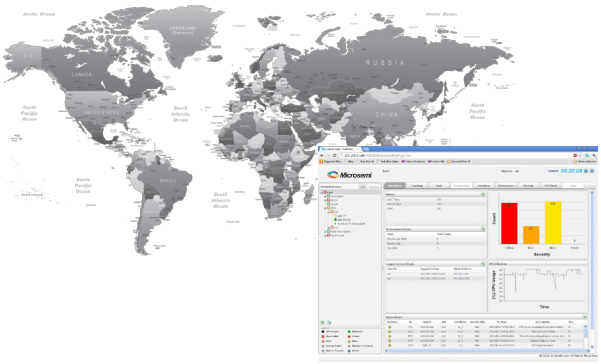
TimePictra

Next Generation Synchronization Management System



Key Features

- Web-based multi-tier software architecture
- Comprehensive FCAPS management functions
- Software options for advanced FCAPS features
- Geographical topology and domain navigation
- User preference dashboard customization
- High Availability option protects sync management
- Multi-vendor PTP client management (up to 50,000 PTP clients)
- Multiple northbound interfaces available
- Operates on standalone servers or as a virtualized instance

Key Benefits

- Cost-effective deployment
- Intuitive Web GUI for easy management
- Scalable architecture for future expansion
- End-to-end PTP management
- PTP client performance monitoring

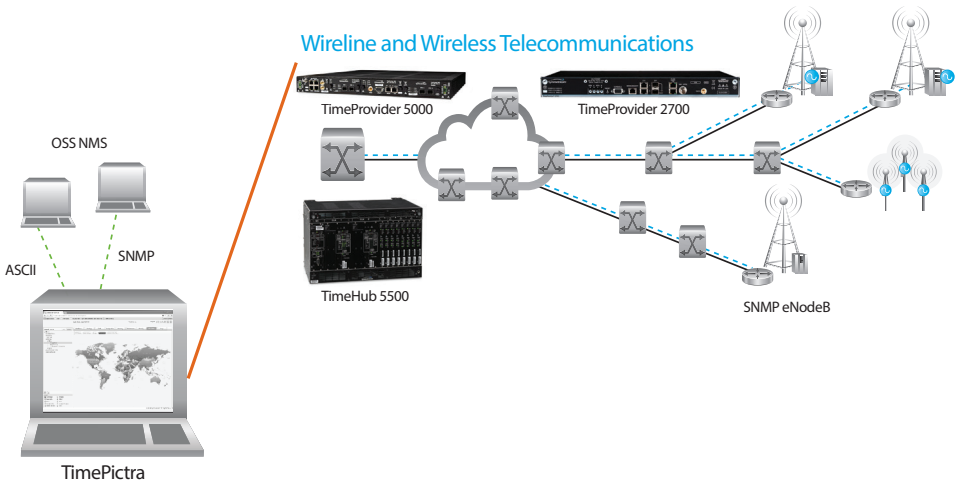
Applications

- Service Provider wireline and wireless networks
- Utility networks
- Enterprise networks
- Government networks

The Microsemi® TimePictra® is a web-based management system for time, frequency and synchronization network elements. It features a modular architecture that will scale and evolve with operational requirements. As timing and synchronization grow in importance in critical infrastructure networks, centralized visibility and control of this vital function has become essential to network operations.

With a multi-tier architecture—server, client, and database—TimePictra can provide scalability and performance to meet growing network services and business needs. The secure web browser client provides easy access and eliminates the complexity of client installation and VPN access. The application server, in conjunction with the database, provides comprehensive business logic to support management of network functions.

TimePictra is server platform and database independent—allowing cost-effective deployment of the management system using any server or database platform meeting the specified requirements.



TimePictra Synchronization Element Management System

TimePictra

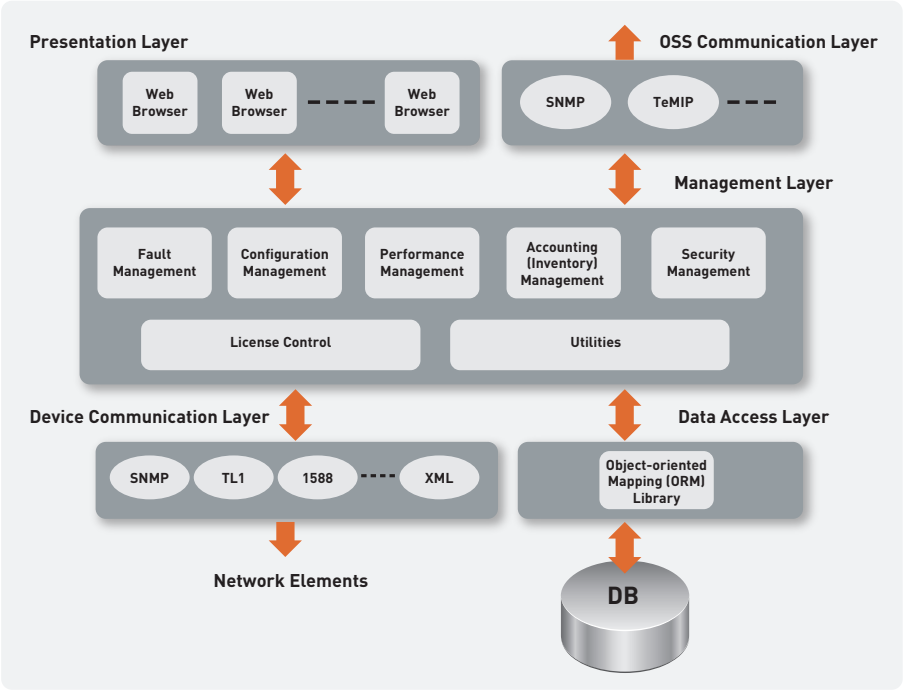
As an element management system, TimePictra provides comprehensive FCAPS functions for managing your network; including Fault Management, Configuration Management, Accounting (Inventory) Management, Performance Management, and Security Management.

TimePictra is comprised of basic software and software options. The basic software includes the standard FCAPS functions as well as geographical topology map, navigation tree with domain hierarchy, dashboard reporting of alarms, inventory, user login, and license installation information.

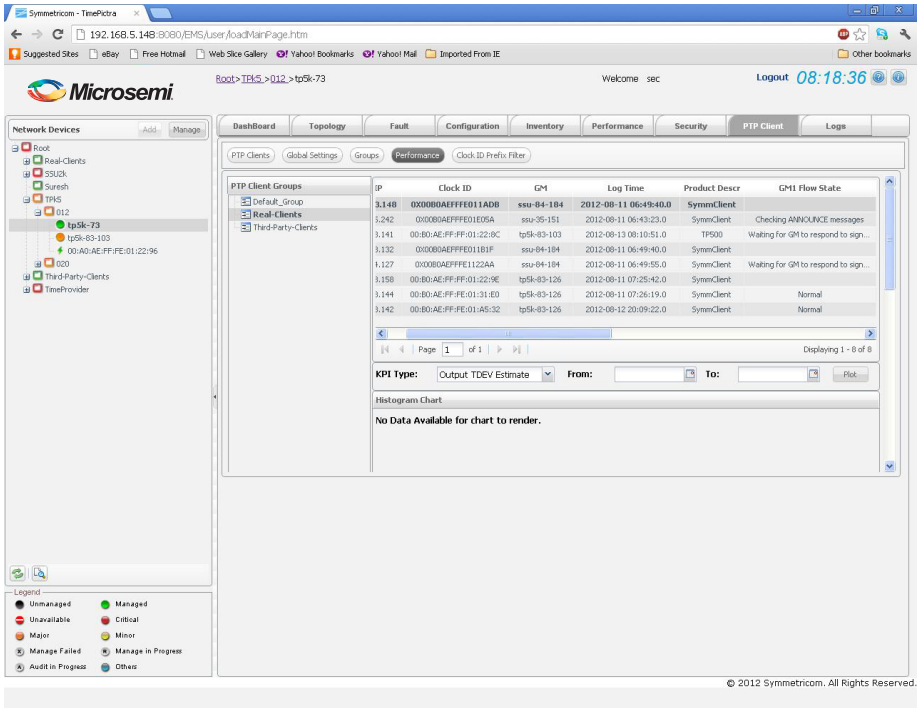
Software options include advanced FCAPS functions. Each option is enabled by a software license key with no additional installation required. This modular architecture allows network operators to easily deploy TimePictra and simplifies future upgrades to expand the system with advanced features as the network grows with future business requirements.

Web–Based Graphical User Interface

Authorized users can have secure access to TimePictra, and manage their sync network from anywhere at any time. It enables connectivity to the mission-critical sync network from remote locations. The low bandwidth requirements of a thin client web-based GUI implies no special client-side installation. The thin clients can be invoked over a dial-up connection or a Virtual Private Network.



TimePictra Architecture



TimePictra Performance Manager, PTP Sync Flow Monitoring

TimePictra

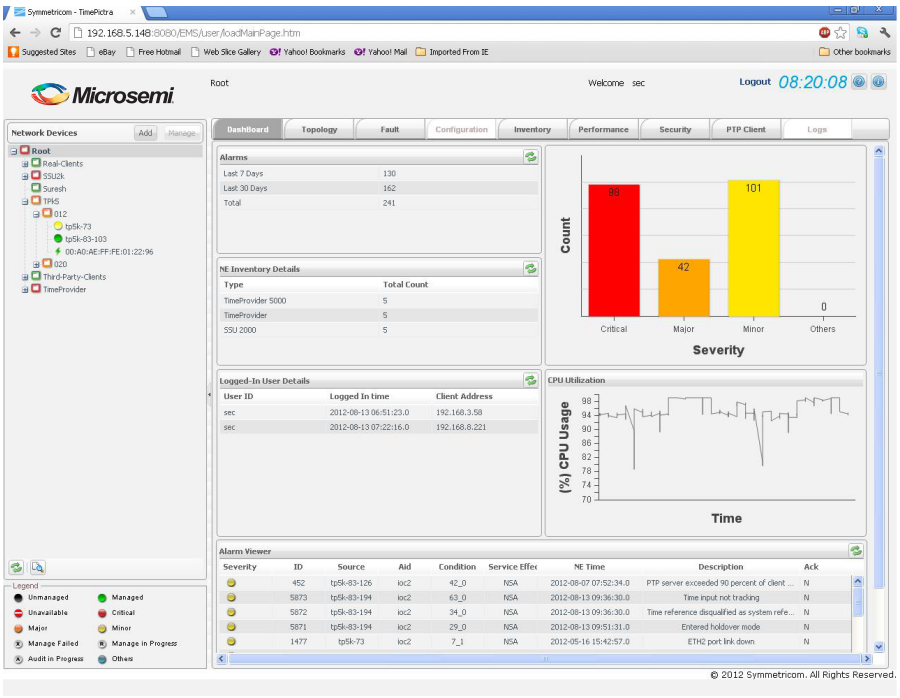
Dashboard

A user dashboard simplifies the display of network health, including alarm counts with severity, network element inventory, logged in users and license information. With the Group Pack option, the dashboard can be customized with user preferences.

IEEE 1588-2008 (PTP) Network and Client Management

With increased reliance on accurate timing and synchronization in critical Ethernet networks such as in the communications, power utility and financial services industries, the IEEE 1588-2008 Precision Time Protocol (PTP) has emerged as the protocol of choice. TimePictra provides end-to-end PTP management including device auto discovery, navigation tree display with hierarchy domain, sync flow monitoring, and key performance index monitoring. This end-to-end management enables network operators to have full visibility of PTP timing.

TimePictra monitors and trends IEEE 1588-2008 (PTP) remote clients and boundary clocks, located throughout the network—including clients not supplied by Microsemi. TimePictra will automatically add new PTP clients and ensure they maintain connection to a Grandmaster and with the possibility to collect PDV and performance statistics from every client in the Network, TimePictra provides to only end to end monitoring solution for PTP clients.



TimePictra Dashboard

Network Operations Integration

Many network operators integrate element management with their operating systems for overall management of multi-vendor, diverse equipment environments. TimePictra enables integration of its northbound interface using SNMP for alarm integration and ASCII northbound for alarm and topology integration.

High Availability Option

TimePictra High Availability option supports two geographically diverse servers to replicate the database and synchronization management function; removing any single point of failure.

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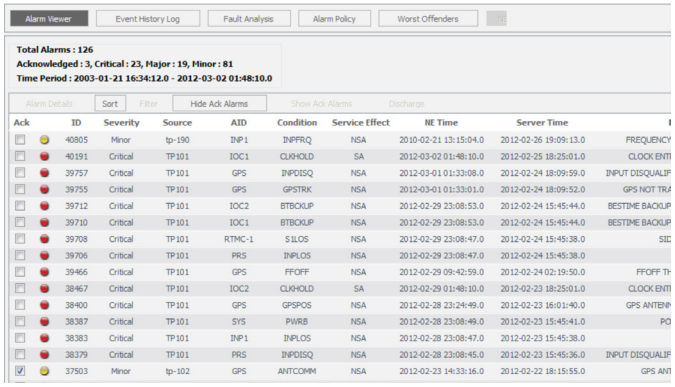
FCAPS Capabilities

Fault Manager

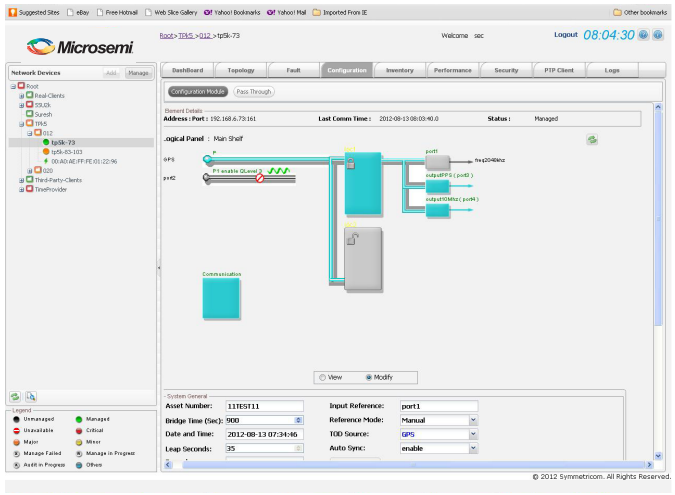
The Fault Manager provides access to all of the network elements. Events and alarms are displayed using a color-coded format compliant with ITU-T standards; notifications are easily intelligible. Whether in an office or in the field, network personnel have the ability to readily access the entire suite of information about any of the synchronization Network Elements (NEs).



TimePictra Fault Manager

Configuration Manager

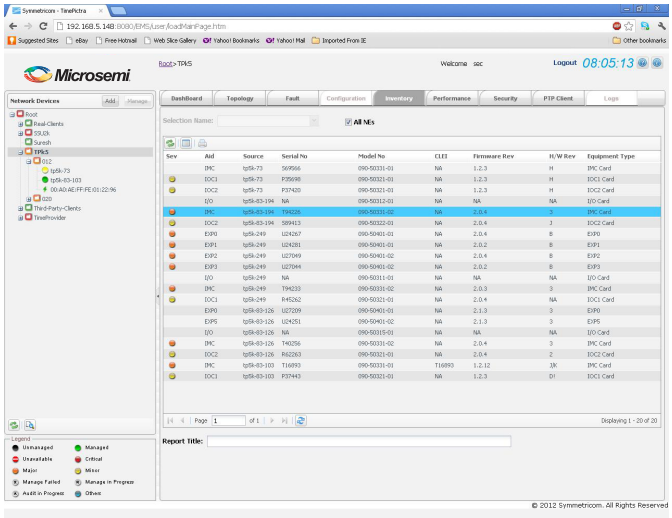
The Configuration Manager allows network personnel to access NE data and update their configurations from within this single application. Information is provided graphically at system, port and card levels. The optional Group Management Pack increases efficiency by defining groups with common users, resources and policies for such things as configurations and alarm mapping.



TimePictra Configuration Manager

Accounting (Inventory) Manager

This manager provides inventory information on any of the managed elements in the synchronization network. Information is provided down to the lowest level of granularity, including such information as location, serial number, part number, type of equipment, software and hardware revision levels.

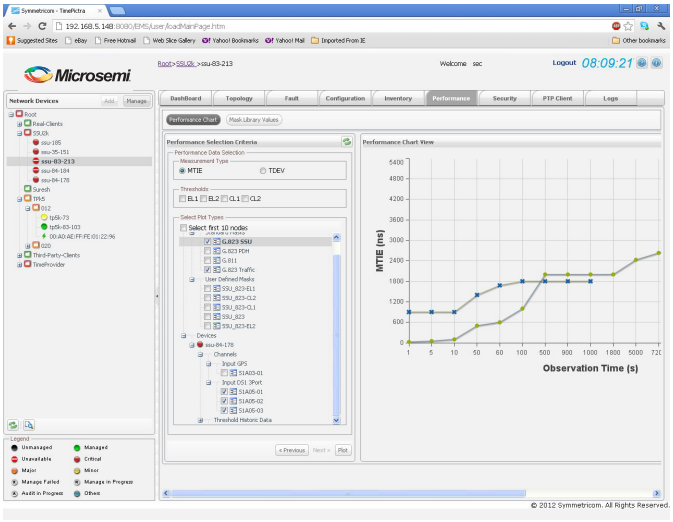


TimePictra Accounting (Inventory) Manager

TimePictra

Performance Manager

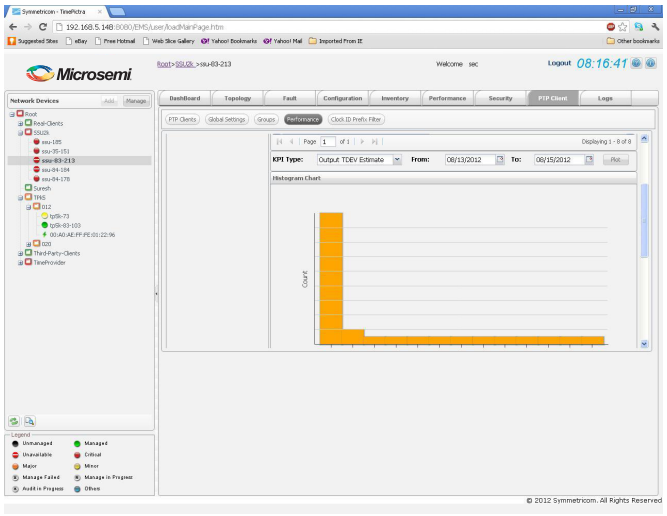
The Performance Manager graphically displays a variety of standard performance data such as MTIE, TDEV and phase, in order to proactively identify and correct problems in the synchronization network. TimePictra enables users to compare current readings to stored industry standard masks and previously stored data. With the Performance Pack option TimePictra will also display PTP performance metrics and PTP sync flow monitoring.



TimePictra Performance Manager, Sync Monitor

Performance Manager, PTP client visibility

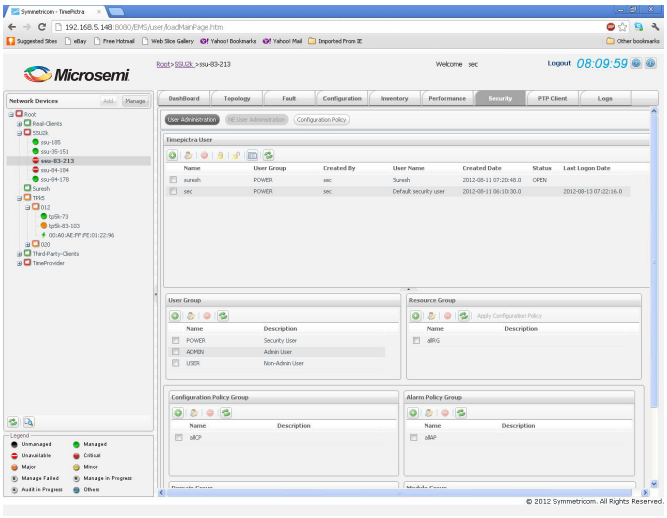
TimePictra end-to-end PTP management includes visibility of slave clocks distributed throughout the network. When the slave is a Microsemi product, TimePictra will provide PTP performance metrics—delivering an advanced end-to-end value. Slaves from other vendors will also be monitored. If their sync flow disappears, an alarm will notify network administrators. These unique and valuable tools are included in the Performance Pack option.



TimePictra Performance Manager, PTP Performance Metrics

Security Manager

TimePictra offers several modes of security for managing synchronization networks. Multi-level, role-based access enforced by passwords and login requirements guarantees only authorized users can access the system. Securely administered permissions control access to domains and functionality. These management domains add both a level of security and organizational structure. SSL and data encryption communications ensures secure access over the Internet. Transaction logs ensure all activities by users are documented and logged. Encrypted TL1 communications (when supported by the sync NEs) ensure that events, alarms and commands are protected and secure, even from remote locations.



TimePictra Security Manager

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Specifications

MANAGEMENT CAPACITY
- Up to maximum of 3,000 network elements
- Up to maximum of 50,000 PTP client elements

INDUSTRY STANDARD
- ITU-T M.3400 (FCAPS)
- ITU-T X.733 and X.734

MANAGEMENT PROTOCOL
- SNMP v1, v2c, v3, HTTP, HTTPS, TCP/IP

MICROSEMI PRODUCT SUPPORT

TimePictra supports these Microsemi timing and synchronization products
- SSU 2000
- TimeProvider® 5000 and TPE10 & TPE30
- TimeProvider® 2700/2300
- TimeProvider® 1000/1100
- TimeSource® 3050/3550
- TimeHub 5500
- TimeCesium / 5071A (Fault, Status, and Tube History)
- SyncServer® S250/S350 (Alarms and Status only)
- XLi (alarms only)

SERVER REQUIREMENTS RECOMMENDATION

TimePictra can run on standalone server or as a virtualized instance on a Virtual Server Farm

HARDWARE AND OPERATING SYSTEM
- VMware instance
  - Minimum 4 virtual processors
  - 4 GB RAM minimum
  - Minimum virtual disk size 50 GB (dependent on database requirements)
  - Red Hat 6.4 Linux 64 bit desktop or server version
- 64-bit PC server
  - Minimum 4 core 8 thread 3 GHz server
  - 8 GB RAM (suggested minimum)

DATABASE
- Oracle 11g and 12g standard edition with suggested latest patch running on the same or remote platform
- MySQL as provided with the RHEL distribution

OPERATING SYSTEM
- Redhat Linux version 6.3 --> 7.0
- Server or Client version 64 bit

SERVER OPERATING SYSTEM
- Redhat Linux, Client or server edition 64 Bit
- Release 6.x and 7.x

WEB-BASED CLIENT
- Firefox 8.0 or above
- Chrome
- Internet Explorer 11

BASIC SOFTWARE

FAULT MANAGEMENT
- Alarm viewer
  - Ack and discharge
  - Alarm detail User Defined Alarms Descriptions
  - Auto alarm sync
  - Show/hide ack alarms
  - Sorting at the Page or datbase level
  - Alarm tool tip description
  - Report printing in PDF format
- Event history viewer
  - Event detail
  - Sort
  - Hide ack/cleared alarms
  - Event tool tip description
- Fault analysis
  - Active alarm/historical event analysis (bar or pie chart)
  - Active alarm / historical event details
- Worse offender alarm

CONFIGURATION MANAGEMENT
- Network element
  - Creation and deletion
  - Manage and un-manage
  - Detail status and configuration view
- Domain and device navigation tree
- Device front panel display (physical view with LED display)
- Device logical view and modification
- Real-time alarm display in logical view panel
- Pass through (direct communication to NE)

ACCOUNTING (INVENTORY) MANAGEMENT
- Device inventory information retrieval
- Inventory detail
- Filtering display
- Device type
- Firmware & hardware revisions
- Serial number
- Others

PERFORMANCE MANAGEMENT
- Data plotting on demand and historical data
- MTIE and TDEV collection and calculation
- Current MTIE and TDEV plot
- Performance plot
  - Input channel
  - MTIE with threshold
  - TDEV with threshold
  - Up to 10 lines plot simultaneously
  - Up to 365 days of historical data plot

SECURITY MANAGEMENT
- TimePictra user administration
- Standard user group
- User login access control
- Default and customized user profiles
  - Password failed login attempt
  - Change password on initial login
  - # of concurrent sessions
  - Password expiration days
- Network element user administration

ADDITIONAL BASIC FEATURES
- Topology maps and navigation tree
- Optional use of Geographical aware Mapping (google maps)
- Display of PTP Paths from Grandmaster to Client via boundary clocks.
- System dashboard
  - Alarm, inventory, login users, license installed, alarm severity
- Alarm sync scheduler
- IP ping

SOFTWARE OPTIONS

PERFORMANCE PACK OPTION
- Live / history data plotting
- Auto collection on 24 hour interval
- Up to 1 year historical performance plot
- Microsemi PTP client KPI monitoring (PTP client license required)
- PTP client sync flow monitoring (3rd party PTP or PTP client license required)
- Mask library (standard and user-defined masks)
- Threshold crossing alarm

SECURITY PACK OPTION
- HTTPS secure client and server communication
- Login customization
- External Password Authentication using RADIUS
- Local Oracle DB
- Remote Oracle DB using SSL communication (requires Oracle enterprise edition and Oracle advanced security option). GNSS Security providing High intensity Jamming detection with PRTC compliance verification.

GROUP PACK OPTION
- User preference Dashboard customization
- Full customization on user and resource groups
  - Domain, alarm policy, configuration policy, performance mask library
- Navigation tree drag & drop

REPORT PACK OPTION
- Export data as: XML, PDF, HTML, CVS
- Print report function
  - Activity log
  - Current and historical alarms and events
  - Inventory and history list
  - Alarm policy audit (Group Pack license is also required)
  - Configuration policy audit (Group Pack license is also required). Scheduled reports sent via email, giving Network and System Status reports

SNMP NORTHBOUND OPTION
- Active alarms and events forwarding
- SNMP v2c and v3 traps

TeMIP NORTHBOUND OPTION
- Active alarms and events forwarding (ASCII format)
- Send topology once per day (ASCII and MD5 checksum files)
- Heartbeat to OSS system on one minute interval
- Multiple TeMIP server support
- Alarm buffering
- Alarm, Alarm Acknowledge and Un-Acknowledge propagation to TeMIP interface

HIGH AVALABILTY OPTION
- Automatic and continuous data replication
- Dashboard widget displays status
- Manual data resync and switching over primary from Dashboard widget

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