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TELECOM SERVICES

TimePictra Software Suite

Next-Generation Synchronization Management System

TimePictra, the Element Manager from Microchip is the perfect choice for all Telecom, Power and critical infas-tucture networks that depend on Time and Frequency for their continued operation. TimePictra has a modular architecture that scales and evolves with operational re-quirements. Accurate Time and high stability Frequency is becoming even more critical with todays applications in critical infrastructure networks, centralized visibility and control of this vital function has become essential to network operations.

When used with Microchip grandmaster, optical boundary clocks, enhanced PRTCs, TimePictra monitors your timing network to ensure it is secure, redundant, protected and meeting the tight timing margins that cutting edge networks demand.

Critical Time and Frequency Networks

Networks are evolving, handeling more traffic, user data and are directly responsible for critical infastuctire. Applications like 5G, Smart Grid and Financial trading could not function without Time.

All of this has led to an exponential increase in timing devices in networks, that all require active management, monitoring and fault handeling via a specialised management system. TimePic-tra is the most widely deployed Management system for critical Time and Frequency networks and provides comprehensive FCAPS functions for managing your network; including Fault Management, Configuration Management, Accounting (Inven-tory) Management, Performance Management and Security Management.

The TimePictra platform is feature-rich in its base configura-tion and can be further enhanced with software options. The TimePictra platform combines FCAPS functions with geographi-cal topology map, navigation tree with domain hierarchy, dashboard reporting of alarms, inventory, user login, and license installation information.

Software options can be added or enabled at any time with by a software license key without no additional installation or downtime required. TimePictra's modular architecture allows network operators to easily deploy and expand the system with advanced features as the network grows with future business requirements.

KEY FEATURES
- Web-based multi-tier software architecture
- Comprehensive FCAPS management functions
- Network SLA monitoring and reporting
- Fully integrated with BlueSky™ GNSS firewall technology for a protected and secure network
- Secure and hardened software
- Geographical, topology and domain navigation
- User customisable dashboard
- High availability option for geographical or clustered protection
- PTP client management (up to 100,000 PTP clients)
- Multiple northbound interfaces
- Operates on standalone or as a virtualized servers

KEY BENEFITS
- Low Resource deployment
- Intuitive Multi-window GUI for easy management
- Scalable architecture for future expansion
- PTP client performance monitoring

KEY BENEFITS
- Service provider wireline and wireless networks
- Utility networks
- Enterprise networks
- Government networks

**IEEE 1588-2008 (PTP) Network and Client Management**
Increased reliance on accurate timing and synchronization in critical telecom, financial, power and military Ethernet networks, the IEEE 1588-2008 Precision Time Protocol (PTP) has emerged as the protocol of choice. The TimePictra platform provides end-to-end PTP management and monitoring, which is vital for any user to demonstrate SLA compliance. TimePictra software provisions, manages and monitors all PTP architectures, including vPRTC and APTS. TimePictra software automatically gathers performance information from the redundant PTP architectures, ensuring continuous operation and supervision and testing of backup and redundant paths.

Web-Based Graphical User Interface
Authorized users can have secure access to the TimePictra software suite, and manage their sync network from anywhere across their secure network. It enables connectivity to the mission-critical sync network from secure remote locations. The low bandwidth requirements of the HTML5 GUI implies no special client-side software, allowing for platform independent clients.

Network SLA Compliance
The TimePictra platform can automatically collect performance data and KPIs from many different sources in a network , to report actual performance. This long-term, historical data can be used to demonstratre SLA compliance of a network in the past and performance trending.
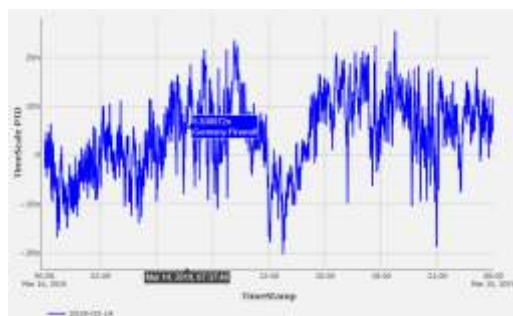
Dashboard
A user dashboard simplifies the display of network health, including alarm counts with severity, network element inventory, logged in users and license information. With the Group Pack option, the dashboard can be customized with user preferences.

Network Operations Integration
Many network operators integrate element management with their operating systems for overall management of multi-vendor, diverse equipment environments. The TimePictra platform enables integration of its northbound interface using SNMP, ASCII, Yang and syslog northbound for alarm, performance, asset tracking, security audits and topology integration.

High Availability Option
The TimePictra platform High Availability option operates with either two geographically diverse servers or server clusters to replicate the database and synchronization management function; removing any single point of failure.

FCAPS Capabilities

Fault Manager
Events and alarms are displayed using a color-coded format compliant with ITU-T standards; notifications are easily intelligible. Network personnel have the ability to readily access the entire suite of for any of the synchronization network elements.

Configuration Manager
The Configuration Manager allows authorized users to access, manage and visualise in realtime the network element data and update their configurations from within this single application. Information is provided graphically at the cluster, port, and card levels.
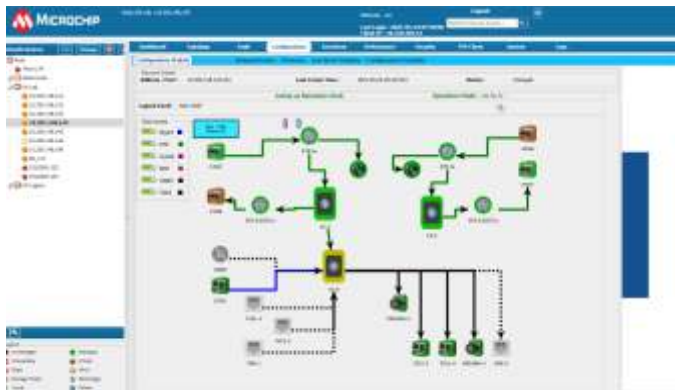
Accounting (Inventory) Manager
This manager provides full asset and inventory information on any of the managed elements in the synchronization network. With full details of firmware, hardware versions, licensed options, inserted SFPs and modules, the inventory provides a full asset list for the manged network.

Performance Manager

The Performance analysis engine graphically displays a variety of standard performance data such as MTIE, TDEV, TE, cTE, maxTE, Floor, FPP and TIE to proactively identify and correct problems, while collecting evidence to support SLA compliance within the synchronization network. TimePictra platform enables users to compare current readings to stored industry standard masks defined active thresholds. TimePictra performance tools consolidate all the valuable time performance data into a year long evidence archive.

Performance Manager, PTP Client Visibility
The TimePictra platform end-to-end PTP management includes visibility of client clocks distributed throughout the network. When the client is a Microchip product, TimePictra software will provide PTP performance metrics—delivering an advanced end-to-end value. Clients 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.

Hardening Option
For networks that demand higer levels of encryption, security and user management then this option is the perfect choice.

Supporting Radius, LDAP, SAML, Dual Factor Authentication, White lists and many other features to support vigorous user authentication.

Specification

Management Capacity

- Up to maximum of 6,000 network elements
- Up to maximum of 100,000 PTP client elements
- ITU-T M.3400 (FCAPS)
- ITU-T X.733 and X.734

Communication Protocols

- GUI - HTTP, HTTPs, SSL, TLS
- CLI - SSH
- NBI - SNMP, Syslog, ASCII, Yang, RestConf
- SBI - SNMP, TL1, SSH, XML, HTTP, RestConf
- User Auth - SAML, Radius, LDAP

Network Element Support

TimePictra software supports these Microchip timing and synchronization architectires and products:

- Virtual PRTC, Assisted Partial Timing Support
- Hybrid Time and Frequency Networks
- TimeProvider® 1000, 2000, 4000 and 5000 series
- TimeSource® 3050/3550
- SSU2000 and TimeHub® 5500
- TimeCesium/5071A (Fault, Status, and Tube History)
- SyncServer® S600/S650 (alarms and status only)
- BlueSky™ GNSS Firewall

Server Requirements Recommendation

The TimePictra platform 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 network size)
- 64-bit PC server
  - Minimum 4-core, 8-thread 3 GHz server
  - 32 GB RAM (suggested minimum)

Database

- MySQL 8.0 or MariaDb 10.x

Operating System

- Redhat or Oracle Linux® version 7.x and 8.x

Web-Based Client

- Firefox Mozilla v.88 and above
- Google Chrome. v.90 and above
- Microsoft EDGE
- Safari

Basic Software

Fault Management

- Alarm Processing
  - User Acknowledgment tracking system
  - User-defined alarms descriptions
  - User-defined search filters
  - Report printing in PDF format
- Historical capacity of 10 million alarms and events
- Over 1 year of historical storage and analysis
- Event tool tip description
  - Fault analysis
  - Active alarm/historical event analysis (bar or pie chart)
  - Active alarm/historical event details
- Worse offender alarm

Topology Visualization

- Dynamic status views with active topology for vPRTC, APTS, TDM, NTP and management networks
- Domain and device navigation tree

Configuration Management

- Network element
  - Detail status and configuration view
- Device front panel display (physical view with LED display)
- Device logical view and modification
- Real-time alarm display in logical view pane

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
- Multi Window Graphing
- Dynamic Zoom
- Graphical and Data Export
- TE, cTE, maxTE , Floor, FPP, MTIE, Tdev
- Powerful plotting engine
- Multi Axis
- High Resolution
- Plot width minute, day, week or month
- Multi Device Plots
- Multi Day Plots
- Up to 10 lines plot simultaneously
- Up to 365 days of performance history available online

Security Management
- TimePictra platform user administration
- 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
- Dynamic Topology Diagrams, with auto arrange and elastic presentation
- Optional use of geographical-aware mapping (Google maps)
- Multi Service and level synchronization trails
- System dashboard
  - Alarm, inventory, login users, license installed, alarm severity
- Alarm sync scheduler

Software Options

Performance Pack Option
- Live/history data plotting
- Auto collection on 24-hour interval
- Up to 1 year historical performance plot
- Mask library (standard and user- defined masks)
- Threshold crossing alarms

Security Pack Option
- HTTPS secure client and server communication
- Login customization
- Dynamic user accounts using RADIUS and SAML
- 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

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
- Active Standby or Active/Active/Active cluster options
- Geographical redundancy and load sharing