NETWORK MANAGEMENT SYSTEMS

SNMS
TIME/VIEW 2000
LMA
TIME/VIEW 2500
TIME/VIEW 3000
Overview

Today's Network Management systems must be capable of supporting distributed and diverse operations to proactively monitor and manage business critical networks. These systems must scale to fit small to large enterprises; have client/server capability to offer flexibility in management operations; and offer web-enabled access so any operator anywhere can retrieve critical information for any part of the network.

TimePlex offers several Network Management Systems to satisfy a variety of network needs.

The SYNCHRONY Network Management System PLUS offers a complete package; with powerful management and monitoring applications, flexibility to cover diverse operating requirements, and an evolutionary client/server architecture which will meet business network management needs today, tomorrow, and into the future. The LMA Link Management Agent (LMA) brings SNMP visibility and manageability to the proprietary LINK management interface.

The stalwart TIME/VIEW family of Network Management systems includes TIME/VIEW 2000 for management capability in support of LINK Family products, TIME/VIEW 3000 to support the TX3/SuperHub™, and TIME/VIEW 2500 to support the SYNCHRONY NP product family.
SYNCHRONY Network Management System PLUS (SNM S+) provides comprehensive network administration and management for the SYNCHRONY and LINK product families. SNM S+ is designed to scale between small to very large networks. SNM S+ utilizes TimePlex's Common Management Architecture (CMA) which allows various levels of user access and management capabilities from centralized or distributed locations. SNM S+ alerts network managers to network and service issues quickly and effectively via intuitive graphical user interfaces, Web-based reports, and intelligent information processing.

SNM S+ allows network managers to configure, monitor, and troubleshoot the interfaces, devices and services on their network to get a unified view of the network, ranging from the entire network down to a single port. Combining SNM S+ with the features and flexibility of SNM P based systems delivers a superior solution for managing networks, providing network managers the tools to minimize network downtime, and ensuring maximum network efficiency.

Integrated Network Management for TimePlex Products
SNM S+ provides a network-wide topology map displaying all TimePlex devices. A consistent look and feel along with uniformity of management capabilities enables network operators to seamlessly manage all TimePlex products. The benefit is reduced training for network operators, resulting in reduced cost of ownership of the network.

Integrated management allows network managers to configure and control end-to-end connections from one device to another. This provides a powerful solution for the integrated network comprised of WAN and LAN Internets connected to a unified backbone consisting of SYNCHRONY nodes.

Auto-Discovery & Auto-Topology
SNM S+ integration with the HP OpenView Topology Map not only simplifies the initial installation but also the ongoing management of networks. Built on the HP OpenView auto-discovery process, SNM S+ dynamically discovers network devices and determines their physical and logical relationship in the network.

SNM S+ provides an integrated topology map using icons and symbols to represent each type of networking device and their associated connections. SNM S+ automatically updates the network map as devices are added or removed from the network. The benefit is single point-of-control and management for geographically dispersed network elements.
Intuitive Graphical User Interface (GUI) with Physical and Logical Network Views

Topology maps are dynamically created to provide physical and logical network views. SNMS+ supports multiple map levels enabling graphic display of the hierarchical network structure. Network problems are quickly propagated to all map and submap levels with icon colors showing the severity of the event.

From the topology map users can click on the device icon to expand and show the physical configuration of the node allowing them to view status and statistics, change configuration or initiate diagnostics. To diagnose network problems more quickly, circuits can be traced through the network. Loopbacks are graphically represented and initiated by simple point and click commands to further isolate network faults.

SNMS+ configuration tools configure nodes, shelves, modules, ports, and interfaces. They offer the flexibility to add or delete a shelf; configure, insert, remove or delete modules; and configure and view alarm logs and filters. These tools also provide the capability to add, delete, modify, and diagnose facilities, TDM circuits, and frame relay circuits.

SNMS+ management features can be accessed via the GUI interface or menu-driven user interface using a mouse or keyboard. On-line context sensitive help offers assistance to the user at the click of a mouse. Multiple instances of help can be simultaneously displayed. Help files can be edited and printed.

Comprehensive Status and Performance Monitoring

The network is continuously monitored for irregularities and network element status. Upon occurrence of a network fault or alarm condition a change in status is reflected by a color change on the appropriate device icon on the network map.

SNMS+ in conjunction with HP OpenView tools allows real-time network performance data to be collected over a period of time. Detailed statistics such as those for frame relay circuits — frames sent, frames received, frames dropped — are gathered at user-defined intervals.

The actual data collected can be custom tailored to include a particular set of network devices and a particular set (or sets) of performance data. Duration and start times are also customizable providing a powerful and flexible tool set for monitoring, evaluating, and optimizing network performance.
Web-Based Reports

Customers can generate and view web-based equipment inventory reports, using a Netscape or Internet Explorer browser. An equipment inventory report provides details of device type, modules and daughtercards, revision level and serial numbers, port types (V.35, V.11, Ethernet, TR, etc.).

INL (Inter Nodal Links) performance reports show the bandwidth utilization between backbone products characterizing TDM and Frame Relay bandwidth in use. The Voice utilization report displays the number of DSP engines currently being utilized for voice compression and the voice compression algorithms in use. The Frame Relay performance report provides the network manager an insight to Frame Relay statistics (frames sent, frames received, number of BECN and FECN, DE packets) and Frame Relay line utilization showing CIR and EIR traffic. SNM S+ performance and utilization reports provide the network manager an insight to future capacity planning.

The alarm event summary report provides a list of alarms and events for any device in the network. Filters may be established based upon alarm, severity, or device to assist the network operator to troubleshoot network problems. Web-based reporting allows the user the flexibility to display, export, print or save to an ASCII file any reports requested.

Distributed, Multi-User Access

Integral to the SNM S+ architecture is the ability for multiple users to access and manage the network from a central console or from distributed consoles in remote locations. Remote consoles can be SUN workstations, standard X Terminals or Pentium PCs running X Terminal software. Integral to SYNCHRONY nodes is the flexibility to be managed by multiple management stations bringing another level of distributed management capability to the SYNCHRONY network.

Advanced Security and Access Control

SNM S+ offers advanced features for security-minded network administrators in mission critical networks. Multiple users, each with their own password, can have different access privileges and network visibility based on their roles and abilities. User access can be restricted based upon device type, geographic location, network segment, functional responsibility (configuration, troubleshooting, monitoring, etc.), and working hours. Access management prevents inadvertent or unauthorized access to SNM S+ and hence the network.
SNMS+ offers security features which logout idle users based on a programmable timeout, with all open applications being closed gracefully. The password-aging feature warns users that they must change their password on a given date and then prompts them through the change process. Passwords are stored in encrypted format in the SNMS+ database. Additionally, SNMS+ provides an administrative audit trail that records all SNMS+ user actions. Audit trails can be printed for security analysis.

Secure access between network elements and the network management system via SNMP community name definitions is provided. Access to the network management workstation is enforced by UNIX security.

Virtual Private Networks
SNMS+ uses a concept of partitions and communities to control access and operations of network resources. Partitions are user-defined logical subsets of the existing network equipment and resources such as nodes, modules, and interfaces. When network managers create a partition, they also define communities that are access profile meaningful within the partition.

SNMS+ allows the network manager to create partitions and assign entire nodes or parts of nodes into various partitions. Network operators are granted access to specific partitions. This creates Virtual Private Networks, network views specific to particular network operators.

In an environment where multiple network operators have varying network access and responsibilities, the SNMS+ partitioning feature allows the creation of Virtual Private Networks (VPNs) based on geographic boundaries, operator expertise, and time-of-day management coverage.

Open, Standards-Based Network Management Architecture
SNMS+ uses the Simple Network Management Protocol (SNMP) and industry standard HP OpenView for UNIX as the NMS Platform. HP OpenView and SNMS+ user interfaces are based on GUI standard X-Windows and OSF/Motif. The combination of SNMP and HP OpenView gives the user the ability to manage virtually any other platform from a single network management station, resulting in the consolidation of management capabilities and the reduction of costs associated with multiple NMS platforms.

SNMP is used to communicate network management information between network devices and management stations, allowing the use of standard SNMP tools to gather and analyze statistics, alarm logs, and generate customer reports.

SNMS+ supports the revised version of the Management Information Base II (MIB II); which defines the set of manageable network objects and the TimePlex Group Enterprise MIB; which provides extensive enhancements to MIB II, to deliver more detailed and comprehensive information needed to manage an integrated network. In addition, SNMS+ complies with the Structure of Management Information (SMI) standard, which specifies the structure and identification of MIB objects. MIBs are compiled using SMC-MG and CMP standard compilers.
**LMA** (LINK MANAGEMENT AGENT)**

**Product Highlights:**
- Open, standards-based SNMP interface to LINK nodes
- Discovery of the TimePlex LINK product family
- Comprehensive alarm monitoring
- Compatible with the TimePlex family of network management products
- Multi-user management

**Overview**
LMA works in conjunction with SNMP-based network management software platforms, such as HP OpenView. Performing as an SNMP proxy agent, LMA converts the LINK node’s proprietary protocol to standards-based SNMP messages providing the capability to manage LINK networks from off-the-shelf network management platforms. LMA demonstrates the TimePlex Group commitment to enhanced network management solutions for evolving customer needs.

LMA functionality goes beyond traditional SNMP proxy agents by providing node discovery and alarm monitoring for LINK networks. The LINK family of products can be configured, monitored, diagnosed, and inventoried via LMA. LMA offers a comprehensive SNMP-based interface for managing LINK networks.
TIME/VIEW provides a powerful set of tools for minimizing the complexities and expense of managing a network.

**Product Highlights:**

- Distributed multiworkstation flexibility
- Alarm monitoring and network troubleshooting
- Automatic event handling with powerful command files
- Convenient configuration management with downloading of alternative network configurations
- Control and logical partitioning of domestic and multinational networks
- Security features, including user-defined access rights
- Standard reports to enhance administrative tasks
- Database export to standard database management systems for network analysis and reporting

**Overview**

TIME/VIEW Network Management Systems (NMS) provide the capability to configure, monitor, administer, and maintain LINK+ and SYNCHRONY TX-3 networks from a single site or from multiple sites. TIME/VIEW is a full featured, multi-tasking system capable of performing multiple management functions concurrently. Extensive use of graphics in the TIME/VIEW user interface enables the network operator to react quickly and effectively to events. With a wealth of intelligent features and capabilities TIME/VIEW makes managing a network a whole lot simpler.

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**Figure 4**

TIME/VIEW 2000 Screen
Network Topology Map and Logical Site Map
Element Management System for SYNCHRONY NP Family Networks

**TIME/VIEW 2500 ELEMENT MANAGEMENT SYSTEM**

Product Highlights:

- Configuration management for SYNCHRONY Nodal Processors
- Centralized alarm management and control of packet switched networks with powerful alarm management capabilities including trouble ticketing and user definable alarm persistence levels
- Alarm integration with TIME/VIEW 2000/3000
- Call accounting and performance management
- Relational database for storage, analysis, and report generation
- Up to four simultaneous TIME/VIEW 2500 control sites with automatic database synchronization
- Multilevel access control and automatic activity record for system security

**Overview**

The TIME/VIEW 2500 Element Management System provides users powerful yet simplified control of packet switched data networks composed of Nodal Processors (NPs).

TIME/VIEW 2500 builds on the distributed intelligence of Nodal Processors to give network administrators full capabilities for monitoring and controlling an entire network from single or multiple sites. This powerful and flexible system can be tailored to meet the demands of a wide variety of unique network requirements.

TIME/VIEW 2500 offers high-resolution color graphics, mass storage for collection of large volumes of network statistics, and connection to an optional laser printer for high-quality printed reports. The extensive use of graphics and menus in the TIME/VIEW 2500 System lets operators react quickly and effectively to network problems and perform control tasks with greater speed and efficiency.

**Figure 5**
TIME/VIEW 2500 Screen
Network Topology Map and Logical Site Map
SNMS

Products Supported
Synchrony ST-1000, ST-20 Releases 3.1, 2.1.x, 1.2.x
Synchrony IAN-150 Release 1.3
Synchrony IPP Release 1.3
Synchrony Enterprise Router (ER-5, ST-1000/ER) Releases 3.x, 4.x, 5.x
Synchrony Access Router, AR-150, AR-350 Releases 3.x, 4.x, 5.x
Synchrony Access Devices (includes AD-3, AD-7, AD-10 Point-to-Network)
With the LINK MANAGEMENT AGENT (LMA) option installed SNMS+ will support:
LINK/2+, microLINK/2+, miniLINK/2+
Releases 9.1 and 11.0
LINK/100+ Releases 3.0, 4.0
entréeLINK+ Releases 3, 4

Hardware Platform
SUN Ultra 1, Ultra 2, Ultra 5, Ultra 10
4 GB hard disk drive
128 MB RAM
CD-ROM drive
QIC Tape drive for backups

Software Requirements
HP OpenView Network Node Manager (version 5.x)
INGRES RDBMS 6.04/06
SUN Solaris 2.6
Synchrony Network Management System PLUS software (version 3.1)

Supported Network Management Standards and Protocols
Request for Comments (RFCs)
1157 (SNMP Version 1)
1213 (MIB II)
1155 (SM I)
1212 (Concise MIB Format)
1215 (SNMP Trap Definition)

Certified Year 2000 Compliant

LINK Management Agent

Products Supported
LINK/2+ Releases 9.1 and 11.0, module types: NCL, ILC, ILP, ILQ, CSP, VSM, QSP, QSC, DSC, QAM, QVM, EVM, FXO, FXS, DCM, ICM, DCI, and BPM
microLINK/2+ Releases 9.1 and 11.0
LINK/100+ Releases 3.0, 4.0, module types: CCM, DLC, and SND
entréeLINK+ Releases 3, 4

Network Management Standards and Protocols Supported
Request for Comments (RFCs):
1157 (SNMP Version 1)
1213 (MIB II)
1155 (SM I)
1212 (Concise MIB Format)
1215 (SNMP Trap Definition)

Hardware Platform
Any class of SUN Sparcstation or UltraSparc workstation
164 MB of free hard disk space minimum
32 MB RAM minimum
CD-ROM drive

Software Requirements
SUN Solaris 2.6
LMA (Link Management Agent) software (version 1.0)

Certified Year 2000 Compliant
**NETWORK MANAGEMENT SYSTEMS**

**TIME/VIEW 2000/3000**

- **System Specifications**

**TIME/VIEW 2000 NMS** provides support for LINK+ networks.
**TIME/VIEW 3000 NMS** provides support for Synchrony TX-3 Networks.
**TIME/VIEW 2000i NMS** supports integrated networks of LINK+ and Synchrony TX-3 nodes.

**Products Supported**
- LINK/2+, microLINK/2+, miniLINK/2+
- Releases 5.0 thru 11.0
- LINK/100+ Releases 3.0, 4.0
- entréeLINK+ Releases 3, 4
- LINK/K/CSU Release 1.1
- TX3/Superhub Releases 4.0 thru 7.1

**Hardware Platform**
- SUN Sparcstation 5, Sparcstation 20, Ultra 1, Ultra 2, Ultra 5, Ultra 10
- 2 GB hard disk drive
- 64 MB RAM
- CD-ROM drive
- QIC Tape drive for backups

**Software Requirements**
- SUN Solaris 2.6
- TIME/VIEW 2000 (2000i or 3000) software (version 10.0)
- SunOS Version 4.1.4 (with Y2K patches)
- TIME/VIEW 2000 (2000i or 3000) software (version 9.027)
- Certified Year 2000 Compliant

**TIME/VIEW 2500**

- **Products Supported**
  - NP-1000 and Branch Nodal Processors

- **Hardware Platform**
  - SUN Sparcstation 5, Sparcstation 20
  - 1 GB hard disk drive
  - 64 MB RAM
  - CD-ROM drive
  - QIC Tape drive for backups

- **Software Requirements**
  - SunOS Version 4.1.4 (with Y2K patches)
  - TIME/VIEW 2500 software (version 3.7.1.1 K)
- Certified Year 2000 Compliant

**SNMS+, LMA, TIME/VIEW and TX-3/ SuperHub**

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