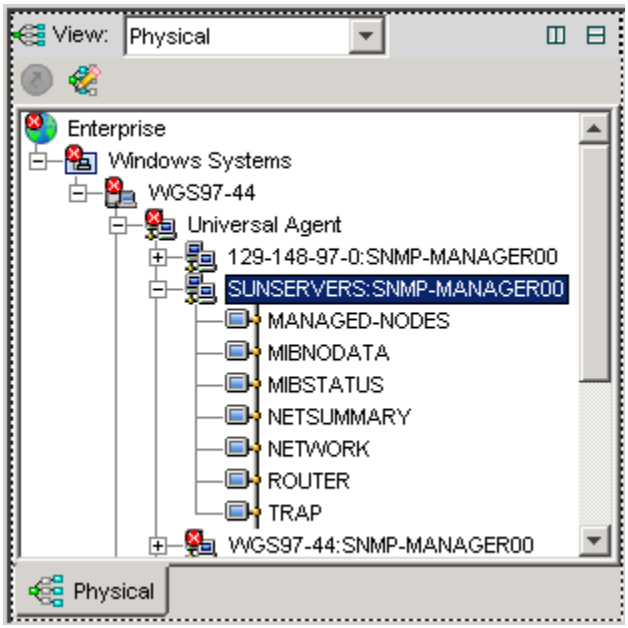
Each of the following Sun-specific situations that ships with the Sun Servers Integration 1.0 for IBM Tivoli Monitoring needs to be activated in ITM manually.

Situation	Description
`Sun_Hw_Trap_cleared`	Handles traps from the SUN-HW-TRAP-MIB with severity level CLEARED.
`Sun_Hw_Trap_critical`	Handles traps from the SUN-HW-TRAP-MIB with severity level CRITICAL.

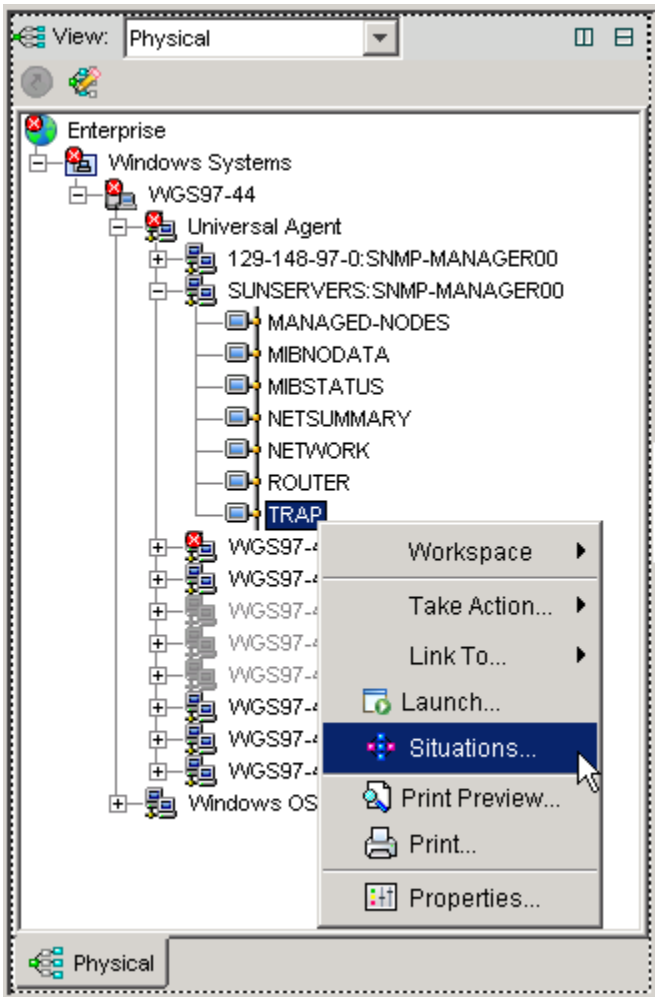
Situation	Description
Sun_Hw_Trap_warn	Handles traps from the SUN-HW-TRAP-MIB with severity level WARNING.
TRAP_alarm_off	Handles traps from the SUN-PLATFORM-MIB of type sunPlatAttributeChangeInteger where alarm state changed from ON to OFF.
TRAP_alarm_on	Handles traps from the SUN-PLATFORM-MIB of type sunPlatAttributeChangeInteger where alarm state changed from OFF to ON.
TRAP_device_inserted	Handles traps from the SUN-PLATFORM-MIB of type sunPlatStateChange and the notification state changes from Empty to Occupied.
TRAP_device_removed	Handles traps from the SUN-PLATFORM-MIB of type sunPlatStateChange and the notification state changes from Occupied to Empty.
TRAP_env_clear	Handles traps from the SUN-PLATFORM-MIB of type sunPlatEnvironmentalAlarm and perceived severity is CLEARED.
TRAP_env_warn	Handles traps from the SUN-PLATFORM-MIB of type sunPlatEnvironmentalAlarm and perceived severity is WARNING.
TRAP_equip_clear	Handles traps from the SUN-PLATFORM-MIB of type sunPlatEquipmentAlarm and perceived severity is CLEARED.
TRAP_equip_warn	Handles traps from the SUN-PLATFORM-MIB of type sunPlatEquipmentAlarm and perceived severity is WARNING.
TRAP_equipholder_clear	Handles traps from the SUN-PLATFORM-MIB of type sunPlatAttributeChangeInteger where equipment holder status changed from Holder Empty to In the Acceptable List.
TRAP_equipholder_warn	Handles traps from the SUN-PLATFORM-MIB of type sunPlatAttributeChangeInteger where equipment holder status changed from In the Acceptable List to Empty.

To activate Sun-specific situations in ITM, do the following:

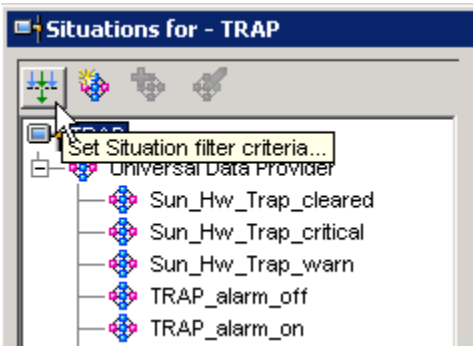
1. **Launch the ITM Enterprise Portal.**
2. **Expand the Universal Agent entry in the Navigation Pane.**



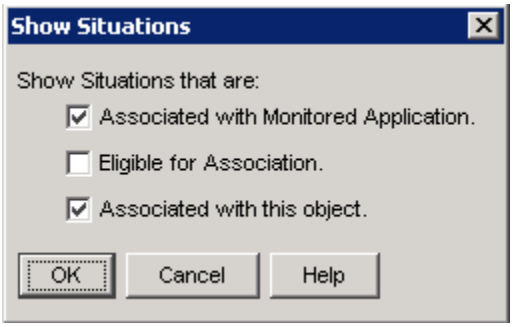
3. **Right-click the SUNSERVERS:SNMP-MANAGER00 - TRAP to display a pop-up menu.**



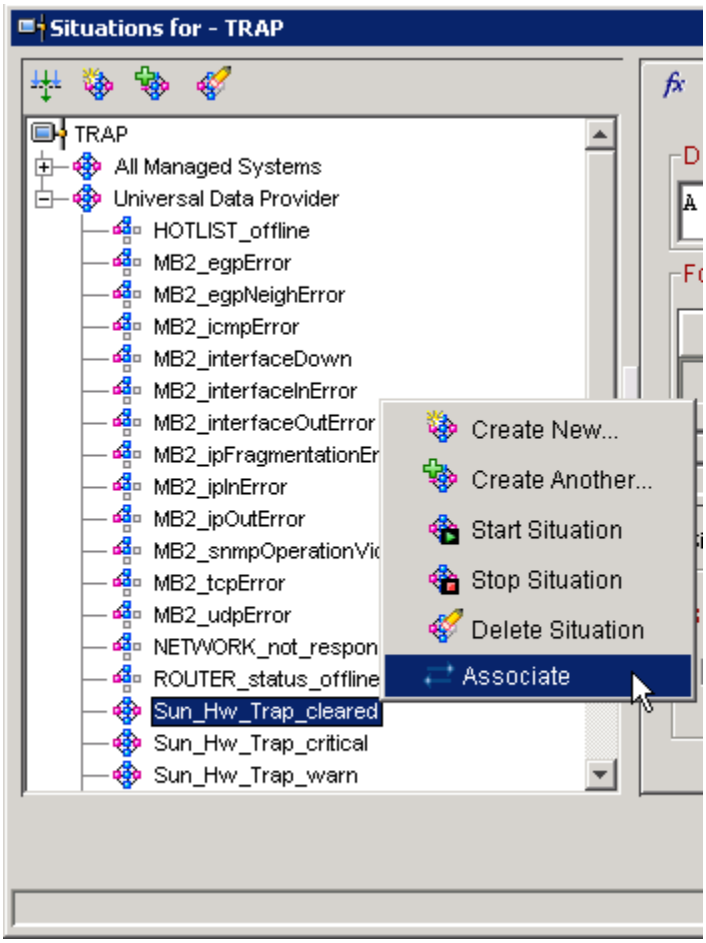
4. **Click the filter button in the toolbar.**



5. **Check the Associated with Monitored Application checkbox**



6. **Click the OK button to display a list of available situations.**
7. **Right-click an entry for a Sun-specific situation to display a pop-up menu.**
8. **Choose Associate.**



9. **In the right-hand pane of the Situation Event Console, click the Formula tab.**

10. **Click the drop-down box in the State control group to display a list of available severity settings for the currently selected trap.**

11. **Choose an appropriate severity level for this trap and click the OK button to apply changes.**

This Sun-specific situation will now be correctly associated with the TRAP workspace.

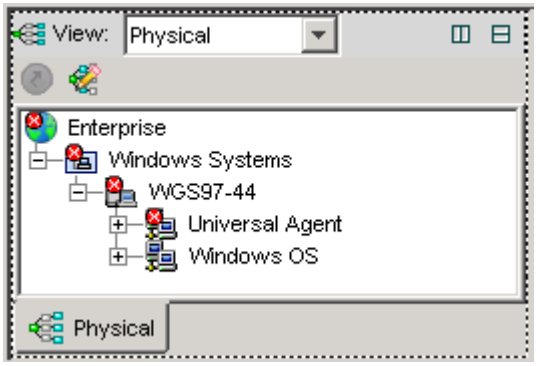
Repeat this procedure for each Sun-specific situation.

Configuring Custom Workpaces for Sun-Specific Situations

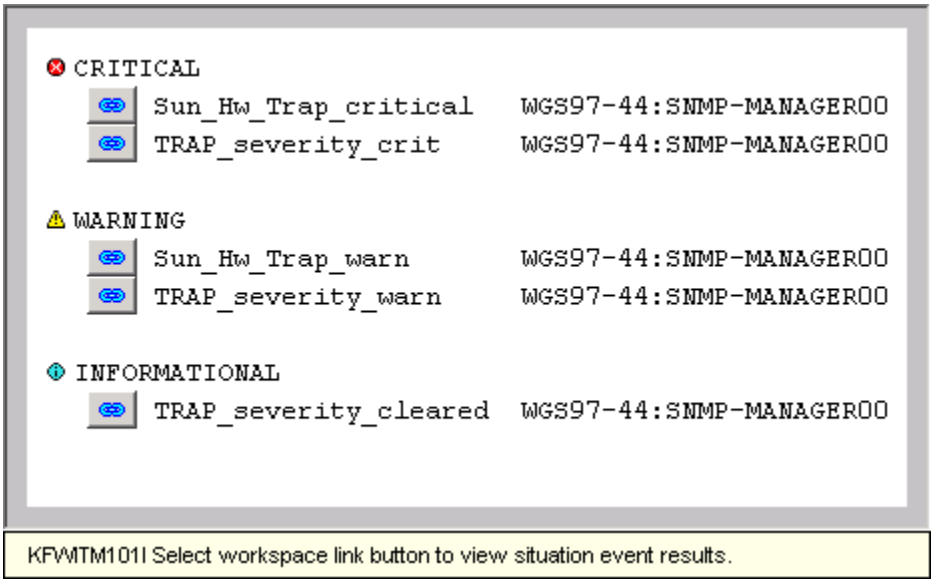
To finalize the configuration of Sun-specific workspaces, you must perform a final configuration procedure.

To customize your workspace(s) for Sun-specific situations, do the following:

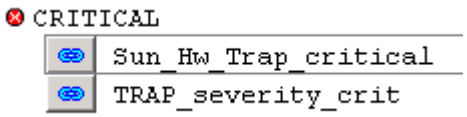
1. **Launch the ITM Enterprise Portal.**
2. **Expand the entry list to display red, yellow, or green status icons next to entries.**



3. **Move your mouse over one of these colored icons to display a pop-up window containing recent traps received from that selected data provider.**

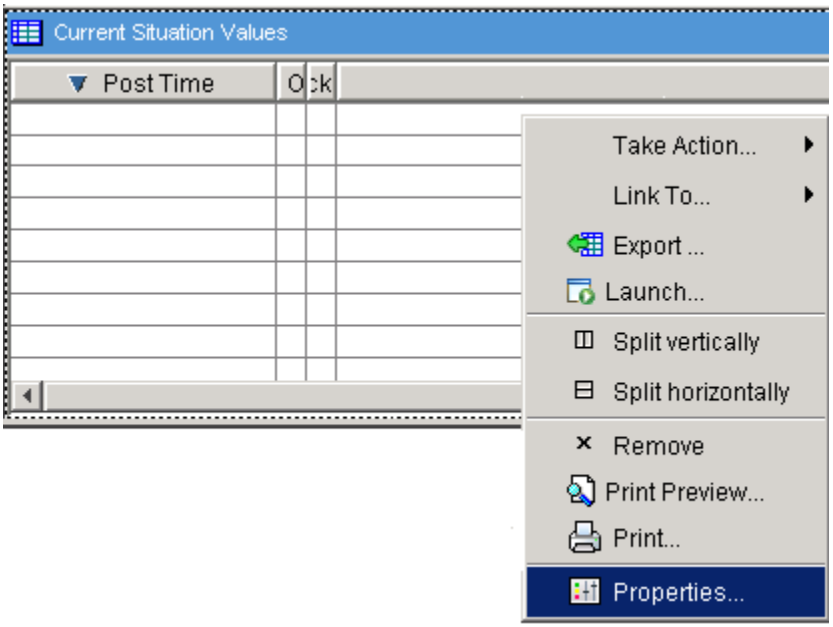


4. **Click one of the icons representing a trap type.**



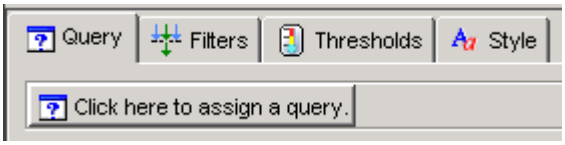
ITM displays specific information about that trap and related traps in the Current Situation Values and Situation Event Console panes.

5. **In the Situation Event Console, right-click one of the displayed traps to display pop-up menu.**



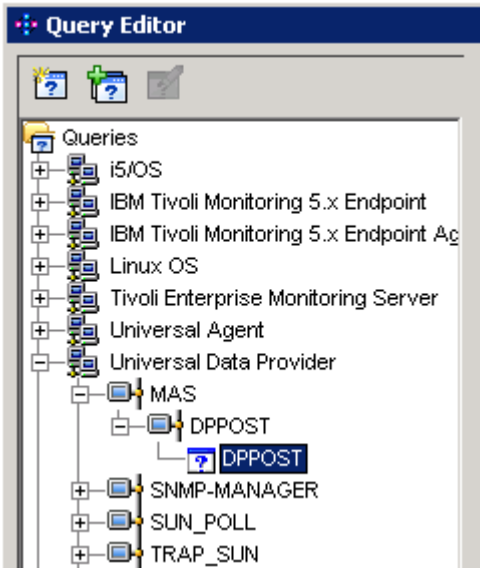
6. **Choose Properties from that pop-up menu to display the Properties dialog box.**

7. **In that Properties dialog box, click the Click here to assign a query button.**



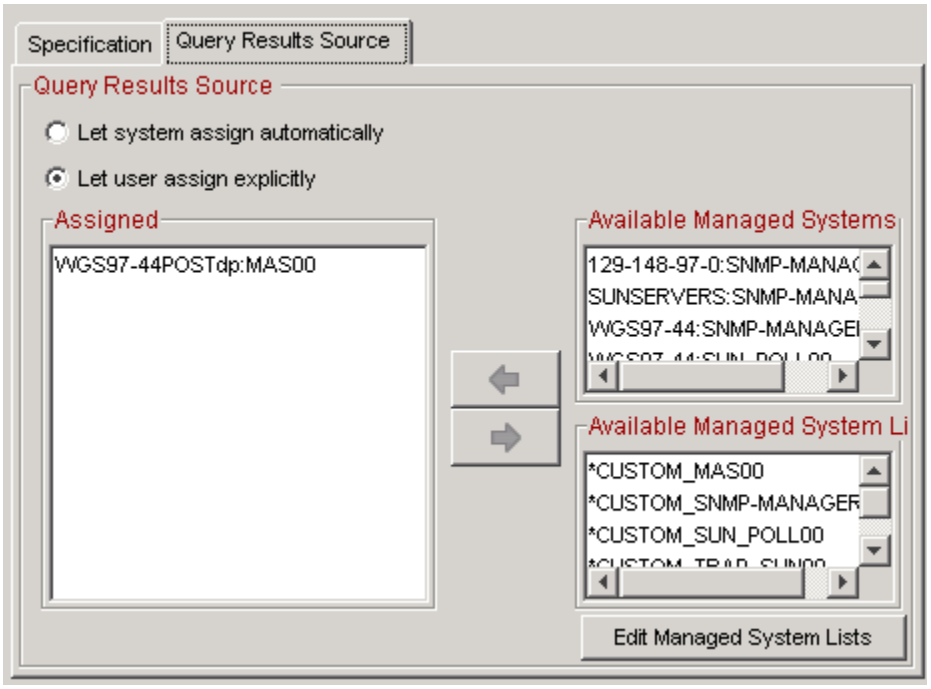
8. **In the left pane of the Query Editor, expand the entries to display the MAS-DPPOST-DPPOST icon under the Universal Data Provider entry.**

Note: ITM preserves a certain amount of this configuration information, even after you have uninstalled and re-installed the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

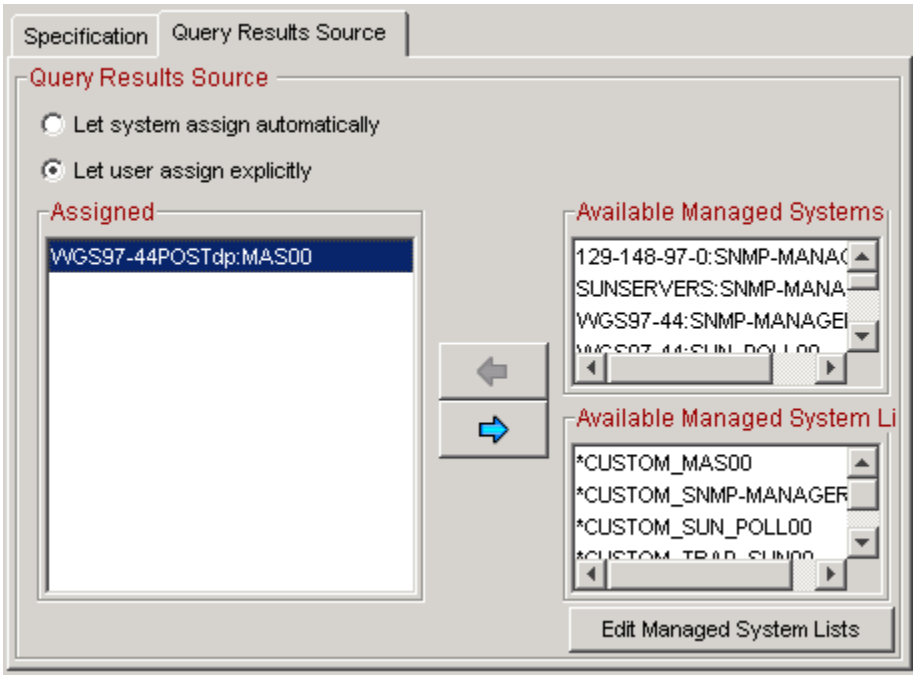


9. **Click the DPPOST entry.**

10. **In the right-hand pane of the Query Editor, click the Query Results Source tab.**



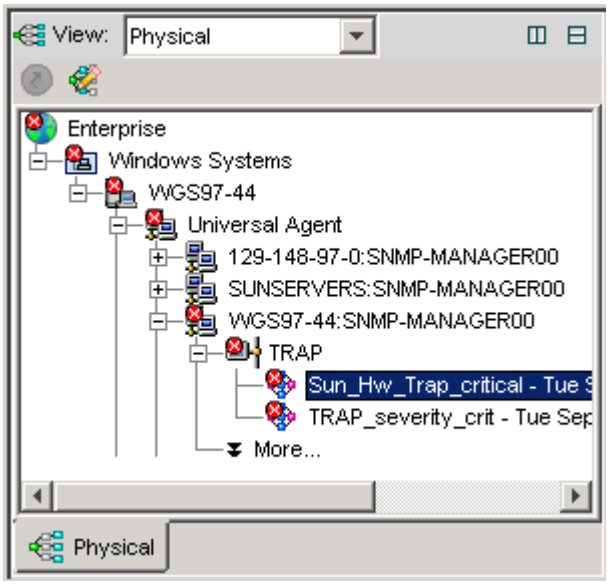
11. **In the Assigned listbox, check the Let user assign explicitly checkbox and click the name of the application group.**



12. **Click OK in the Query Editor and in the Properties dialog box to apply these changes.**

Perform this task with each Sun-specific Situation.

ITM then displays each of these configured traps under the TRAP entry in the Workspace navigator.



ITM will also begin to populate the Current Situation Values pane with traps received from this data provider.

CHAPTER 4

Configuring Sun Devices to be Monitored by ITM

This chapter describes how to configure your Sun devices to be monitored by ITM.

A complete and current list of supported Sun servers, service processors, and service processor firmware is available at http://www.sun.com/system-management/tools.jsp. Please consult this web site before configuring Sun devices for ITM.

Sun Device	Configuration Task
Sun SPARC Enterprise T1000/T2000/T5x20 Servers	Configure the Sun SNMP Management Agent for Sun Fire and Netra Systems
Sun SPARC Enterprise T5x20 Service Processors	Enable and configure SNMP on the ILOM 2.x service processor

Configuring Supported Sun SPARC Enterprise Servers to be Monitored by ITM

To monitor Sun servers or service processors in ITM, you must configure SNMP on those devices.

SPARC Solaris SNMP Configuration

If you want ITM to use OS-based SNMP to monitor your SPARC Solaris servers, the Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems (hereafter Hardware Management Agent) must be installed and configured on each of these SPARC Solaris nodes.

Installation

To evaluate SNMP system requirements for your SPARC Solaris server and to learn how to install the Hardware Management Agent on it, consult the following Sun manual:

- *Sun™ SNMP Management Agent Administration Guide for Sun Fire™ and Netra™ Servers* (Part Number 819-7978). You can download this manual from http://docs.sun.com.

Configuration

For integration between the Hardware Management Agent and ITM to work correctly, you must verify that the Hardware Management Agent configuration file on your managed SPARC Solaris nodes contains the following entries. To update that configuration file, do the following:

1. **On the managed server, open the following configuration file in a text editor:**

   `/etc/opt/SUNWmasf/conf/snmpd.conf`

2. **Configure (or verify) that the Read Only community string matches at least one of the community strings configured on the ITM management server, for example `rocommunity public`.**

3. **Configure (or verify) that the Hardware Management Agent and ITM are listening and sending on the appropriate port numbers.**

   For example, if the Sun SNMP Hardware Agent is listening on port 9161 and sending traps on port 162, configure ITM to listen on port 162 and send on port 9161. The following setting specifies that the Sun SNMP Hardware Agent listens on port 9161.

   ```
   agentaddress  9161
   ```

   You must configure ITM to poll SPARC Solaris servers using that same port, in this case port 9161.

4. **Add an entry to specify whether you want to send SNMP v1 or SNMP v2 traps.**

SNMP format	Entry
v1	`trapsink <destination_hostname>`
v2c	`trap2sink <destination_hostname>`

   where `<destination_hostname>` specifies the name or IP address of the destination server receiving the SNMP v1 (trapsink) or v2c (trap2sink) traps from the Hardware Management Agent.

   Note: Adding both lines will result in the Hardware Management Agent sending ITM two traps for each alert and those redundant alerts appearing in the event console.

5. **(Optional) Uncomment (remove the # character) from the following line in the final section of the file.**

   ```
   ############################################################
   # SECTION: Trap compatibility mode
   . . .
   SUNW_alwaysIncludeEntPhysName   yes
   ```

   Enabling this mode for the Hardware Management Agent adds more detailed sensor and device names to traps and eliminates the need for generic messages for some sensors such as “A device has been disabled.”

6. **Save the modified file.**

   For these changes to take effect, you must force the Hardware Management Agent to re-read the configuration file.

7. **Enter the following commands in a terminal window to force the Hardware Management Agent to re-read its configuration file.**

   ```
   # ps -ef | grep SUNWmasf | grep -v grep
   ```

   This command returns the process ID of the Hardware Management Agent daemon running on your SPARC Solaris system.

   ```
   # kill -HUP <snmpd_pid>
   ```

   where <*snmpd_pid*> is the process ID of the Hardware Management Agent obtained in the previous sub-step.

   The Hardware Management Agent re-reads its configuration file automatically when it restarts.

Your managed SPARC Solaris servers are now ready to forward traps to ITM.

Configuring Sun SPARC Enterprise T5x20 Service Processors to be Managed by ITM

For a Sun SPARC Enterprise T5x20 service processor to be discovered and monitored by ITM, you must configure SNMP on it.

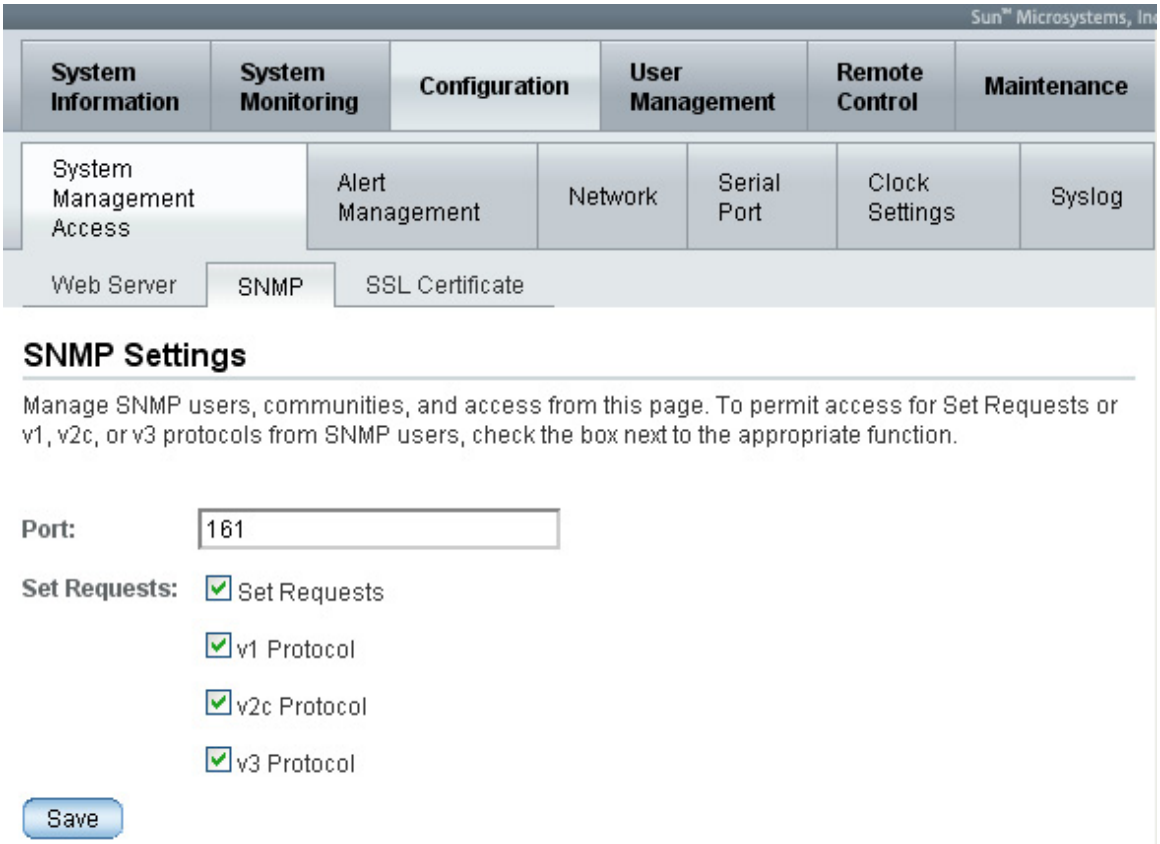
A complete and current list of supported Sun servers, service processors, and service processor firmware is available at http://www.sun.com/system-management/tools.jsp. Please consult this web site before installing the Sun Servers Integration 1.0 for IBM Tivoli Monitoring.

Sun Server	Service Processor
Sun SPARC Enterprise T5x20	ILOM 2.0

Configuring Sun ILOM 2.x Service Processors to be Monitored by ITM

To configure SNMP protocol settings on your Sun ILOM 2.x service processor, do the following:

1. **Launch the web GUI (ILOM) on the service processor to be configured and monitored.**
2. **Log in to the ILOM graphical interface as root.**
3. **Click Configuration – System Management Access – SNMP to display the SNMP configuration screen.**

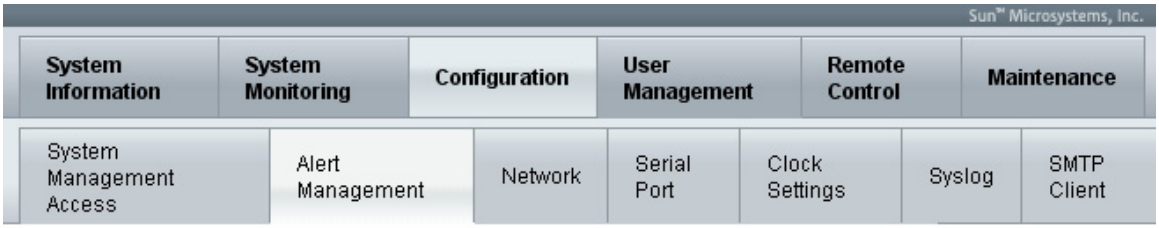


4. **Verify that the value of Port is set to the default SNMP port number (either the original default port 161 or some other port that you have set as default).**

   Note: Check the v3 Protocol checkbox only if your management application supports it.

5. **Click the Save button to submit the changes.**

6. **Click the Configuration - Alert Management tab to display the Alert Settings screen.**



Alert Settings

This shows the table of configured alerts. To send a test alert to each of the configured alert destinations, click the *Send Test Alerts* button. IPMI Platform Event Traps (PETs), Email Alerts and SNMP Traps are supported. Select a radio button, then select Edit from the Actions drop down list to configure an alert. You can configure up to 15 alerts.

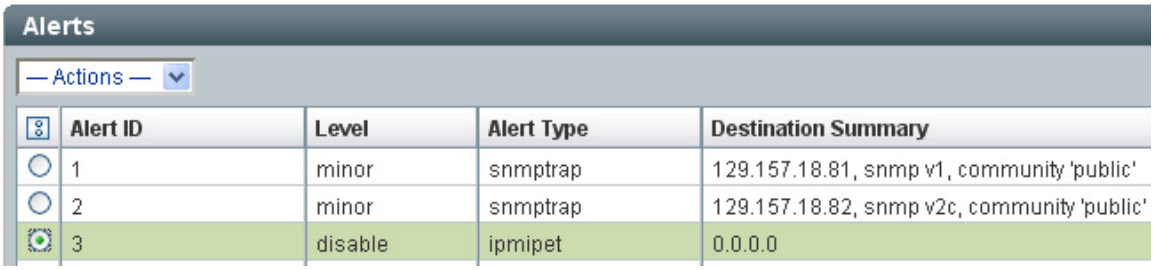
Send Test Alerts

Alerts

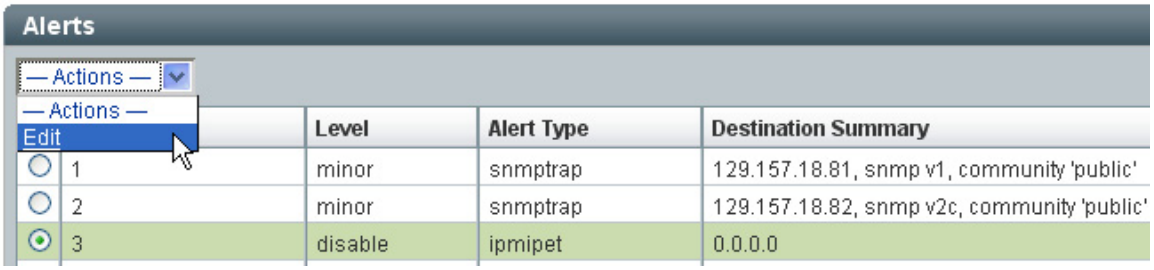
— Actions —

	Alert ID	Level	Alert Type	Destination Summary
○	1	minor	snmptrap	129.157.18.81, snmp v1, community 'public'
○	2	minor	snmptrap	129.157.18.82, snmp v2c, community 'public'
○	3	disable	ipmipet	0.0.0.0

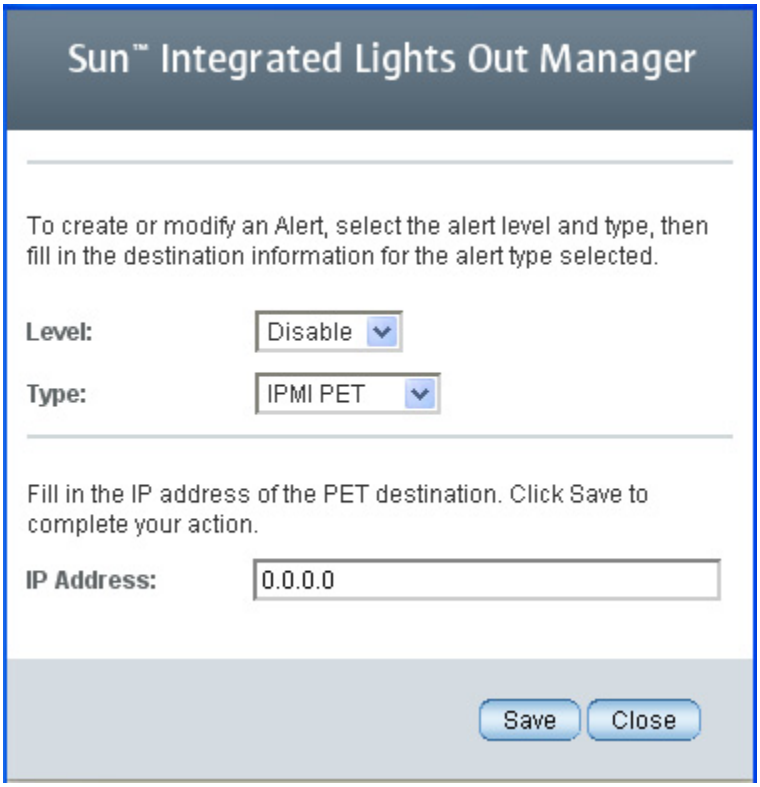
7. **Click one of checkboxes for an entry that has no value for the Destination Summary field.**



8. **Click the Actions drop-down box and choose Edit.**



ILOM 2.x displays the following screen.



9. **Set (or verify) the following configuration settings.**

Field	Value
Level:	Minor (to view the maximum number of traps at all severity levels)
Type:	SNMP Trap (for the SUN-HW-TRAP-MIB) **Note**: Although ILOM 2.0 continues to support the `SUN-ILOM-PET-EVENTS` MIB, Sun strongly recommends configuring your service processors to use the more robust `SUN-HW-TRAP-MIB` MIB.
IP Address:	*IP_address_of_destination_server*
SNMP Version:	v1, v2c, or v3 (if supported) for your management configuration
Community Name:	public **Note:** At least one of the community strings with at least read-only (ro) permissions must match one of the community strings configured in the Element Manager.

10. **Click the Save button to submit the change.**

    Tip: Verify that the information that you just entered in the dialog box appears in the updated Alert Management table.

Your Sun ILOM 2.x service processor is now configured to send SUN-HW-TRAP-MIB SNMP traps to all trap destinations.

CHAPTER 5

Monitoring Sun Devices in ITM

Beyond the raw traps that ITM receives from Sun devices via SNMP, the Sun Servers Integration 1.0 for IBM Tivoli Monitoring adds value in two ways:

- It filters and parses raw traps so they appear in ITM Situations with meaningful information about event sources, severity, and causes (Sun-specific product knowledge).
- It also polls Sun devices via SNMP to extract additional information about the physical devices and physical configuration of components on your monitored Sun servers.

The Sun Servers Integration 1.0 for IBM Tivoli Monitoring does not provide custom reporting tools or views beyond what ITM supports. The value-add with the Sun Servers Integration 1.0 for IBM Tivoli Monitoring is not in the display of Sun-specific data, but in the robustness and accuracy of the data that is being brought into the ITM environment.

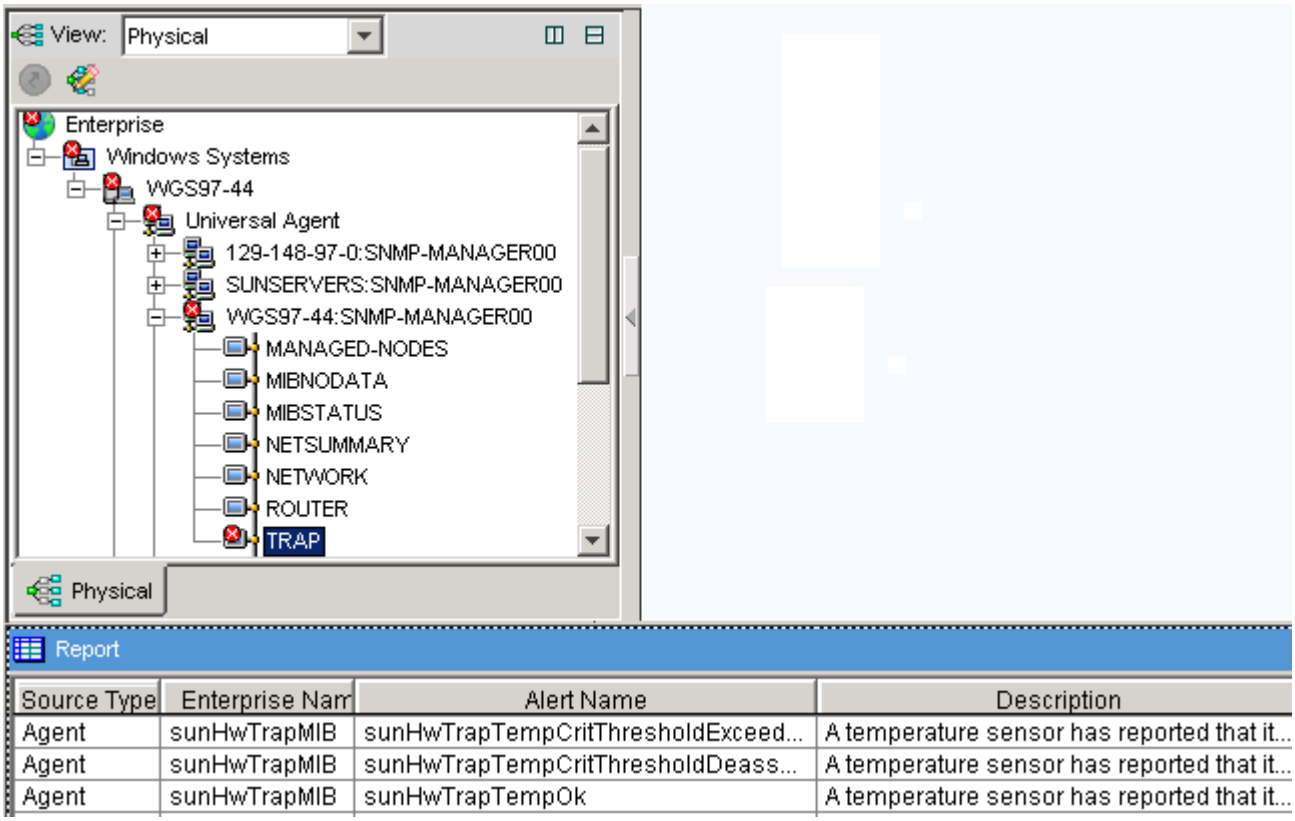
This chapter provides an overview of the ways that this robust, Sun-specific data appears in the ITM user interface:

- Raw traps received form Sun servers
- Filtered events as they appear in the Situation Event Console and its related tools
- Polled information about Sun hardware components

These topics are addressed in the following sections of this chapter.

Viewing Raw Traps in the Tivoli Enterprise Portal

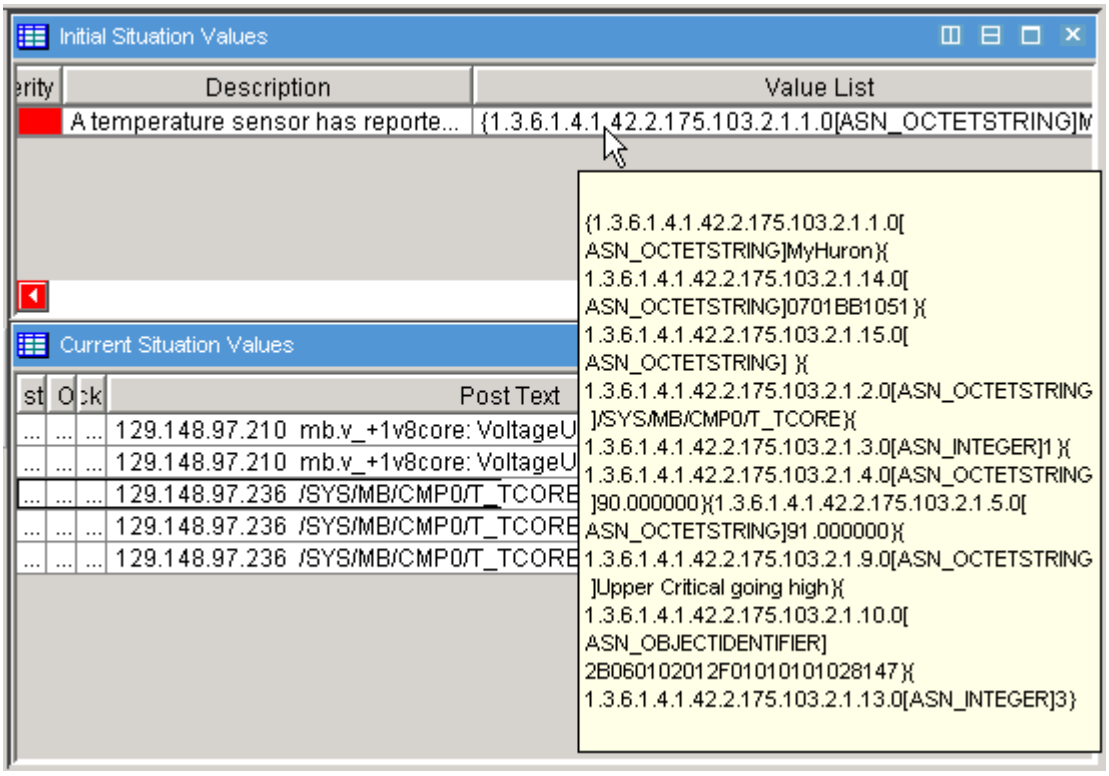
Depending which Sun device you are monitoring, the Sun Servers Integration 1.0 for IBM Tivoli Monitoring relies upon a variety of SNMP MIBs and/or agents. The MIB or agent generating these raw traps is visible in the ITM SNMP-MANAGER00 – TRAP situation. For example, raw traps generated by the `SUN-HW-TRAP-MIB` are identifiable in the Report pane as `sunHwTrapMIB`.



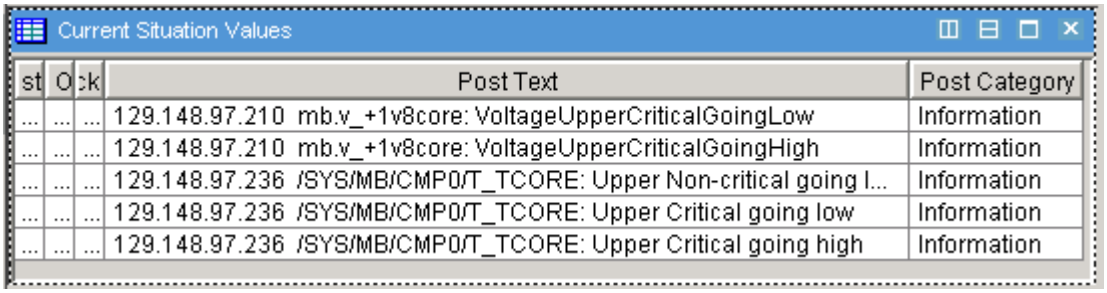
The SNMP alert name and short description are also visible. These raw SNMP traps serve as input to the Sun-specific filtering and parsing that drive the ITM Situation views.

Viewing Situation Events in the Tivoli Enterprise Portal

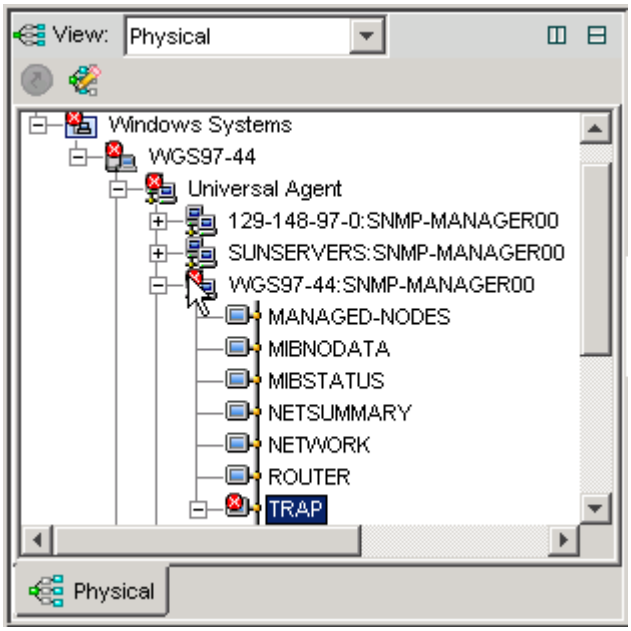
The unparsed, unfiltered information in raw SNMP traps is visible in ITM situations in the Initial Situation Values pane. To view the raw information, mouse over the Value List field in that pane.



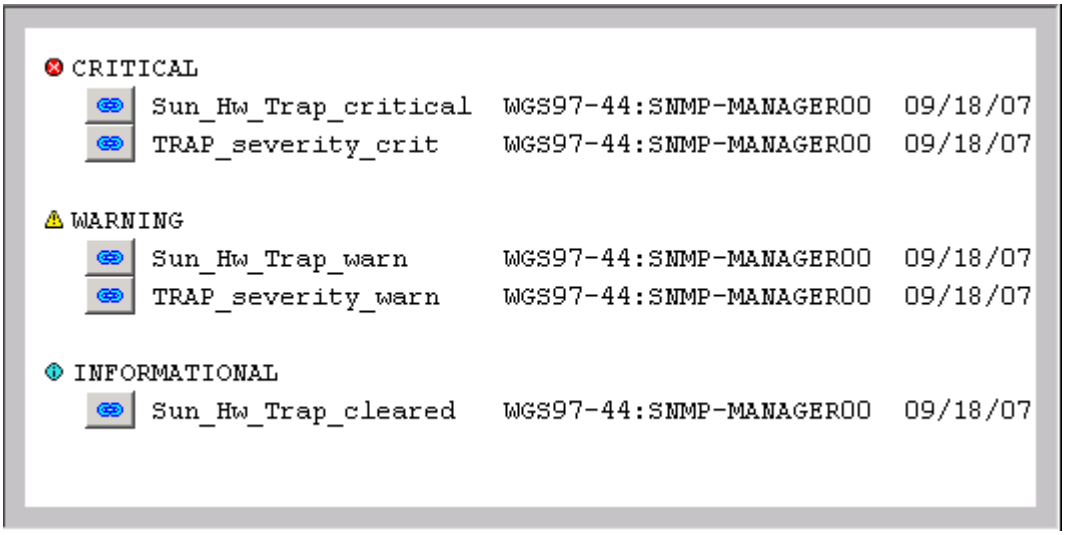
The Sun Servers Integration 1.0 for IBM Tivoli Monitoring makes this information more readable and usable by parsing it into Sun-specific fields of information in the Current Situation Values pane. For each message, the originating system IP address, sensor name, short description, and severity are clearly visible.



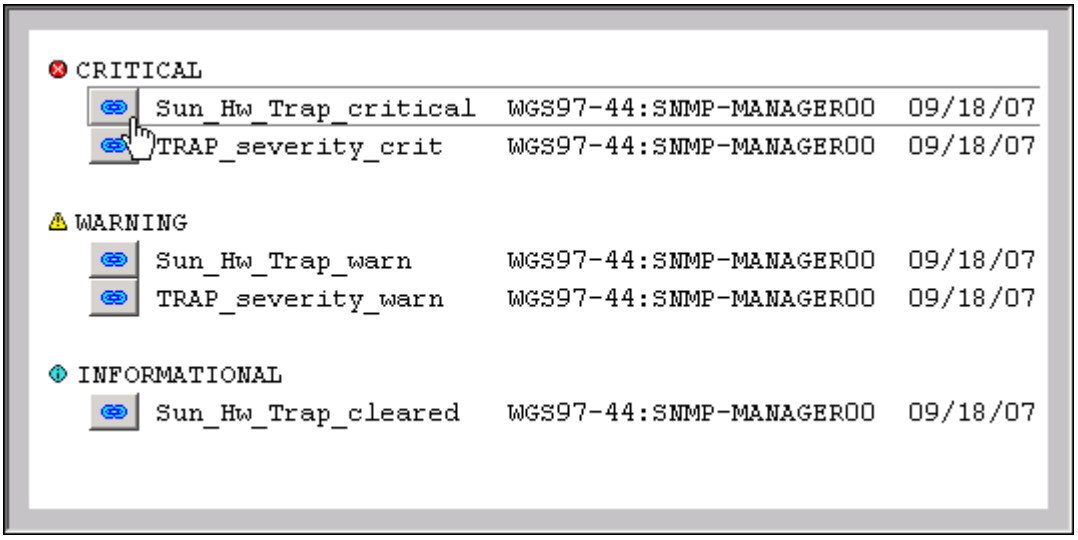
This detailed information is useful when diagnosing problems with one or more monitored Sun servers on your network. Once you have the Sun Servers Integration 1.0 for IBM Tivoli Monitoring and your ITM situations configured, you can view the overall status of multiple servers by expanding the situations in the Navigation Pane.



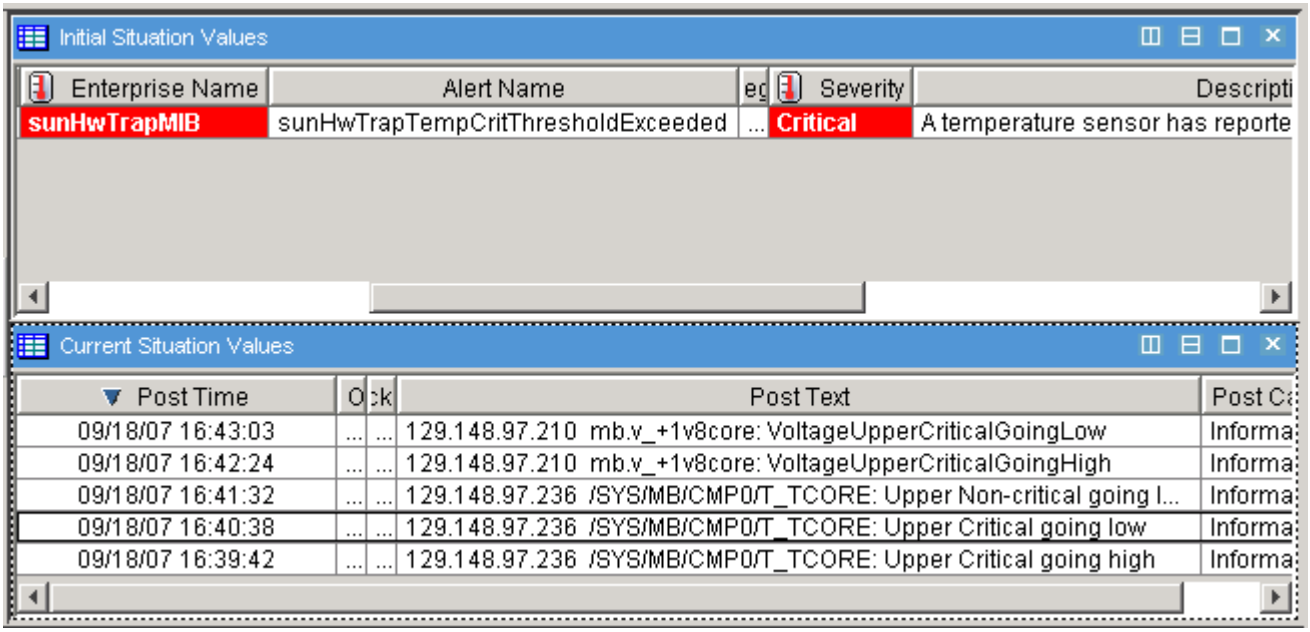
For any Situation Event Item that has a colored event indicator, you can mouse over that indicator to display a severity-sorted list of the most recent events received by that situation.



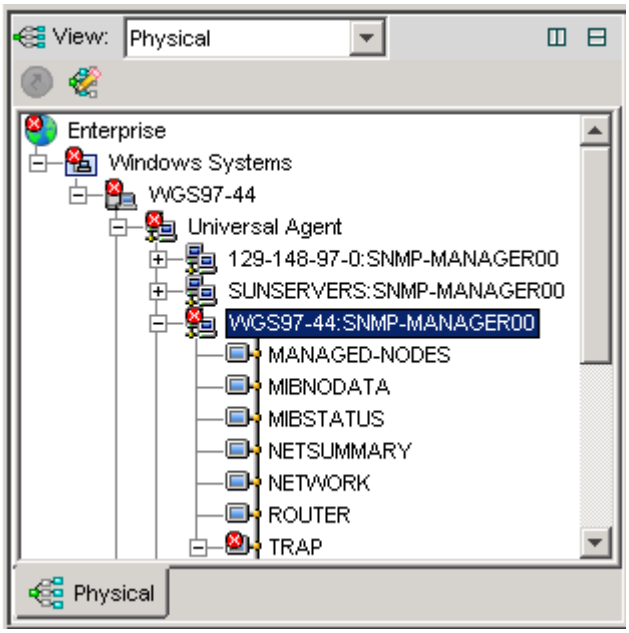
To drill down further to investigate the status or cause of an event, select one of those events in the list.



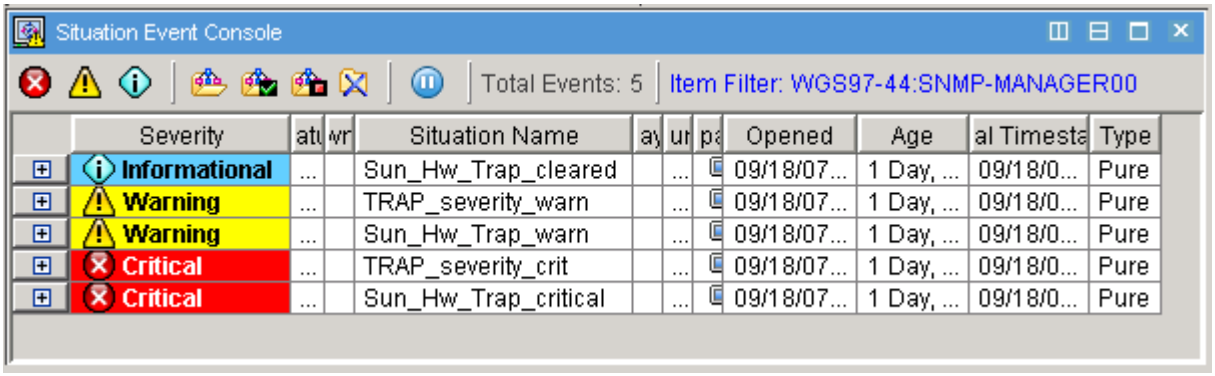
Click that selected event to display detailed information about it in the Initial Situation Values and Current Situation Values panes.



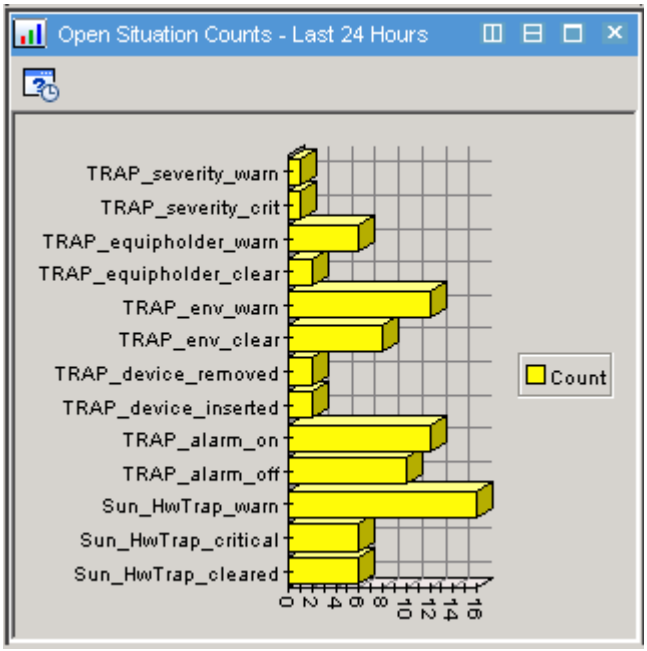
To view any one of these events in the context of all the events received from multiple servers, click the SNMP-MANAGER00 in the Navigation Pane.



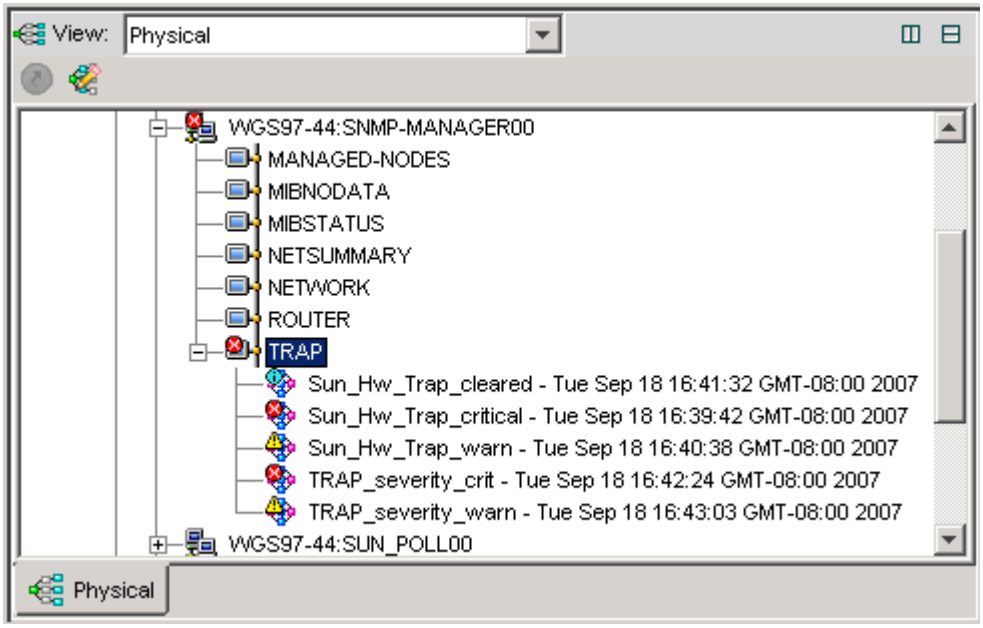
ITM displays all events in the Situation Event Console.



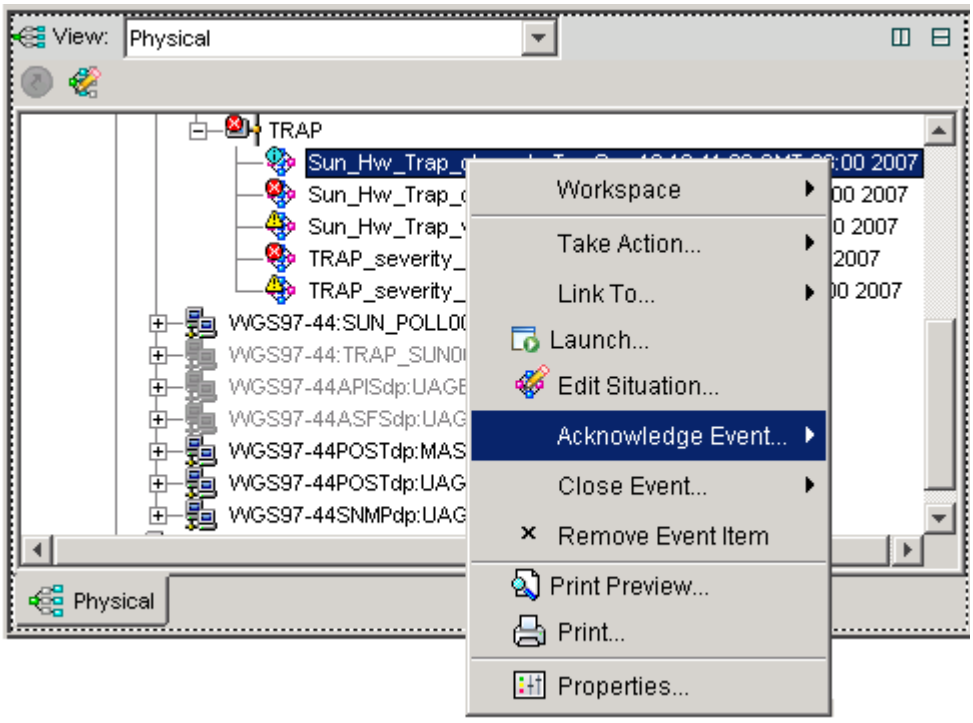
You can also configure the Chart object in the Situation Event Console to display a graphical summary of events of a particular severity or source.

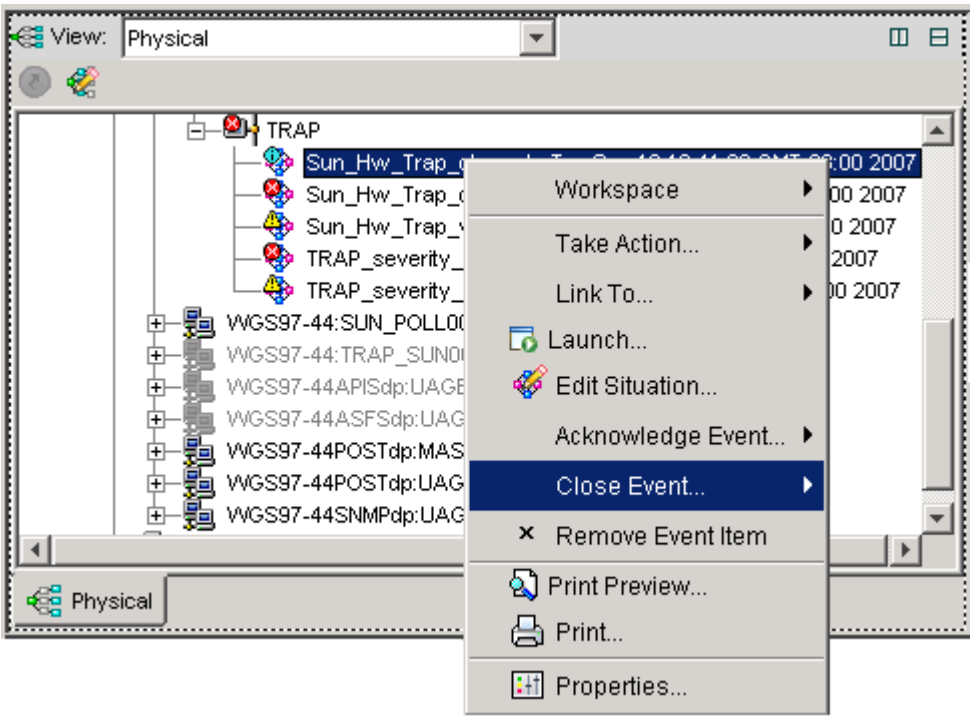


As you investigate particular events in the Situation Event Console, ITM adds them to the SNMP-MANAGER00 – TRAP list in the Navigation Pane.



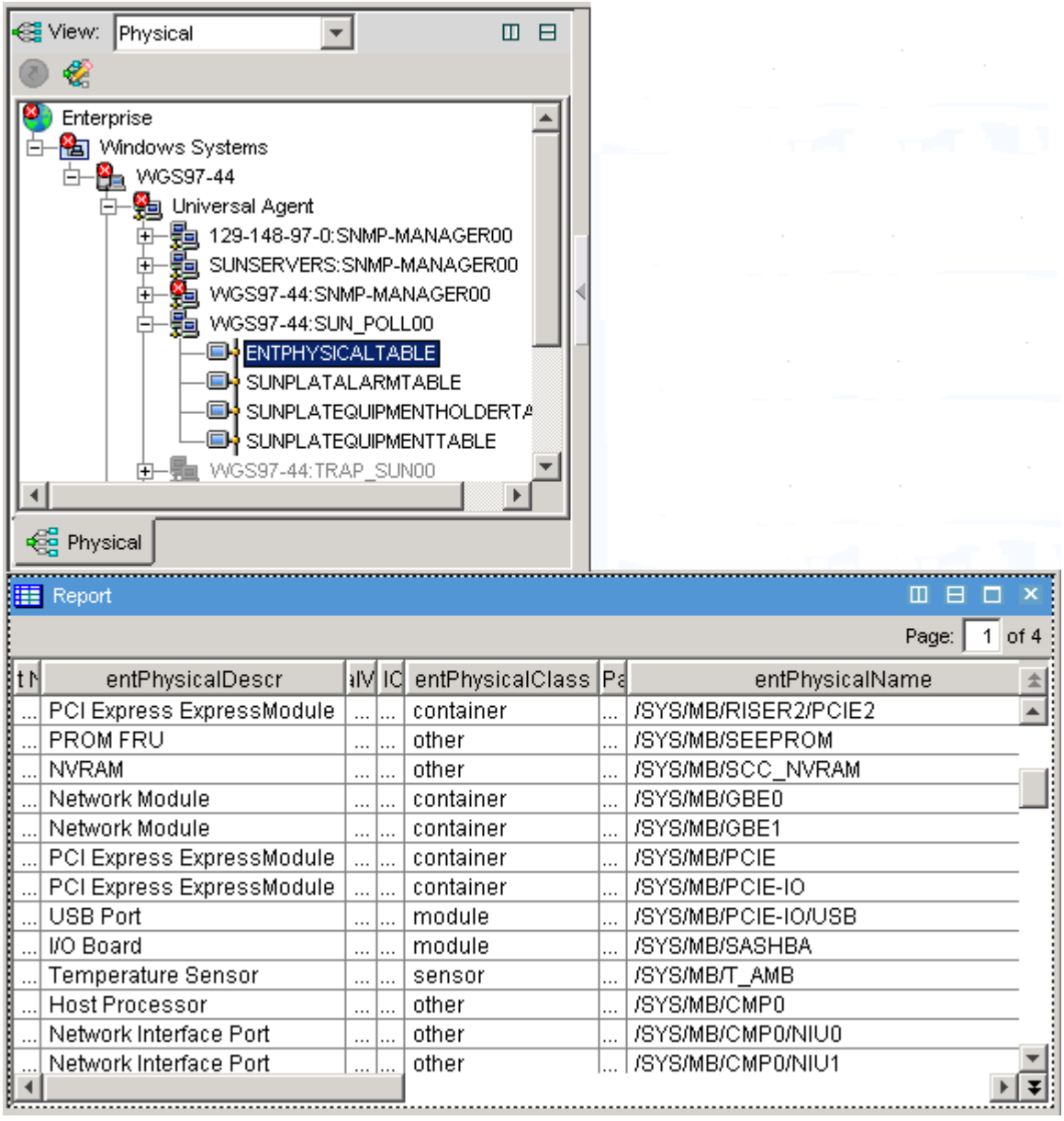
If you no longer need to preserve them, you can right-click a Situation Event Item to choose to acknowledge it or to close it.


View:
Physical
TRAP
Sun_Hw_Trap_
Sun_Hw_Trap_
Sun_Hw_Trap_
TRAP_severity_
TRAP_severity_
WGS97-44:SUN_POLL0
WGS97-44:TRAP_SUN0
WGS97-44APISdp:UAGE
WGS97-44ASFSdp:UAG
WGS97-44POSTdp:MAS
WGS97-44POSTdp:UAG
WGS97-44SNMPdp:UAG
Physical
Workspace
Take Action...
Link To...
Launch...
Edit Situation...
Acknowledge Event...
Close Event...
Remove Event Item
Print Preview...
Print...
Properties...


View:
Physical
TRAP
Sun_Hw_Trap_
Sun_Hw_Trap_
Sun_Hw_Trap_
TRAP_severity_
TRAP_severity_
WGS97-44:SUN_POLL0
WGS97-44:TRAP_SUN0
WGS97-44APISdp:UAGE
WGS97-44ASFSdp:UAG
WGS97-44POSTdp:MAS
WGS97-44POSTdp:UAG
WGS97-44SNMPdp:UAG
Physical
Workspace
Take Action...
Link To...
Launch...
Edit Situation...
Acknowledge Event...
Close Event...
Remove Event Item
Print Preview...
Print...
Properties...

Viewing polling results in the SUN-POLL application

In addition to filtering and parsing raw traps that are sent to it from SNMP MIBs and agents, the Sun Servers Integration 1.0 for IBM Tivoli Monitoring can enable SNMP polling of monitored Sun devices. The situation named SUN_POLL00 displays the results of SNMP polling of Sun device tables and device status information.



t N	entPhysicalDescr	IV	IC	entPhysicalClass	Pa	entPhysicalName
...	PCI Express ExpressModule	...	...	container	...	/SYS/MB/RISER2/PCIE2
...	PROM FRU	...	...	other	...	/SYS/MB/SEEPROM
...	NVRAM	...	...	other	...	/SYS/MB/SCC_NVRAM
...	Network Module	...	...	container	...	/SYS/MB/GBE0
...	Network Module	...	...	container	...	/SYS/MB/GBE1
...	PCI Express ExpressModule	...	...	container	...	/SYS/MB/PCIE
...	PCI Express ExpressModule	...	...	container	...	/SYS/MB/PCIE-IO
...	USB Port	...	...	module	...	/SYS/MB/PCIE-IO/USB
...	I/O Board	...	...	module	...	/SYS/MB/SASHBA
...	Temperature Sensor	...	...	sensor	...	/SYS/MB/T_AMB
...	Host Processor	...	...	other	...	/SYS/MB/CMP0
...	Network Interface Port	...	...	other	...	/SYS/MB/CMP0/NIU0
...	Network Interface Port	...	...	other	...	/SYS/MB/CMP0/NIU1

This provides another tool for interrogating Sun devices and for investigating any problems that you might encounter with them.

CHAPTER 6

Troubleshooting

If you are experiencing difficulty in configuring ITM and the Sun Servers Integration 1.0 for IBM Tivoli Monitoring, review the following troubleshooting sections:

- Traps from monitored servers do not appear in the SNMP-MANAGER00-TRAP workspace.
- Situation events are not created when traps arrive.
- Sensor names do not appear in the Situation Event workspace.

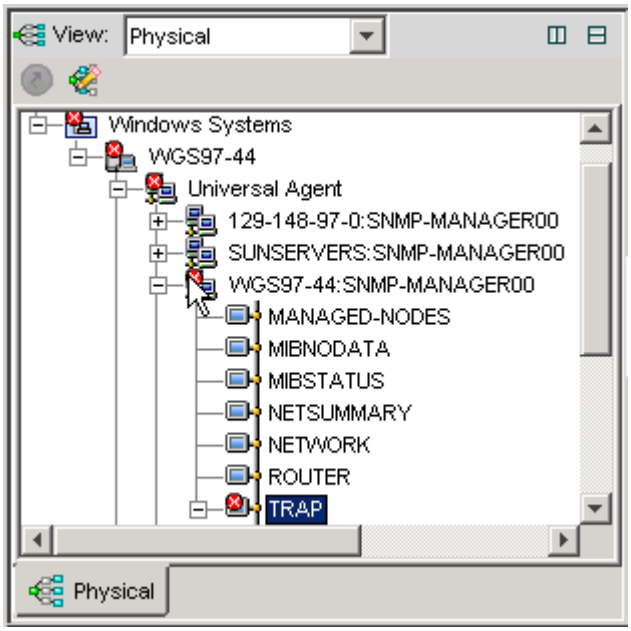
Traps From Monitored Servers Do Not Appear in the SNMP-MANAGER00-TRAP Workspace

If you do not see traps from one or more monitored Sun servers, check the following:

- Are there general connectivity issues on your network?
- If you are monitoring T5x20 servers with the ILOM 2.x service processor, is there network connectivity between the service processor on the monitored server and the ITM server? If there is, you should see traps from the SUN-HW-TRAP-MIB mib.
- If you are monitoring any supported SPARC Enterprise server at the operating system level, is there network connectivity between the host of the monitored server and the ITM server? If there is, you should see traps from the SUN-PLATFORM-MIB mib.
- Is there a firewall between the monitored device (server or service processor) and the ITM server?
- Is the SNMP agent on the host or SP of the monitored server configured to send traps to the address of the ITM server?
- Is any port other than the default 162 being used to send the traps?

Situation Events Are Not Created When Traps Arrive

The most visible symptom of this problem is that the color-coded Situation Event Items do not appear beside Situation Events in the Navigator pane. .



Check the following:

- Were the Situations imported correctly during installation?
- Have the Situations been associated with the SUNSERVERS:SNMP-MANAGER00 - TRAP application as described in the Section "Activating the Sun-specific Situations"?
- Is ITM6 Fixpack-05 or above installed on the ITM server?

If the problem persists, you may need to delete all the Sun-specific Situations and reinstall them using the following sequence of commands:

```
tacmd login -s (TEMS_HOSTNAME) -u (TEMS_USERID) -p (TEMS_PASSWORD) -t 1440
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_severity_warn.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_severity_crit.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_severity_cleared.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_equip_warn.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_equip_clear.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_equipholder_warn.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_equipholder_clear.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_env_warn.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_env_clear.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_device_removed.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_device_inserted.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_alarm_on.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\TRAP_alarm_off.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\Sun_HwTrap_warn.xml"
tacmd createSit -i "(ITM_INSTALL_DIR)\Sun_HwTrap_critical.xml"
```

```
tacmd createSit -i "(ITM_INSTALL_DIR)\Sun_HwTrap_cleared.xml"
tacmd logout
```

Sensor Names Do Not Appear in the Situation Event Workspace for Individual Situation Events

Check the following:

- Was the POST data provider started by the Universal Agent?
- Was a long enough TTL (time to live) specified in the ITM6 Environment file?
- Was the Situation Event workspace configured to link with the POSTDP:mas00 - DPPOST workspace, as described in the section "Configuring Custom Workspaces for Sun-specific Situations?

APPENDIX A

Installed and Modified Files

The following files are installed as Sun-specific files or updated by the Sun Install Wizard.

Category	File paths and file names
Application files	%CANDLE_HOME%\TMAITM6\metafiles\SNMP_sunPoll.mdl
Trap parsing scripts	%CANDLE_HOME%\TMAITM6\scripts\hwtrap.vbs %CANDLE_HOME%\TMAITM6\scripts\pettrap.vbs %CANDLE_HOME%\TMAITM6\scripts\trap_device_presence.vbs %CANDLE_HOME%\TMAITM6\scripts\trap_env_alarm.vbs %CANDLE_HOME%\TMAITM6\scripts\trap_obj_alarm.vbs
Managed Node List	%CANDLE_HOME%\TMAITM6\work\SUNSERVERS
Trap Definition file (updated)	%CANDLE_HOME%\TMAITM6\work\TRAPCNFG
Configuration file of applications to load at Universal Agent startup (updated)	%CANDLE_HOME%\TMAITM6\work\KUMPCNFG

The Situations are loaded into ITM directly from the XML files that define them. There are no files under %CANDLE_HOME% that represent Situations.

APPENDIX B

Sun System Management MIBs

Many Sun system management integration packages depend on the SNMP protocol and use one or more of the following Sun SNMP MIBs:

- `ENTITY-MIB`: This MIB is used by all SNMP agents to monitor and to describe the physical and logical elements of a managed system. The operation of this MIB is described in the Sun publication *Sun SNMP Management Agent Administration Guide for Sun Blade, Sun Fire and Netra Servers* (819-7978).
- `SUN-PLATFORM-MIB`: This MIB is used by Solaris-based servers to extend the ENTITY-MIB Physical Entity Table to represent new classes of component and the Logical Entity Table to represent high value platform and server objects. This MIB supplies the Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems with traps. The operation of this MIB is described in the Sun publication *Sun SNMP Management Agent Administration Guide for Sun Blade, Sun Fire and Netra Servers* (819-7978).
- `SUN-ILOM-PET-EVENTS`: This MIB enables management platforms that are not IPMI compliant to partly decode standard IPMI Platform Event Traps (PETS) generated by the ILOM v1.x and Embedded LOM service processors.
- `SUN-HW-TRAP-MIB`: This MIB replaces and enhances the SUN-ILOM-PET-EVENTS MIB for ILOM 2.x systems.

To view a summary of the entries in these MIBs or to download them, consult the following Sun web site:

`http://www.sun.com/system-management/tools.jsp`

APPENDIX C

Glossary

Acronym	Term	Definition
ALOM	Advanced Lights Out Manager	Sun Advanced Lights Out Manager (ALOM) consists of service processor hardware and firmware that supports the remote monitoring of Sun SPARC servers.
	agent	An agent is a service that runs on every computer you want to monitor. An agent captures information from the computer on which it is running. An agent applies predefined rules to the captured data and performs actions as defined by the rules.
	alert	An alert is an indication of a significant event. Alerts are defined by rules.
CLI	Command Line Interface	A CLI is a text-based interface to a system. Commands in a CLI can be executed a command shell such as sh, csh, ksh or the Microsoft Windows CMD shell.
	community string	The community string is similar to a password, offering a limited amount of protection for SNMP data shared over a network.
	configuration file	In IBM Tivoli Monitoring, a configuration file specifies the characteristics of a system device or network.
	daemon	A daemon is a background process that performs operations for system software and hardware. Daemons normally start when the system software is booted, and run as long as the software is running.
	Embedded Lights Out Manager	Sun Embedded Lights Out Manager consists of service processor hardware and firmware that supports the remote monitoring and management of Sun servers through IPMI and SNMP interfaces.
	event	An event is any significant occurrence in the system or an application that requires a user to be notified or an entry to be added to a log.
	event indicator	In IBM Tivoli Monitoring, the event indicator is a colored icon that displays over a Navigator item when an event opens for a situation.
GUI	Graphical User Interface	A GUI is a program interface that takes advantage of the graphics capabilities of the computer to make the program easier to use. Many system management graphical user interfaces run within a web browser.
	host	In the context of systems management applications, a host is a server onto which software (operating systems or applications) is installed.

Acronym	Term	Definition
ITM	IBM Tivoli Monitoring	ITM is an IBM Tivoli application that applies preconfigured, automated best practices to the automated monitoring of essential system resources. The application detects bottlenecks and other potential problems and provides for the automatic recovery from critical situations, which eliminates the need for system administrators to manually scan through extensive performance data. The application also integrates seamlessly with other Tivoli Availability solutions, including the IBM Tivoli Business Systems Manager and the IBM Tivoli Enterprise Console. Previously called Tivoli Distributed Monitoring (Advanced Edition).
ILOM	Integrated Lights Out Manager	Sun ILOM consists of service processor hardware and firmware that supports the remote monitoring and management of Sun servers through IPMI and SNMP interfaces.
	IP address	The IP address for a networked object is a 32-bit binary number that identifies it as a network node to other nodes on the network. An IP address is expressed in dotted quad format, which consists of the decimal values of its 4 bytes, separated with periods (for example, 127.0.0.1).
	managed device [object]	A managed device is an object that is monitored and managed by a systems management application. Devices include servers, clients, routers, switches, hubs, and service processors.
MIB	Management Information Base	MIB is a data specification for passing information using the SNMP protocol. An MIB is also a database of managed objects accessed by network management protocols.
	Navigator	In IBM Tivoli Monitoring, the Navigator is the left pane of the Tivoli Enterprise Portal window. The Navigator Physical view shows your network enterprise as a physical hierarchy of systems grouped by platform. You can also create other views to create logical hierarchies grouped as you specify, such as by department or function.
SSH	secure shell	SSH is a program that supports one user logging in to another system over a network and executing commands on that system. It also enables the user to move files from one system to another, and it provides authentication and secure communications over insecure channels.
SP	service processor	An SP is an on-board component or separate peripheral card integrated with a managed device. SPs host their own operating system and network connectivity so they can function as a source of information bout a managed device when the OS or basic services for that device become degraded or inoperable. Typically SPs also have specialized firmware that allows remote management applications to communicate with the SP via a CLI or GUI.
SNMP	Simple Network Management Protocol	SNMP is a popular network control and monitoring protocol developed in the 1980s. SNMP provides the format in which important information about network-attached devices can be sent to a management application.

Acronym	Term	Definition
	situation	In IBM Tivoli Monitoring, a situation is a set of conditions that, when met, creates an event. A condition consists of an attribute, an operator such as greater than or equal to, and a value. It can be read as, "If - system condition - compared to - value - is true". An example of a situation is: IF - CPU usage - > - 90% - TRUE. The expression "CPU usage > 90%" is the situation condition.
	SNMP agent	An SNMP agent is a process running on an SNMP-managed device that uses SNMP to exchange management information with one or more management stations.
	SNMP trap	An SNMP trap is a message sent by a managed device to a system management application. The message notified the system management application about the state of components or operation on the managed device.
MASF	Sun SNMP Management Agent	The Sun MASF agent provides SNMP integration between Sun SPARC-based servers and management hosts.
	threshold	A threshold is a preset limit that produces an event when the limit is reached or exceeded.
TEPS	Tivoli Enterprise Portal Server	TEPS is a server you log on to and connect to from the Tivoli Enterprise Portal client. The portal server connects to the hub monitoring server. It enables retrieval, manipulation and analysis of data from monitoring agents.
	trap	A trap is an alert, error, or system message generated by a device reporting an exception or change in state in its operation.
	workspace	In IBM Tivoli Monitoring, the workspace is a viewing area of the Tivoli Enterprise Portal window, excluding the Navigator. Each workspace comprises one or more views. Every Navigator item has its own default workspace and may have multiple workspaces.

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