

Intel Telco Alarms Manager 2.0 Revision 1.0 for the HP Carrier-Grade Server cc3310 User's Guide

Version 3.0



Manufacturing Part Number: cc3310_W2K3_TelcoAlarmMgr

January 2006

U.S.A.

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Related Documents. The *HP Server cc3310 User Information Diagnostics and Utilities Resource CD-ROM* has been provided with your server. It contains a complete documentation set for the server. Included on the CD-ROM is the *hp Carrier-Grade Server cc3310 Product Guide*, which contains in-depth troubleshooting, installation, and repair information.

The CD will autorun when you insert it into an operating Windows workstation, or boot from the CD after a hardware reset.

In addition, the latest versions of all these documents, and any product updates to these documents, are posted under the appropriate server at: <http://docs.hp.com>.

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Introduction

Telco Alarms Manager (TAM) is a set of telecom server software components designed to manage the alarms state of the server and indicate health status via the local Telco Alarm Panel (TAP) as well as remotely via dry contact relays. The TAM Service receives alarm requests from multiple entities, such as the Intel Server Management (ISM) Local Response Agent (LRA), the Intel Linux Resource Monitor (RM), the SNMP Event Agent (for SNMP traps), and other applications which have registered with TAM.

Additionally, the Telco Alarms Manager delivers several APIs that permit access to the TAP. Application developers who wish to manage the alarms state from within their application can do so by using these APIs, which bypass the TAM Service management of the state machine.

Configuration Requirements

The TAM (2.0, rev 1.0) is provided for use on the HP Carrier Grade Server cc3310.

Required Software Components:

- Red Hat Advanced Server (AS) 2.1
- Red Hat Enterprise Linux (RHEL) 3.0
- Microsoft® Windows® 2000 Advanced Server, SP3 or higher
- Microsoft Windows 2003 Advanced Server

Required Software Components:

- TAM 2.0
 - Activate a hot key combination to enter secure mode quickly.
 - No additional software components required
- TAMTools 2.0¹
 - Java™ Runtime Environment (JRE) Version 1.3
 - SNMP Agent Software

¹ UCD-SNMP and SunJRE (J2SE) are delivered software components. Other third-party components may require additional configuration.

Installation

TAM 2.0 is provided on the *HP Server cc3310 User Information Diagnostics and Utility Resource CD*.

To run installation directly from CD:

Installation can be started from the Welcome page that auto runs when the CD is mounted or inserted. From the welcome page, select **Management SW**. From the drop down Management Software page:

1. If you are using a Linux OS, select the **Install Linux ISM/TAM Driver's** box (at the bottom of the page).
2. If you are using a Windows OS, select **ISM\Software\win32\TAM**.

Telco Alarms Manager Event Agents

Overview

TAM is designed to work with software or modules that register with TAM. This registered software is referred to as event agents. These event agents relay information to TAM so that any problems that occur on a system are indicated by the LEDs on the alarm panel. A set of TAM event agents is delivered as part of the TAM software package.

PI Event Agent

ISM's PI (Platform Instrumentation) Event Agent is installed with ISM on the Resource CD. PI monitors and provides information on several baseboard and hardware components. Any exceeded thresholds or alerts that it receives are mapped and forwarded to TAM, which illuminates corresponding status LEDs on the alarm panel. The following is a summary of some of the hardware components monitored by PI. Please refer to ISM documentation for more detailed information.

- Fan (failure, speed)
- Memory (single- and multi-bit errors, ECC errors)
- Processor (thermal trips and internal errors)
- Temperature (baseboard and processor temperature)
- Voltage (standby, baseboard, and processors)
- Power supplies (presence, redundancy, and temperature)

SNMP Event Agent

The SNMP Event Agent is installed with TAM. It is delivered as a component of TAMTools. The SNMP Event Agent listens for configured SNMP (Simple Network Management Protocol) traps. Any exceeded thresholds or alerts that it receives are mapped and forwarded to TAM which illuminates corresponding status LEDs on the alarm panel.

NOTE TAMTools must be running for this feature to be active. You can run TAMTools in the background by starting it in the shell with a "tamtools -t" command. TAMTools is an example of how the TAM API can be used to operate the Telco alarms.

System Event Agent

The System Event Agent is installed with TAM. It is delivered as a component of TAMTools. The System Event Agent polls and monitors configured system events. Linux leverages the `proc` file system and makes system information available for configuration as subsystems, resources, and statistics. Any exceeded thresholds or alerts that the System Event Agent receives are mapped and forwarded to TAM, which illuminates corresponding status LEDs on the alarm panel.

NOTE TAMTools must be running for this feature to be active. You can run TAMTools in the background by starting it in the shell with a "tamtools -t" command. TAMTools is an example of how the TAM API can be used to operate the Telco alarms.

On-Screen Display (OSD) Event Agent

The OSD (On-Screen Display) Event Agent is installed with TAM. It is delivered as a component of TAMTools. The OSD Event Agent is useful as a diagnostic or development tool. It can return the panel's state, send user-generated alarms to the alarm panel, and return event records stored in the alarms database, such as the GeneratorID, GeneratorInfo, AlarmID, and Severity.

Configuration

TAM Model

In the cc3310 server (firmware-based model), alarm processing is managed via the BMC (Baseboard Management Controller).

Alarm Models

TAM supports two models, Most Severe and All Severities. If TAM is running in firmware-based mode, the SDR (Sensor Data Record) can be configured to change the alarm model. Please refer to the BMC TAM EPS for SDR information. If TAM is running in software-based mode, the alarm model can be configured by modifying the `tamconfig` file and setting `ALL_SEVERITIES_MODEL` to `yes` or `no`. TAM must be restarted in order for this change to take effect.

- Linux: `/usr/local/tam/etc/tamconfig`
- Windows: `<TAMTargetDirectory>\tamconfig.dat`
- TAMTools: OSD Tab > Options > Alarm Model

Most Severe Alarm Model—Only the most critical alarm LED is illuminated. For example, if a minor alarm is present and a major alarm occurs, the minor alarm data will be retained in the alarm database; only the major alarm LED will be illuminated. If the condition that set the minor alarm previously still exists when the major alarm is cleared, the minor alarm will once again become illuminated. The Most Severe model is the default alarm model.

All Severities Alarm Model—All alarm LEDs for which alarm data exist will illuminate. This behavior facilitates the illumination of multiple LEDs simultaneously.

Alarm Severities

Severity modifications are dependent upon the Event Agent's configuration. The Event Agents analyze events from the hardware and software applications, and map the sensor severity to a Telco Alarm severity. The Event Agents then make calls to the TAM with the alarm information for alarm table entry and LED illumination. Table 1 lists descriptions for each alarm panel LED. In ISM, a noncritical map to a minor TAM event, a critical maps to a major TAM event, and nonrecoverable maps to a critical TAM event.

Table 1. Severity Mapping

TAM Alarm Panel LEDs	Description
MINOR (MNR)	A non-service-affecting condition. Corrective action should be taken in order to prevent a more serious fault.
MAJOR (MJR)	A service-affecting condition that requires an urgent action.
CRITICAL (CRT)	A service-affecting condition that requires an immediate action.
POWER (PWR)	Only active for power or voltage events.
DISK (DSK)	Activated during disk activity.
(NIC)	Activated during network activity.
(ON)	Activated when system is powered on. Not activated when system is powered off.

TAMTools

NOTE TAMTools must be running for this feature to be active. You can run TAMTools in the background by starting it in the shell with a "tamtools -t" command. TAMTools is an example of how the TAM API can be used to operate the Telco alarms.

Overview

TAMTools is a Java-based stand-alone application that performs various Telco Alarms Manager functions. TAMTools is composed of event agents that serve as a conduit to allow different types of events (System, SNMP, user-generated) to be mapped and configured to the server's alarm panel LEDs. Each tab in the TAMTools application performs one of the event agent's tasks.

Configuration File

An XML-based configuration file is used to store TAMTools configured events. This configuration file resides under `/usr/local/tam/etc/tamtools` as `tamtools.xml` for Linux installations. This configuration file makes deployment and configuration of multiple systems an easier task. `tamtools.xml` is generated as the end-user makes selections in the TAMTools user interface, or the user can create this file from any text editor, open it through the interface, or copy it to the TAMTools directory directly. In cases such as non-graphical OS installations, the TAMTools parses this file to forward events to TAM, therefore making the GUI in TAMTools an optional component. Please see Appendix B: TAMTools Schema for schema information.

Opening a Different Configuration File

To open another configuration file, select **File > Open** in the TAMTools menu bar. The title bar always reflects the current configuration file that is in use with the TAMTools application.

Saving Configured System Events to a Different Configuration File

`tamtools.xml` is the default configuration file for TAMTools. You can save the settings to another file for backup, replication to other similar servers, etc. To save the configuration to another filename, select **File > Save** in the TAMTools menu bar.

System Tab

The System tab represents the System Event Agent. Some of the objects that are monitored under the system event are: disk, CPU, process, network, etc. The System Event Agent gets a current reading for the selected object. A threshold can be set to trigger a Telco Alarms Manager LED assertion. The System Event Agent stores configuration information in `tamtools.xml`. This configuration file can be imported or exported to additional servers.

Terminology

The following terms provide information needed for configuring the System Event Agent (Windows):

TAMTools

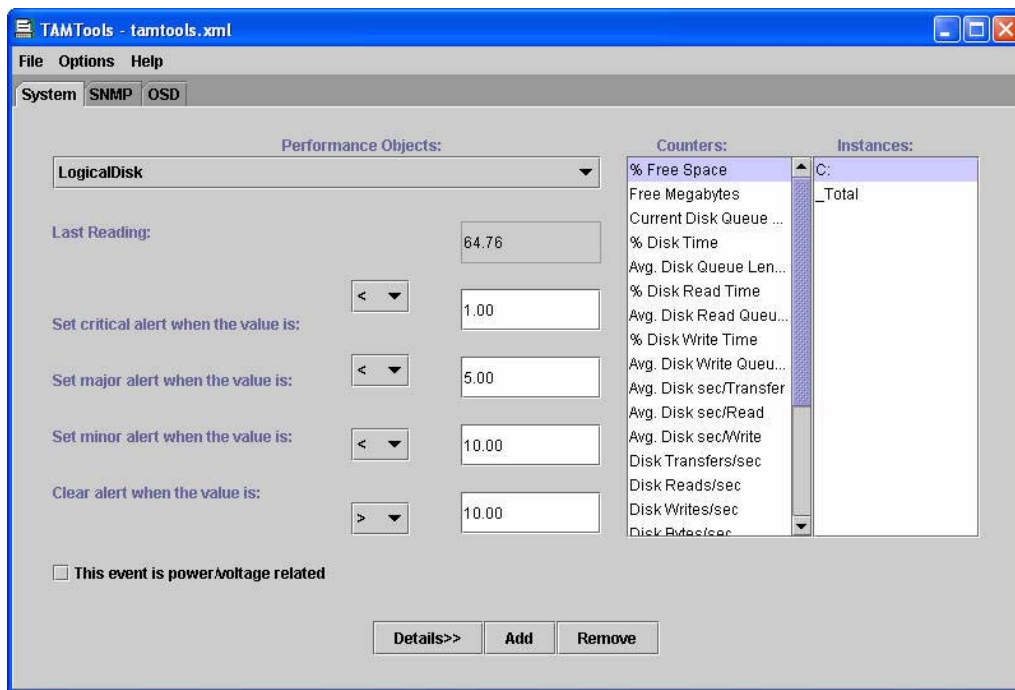
- Object— An object represents major hardware component(s) such as memory, processors, etc.
- Counter—The monitored value(s) of an object. Each object has 1 or more counters. For example, available memory is a counter for the memory object.
- Instance— Some objects have multiple entities. For example, the PhysicalDisk object may have one instance - c : \ or multiple instances - c : \, d : \, and e : \.

The following terms provide information needed for configuring the System Event Agent (Linux):

- Subsystem—A subsystem represents major hardware components, such as memory, processors, etc.
- Statistic—The monitored value(s) of an object. Each object has 1 or more statistics. For example, available memory is a statistic for the memory object.
- Resource—Some objects have multiple entities. For example, the PhysicalDisk object may have one resource - /usr or multiple resources - /, /boot, /home, /usr, /var, etc.

Configuring System Events

Select the **System** tab and select components to monitor. The last reading box will show the latest reading according to the polling interval that is set. The polling interval can be changed by selecting **Options > Configure** in the TAMTools menu bar. Set thresholds for minor, major, and/or critical events by selecting the conditional operator and entering a value. A value must be entered to clear the event before the configuration is accepted. Then select **Add**. This configuration is saved to the xml file and can be viewed immediately in the details window. To remove events, select the **System** tab and **details** to view event details. Select the event that you wish to remove and then select **Remove**. This configuration change is updated to the xml file and can be viewed immediately in the details window.



SNMP Tab

The SNMP tab represents the SNMP Event Agent. The TAMTools MIB browser allows the user to select SNMP entries or TRAP entries and configure a threshold for the entry. The threshold allows for the generation of a Telco Alarms Manager LED assertion. The SNMP Event Agent stores configuration information in `tamttools.xml`. This configuration file can be imported or exported to additional servers.

NOTE Before the TRAP entries will be visible, it is necessary to load a MIB file from Option>Load MIBs.

Terminology

The following terms provide information needed for configuring the SNMP Event Agent:

- **MIB**—MIB stands for Management Information Base. A MIB file defines what parameters or variables can be accessed and how they are interpreted.
- **OID**—OID stands for object identifiers. The OID is a unique identifier for read-only, read-write, and trap information.
- **Trap**—A trap is an event sent by the SNMP agent to a SNMP manager. Objects and values may be sent with the trap.
- **Variable**—(Sometimes called variable binding or trap variable) is the object and value that gets sent with a trap PDU message.
- **Browser**—A program to walk (traverse) MIB files to display SNMP parameters.

Configuring SNMP Events

- **Load MIBs**—MIBs need to be loaded first before the MIB values can be browsed. Select **Options > Load MIBs** in the TAMTools menu bar to load MIB files. For example: In order to receive SNMP traps for network interface card (NIC) events, you must install specific NIC SNMP software from the following Intel web site: <http://support.intel.com/support/network/adapter/1000/software.htm> .
- Download the Native SNMP software for your operating system and follow the installation and configuration instructions that are included in the download package. One of the files in the installation package will be a MIB file. This file can be loaded with the Load MIBs function. Traps will not be visible until a MIB file is loaded.
- MIB files that are used by ISM are installed in `/usr/share/snmp/mibs`.
- **Browse for Traps**—Select the **SNMP** tab. Trap values can be identified by a red dot icon beside them. You can expand and collapse the MIB tree quickly by using the Expand and Collapse buttons. Select the trap value and go to **Options > Configure** in the TAMTools menu bar or select Configure. Select the variable to monitor and set thresholds for minor, major, and/or critical events by selecting the conditional operator and entering a value. A value must be entered to clear the event before the configuration is accepted. Then select **Save**. This configuration is saved to the xml file and can be viewed immediately in the details window. If this trap occurs, the selected variable's value is compared with threshold settings.

TAMTools

- **Removing SNMP Events**—Select the **SNMP** tab and select **details** to view event details. Select the event that you wish to remove and then select **Remove**. This configuration change is updated to the xml file and can be viewed immediately in the details window.

OSD Tab

TAMTools provides an on-screen display tool that shows the Telco Alarms Manager state and the Telco Alarm Panel state. TAM OSD is available for use as a debug or development tool. The OSD Event Agent allows you to set and clear LEDs and it lists alarm information for all event records stored in TAM.

OSD Configuration Options

Select the **OSD** tab and go to **Options > Configure** in the TAMTools menu bar. In the Configure dialog, selections are presented for Alarm Persistence and Alarm Model.

Alarm Persistence—The behavior of the Alarm LEDs through system restarts is configurable on a per Event Agent basis. TAM can automatically clear alarms from specific Event Agents upon restart, or the alarms can be left for the Event Agent to clear when it determines its health state. Please note that changing this setting only affects OSD Event Agent alarm records.

Alarm Model—Alarm models are discussed on page 8. Changing this setting affects all installed Event Agents on the system.

Appendix A: Glossary

This appendix contains important terms used in the preceding chapters.

Acronym	Definition
API	Application Programming Interface
BMC	Baseboard Management Controller
ISM	Intel® Server Management
J2SE	Java 2 Platform, Standard Edition
JRE	Java Runtime Environment
LRA	Local Response Agent
OSD	On-Screen Display
PDU	Protocol Data Units
PI	Platform Instrumentation
RM	Resource Monitor
SDR	Sensor Data Record
SNMP	Simple Network Management Protocol
TAM	Telco Alarms Manager
TAP	Telco Alarm Panel

Appendix B: TAMTools Schema

This appendix contains an example XML tag and schema definition for the Event Agents used in TAMTools.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<tamtools>
<system>
<systemId obj = "Disk"
counter = "Available"
instance = "/"
id = "1"
power = "false"
clear = "> 800"
minor = "< 500"
major = "< 300"
critical = "< 200">
</systemId>
</system>
<snmp>
</snmp>
</tamtools>
```

