



Third Party System Management Integration Solution

Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console

This publication describes how to install and configure the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console.

A complete list of currently supported Sun servers, service processors, and service processor firmware is available at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Please consult this web site before configuring the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console.

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Introduction

This topic introduces the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console.

IBM Tivoli Enterprise Console™ (hereafter TEC) is an enterprise management application that uses methods such as log file forwarding and protocols such as the Simple Network Management Protocol (SNMP) to monitor the status of networked devices.

Once you have installed and configured the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console, you will be able to take advantage of the following Sun technologies and Sun-specific features in TEC.

- Alerts from Sun servers and service processors clearly identified by source.
- Sun-specific charts and tables depicting the number and severity levels of alerts received from Sun devices.
- Sun-specific monitoring data depicting the number and severity levels of alerts available for custom charts and tables in TEC.
- Sun-specific rules for managing alerts received from multiple sources:
 - Event clearing (automatic clearing of warnings once the system state that generated them has been changed)
 - Event selection (automatic pruning of duplicate messages)
 - Event severity marking (normalizing the status labels and colors for messages generated by multiple sources)
- Sun SPARC Enterprise T1000/T2000 service processor (ALOM) events forwarded to its host server Solaris `syslogd` service and to the TEC Event Server.
- New SUN-HW-TRAP-MIB (available for ILOM 2.0 and higher service processors) providing more robust support for reporting device names and changes to device status.
- Updated Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems providing support for additional monitoring information.
- Sun Server Hardware Management Pack for hardware monitoring via the operating system

The integration discussed in this paper has been tested with the most current release of the TEC Event Server running on Solaris 10, the TEC SNMP and Logfile Adapters running on Solaris 10, and the Sun servers listed at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Categories of Sun Servers

Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console is one of several Sun ISV System Management solutions that provides Sun-specific resources for monitoring Sun servers in enterprise or workgroup data centers.

All the Sun servers supported by these integration packs fall into four categories differentiated by architecture (x64 or SPARC) and by service processor type (ALOM, ILOM, or Embedded LOM). The integration pack that you are installing or the configuration that you are implementing may not support all categories of servers, so consult the following website to verify that a particular server in one of these categories is supported by Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console:

<http://www.sun.com/systemmanagement/tools.jsp>

Category	Supported	Description
x64 Servers with ILOM	Yes	x64 servers and blade server modules with the Integrated Lights Out Manager (ILOM) service processor. Hereafter referenced as x64/ILOM servers.

Category	Supported	Description
		These servers are monitored at either the service processor level or at the operating system level via the Sun Server Hardware Management Pack.
SPARC Servers with ILOM	Yes	SPARC Solaris servers and Blade server modules with the Integrated Lights Out Manager (ILOM) service processor. Hereafter referenced as SPARC/ILOM servers. These servers can be monitored at either the service processor level or at the operating system level via the Sun SNMP Management Agent for Sun Fire and Netra Systems.
x64 Servers with Embedded LOM	Yes	x64 servers and blade server modules with the Embedded Lights Out Manager (Embedded LOM) service processor. Hereafter referenced as x64/EmbeddedLOM servers. These servers can be monitored at either the service processor level or at the operating system level via the Sun Hardware Management Agent
SPARC Servers with ALOM	Yes	SPARC Solaris servers with the Advanced Lights Out Manager (ALOM) service processor Hereafter referenced as SPARC/ALOM servers. These servers are monitored at the operating system level via the Sun SNMP Management Agent for Sun Fire and Netra Systems.
x64 Servers with ILOM	Yes	The Sun Hardware Management Agent sends alerts generated by the SUN-HW-TRAP-MIB to the TEC SNMP adapter. To enable this integration, you need to configure the snmpd service on supported operating systems to forward traps to the TEC Event Server.

The matrix of servers and service processors supported by Sun integration packs is expanding dynamically. A complete, current list of supported Sun servers, service processors, and service processor firmware is available at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Please consult this web site before performing installation and/or configuration of the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console.

Levels of Integration with TEC

This topic describes how the Sun Integration Pack can integrate with TEC at both the SNMP and log file levels.

The Sun Integration Pack integrates with both the TEC SNMP and the TEC Logfile adapter. Although it is technically possible to implement both SNMP and log file forwarding for T1000/T2000 servers on your network, Sun recommends that you implement one method of integration to simplify administration and to avoid receiving redundant messages from both the SNMP and log file adapters.

Your options for integration derive from the types of Sun servers that you plan to integrate with TEC.

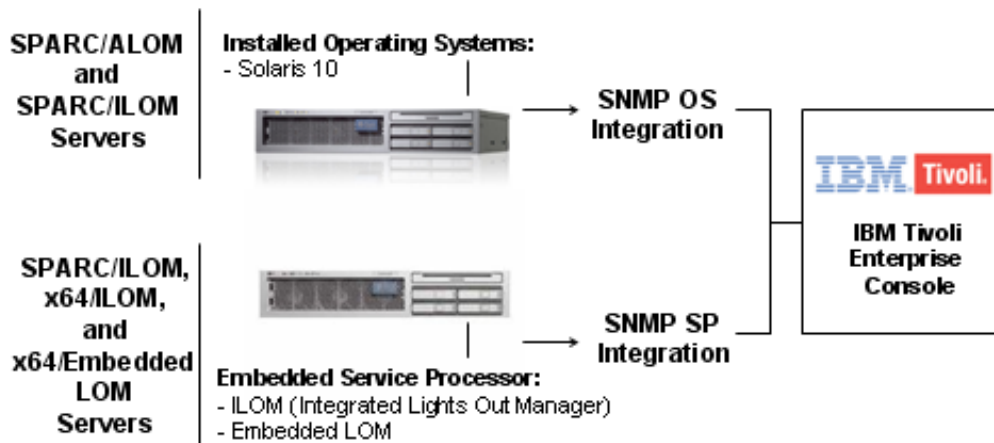
Servers	Integration	Description
SPARC/ALOM	SNMP OS	The Solaris operating system sends the TEC SNMP Adapter alerts generated by the following SNMP MIBs and agents:

Servers	Integration	Description
SPARC/ILOM Servers		<ul style="list-style-type: none"> SUN-PLATFORM-MIB ENTITY-MIB Sun Management (MASF) Agent <p>To enable this integration, you do not need to install any TEC-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 TEC Event Server.</p>
SPARC/ALOM Servers	Log file forwarding	<p>You can configure the ALOM service processor on your T1000/T2000 server to forward its messages to the Solaris <code>syslogd</code> output on its host server. Once there, the locally installed TEC Logfile Adapter can read those messages and forward them to the TEC Event Server. Although you need to install and configure the TEC Logfile Adapter on each T1000/T2000 server, the quality and specificity of the messages forwarded to TEC via these log files is better than those generated by the SNMP MIBs.</p> <p>No log file integration is available for Sun Fire x64 servers.</p>
SPARC/ILOM Servers	SNMP SP	<p>The ILOM service processor sends the TEC SNMP adapter alerts generated by the following SNMP MIB:</p> <ul style="list-style-type: none"> SUN-HW-TRAP-MIB <p>To enable this integration, you do not need to install any TEC-specific agents on the monitored devices, you simply need to configure these service processors to forward traps to the TEC Event Server.</p>
x64/ILOM x64/EmbeddedLOM Servers	SNMP SP	<p>The ILOM and Embedded LOM service processors send the TEC SNMP adapter alerts generated by one of the following SNMP MIBs:</p> <ul style="list-style-type: none"> SUN-ILOM-PET-MIB (ILOM 1.1, Embedded LOM) SUN-HW-TRAP-MIB (ILOM 2.0 and higher) <p>To enable this integration, you do not need to install any TEC-specific agents on the monitored devices, you simply need to configure these service processors to forward traps to the TEC Event Server.</p>

If you want to monitor different types of Sun servers, opt for SNMP integration. If you want to monitor Sun SPARC Enterprise T1000/T2000 servers primarily or exclusively, use log file integration.

SNMP Integration

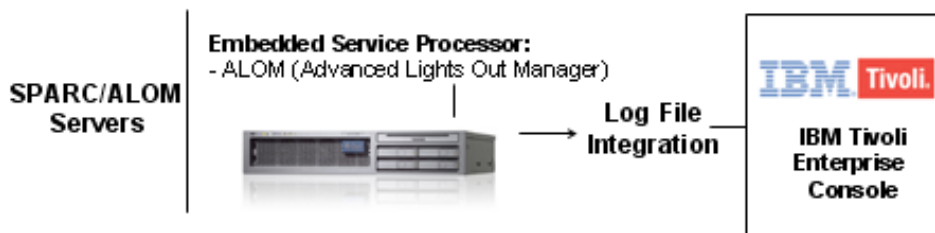
To implement SNMP integration, you must verify that SNMP is enabled on the monitored devices and is configured to communicate with the TEC SNMP Adapter running on a central server.



If you implement SNMP integration, do not implement log file integration on the same server.

Log File Integration

Log file integration is the preferred method for monitoring SPARC/ALOM servers. To achieve log file integration, you must configure the ALOM service processor on your T1000/T2000 server to forward its messages to the Solaris system log file on its host server. Then you must install and configure an instance of the TEC Logfile Adapter on that same T1000/T2000 server. The TEC Logfile Adapter reads messages from the Solaris `syslogd` service and forwards them to the TEC Event Server.



If you implement log file integration, do not implement SNMP integration on the same server.

Access to TEC Integration

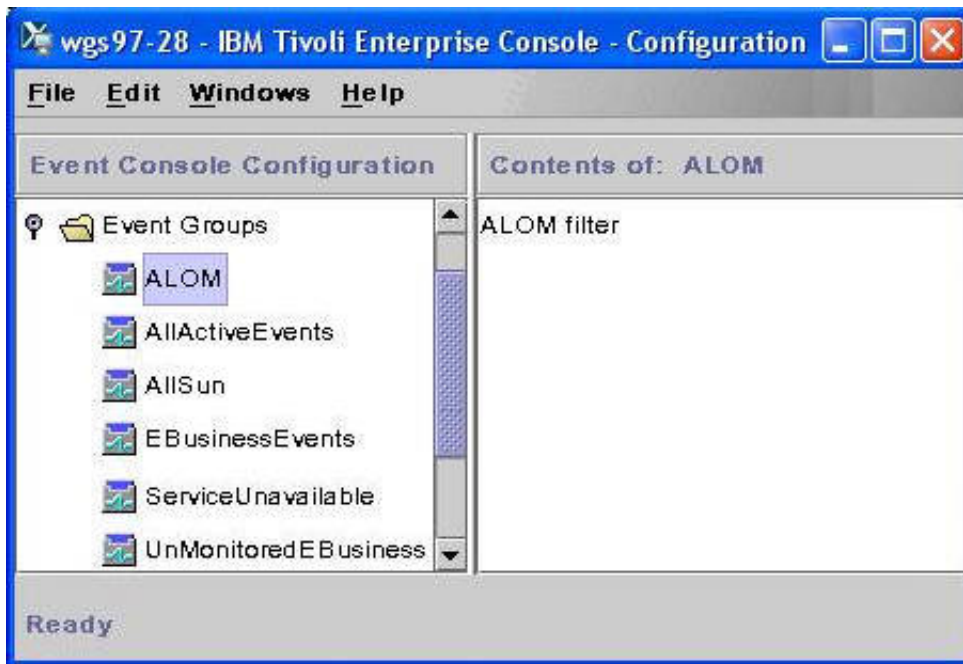
This topic explains where Sun-specific information is accessible in TEC.

Once you have installed and configured either SNMP or log file integration between TEC and your Sun devices, you can access information derived from that integration in the TEC Event Console in four views.

- *Summary Chart View*: Displays the quantity, severity, and source filter for Sun-specific events.



- *Configuration View*: Displays the Event Groups, Group Filter definitions, and Consoles relevant to Sun events.

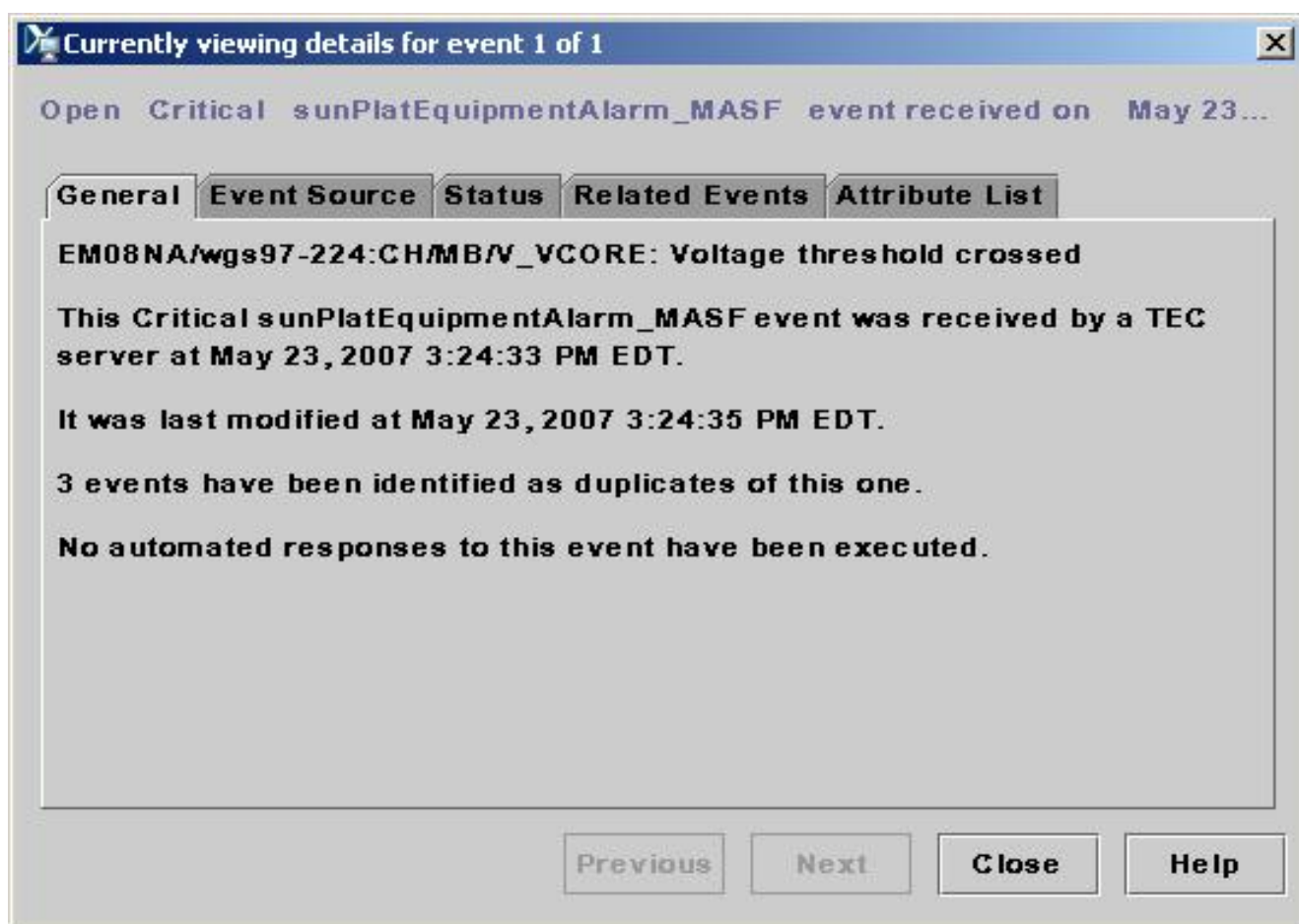


- *Event View*: Displays a table of events for a specific Event Group Filter.

Time Received	Event T...	Class	Hostna...	Severity	Status
February 12, 2007 3:00...	Other	CPU0BcoreTempThre	wgs97-228	Warning	Open
February 12, 2007 3:00...	Other	CPU0BcoreTempThre	wgs97-228	Warning	Open
February 12, 2007 3:40...	Other	CPU0BcoreTempThre	wgs97-228	Harmless	Open
February 12, 2007 3:40...	Other	CPU0BcoreTempThre	wgs97-228	Harmless	Open
February 12, 2007 3:51...	Other	MainboardCoreVolutag	wgs97-228	Harmless	Open
February 12, 2007 3:51...	Other	MainboardCoreVolutag	wgs97-228	Harmless	Open
February 12, 2007 3:54...	Other	sunPlatE nvironmental	wgs97-228	Warning	Open

Time Received	Event T...	Class	Hostna...	Severity	Status	Message
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Warning	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Warning	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Harmless	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Harmless	Open	CPU 0 bot...
February 12, 2007...	Other	Mainboard...	wgs97-228	Harmless	Open	Mainboard...
February 12, 2007...	Other	Mainboard...	wgs97-228	Harmless	Open	Mainboard...
February 12, 2007...	Other	sunPlatEn...	wgs97-228	Warning	Open	PC0RMU/...
February 12, 2007...	Other	sunPlatEn...	wgs97-228	Warning	Open	PC0RMU/...
February 12, 2007...	Other	IOBoardC...	wgs97-228	Harmless	Open	I/O board ...
February 12, 2007...	Other	IOBoardC...	wgs97-228	Harmless	Open	I/O board ...
February 12, 2007...	Other	IOBoardT...	wgs97-228	Warning	Open	I/O board ...
February 12, 2007...	Other	IOBoardT...	wgs97-228	Warning	Open	I/O board ...
February 13, 2007	Other	CPU0Tcor	wgs97-228	Harmless	Open	CPU 0 ton

- *Detailed Event View*: Displays detailed information about an individual event selected in an Event Viewer.



You can also customize charts and views in the TEC Event Console to monitor the origin, severity, and volume of messages received from monitored Sun devices.

Requirements

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

Managed Devices

This topic details requirements for Sun managed devices.

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

A complete and current listing of supported Sun servers, service processors, and service processor firmware is available at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Please consult this website before installing this integration package.

TEC Server Software

This topic details requirements for the TEC server.

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

Component	Version	Operating System and Software
TEC Event Server	Release 3.9	Solaris 10
TEC SNMP Adapter	Release 3.9	Solaris 10 Release 3.9 Fixpack 07 or higher installed
TEC Logfile Adapter	Release 3.9	Solaris 10 Release 3.9 Fixpack 07 or higher installed

To the extent that the Sun Integration Pack uses configuration files and rule definition files to achieve integration with TEC, the Sun Integration Pack should run on any version of TEC hosted on any operating system supported by TEC.

Related Documentation

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

- *IBM Tivoli Enterprise Console Adapters Guide*
- *IBM Tivoli Enterprise Console Command and Task Reference*
- *IBM Tivoli Enterprise Console Installation Guide*
- *IBM Tivoli Enterprise Console User's Guide*
- *Sun™ SNMP Management Agent Administration Guide for Sun Fire™ and Netra™ Servers (820-1188)*
- *Sun Integrated Lights Out Manager documentation*
- *Sun Server Hardware Management Using SNMP (820-7621)*
- For documentation on the Sun Embedded Lights Out Manager, consult the product documentation that ships with your particular x64/EmbeddedLOM server.

Installing the Sun Integration Pack

This section describes how to perform the following tasks:

- [Downloading the Sun Integration Pack](#) on page 12
- [Preparing to Install the Sun Integration Pack](#) on page 12
- [Installing the Sun Integration Pack](#)
 - [Installing and Configuring the SNMP Integration](#) on page 13
 - [Installing and Configuring the Log File Integration](#) on page 15
- [Verifying Successful Installation](#) on page 17
- [Uninstalling the Sun Integration Pack](#) on page 17

Pre-installation Checklist

Before you download and install the Sun Integration Pack, collect the following information.

	Information Category	Details
___	TEC Version: Release 3.9 is the version tested.	_____
___	Tivoli TMF Server Name: The name of the host server on which the Tivoli framework has been installed and configured.	_____
___	TEC SNMP Adapter Server: The name of the host server on which the TEC SNMP adapter has been installed and configured.	_____

Downloading the Sun Integration Pack

To install the most current version of the Sun Integration Pack, download it from the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Save the Sun Integration Pack to a working directory on the local system from which you plan to perform the installation and uncompress it.

Once you have downloaded the current version, uncompress the file.

Preparing to Install the Sun Integration Pack

The unpacked distribution archive contains the following files.

Integration	Distribution Files	Description
SNMP	sunfire_snmp.rls	Sun-specific rules to be imported and compiled into the active TEC rule base.

Integration	Distribution Files	Description
	<code>sunfire_snmp.baroc</code>	Sun-specific entries to be appended to the default TEC <code>tecad_snmp.baroc</code> file and then imported and recompiled.
	<code>sunfire_snmp.cds</code>	Sun-specific entries to be copied to the <code>tecad_snmp.cds</code> file.
Log file	<code>sunfire_logfile.rls</code>	Sun-specific rules to be imported and compiled into the active TEC rule base.
	<code>sunfire_logfile.baroc</code>	Sun-specific entries to be appended to the default TEC <code>tecad_logfile.baroc</code> file and then imported and recompiled.
	<code>sunfire_logfile.fmt</code>	Sun-specific entries to be appended to the <code>tecad_logfile.fmt</code> file on TEC Logfile Adapter and then compiled to produce a new <code>tecad_logfile.cds</code> class definition file on the TEC Logfile Adapter system.

The following sections explain how to install and configure these distribution files for the SNMP and log file integrations.

Installing and Configuring the SNMP Integration

Once you have unpacked the distribution archive, you must configure the TEC SNMP Adapter running on a central server to use the Sun-specific events and rules in the distribution archive. This involves identifying the appropriate location of the existing TEC SNMP Adapter configuration files, copying Sun-specific entries to those configuration files, and finally re-importing the updated configuration files into the active TEC rulebase.

Identifying the Location of the TEC SNMP Adapter Configuration Files

TEC adapters expect to find their configuration and error definition files in specific directory locations. By default, the TEC SNMP Adapter software and its configuration files are stored on the TEC SNMP Adapter server in the following directory:

```
/usr/tecad/etc
```

To confirm that the appropriate SNMP configuration files are available, do the following:

1. Verify that the `sunfire_snmp.cds` and `tecad_snmp.conf` files are in the following directory:


```
/usr/tecad/etc/
```

2. Verify that you have sufficient privileges to edit these files.

Adding Sun-Specific Entries to Existing Configuration Files

Once you have identified the appropriate location of the configuration files used by your TEC SNMP Adapter, you must copy Sun-specific entries from the configuration files in your unpacked distribution archive into the existing configuration files.

Sun Distribution File	Target TEC SNMP Adapter Configuration File
<code>sunfire_snmp.baroc</code>	<code>tecad_snmp.baroc</code>

Sun Distribution File	Target TEC SNMP Adapter Configuration File
	 Note: You can, optionally, import the Sun-specific entries in the <code>sunfire_snmp.baroc</code> configuration file directly into TEC separately.
<code>sunfire_snmp.cds</code>	<code>tecad_snmp.cds</code>
<code>sunfire_snmp.rls</code>	No target. Needs to be compiled into the active TEC rulebase independently.

To add Sun-specific entries to these configuration files, do the following:

1. Copy the Sun-specific entries in the `sunfire_snmp.baroc` source file into the `tecad_snmp.baroc` file.
2. Copy the Sun-specific entries in the `sunfire_snmp.cds` source file into the target `tecad_snmp.cds` file.

Importing and Recompiling the SNMP Configuration Files

Before the TEC Event Server can process information from an adapter, the adapter-specific information in the configuration files that you just updated must be integrated with the active rulebase running on the TEC Event Server. Once you update the active rulebase, TEC can process information from the updated TEC SNMP Adapter.

To import and recompile the updated TEC SNMP configuration files, do the following:

1. Open a command shell window on the central server hosting your TEC Event Server.
2. Enter the following commands to import the updated or new SNMP configuration files into the active rulebase on the TEC Event Server.

```
# wrb -imprbclass tecad_snmp.baroc <rulebase>
```

```
# wrb -imprbrule sunfire_snmp.rls <rulebase>
```

```
# wrb -imptgtrule sunfire_snmp EventServer <rulebase>
```

```
# wrb -comprules <rulebase>
```

```
# wrb -loadrb -use <rulebase>
```

3. (Optional) Enter the following commands to stop and restart the TEC Event Server if you need to.

```
# wstopesvr
```

```
# wstartesvr
```

4. Stop and restart the TEC SNMP Adapter.


```
# /usr/tecad/bin/init.tecad_snmp stop
```

```
# /usr/tecad/bin/init.tecad_snmp start
```

The TEC Event Server should now be configured to receive SNMP messages from supported Sun service processors and servers.

Installing and Configuring the Log File Integration

Once you have unpacked the distribution archive, you must install the TEC Logfile Adapter on each Sun SPARC Enterprise T1000/T2000 server and then integrate Sun-specific configuration files with the TEC Event Server.

 **Note:** To forward messages from the TEC Logfile Adapter to the TEC Event Server, you must install TEC 3.9 Fixpack 06 or higher.

Installing the TEC Logfile Adapter on your Sun SPARC Enterprise T1000/T2000 Servers

Once you have unpacked the distribution archive, you must install the TEC Logfile Adapter on each Sun SPARC Enterprise T1000/T2000 server and then integrate Sun-specific configuration files with the TEC Event Server.

 **Note:** To forward messages from the TEC Logfile Adapter to the TEC Event Server, you must install TEC 3.9 Fixpack 06 or higher.

Adding Sun-Specific Entries to the `tecad_logfile.conf` File

The first step in the log file configuration involves adding a line to the TEC Logfile Adapter configuration file.

To accomplish this task, do the following:

1. Open the file `/usr/tecad/etc/tecad_logfile.conf` in a text editor.
2. Add the following line to the text file.


```
cl_ServerLocation=<TECEventServer>
```

where `<TECEventServer>` is the host name of the TEC Event server. This statement directs the TEC Logfile Adapter to send its messages to the appropriate TEC Event Server.

3. Save the file.

Copying Sun-Specific Entries to `.baroc` and `.rls` Configuration Files

To integrate Sun-specific configuration information with the active rulebase on your TEC Event Server, you must copy Sun-specific entries from the configuration files in your unpacked distribution archive into the existing configuration files.

Sun Distribution File	Target TEC Logfile Adapter Configuration File
<code>sunfire_logfile.baroc</code>	<code>tecad_logfile.baroc</code>  Note: You can, optionally, import the Sun-specific entries in the <code>sunfire_logfile.baroc</code> configuration file directly into TEC separately.
<code>sunfire_logfile.rls</code>	No target. Needs to be compiled into the active TEC rulebase independently.

To copy these Sun-specific entries, do the following:

1. Open the configuration files `tecad_logfile.baroc` and `sunfire_logfile.baroc` in a text editor.
2. Copy the Sun-specific entries from `sunfire_logfile.baroc` file to `tecad_logfile.baroc`.
3. Save the configuration file `tecad_logfile.baroc`.

Configuring the .cds Configuration File

The TEC Logfile Adapter installed on each T1000/T2000 server reads messages from the Solaris `syslogd` output, formats them, and forwards them to the TEC Event Server. To configure the TEC Logfile Adapter to format messages appropriately, you must add Sun-specific formatting information to the default message formatting file and then compile that formatting file into a class definition file (`tecad_logfile.cds`).

To configure the TEC Logfile Adapter on each Sun SPARC Enterprise T1000/T2000 server, do the following:

1. Open in a text editor the `tecad_logfile.fmt` file stored in the TEC Logfile Adapter directory on each T1000/T2000 server.
2. Copy into it all lines beginning with `FORMAT SC_` from the `sunfire_logfile.fmt` file that is in the Sun distribution archive.
3. Save the file to disk.
4. Enter the following command to recompile the `tecad_logfile.fmt` into the master `tecad_logfile.cds` file.


```
# $TECADHOME/bin/logfile_gencds tecad_logfile.fmt > tecad_logfile.cds
```

5. Open in a text editor the `$TECADHOME/etc/tecad_logfile.conf` configuration file on the T1000/T2000 server.
6. Add the following line to that configuration file:

```
c1_ServerLocation=TEC_EventServer
```

where `TEC_EventServer` is the name of the server hosting the TEC Event Server.

7. Save the configuration file.
8. Verify that the updated configuration files are in their appropriate file location.

Configuration File	File Location
<code>tecad_logfile.cds</code>	<code>/usr/tecad/etc</code>
<code>tecad_logfile.fmt</code>	<code>/usr/tecad/etc/C</code>  Note: <code>/usr/tecad/etc/C</code> is the recommended directory; substitute a path to an alternate directory if your installation does not use the recommended path.

9. Enter the following commands to stop and restart the TEC Logfile Adapter:

```
# /usr/tecad/bin/init.tecad_logfile stop
```

```
# /usr/tecad/bin/init.tecad_logfile start
```

Importing and Recompiling the Log File Configuration Files

Before the TEC Event Server can process information from an adapter, the adapter-specific information in the configuration files that you just updated must be integrated with the active rulebase running on the TEC Event Server. Once you update the active rulebase, TEC can process information from the updated Logfile Adapter.

To import and recompile the updated TEC Logfile Adapter configuration files, do the following:

1. Open a command shell window on the central server hosting your TEC Event Server.
2. Enter the following commands to import the updated or new logfile configuration files into the active rulebase on the TEC Event Server.

```
# wrb -imprbclass tecad_logfile.baroc <rulebase>
```

```
# wrb -imprbrule sunfire_logfile.rls <rulebase>
```

```
# wrb -imptgtrule sunfire_logfile EventServer <rulebase>
```

```
# wrb -comprules <rulebase>
```

```
# wrb -loadrb -use <rulebase>
```

3. (Optional) Enter the following commands to stop and restart the TEC Event Server if you need to.

```
# wstopesvr
```

```
# wstartesvr
```

The TEC Event Server should now be configured to receive logfile messages from TEC Logfile Adapters running on Sun SPARC Enterprise T1000/T2000 servers. See [Configuring Sun Devices to be Monitored by TEC](#) for information about configuring the ALOM service processor on your Sun SPARC Enterprise T1000/T2000 servers.

Verifying Successful Installation

The best way to verify that the Sun Integration Pack has been successfully installed on your TEC server is to observe whether TEC reports a test event.

To verify correct installation, do the following:

1. Remove the power cord for a redundant power supply on a monitored server.
2. Check the TEC Event Console for a corresponding event

If you have configured your Sun devices, you should be able to perform a manual or remote verification procedure and check the TEC Event Console for a corresponding event. If you have not configured your Sun devices, proceed to [Configuring Sun Devices to be Monitored by TEC](#). If you have configured them, see [Verifying Successful Configuration](#) on page 23.

Uninstalling the Sun Integration Pack

Uninstalling the TEC is a manual process that involves the following stages:

- Uninstalling Sun-specific rules from the TEC rulebase on the TEC server
- Deleting one SNMP class definition file (`/usr/tecad/etc/sunfire_snmp.cds`)
- Uninstalling the Sun-specific formatting definitions from the TEC Log File Adapter server and then recompiling the updated format definition file (`tecad_logfile.fmt`) into an updated class definition file (`tecad_logfile.cds`)

Uninstalling SNMP and Log File Rules from the TEC Rulebase

To uninstall Sun-specific SNMP and log file rules and event classes from the TEC rulebase, you must enter some commands in a terminal window on the system hosting your TEC Event Server.

To accomplish this task, do the following:

1. Open a terminal window on the server hosting TEC.
2. Enter the following commands.

```
# wrb -deltgtrule sunfire_snmp EventServer <rule base name>
# wrb -deltgtrule sunfire_logfile EventServer <rule base name>

# wrb -delrbrule sunfire_snmp <rule base name>
# wrb -delrbrule sunfire_logfile <rule base name>

# wrb -delrbclass sunfire_snmp <rule base name>
# wrb -delrbclass sunfire_logfile <rule base name>

# wrb -delrbclass tecad_snmp <rule base name>
# wrb -delrbclass tecad_logfile <rule base name>
```

Deleting the SNMP Class Definition File

Once you have uninstalled the Sun-specific SNMP and log file rules from the rulebase, you must delete an SNMP class definition file on the TEC SNMP Adapter server.

1. Log on to the SNMP Adapter server.
2. Delete the following file.
/usr/tecad/etc/sunfire_snmp.cds
3. Stop and then restart the TEC SNMP Adapter daemon.

Uninstalling TEC Log File Format Definitions

To complete the uninstallation of Sun-specific configurations for the TEC Log File Adapter, you must perform several steps.

To uninstall the TEC log file format definitions, do the following:

1. Open in a text editor the `tecad_logfile.fmt` file stored on each T1000/T2000 server.
2. Delete all lines that begin with the following string:
FORMAT SC_
These lines define the Sun-specific events that you must uninstall.
3. Save the file to disk.
4. Enter the following command to recompile the `tecad_logfile.fmt` into the master `tecad_logfile.cds` file.

```
# /usr/tecad/bin/logfile_gencds tecad_logfile.fmt > tecad_logfile.cds
```

5. Open in a text editor the `$TECADHOME/etc/tecad_logfile.conf` configuration file on the T1000/T2000 server.
6. Save the configuration file.

7. Enter the following commands to stop and then restart the Logfile Adapter.

```
# /usr/tecad/bin/init.tecad_logfile stop  
# /usr/tecad/bin/init.tecad_logfile start
```

Configuring Sun Devices For Integration

This section describes how to configure your Sun devices to be monitored by TEC.

A complete and current listing of supported Sun servers, service processors, and service processor firmware is available at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Please consult this website before installing this integration package.

You can integrate Sun servers with TEC at two levels:

- *SNMP OS*: Operating system level integration using the SNMP protocol
- *SNMP SP*: Service processor level integration using the SNMP protocol

Sun provides SNMP OS level management agents for SPARC and x64 architectures with different types of service processor. For information on the various operating systems supported please see the following web pages:

- <http://www.sun.com/systemmanagement/managementtools.jsp>

Sun Device	Integration	Configuration Task
SPARC/ALOM server SPARC/ILOM server	SNMP OS Logfile	Configure the Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems. Configure the ALOM service processor to forward messages to the Solaris <code>syslogd</code> service.
SPARC/ILOM x64/ILOM	SNMP SP	Enable and configure SNMP on the ILOM service processor.
x64/ILOM	SNMP OS	Configure the Sun™ Server Hardware Management Pack
x64/EmbeddedLOM	SNMP SP	Enable and configure SNMP on the Embedded LOM service processor.

Configuring Sun SPARC Servers to be Monitored by TEC

There are two possible levels of integration between TEC and Sun Integration Pack, SNMP integration and log file integration. At the server level, each integration requires a unique procedure that is documented in separate sections.

Configuring SNMP on SPARC Solaris Servers

If you want TEC to use OS-based SNMP to monitor your SPARC Solaris servers, the Sun™ SNMP Management Agent for Sun Fire™ and Netra™ Systems (hereafter MASF) 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 MASF 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 MASF and TEC to work correctly, you must verify that the MASF 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. **Add an entry to specify whether you want to send SNMP v1 or SNMP v2 traps to TEC.**

SNMP format	Status	Entry
v1	One protocol (either v1 or v2c) is required	trapsink <destination_hostname>
v2c	One protocol (either v1 or v2c) is required	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 MASF Agent.

 **Note:** Adding both lines will result in the MASF Agent sending TEC two traps for each alert and those redundant alerts appearing in the target event console.

3. **(Optional and recommended) For versions of the MASF Agent earlier than version 1.6, uncomment the following line in the final section of the file.**

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

Enabling this mode for the MASF Agent adds more detailed sensor and device names to traps and eliminates the need for generic messages such as 'A device has been disabled.'

4. **Save the modified file.**

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

5. **Enter the following commands in a terminal window to force the MASF Agent to re-read its configuration file:**

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

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

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

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

The MASF Agent also re-reads its configuration file automatically when it restarts.

Your Sun SPARC Solaris servers are now ready to be managed using TEC.


Configuring the TEC Logfile Adapter

The TEC Logfile Adapter installed on each T1000/T2000 server reads messages from the Solaris syslogd output, formats them, and forwards them to the TEC Event Server. See [Installing and Configuring the Log File Integration](#) on page 15 for information about configuring the TEC Logfile Adapter on each Sun SPARC Enterprise T1000/T2000 server.

Configuring ALOM Service Processors to Forward Log File Messages to TEC

The ALOM firmware installed on the service processor of your Sun SPARC Enterprise T1000/T2000 servers can be configured by default to copy the events that it monitors to the Solaris `syslog` facility.

Once the ALOM messages are forwarded to the syslogd service, the TEC Logfile Adapter that you installed and configured on your T1000/T2000 server can forward those messages to the TEC Event Console.

 **Note:** This feature is available only with ALOM CMT version 1.3 or later. Solaris 10 patch 123839-05 (or higher) must be installed on the managed server.

To configure ALOM to forward event messages to the Solaris syslogd service on its T1000/T2000 server, do the following:

1. **Log in to the ALOM command shell on the Solaris server.**
2. **Enter the following ALOM CMT command:**

```
sc> sys_eventlevel <event_numeral>
```

where `<event_numeral>` sets the level of ALOM event to be sent to the host system SYSLOG (0=none, 1=critical, 2=major, 3=all).

Once configured, ALOM will forward event messages directly to the syslogd service on the T1000/T2000 server. All event messages forwarded to TEC are then formatted with the prefix `SC_`

Configuring SNMP on x64/ILOM Servers

If you want TEC to use OS-based SNMP to monitor your Sun x64/ILOM servers, the Sun™ Server Hardware Management Pack (hereafter Hardware Management Pack) can be used.

Installation

Before installing the Hardware Management Pack, you must check that the operating system installed on the Sun x64/ILOM server is compatible. For more information on the Hardware Management Pack, consult the Sun Server Hardware Management Using SNMP manual at the following web page:

- <http://www.sun.com/systemmanagement/managementtools.jsp>

Configuration

For integration between the Hardware Management Pack and TEC to work correctly, you must verify that the Hardware Management Pack on your managed Sun x64/ILOM nodes is configured correctly.

To configure the Hardware Management Pack for integration with TEC, do the following:

Configure the SNMP interface to send SNMP v2 traps to TEC.

For more information on configuring the Hardware Management Pack, please see the following document:

- *Sun Server Hardware Management Using SNMP (820-7621)*

Your Sun x64/ILOM servers are now ready to be managed using SNMP within TEC.


Configuring SNMP On Sun Service Processors

To enable service processor level SNMP monitoring, you must configure SNMP on your Sun service processor.

A complete and current listing of supported Sun servers, service processors, and service processor firmware is available at the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

Please consult this website before installing this integration package.

Sun Server	Configuration Tasks
SPARC/ILOM x64/ILOM	Configure SNMP on your ILOM service processor.  Note: Sun recommends that you upgrade the firmware on your ILOM service processor to the most recent release. You may need to use different procedures for different version of the ILOM firmware.
x64/EmbeddedLOM	Configure SNMP on your Embedded LOM service processor.

Configuring SNMP On Sun Service Processors

The exact procedure for configuring your Sun service processor to enable SNMP monitoring depends on the exact type of service processor being used. The following section explains the general actions you should perform on a service processor to enable it to be monitored using TEC .

1. **Permit access for SNMP v2c queries at port 161.**
2. **Configure SNMP v2c traps to be sent to the TEC destination.**

Your Sun service processor is now configured for SNMP monitoring.

Verifying Successful Configuration

To the extent that the Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console employs a variety of system management technologies to monitor different types of Sun servers, there is no one procedure that exercises every interface on each managed system in order to verify that the entire integration has been installed and configured properly. If you are physically located with your managed systems, you could always manually remove and re-insert a non-critical component on one Sun server after another. See the topic '[Verifying Configuration Manually](#)' on page 24' below for more information on manual verification. This manual procedure becomes impractical at large installations and impossible at remote locations. Performing remote verification is more convenient, but requires different procedures for OS-level or SP-level integrations and for different types of Sun servers (x64 or SPARC).

To determine which remote procedures are appropriate for your test plan and for the types of Sun servers supported by your management application, consult the following table.

CPU Type	SP Type	OS-level Procedure(s)	SP-level Procedure(s)
----------	---------	-----------------------	-----------------------

x64	ILOM	See ' Verifying Configuration Remotely Using IPMItool on page 25'	See ' Verifying Configuration Remotely Using IPMItool on page 25'
	Embedded LOM	Not supported	See ' Verifying Configuration Remotely Using IPMItool on page 25'
SPARC	ILOM	See ' Verifying Configuration Remotely Using psradm on page 27'	See ' Verifying Configuration Remotely Using IPMItool on page 25'
	ALOM	See ' Verifying Configuration Remotely Using ALOM on page 24'	Not supported


The following sections describe how to perform each of these procedures.

Verifying Configuration Manually


If you are located physically near one or more of your Sun servers, you can always verify configuration by generating a physical event. The most reliable way to accomplish this is to remove and re-insert a non-critical component.

To test your configuration manually, do the following:

1. **Locate the Sun server or blade server module in your data center.**
2. **Identify a component on that system that is non-critical and hot-pluggable (for example, a redundant power supply or fan tray).**

 **Note:** Be certain that removal and re-insertion of this component will not affect the normal and routine operation of the server. Verify that the redundant component is not critical to the current state of the system.

3. **Remove that non-critical component.**

 **Note:** Be certain to follow all required software and firmware procedures required for the safe removal of any hot-pluggable component. Consult the Sun manual or online information system that ships with your Sun server for specific procedures related to removing the hot-pluggable component.

4. **After an appropriate amount of time (10 seconds minimum), re-insert the non-critical component.**
5. **In the message or event console of your management program, verify that removing/re-inserting the non-critical component has generated one or more hardware events.**

If you do not see the events in the Operations Manager Console, review this manual for required configuration steps or consult Troubleshooting topics.

Verifying Configuration Remotely Using ALOM

To verify that a remote ALOM-based SPARC Solaris system is configured correctly, do the following:

1. **Identify the name and/or IP address of the ALOM-based SPARC Solaris server that you want to test.**
2. **Log in to the ALOM CMT command shell on that remote system via an Ethernet or serial connection.**
3. **Enter the following command to determine the current state of the system locator LED.**

```
sc> showlocator
```

ALOM returns one of the following messages:

- Locator led is ON
- Locator led is OFF

The following example assumes that the locator LED is currently OFF.

4. Enter the following command to turn the locator LED on.

```
sc> setlocator on
```

5. In the message or event console of your management package, verify that it has received an event from ALOM indicating that the locator LED is on.

6. Enter the following command to restore the locator LED to off.

```
sc> setlocator off
```

7. (Optional) In the message or event console of your management package, verify that it has received an event from ALOM indicating that the locator LED is off.

If you do not see these messages in the console, review this manual for required configuration steps or consult Troubleshooting sections.

Verifying Configuration Remotely Using IPMItool

Recent Sun servers support either an Integrated Lights Out Manager (ILOM) service processor or an Embedded LOM service processor. You can communicate with these ILOM and Embedded LOM service processors via their IPMI interfaces to have them generate non-critical, simulated events. If TEC receives these non-critical, simulated events from ILOM or from Embedded LOM, it is configured properly for actual events.

IPMItool is an open-source utility for managing and configuring devices that support the Intelligent Platform Management Interface (IPMI) version 1.5 and version 2.0 specifications. Versions of IPMItool are available for the Solaris, Linux, and Windows operating systems.

Operating System	IPMItool Distribution(s)
Solaris	<ul style="list-style-type: none"> - Web: http://ipmitool.sourceforge.net/ - Solaris 10 image: IPMItool is available at <code>/usr/sfw/bin</code>. - Software resource CDs: Often distributed with Sun servers.
Linux	<ul style="list-style-type: none"> - Web: http://ipmitool.sourceforge.net/ - Software resource CDs: Often distributed with Sun servers.
Windows	<ul style="list-style-type: none"> - Web: http://www.sun.com/systemmanagement/tools.jsp - Software resource CDs: Often distributed with Sun servers.

To verify that TEC is configured to receive hardware events from a server supporting an ILOM or Embedded LOM service processor, do the following:

1. Collect the following information about the remote service processor that you want to test.

Field	Description
<SPname>	The name or IP address of the service processor Example: 192.168.1.1
<SPadminname>	The administrator login name for the service processor Example: root
<SPadminpassword>	The administrator password for the service processor

Field	Description
	Example: changeme

2. Enter the following IPMItool command to generate a list of all available sensors on that remote Sun server.

```
# ipmitool -U <SPadminname> -P <SPadminpassword> \
-H <SPname> -v sdr list
```

For example, to get the list of available sensors on a Sun Fire X4200 M2 server with service processor with IP address 192.168.1.1, login/password root/changeme, you would enter the following command:


```
# ipmitool -U root -P changeme -H 192.168.1.1 -v sdr list
```

3. In the output from IPMItool, identify the Sensor ID name of a sensor that has at least one entry in the Assertions Enabled or Deassertions Enabled fields.

In the following example, IPMItool returns the following information about the sensor named *mb.t_amb*

```
Sensor ID           : mb.t_amb (0x9)
Entity ID          : 7.0 (System Board)
Sensor Type (Analog) : Temperature
. . .
Upper critical     : 55.000
. . .
Assertions Enabled  : lnc- lcr- lnr- unc+ ucr+ unr+
Deassertions Enabled : lnc- lcr- lnr- unc+ ucr+ unr+
```

This sensor monitors ambient temperature on the motherboard of servers.

 **Note:** Exercise caution in choosing a sensor to use for a simulated event. Simulating unrecoverably high or low temperature for some sensors may cause the server to shut down.

4. Enter the following IPMI command to generate a simulated event.

```
# ipmitool -U <SPadminname> -P <SPadminpassword> \
-H <SPname> event <sensorname> <option>
```

For example, to generate a simulated event for exceeding the upper critical (ucr) ambient temperature on a Sun Fire X4200 M2 server with service processor at IP address 192.168.1.1 with ILOM SP login/password root/changeme, you would enter the following command:

```
# ipmitool -U root -P changeme -H 192.168.1.1 \
event mb.t_amb ucr assert
```

In the command shell, IPMItool returns information similar to the following:

```
Finding sensor mb.t_amb ... ok
0 | Pre-Init Time-stamp | Temperature mb.t_amb | \
Upper Critical going high | Reading 56 > Threshold \
55 degrees C
```

5. In the Operations Manager event console, verify that an event from ILOM or from Embedded LOM relevant to the sensor that you specified in your IPMItool command has been received.
6. (Recommended) Clear the simulated event with the following syntax:

```
# ipmitool -U <SPadminname> -P <SPadminpassword> \
-H <SPname> event <sensorname> <option>
```

To clear (deassert) the simulated event in the previous example, enter the following command:

```
# ipmitool -U root -P changeme -H 192.168.1.1 \
event mb.t_amb ucr deassert
```

If you do not see these messages in the console, review this manual for required configuration steps or consult the Troubleshooting topics.

Verifying Configuration Remotely Using `psradm`

The Solaris utility `psradm(1M)` performs configuration on multiprocessor CPUs. When you use `psradm` to disable or to re-enable a CPU core, it generates a trap that should appear in the TEC event console. This procedure is appropriate if you are verifying configuration for a Sun SPARC Enterprise server supporting the ILOM service processor such as the SPARC Enterprise T5120 or T5220 server.

To use `psradm` to generate a trap for one of these supported systems, do the following:

1. **Identify the name and/or IP address of the server that you want to test.**
2. **Log in to that server as root or with administrator privileges.**
3. **Enter the following command to disable a specific CPU core on that remote server.**

```
# psradm -f <CPU_Core_ID>
```

where `<CPU_Core_ID>` is the ID for one CPUcore. For example, to disable core 0 on a Sun SPARC Enterprise T5120, you would enter the following command:

```
# psradm -f 0
```

The trap generated by the T5120 should appear in the TEC console in a format like the following:

```
CH/MB/CMP0/P0/CPU Device has been removed
```

4. **(Recommended) Enter the following command to re-enable that same CPU core on that remote server.**

```
# psradm -n <CPU_Core_ID>
```

If you do not see these messages in the console, review this publication for required configuration steps and troubleshooting information.

Monitoring Sun Devices in TEC

Once you have configured TEC, TEC adapters, and the Sun devices for SNMP or log file integration, you can monitor Sun-specific events and detailed event information in the TEC Event Console. This chapter provides an overview of the following tasks:

- [Creating Event Group Filters for the Sun Management Pack](#) on page 28
- [Monitoring Sun Devices in the TEC Event Console](#) on page 33

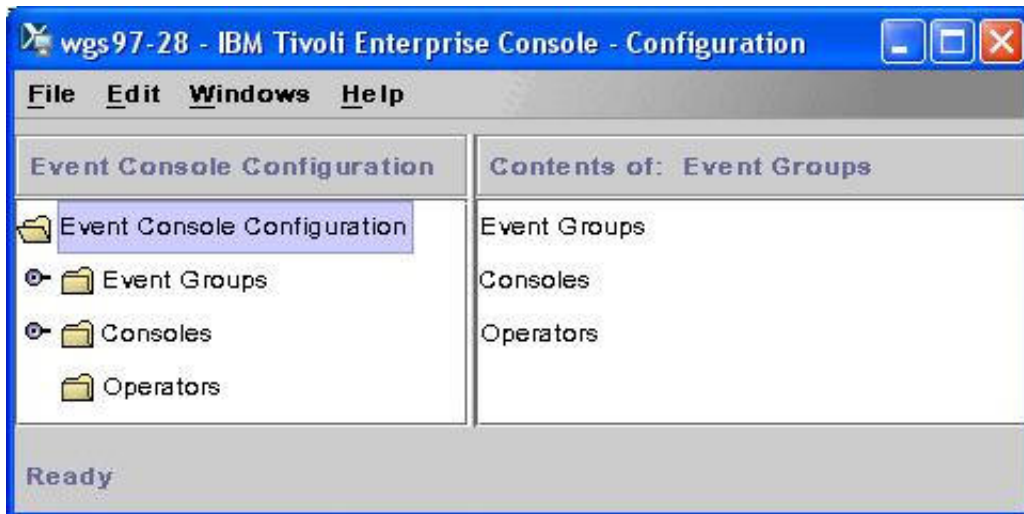
Creating Event Group Filters for the Sun Management Pack

Although Sun-specific events are always visible in the default console via the filter AllActiveFilters, creating a Sun-specific event group in the TEC Console is useful and convenient. To create an event group filter for Sun-specific events, do the following:

1. **Launch the TEC Event Console.**
2. **Choose Windows - Configuration to display the TEC Console Configuration Viewer.**



TEC displays the default view of the Configuration Viewer.



3. **Right-click the Event Groups heading in the navigation pane to display a popup menu containing the menu item Create Event Group.**



4. Click the Create Event Group menu item to display the TEC Create Event Group dialog box.



5. Enter the name and a description for the new event group.



In the above example, the name of the event group is T1000/T2000 and the description is ALOMServers.

6. Click OK to create the group and to display the Add Event Group Filter dialog box.

Add Event Group Filter

Name

Description

Constraints

Add Constraint Add SQL Edit Delete Test SQL

OK Cancel Help

7. Specify a name and description for the new event group filter.

In this example, the name of the event group filter is SunALOMFilter and its description is ALOM events from T1000/T2000 Servers (prefix = SC_).

Add Event Group Filter

Name

SunALOMFilter

Description

ALOM events from T1000/T2000 Servers (prefix = SC_)

Constraints

Add Constraint Add SQL Edit Delete Test SQL

OK Cancel Help

8. Click the Add Constraint button to display the Add Constraint dialog box.

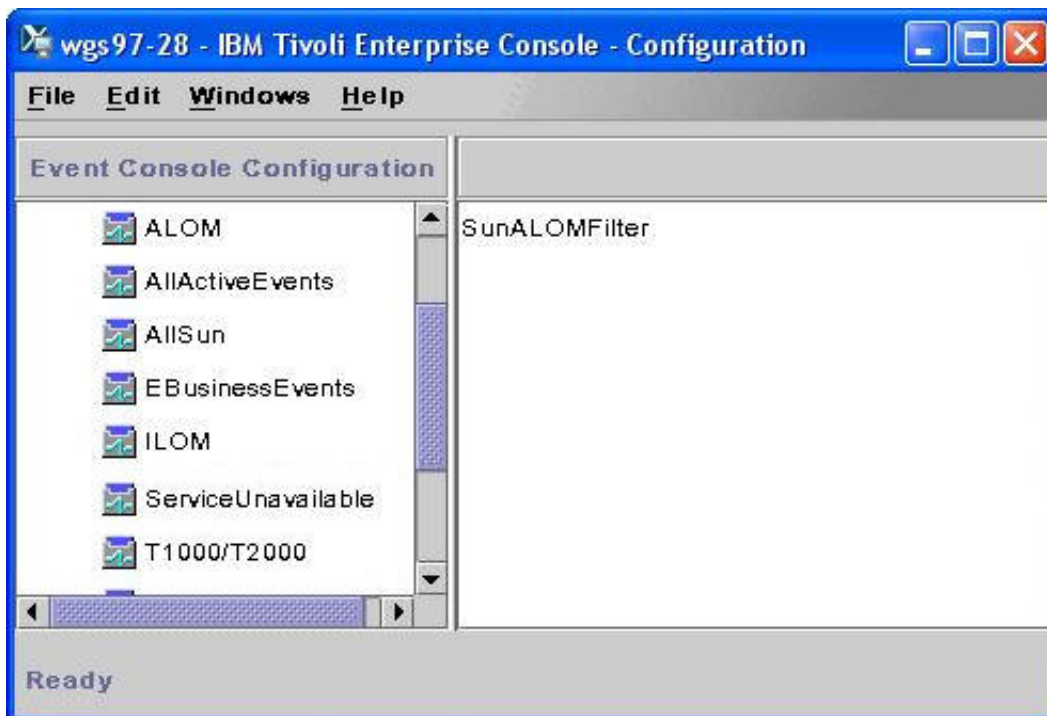
9. Set the following values for fields in the dialog box.

Attribute	Operator	Value	Description
Sub-origin	Equal to (=)	Sun ALOM	Sun ALOM (for Sun SPARC T1000/T2000 Servers)
Sub-origin	Equal to (=)	Sun ILOM Sun Embedded LOM	Sun ILOM Sun ELOM (for Sun Fire x64 and Sun SPARC Enterprise T5x20 service processors)
Sub-origin	LIKE (Like)	Sun%	Sun% (for all supported Sun servers and service processors)

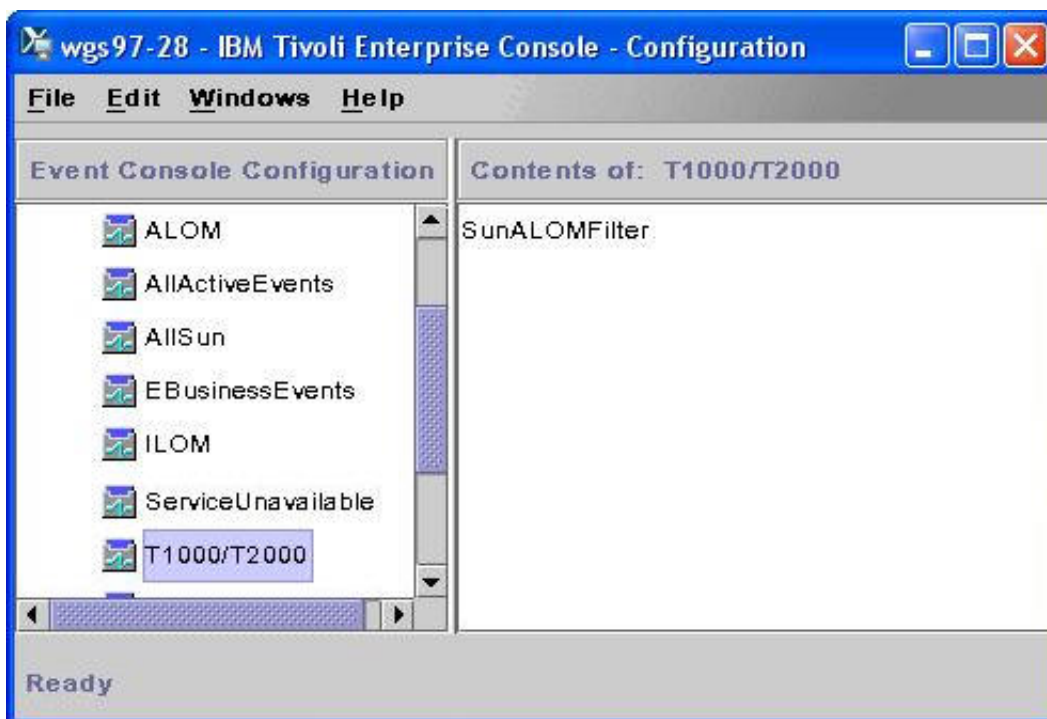
The following screen shot illustrates values for a constraint for Sun SPARC Enterprise T1000/T2000 servers.

The screenshot shows a dialog box titled "Add Constraint". It contains three main sections: "Attribute" with a dropdown menu showing "Sub-origin", "Operator" with a dropdown menu showing "Equal to (=)", and "Value" with a text input field containing "Sun ALOM". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

10. Click OK to confirm the definition and to add this constraint to the new event group filter.



11. Click OK to complete the definition and to add the event group filter to the definition of the new event group.



Repeat this procedure for each event group you want to define for your Sun devices. Once these event groups are defined, you can add them to the TEC Summary Chart View and display listings of filtered events in the TEC Event Viewer.

Monitoring Sun Devices in the TEC Event Console

Once TEC Event Console has event group filters that specify how to categorize and display events from Sun servers and service processors, it can display views of those events in the Summary Chart Viewer and Event Viewer.

Monitoring Sun Devices in the TEC Summary Chart Viewer

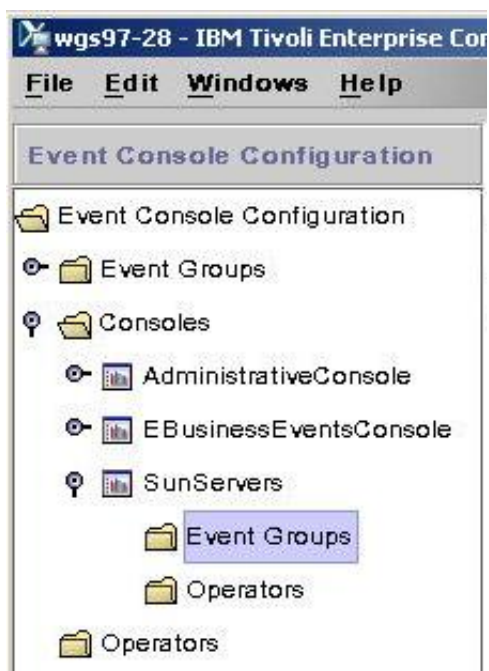
The TEC Summary Chart Viewer provides a graphical view of the quantity, severity, and event grouping of events received by the TEC Event Server.

To add Sun-specific event group definitions to the TEC Summary Chart Viewer, do the following:

1. Choose **Windows - Configuration** to open the Configuration Viewer.
2. Click the **Consoles** label in the navigation pane to expand the contents of Consoles.



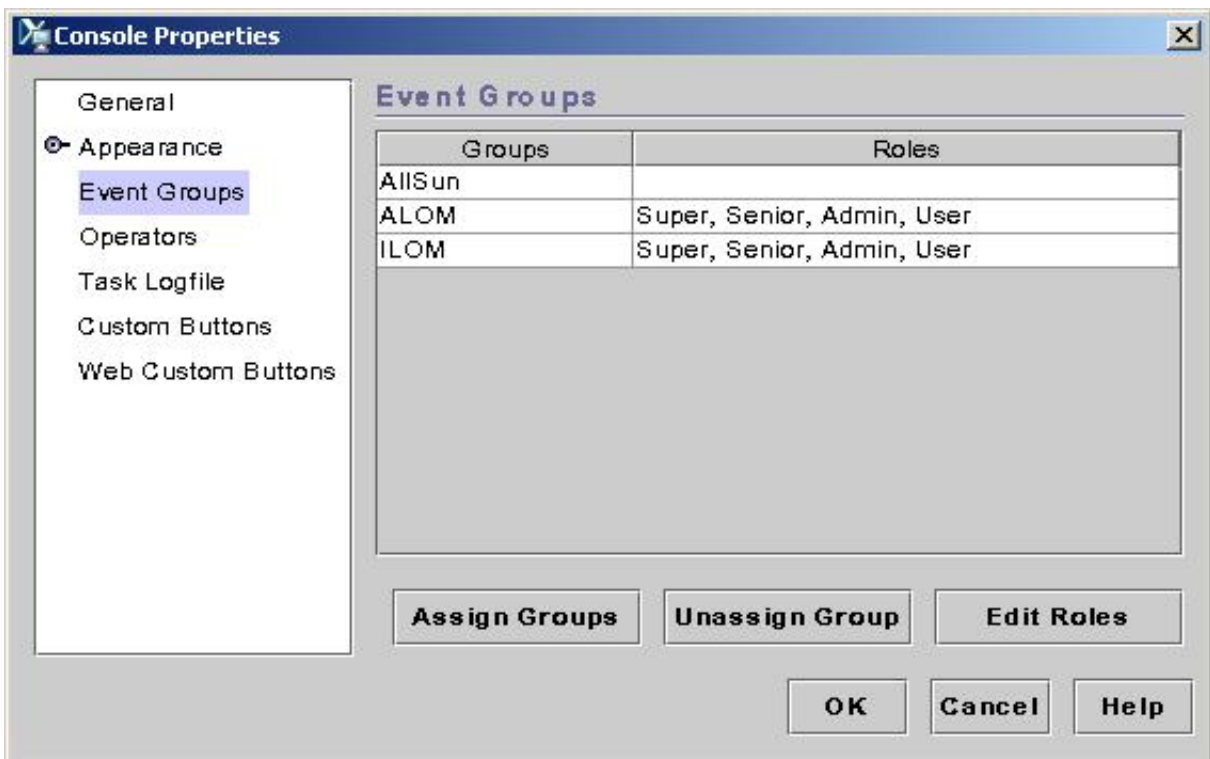
3. Click the name of the console that you have defined for Sun servers and the **Event Groups** label in the navigation pane.



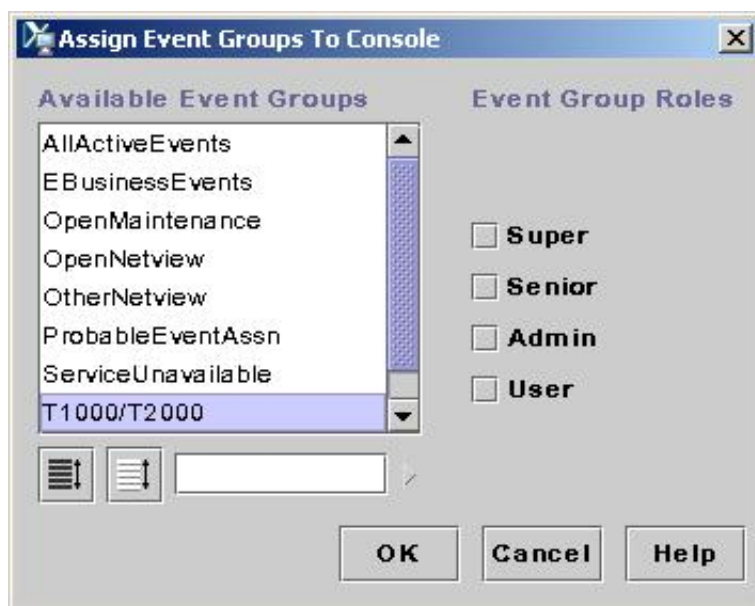
4. Right-click the **Event Group** label to display a popup menu and choose **Assign Event Groups**.



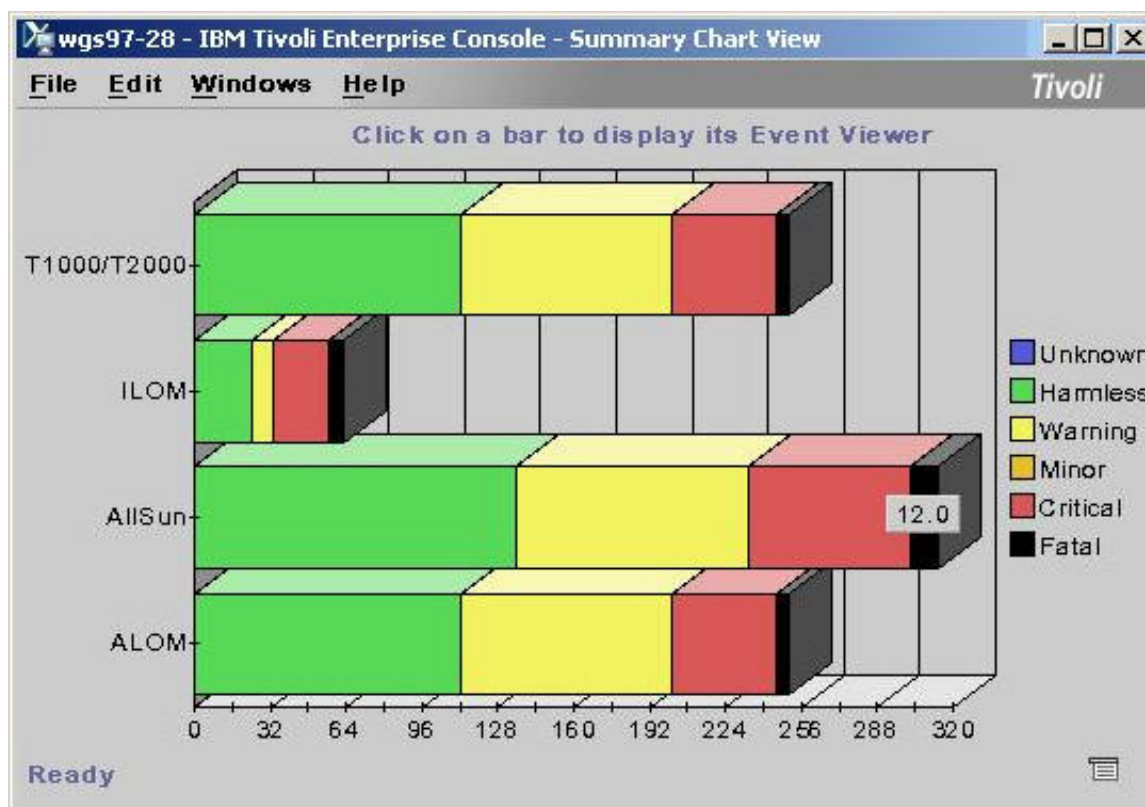
The Configuration View displays a dialog box with the names of event groups associated with the selected console.



5. Click the Assign Groups button to display the following dialog box.



6. Double-click the name of a Sun-specific event configuration that you want to add to the selected console and to the Summary Chart Viewer.
7. Click OK in the Console Properties dialog box to save the new configuration.
8. Choose Windows - Summary Chart View to display the updated set of event groups in the console.



- Note:** In this example, the charts for the event groups named T1000/T2000 and ALOM are identical because both event groups use the same filter definition: sub-origin = Sun ALOM.

Monitoring Sun Devices in the TEC Event Viewer

To view a listing of the events associated with any of the event groups displayed in the Summary Chart Viewer, click the chart bar associated with that event group.

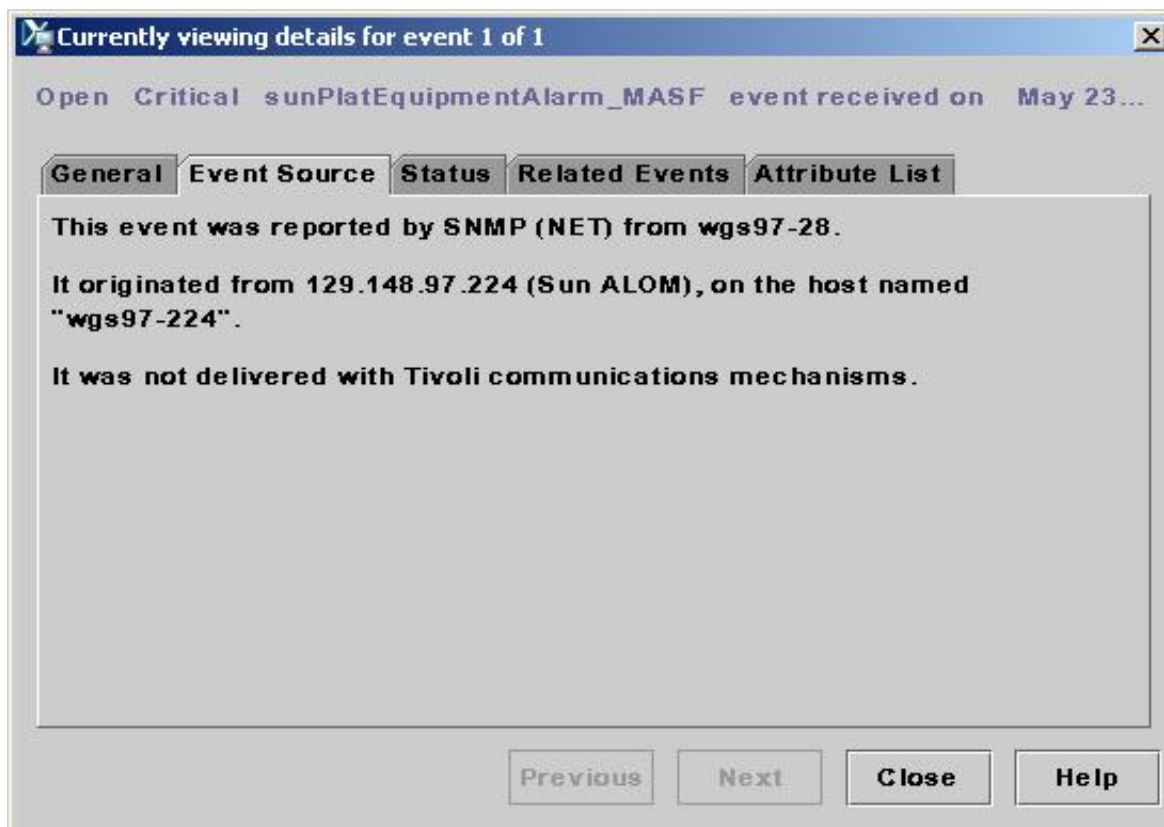
The screenshot shows the 'Event Viewer' window for 'Group AllSun - All Sun servers x64 and SPARC'. The interface includes a menu bar (File, Edit, Options, Selected, Automated Tasks, Help) and a 'Working Queue' section with a summary of 314 total events and 1 selected. Below this is a table of recent events, and at the bottom, a section for 'All Events' showing a list of historical events.

Time Received	Ev...	Class	Hostna...	Severity	Message
May 23, 2007 3:15:25 ...	Other	SC_Login_Notification	wgs97-224	Harmless	User admin log
May 23, 2007 3:24:20 ...	Other	SC_Soft_Shutdown	wgs97-224	Fatal	SC initiating se
May 23, 2007 3:24:31 ...	Other	SC_PowerOff_Host	wgs97-224	Fatal	SC Request to
May 23, 2007 3:24:32 ...	Other	MainboardCoreVoltage...	wgs97-224	Warning	Mainboard core
May 23, 2007 3:24:33 ...	Other	sunPlatEquipmentAlar...	wgs97-224	Critical	EM08NA/wgs9
May 23, 2007 3:37:32 ...	Other	sunPlatEquipmentAlar...	wgs97-224	Critical	EM08NA/wgs9

Time Received	Eve...	Class	Hostna...	Severity	Status	Message
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Warning	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Warning	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Harmless	Open	CPU 0 bot...
February 12, 2007...	Other	CPU0Bcor...	wgs97-228	Harmless	Open	CPU 0 bot...
February 12, 2007...	Other	Mainboard...	wgs97-228	Harmless	Open	Mainboard...
February 12, 2007...	Other	Mainboard...	wgs97-228	Harmless	Open	Mainboard...
February 12, 2007...	Other	sunPlatEn...	wgs97-228	Warning	Open	PC0RMU/...
February 12, 2007...	Other	IOBoardT...	wgs97-228	Warning	Open	I/O board ...
February 13, 2007	Other	CPU0Tcor	wgs97-228	Harmless	Open	CPU 0 ton

To drill down into a particular event in the Event Viewer, double-click it or click the Details button after selecting it.

The following screen shots illustrate detailed event information derived from an SNMP integration with a Sun SPARC Enterprise T2000 server.



Currently viewing details for event 1 of 1

Open Critical sunPlatEquipmentAlarm_MASF event received on May 23...

General Event Source Status Related Events Attribute List

Attribute Name	Attribute Value
Server ID	1
Severity	Critical
Source	SNMP
Status	Open
Sub-origin	Sun ALOM
Sub-source	NET
Time Modified	May 23, 2007 3:24:35 PM EDT
Time Occurred	May 23 15:24:33 2007
Time Received	May 23, 2007 3:24:33 PM EDT

Show Base Attributes Show Extended Attributes

Display Formatted Names and Va...

Previous Next Close Help

Troubleshooting

The Tivoli TEC product provides a number of troubleshooting utilities for tracing the progress of events through various TEC components and for observing the activation of TEC rules.

Tracing TEC Events

TEC events can be traced from the TEC adapter layer, through the TEC Event Server and into the database. TEC event adapters read a configuration file at startup that can be used to enable tracing. The configuration file `$TECADHOME/etc/tecad_snmp.err` (for the TEC SNMP Adapter), or `tecad_logfile.err` (for the TEC Logfile Adapter) can be modified to write debugging statements from the adapter to the specified log file. The user can select many individual categories of messages to be logged. Upon startup, the adapter will write a trace of its activities to the log file. When new events arrive, the process by which each event is matched against the known TEC event classes is also traced. Errors in parsing or missing event class definitions can be discovered at this phase.

Tivoli also provides a command to trace activity when an event arrives at the server from the adapter layer. The `wtDumpPr1` command generates a report of received events from the event server's reception log. The following listing is an example of an event as output from the `wtDumpPr1` command:

```
1~1492~1~1175704967(Apr 04 12:42:47 2007)
### EVENT ###
ProcessorPredictiveFailureAsserted_PET;source=SNMP;sub_source=NET;
origin=129.148.97.116;adapter_host=wgs97-28;hostname=wgs97-116;
severity=CRITICAL;msg='Processor Predictive Failure Asserted.';END
### END EVENT ###
PROCESSED
```

However, if the event class is not defined in the current active rule base, then the output will end with the following line:

```
PARSING_FAILED~'Line 1: Class
ProcessorPredictiveFailureAsserted_PET undefined'
```

Finally, the underlying TEC database can be queried to gain further information about an event that has been processed and stored. The name of the table that stores the events is `TEC_T_EVT_REP`. A simple SQL query such as the following will show you all events that were closed by a TEC event clearing rule:

```
Select class, status, date_event from tec_t_evt_rep where administrator is not
null
```

Tracing TEC Rules

The actions of rules in the Sun Fire rule set can also be traced. The following line can be added to the `sunfire_snmp.rls` and `sunfire_logfile.rls` files, to turn on tracing for a single rule or for the whole files:

```
directive: trace,
```

Or the rules can be compiled with the `-trace` option. In either case, the TEC event engine will write a trace of its activities to the file `/tmp/rules.trace`. By examining this log file, you can determine whether your rules are being triggered appropriately.

Log File Event Problems

If Logfile events do not appear in the TEC Event Console, verify that the `tecad_logfile.fmt` file with the Sun specific events is present in `/usr/tecad/etc/C/` and that the compiled version of `tecad_logfile.cds` is located in `/usr/tecad/etc/`.

File entries: `/usr/tecad/etc/C/tecad_logfile.fmt`

```
FORMAT Logfile_SC_Alert FOLLOWS Logfile_Base
FORMAT SC_Temperature_Alert FOLLOWS Logfile_SC_Alert
FORMAT SC_Temperature_Notice FOLLOWS Logfile_SC_Alert
FORMAT SC_Indicator_Alert FOLLOWS Logfile_SC_Alert
FORMAT SC_Indicator_Notice FOLLOWS Logfile_SC_Alert
FORMAT SC_Voltage_Alert FOLLOWS Logfile_SC_Alert
FORMAT SC_Voltage_Notice FOLLOWS Logfile_SC_Alert
FORMAT SC_SystemLoad_Alert FOLLOWS Logfile_SC_Alert
FORMAT SC_SystemLoad_Notice FOLLOWS Logfile_SC_Alert
FORMAT SC_Soft_Shutdown FOLLOWS Logfile_SC_Alert
FORMAT SC_Fan_Absence FOLLOWS Logfile_SC_Alert
FORMAT SC_Fan_Presence FOLLOWS Logfile_SC_Alert
FORMAT SC_Input_Power_Alert FOLLOWS Logfile_SC_Alert
FORMAT SC_Input_Power_Notice FOLLOWS Logfile_SC_Alert
FORMAT SC_PSU_Absence FOLLOWS Logfile_SC_Alert
FORMAT SC_PSU_Presence FOLLOWS Logfile_SC_Alert
FORMAT SC_Disk_Absence FOLLOWS Logfile_SC_Alert
FORMAT SC_Disk_Presence FOLLOWS Logfile_SC_Alert
```

File entries: `/usr/tecad/etc/tecad_logfile.cds`

```
CLASS Logfile_SC_Alert
CLASS SC_Temperature_Alert
CLASS SC_Temperature_Notice
CLASS SC_Indicator_Alert
CLASS SC_Indicator_Notice
CLASS SC_Voltage_Alert
CLASS SC_Voltage_Notice
CLASS SC_SystemLoad_Alert
CLASS SC_SystemLoad_Notice
CLASS SC_Soft_Shutdown
CLASS SC_Fan_Absence
CLASS SC_Fan_Presence
CLASS SC_Input_Power_Alert
CLASS SC_Input_Power_Notice
CLASS SC_PSU_Absence
CLASS SC_PSU_Presence
CLASS SC_Disk_Absence
CLASS SC_Disk_Presence
```

Appendices

This section contains the following appendices:

- [Appendix A - Sun SNMP MIBs](#) on page 41
- [Appendix B - Release Notes](#) on page 41
- [Appendix C - What's New?](#) on page 42

Appendix A - Sun SNMP MIBs

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

- **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).

Filename: SUN-PLATFORM-MIB.mib

- **SUN-ILOM-PET-MIB:** 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 Lights Out Manager service processors.

Filename: SUN-ILOM-PET-MIB.mib

- **SUN-HW-TRAP-MIB:** This MIB supplements and enhances the SUN-ILOM-PET MIB for ILOM 2.0 and higher systems.

Filename: SUN-HW-TRAP-MIB.mib

- **SUN-HW-MONITORING-MIB:** This MIB enables hardware inventory, status, version and power consumption information related to the Sun server or blade implementing this MIB. SNMP Traps associated with this server are defined in a separate SUN-HW-TRAP-MIB.

Filename: SUN-HW-MONITORING-MIB.mib

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

<http://www.sun.com/systemmanagement/tools.jsp>

Sun Integration Pack may also make use of other system management MIBs.

Appendix B - Release Notes

The following notes are relevant to the operation of Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console.

Misreported Battery and Disk Events in the Logfile Integration

In the logfile integration, the following two events are misreported as the `Logfile_SC_Alert` alert:

- BATTERY undervoltage
- DISK failure and restoration

They do not, therefore, respond to a corresponding CLEAR event. These misreported events appear as follows in the event log:

```
Sep 17 17:12:23 sg-prg-t2000-01 SC Alert: [ID 628137 daemon.alert]
BATTERY at SC/BAT/V_BAT has exceeded low warning threshold.

Sep 17 14:47:01 sg-prg-t2000-01 SC Alert: [ID 601244 daemon.error] DISK
at HDD0 has FAILED.

Sep 17 14:48:30 sg-prg-t2000-01 SC Alert: [ID 470500 daemon.notice] DISK
at HDD0 is OK.
```

Misreported HDD Events on Sun Fire X4500 Servers

All disk events are reported with the following WARNING-severity message:

Hard drive sensor /SYS/HD/HDD0/STATE has detected an error: Rebuild In Progress

The HDD0 identifier may vary depending on the disk.

Appendix C - What's New?

This topic provides an overview of the new features that are available with this release of the Sun Integration Pack.

The enhancements to Sun Servers Integration 1.2 for IBM Tivoli Enterprise Console fall into one major area:

- Server and firmware support

Server and Firmware Support

The Sun Integration Pack now supports the following Sun servers and updated Sun system management firmware.

Category	Enhancements
New servers	TBD ...
Updated firmware	Integrated Lights Out Manager (ILOM) 2.0 Embedded Lights Out Manager (Embedded LOM) Version 4.x

SPARC/ILOM and x64/ILOM servers support the ILOM 2.0 service processor and firmware. SNMP traps from the new SUN-HW-TRAP-MIB appear in the ILOM Group in TEC. In the following screen shots depict first the event summary and then the event detail for a fatal-severity trap generated from a Sun SPARC Enterprise T5120 server.

Time Received	Event Name	Class	Hostname	Severity
July 30, 2007 2:40:42 PM...	Other	VoltageUpperCriticalGoi...	wgs97-210	Critical
July 30, 2007 3:03:30 PM...	Other	VoltageUpperCriticalGoi...	wgs97-210	Warning
July 31, 2007 12:37:36 P...	Other	ComponentFault_SunHW	wgs97-236	Warning
July 31, 2007 1:15:52 PM...	Other	TempFatalThresholdExc...	wgs97-236	Fatal
July 31, 2007 3:23:03 PM...	Other	VoltageUpperCriticalGoi...	wgs97-210	Critical
July 31, 2007 3:44:41 PM...	Other	VoltageUpperCriticalGoi...	wgs97-210	Warning

Currently viewing details for event 1 of 1

Open Fatal TempFatalThresholdExceeded_SunHW event received on July 31, 2007 1:15:52 PM EDT.

General | Event Source | Status | Related Events | Attribute List

Temperature sensor /SYS/MB/CMP0/BR0/CH0/D0/T_AMB: Upper Non-recoverable going high

This Fatal TempFatalThresholdExceeded_SunHW event was received by a TEC server at July 31, 2007 1:15:52 PM EDT.

It was last modified at July 31, 2007 1:15:52 PM EDT.

No events have been identified as duplicates of this one.

No automated responses to this event have been executed.

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For the most current list of servers supported in TEC, see the following web site:

<http://www.sun.com/systemmanagement/tools.jsp>

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