Intelligent Peripheral Fault Manger for Tru64 UNIX (IPFM)

SOFTWARE PRODUCT DESCRIPTION 60.35.05

DESCRIPTION

Intelligent Peripheral Fault Manager for Tru64 UNIX (IPFM) Version 3.0,a layered software product, provides fault management services for the *AlphaServer Intelligent Peripheral Platform.* It monitors events within the platform and provides visual and audible alarms. In addition, it provides a software API (the IP Fault Manager Application Programming Interface) to allow applications or other layered software to integrate into the same alarm subsystem. *IPFM V3.0* is supported on Tru64 UNIX V4.0D, V4.0E, V4.0G, V5.0A, V5.1, and V5.1A.

IPFM V2.2 provides the following new functionality:

- Process monitoring
- Maximum number of alarms increased to 2048
- New API routine for getting the number of outstanding alarms and the alarm text
- New API routine for clearing all alarms
- Support for warnings and informational messages
- The ability to disable audible alarms
- The ability to limit, by severity, the SNMP traps generated

IPFM V3.0 is a forward migration effort. The main focus of this release is to support Compaq *Tru64 UNIX* V4.0G to V5.1A.

See the Release Notes for more Information.

FUNCTIONAL DESCRIPTION

The *IP Fault Manager* components are:

- Event Detector – Event detection software that runs on each system in the Intelligent Peripheral. Monitors the Tru64 UNIX operating system for detected errors, and monitors the system for user-specified events as defined in the configuration files.
- Event Manager – The manager of the event database. The Event Manager coordinates the combination of all outstanding events on the local system. The Event Manager logs all event activity in the local event log file as well as insures that the local event database is kept up to date. It also manages the visual and audible alarms on the Indicator Module to ensure it is consistent with the Event Database.
- Event Database – The repository of outstanding events. This event database contains an entry for each outstanding event that has been detected or presented to a system. The events can be added (SET), acknowledged (ACK), and removed (CLEAR) from the event database.

- *IPFM* Application Programmer's Interface (API) – A programming interface that third party applications can use to set, acknowledge and clear alarmed events within the *AlphaServer IP Platform*.
- *IPFM* Operator Interface – An interface that can be used to display outstanding events, as well as to set, acknowledge, and clear alarms manually on the local system.
- IP Event Log File – An event log file on each system in the Intelligent Peripheral Platform. The log files contain every event that is detected or generated.
- Configuration Files – Files that are used to allow user customization of certain details of the *IPFM* configuration. The user can modify all periodic timers (used for repeated actions), as well as the event-to-alarm severity definitions.
- SNMP subagent / *IPFM* MIB – Maintains the MIB (SNMP database) to be consistent with the Event Database and sends traps to a network management station (such as *Compaq Insight Manger* or *TeMIP*) to trigger visual indicators and provide data for the alarm database within the network management station. Any network management station with an SNMP interface can manage *IPFM*.

EVENT DETECTION

The Event Detector is responsible for detecting any events that occur on a system, and reporting the events to the *IPFM* Event Managers.

The *IPFM* Event Detector detects several categories of events: processor-based events (hardware events detected within the *Tru64 UNIX* operating system), external events, and storage events. When events are detected, they are checked against the list of reportable events (listed in the configuration file). An alarmed event is categorized by severity:

Critical: Severe, service-affecting condition requiring immediate corrective action.

Major: Serious disruption of service or the malfunctioning or failure of important functions or components. Less immediate or impending effect on system performance than Critical.

Minor: Trouble that does not have a serious effect on service, or that occurs in functions or components that are not essential for providing service.

Warning: Warning messages.

Informational: Informational techniques.

If the event passes the event filter, it is passed to the Event Manager. Since the Event Detector and the Event Manger reside in different processes, the information is passed using common interprocess communication techniques.

INTERFACES

The IP Fault Manager has interfaces to other components of the AlphaServer IP Platform:

- The IP Alarm Control Module
- An IP alarm control module must be present in order to support fault management for the chassis and for user defined events. The alarm control module has interfaces to the *AlphaServer IP Platform* subassemblies. When the alarm control module detects an event, it generates an interrupt to system software in order to update the event database.
- Alarm Control Module Device Driver
- The Alarm Board Device Driver has an interface with the alarm control module in the *AlphaServer IP Platform*. The alarm control module is the board that the device driver directly accesses. The device

driver presents an internal interface to the *IPFM* code, which allows the *IPFM* Fault Coordinator to set and clear minor, major, and critical alarms on the alarm indicator panel and to receive information through the alarm control module.

- The information from the alarm control module can be mapped by the end users to indicate alarms and alarm priorities as the see fit. This device driver is dynamically loadable. The setting and clearing of alarm is accomplished through ioctl calls to the device driver. This driver also supports ioctl calls, which reset the expansion board and the alarm board.
- When an event condition occurs or ceases to occur, the alarm control module interrupts the device driver, which reads the Status Register (SREG) to determine what change has occurred in the event conditions monitored. This event condition is then passed up to the event detector, and the appropriate action is taken as with any other event condition.
- The device driver has a diagnostics section that runs the hardware supplied self-test through the alarm control module and performs any additional hardware diagnostics that require software assist. The results of the diagnostics are reported to the operator.
- IP Alarm indicator Panel
- The IP alarm indicator panel displays alarm and system status for the *AlphaServer Intelligent Peripheral Platform*. It is connected to the Compaq AlphaServer system through a cable to the IP alarm control module. Setting, clearing, and acknowledging alarm status (Critical, Major, Minor, Warning, Informational) can be accomplished through the *IPFM* software menu. Clearing and acknowledging alarm status (Critical, Major, Minor, Warning, Informational) can be accomplished from an SNMP-compliant network management station.
- IP Alarm Log File
- This log file records the occurrences of all IP events and is accessible by the *AlphaServer IP Platform* operator. It serves as a permanent record of all events that are displayed on the *AlphaServer IP Platform* console, operator workstation, or SNMP network management station.

USER INTERFACES

The *IP Fault Manager* offers user interfaces as follows:

- A user application (API) that enables applications to monitor and control application-oriented fault events to be integrated with the ones already handled by the *IPFM*. The *IPFM* can then send messages to the IP alarm indicator panel to set and clear alarms on behalf of the application.
- A user menu located on a window on the *AlphaServer IP Platform* that allows the system operator to manually set and clear alarms as well as system status LEDs on the IP alarm indicator panel.
- An IP alarm log file that provides a recorded fault event history of all events monitored by the IP alarm indicator panel, the IP Fault Manager itself, and the user application.
- An SNMP interface that allows an SNMP-compliant network management station to monitor, clear, and acknowledge alarms from a remote location.

HARDWARE REQUIREMENTS

Processors Supported

AlphaServer 1000:	Model 4/200
	Model 4/233
	Model 4/266
	Model 5/300
AlphaServer 1000A:	Model 5/500
	Model 5/400
AlphaServer 4100:	Model 5/400
	Model 5/466
AlphaServer TS10	
AlphaServer TS20	
AlphaServer TS40	
AlphaServer ES40:	Mode1
	Model 2

Other Hardware

- ISA bus expansion chassis with IP sensor module: 3T-VC220-IP; 2T-VC221-IB; 2T-IPSEN-AA
- IP alarm control module: 2T:IPCON-AA
- IP alarm indicator panel: 2T-IPAIP-AA, 2T-IPAIP-AB, 2T-IPAIP-CA, 2T-IPAIP-CB, 2T-IPAIP-BB, 2T-IPAIP-GB, 2T-IPF1U-01

Disk Space Requirements for AlphaServer and Tru64 UNIX Systems

Disk space required for installation: 1.5MB

Block cluster size = 1

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

SOFTWARE REQUIREMENTS

Tru64 UNIX, V4.0D, V4.0E, V4.0G, V5.0A, V5.1, V5.1A

SOFTWARE LICENSING

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GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

CD-ROM

ORDERING INFORMATION

Intelligent Peripheral Fault Manager for Tru64 UNIX

Software Licenses: QL-4K4A9-AA

Software Media: QA-4K4AA-H8

Software Documentation: QA-4K4AA-GZ

The above information is valid at time of release. Please contact your local Compaq office for the most up-to-date information.

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