TimePictra

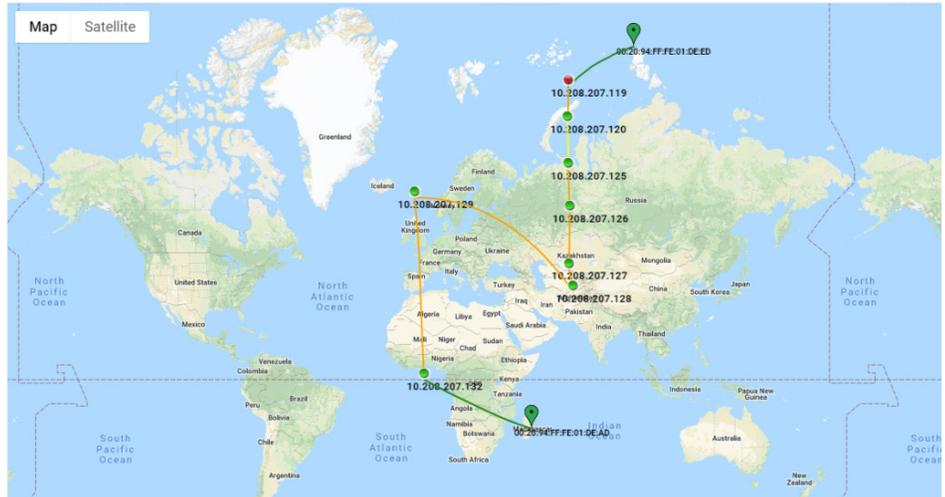## Next-Generation Synchronization Management System

Key Features

- Web-based multi-tier software architecture
- Comprehensive FCAPS management functions
- Network SLA monitoring and reporting
- Fully integrated with BlueSky for a protected and secure network.
- Highly secure and hardened software
- Geographical topology and domain navigation
- User preference dashboard customization
- High Availability option for high-value networks
- Multi-vendor PTP client management (up to 100,000 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 performance monitoring
- 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 phase, frequency, and synchronization network elements. It features a modular architecture that scales and evolves 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.

When used with Microsemi grandmaster and probes, Timepictra can report the timing status of a network at the core, access, and eNB level. With phase accuracy being the most vital service in a network today, monitoring and long term historical evidence of performance plays the largest part in meeting customer SLA.

TimePictra Synchronization Element Management System
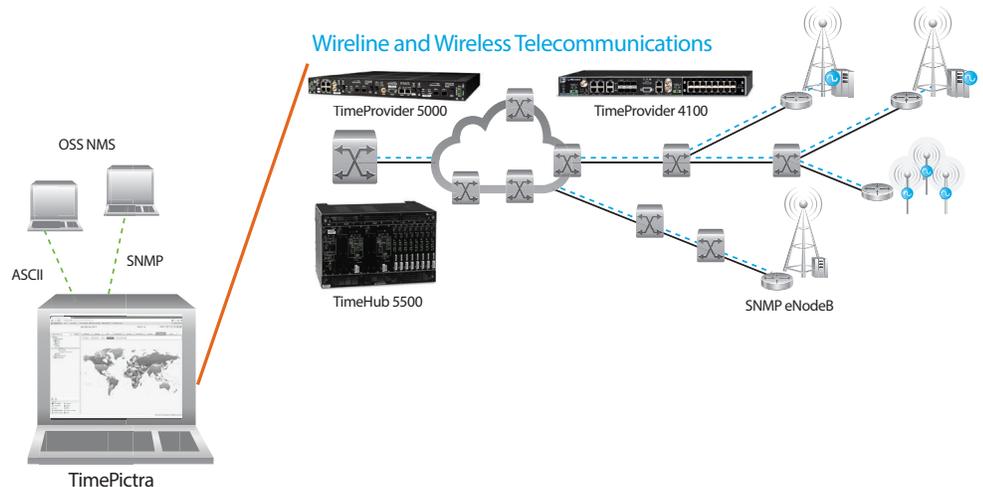
TimePictra
Next-Generation Synchronization Management System

As the most widely deployed manager for phase and frequency on the planet, TimePictra provides comprehensive FCAPS functions for managing your network; including Fault Management, Configuration Management, Accounting (Inventory) Management, Performance Management, and Security Management.

TimePictra is feature-rich, out-of-the-box, and can be further enhanced with software options. TimePictra 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 across their secure network. It enables connectivity to the mission-critical sync network from remote locations. The low bandwidth requirements of a thin client webbased GUI implies no special client-side installation.

Network SLA Compliance

TimePictra can be used with several devices, like ther IGM report actual network performance at any point in the network for phase and frequency.

This long-term, historical data can be used to demonstratre SLA compliance of a network in the past.

TimePictra Performance Manager, PTP Sync Flow Monitoring
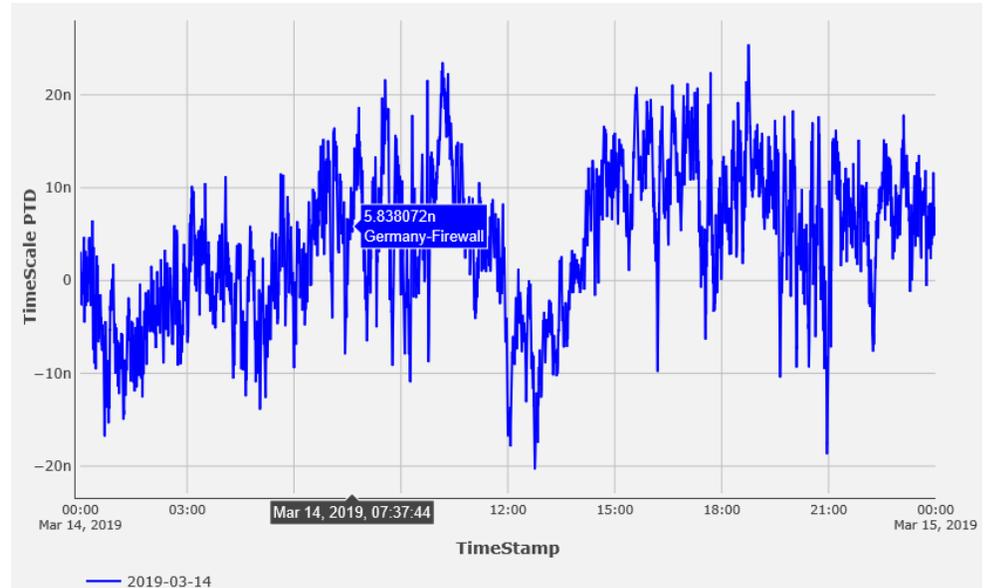
TimePictra
## Next-Generation Synchronization Management System

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 Telecom, financial, and military Ethernet networks, the IEEE 1588-2008 Precision Time Protocol (PTP) has emerged as the protocol of choice. TimePictra provides end-to-end PTP managementand monitoring, which is vital for any user to demonstrate SLA compliance. 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
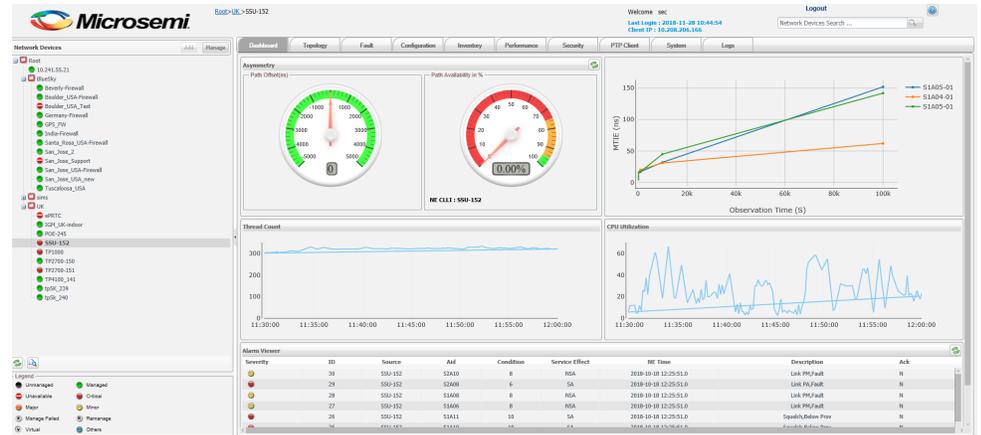
Network Operations Integration

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, ASCII and Syslog northbound for alarm, performance, 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.

TimePictra
Next-Generation Synchronization Management System

FCAPS Capabilities

Fault Manager

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.

TimePictra Fault Manager

Configuration Manager

The Configuration Manager allows authorized users to access network element 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. With full details of firmware, hardware versions, licensed options, and modules, the inventory provides a full asset list for the manged network.

TimePictra Accounting (Inventory) Manager

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Next-Generation Synchronization Management System

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
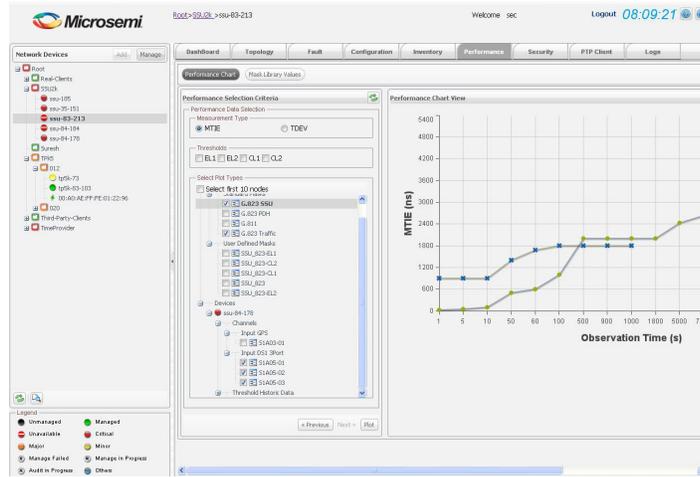
Performance Manager, PTP Client Visibility

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
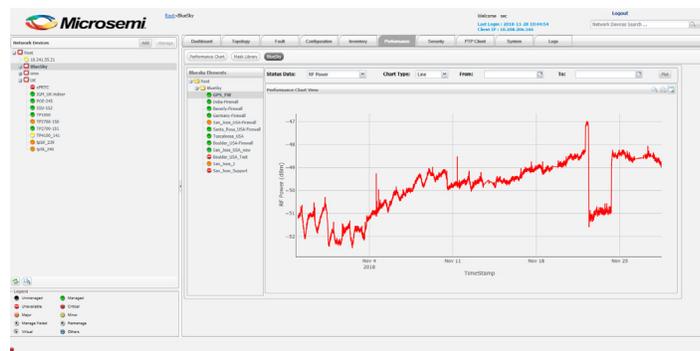
Security Manager

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
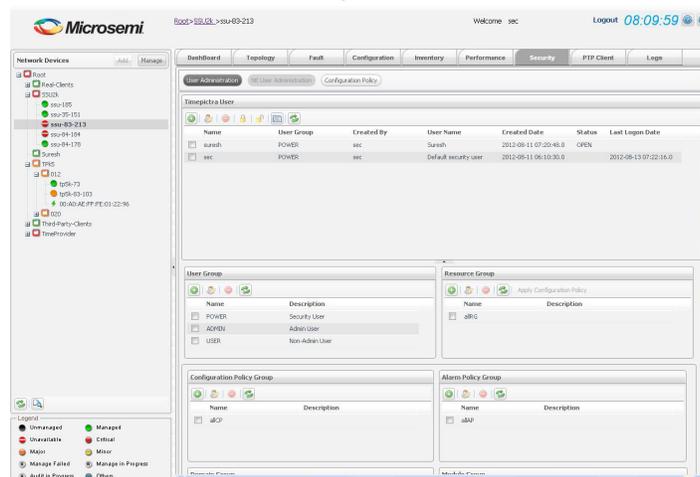
Specifications

Management Capacity

- Up to maximum of 6,000 network elements
- Up to maximum of 100,000 PTP client elements

Industry Standard

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

Management Protocol

- SNMP, v2c, v3, HTTP, HTTPS, TCP/IP

Microsemi Product Support

TimePictra supports these Microsemi timing and synchronization products:

- TimeProvider 4100 SSU 2000
- TimeProvider 5000 and TPE10 and TPE30
- TimeProvider 2700/1100/1000
- TimeSource 3050/3550
- TimeHub 5500
- TimeCesium/5071A (Fault, Status, and Tube History)
- SyncServer S600/S650 (alarms and status only)
- TimeSource ePRTC

Server Requirements Recommendation

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

Hardware and Operating System

- VMware instance
  - Minimum 4 virtual processors
  - 32 GB RAM minimum
  - Minimum virtual disk size 600 GB (dependent on database requirements)
- 64-bit PC server
  - Minimum 4-core, 8-thread 3 GHz server
  - 32 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 or Oracle Linux version 7.0
- Server or client version 64-bit

Web-Based Client

- Mozilla 50.0 or above
- Chrome
- Internet Explorer 11

Basic Software

Fault Management

- Alarm viewer
  - Ack and discharge
  - Alarm detail, user-defined alarms descriptions
  - User-defined search filters
  - Report printing in PDF format
- Event history viewer
  - Event detail
  - Sort
  - 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

Accounting (Inventory) Management

- Inventory detail
- Filtering display
- Device type
- Firmware and hardware revisions
- Serial number
- Others

Performance Management

- Data plotting on demand and historical data
- Dynamic Zoom, with Filter and Highlight Plotting functions
- MTIE, TDEV, and Tie 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
  - Number 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 (third-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
- Dynamic user accounts using RADIUS
- Local or remote Oracle DB
- 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-and-drop

Report Pack Option

- Various file formats: XML, PDF, HTML, and 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 by email, giving Network and System Status reports.

SNMP Northbound Option

- Active alarms and events forwarding
- SNMP v2c and v3 traps
- Syslog Northbound for alarms, security, events, and performance

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
- Guanteed delivery of alarms

High Availability Option

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

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