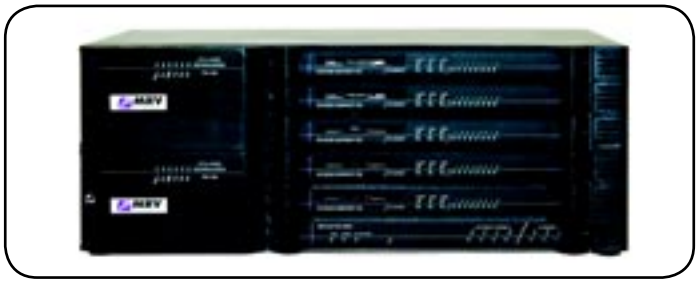
MRV Communications, Inc.

REMOTE PRESENCE SOLUTIONS

Datasheet

Network 9000 Series



The Network 9000 15-slot and 6-slot are high-performance, multi-processor and modular chassis-based out-of-band network element management (NEM) systems. These multifunctional platforms offer the same powerful and innovative remote console, alarm and sensor management features found in the In-Reach standalone solutions.

The reliability, security and performance of the Network 9000 chassis-based solutions significantly reduce the cost of network operations by eliminating the need for trained technicians at every site and minimizing costly on-site visits. The Network 9000 solution enhances operations support system (OSS) management by enabling more centralized monitoring and control of network elements (NEs). NEs such as server farms, switches, routers, CSU/DSUs, alarm devices, environmental sensors and telecommunications equipment can be managed efficiently from a single In-Reach chassis.

Ideally suited for communication network service providers and enterprise networks, Network 9000 solutions offer a range of processor and I/O module configurations to provide an all-in-one solution for remote console, alarm/control and sensor management.

High Port Density

The Network 9000 chassis models deliver the highest port density NEM system in the industry. The15-slot chassis scales from 20 to 336 physical ports. The 6-slot chassis scales from 20 to 100 physical ports.

The 15 slot chassis can provide a maximum of 336 remote console ports, 560 alarm/control points or 280 sensor ports and the 6 slot chassis can provide a maximum of 100 remote console ports, 200 alarm/control points or 100 sensor ports, all in a single chassis.

Scalable Architecture

Network 9000 systems can scale to thousands of ports by interconnecting multiple chassis and standalone systems either locally or remotely. Network 9000 networking modules support autosensing 10/100BaseTX copper, 100 BaseFX multimode fiber Ethernet, or asynchronous dial-up connections.

Features

- Highest port densities in the industry
- 6 slot & 15 slot chassis
- 1 slot reserved for power and Ethernet connection
- Integrated console, alarm and sensor management
- Scalable, modular multi-processor design
- Hot-swappable modules and power supplies
- AC or -48 VDC power models
- Load balancing power supplies
- N+1 power redundancy
- 19/23" rackmount
- Per-port, multi-level password protection, PPP, PPP dialback, PAP, CHAP, SLIP, TN3270, TL1, RADIUS, ACLs
- SecurID, data logging, IP filtering, Secure Shell
- Flash card for easy software loading and upgrades
- SNMP-based management

Benefits

- Integrated remote console, alarm and sensor management
- Unmatched multi-processor performance
- Decreased costly on-site visits
- Reduced network operations costs
- Lower cost of ownership
- Robust security features
- Enhanced quality of service
- Increased customer satisfaction and retention

The Network 9000's design simplifies the management of all remote console, alarm and sensor devices. Further, the software is equipped with an intuitive command line interface (CLI) for installation, configuration, maintenance and troubleshooting. The Network 9000 chassis operates efficiently in heterogeneous networks and can be managed by any industry-standard, SNMP-compliant NMS such as MegaVision, HP OpenView, Sun NetManager, etc.

OPERATION

Console Management

The Network 9000 remote console management processor and I/O modules connect to the serial console or craft ports of the network elements to be managed. This serial connection allows network operations and OSS managers to remotely access, configure, manage, troubleshoot or upgrade their network elements as if attached locally. This centralized out-of-band management approach is required for maintaining the operational stability of in-band networks and geographically dispersed network elements.

Network 9000 console management systems also support script-based automated provisioning for unmanned environments. Optional external modems can be connected to serial ports for reliable and secure out-of-band access to the console ports of remote network elements. In addition to the physical ports, In-Reach provides nine virtual management ports enabling multiple users to perform system operations simultaneously.

Network 9000 systems do not generate serial break signals when powered off; therefore, Sun servers attached to Network 9000 chassis are protected from unexpected and costly server outages.

Next Generation IP-Based Alarm and Sensor Management

Network 9000 alarm management processors and I/O modules connect to dry-contact closures and provide discrete alarm management. Our next-generation IP-based alarm management enables network managers from a centralized network operations center (NOC) to monitor all types of alarm devices, such as door, pressure, flood, gas and battery. It also allows either manual or automatic handling of control outputs such as emergency lighting, sirens and power generators. Network 9000 software enables each physical alarm management port to operate as an alarm master port or pairs of alarm inputs and control outputs.

Alarm inputs accept discrete input signals that are generated when contact closures change state. Network 9000 control outputs send voltage signals to relays in devices such as backup generators or emergency lighting systems in response to state changes from alarm devices.

The serial ports of the Network 9000 system can be configured to monitor the readings of temperature/humidity sensors. Coupled with its intelligent self-healing feature, environmental conditions of equipment facilities can be managed efficiently.

Automated Response to Alarm Conditions

The Automated Response to Alarm Conditions feature in the Network 9000 software facilitates timely, intelligent and unmanned alarm and sensor management. Using this feature, alarm or sensor trigger-conditions and corresponding response actions can be defined.

Response actions can be defined to initiate an SNMP trap or control output signal, or automatically execute a pre-defined command script. These trigger actions can also be configured to initiate a response whenever measured parameter values of a sensor port change beyond preset thresholds or when an alarm input changes state.

This self-healing feature has the provision to define as many as 255 trigger conditions and 255 actions, ensuring reliable alarm and sensor management.

Security

To add to your peace of mind, Network 9000 software offers a set of robust security features such as per-port and multi-level password protection, access control lists (ACLs), IP filtering, PPP PAP/CHAP, PPP dialback, SecurID and RADIUS. In addition, support for the industry-standard Secure Shell (V1.5) encryption serves as a secure alternative to Telnet and prevents unauthorized intrusion.

The Network 9000 software also includes a powerful data-logging feature that provides the ability to track previously entered commands and data. With this feature, security breaches and last change events are accounted for and easily identified.

Redundant Power

Network 9000 chassis N+1 power redundancy guarantees the delivery of reliable power to the system in the rare occurrence of a power supply failure. The 15 slot can accommodate up to five load-balancing power supplies and the 6 slot can accommodate a maximum of two power supplies for critical applications that require power redundancy. Network 9000 chassis can also accommodate redundant power inputs from multiple power sources.

Terminal Server Applications

At no extra cost, full support for a large variety of traditional terminal server protocols is also provided. The 6 slot and the 15 slot can be easily configured to support any combination of LAT, Telnet, TN3270 and DEC Multisessions making them among the most versatile and cost-effective solutions in the industry today.

Service and Support

Delivering value added service and support for nearly 20 years, MRV Communications provides worldwide technical assistance through a highly trained team of dedicated corporate and field based engineers as well as through certified channel partners. Whether your needs are for 24x7 dedicated support, same day replacement parts shipment, on-site support or network design and installation related professional services, you'll gain the opportunity to build a responsive and accountable partnership with the MRV service and support experts.

Technical Specifications

Specification	6 slot	15 slot
Total Slots	6	15
Maximum Available Slots	5	14
	1 slot reserved for power and Ethernet connections	
Dimensions		
Width	44.6 cm (17.6 in)	44.6 cm (17.6 in)
Height	17.6 cm (6.9 in.)	44.1 cm (17.44 in)
Depth	35.9 cm (14.1 in)	35.9 cm (14.1 in)
Weight	9.5 kg (21 lb) (includes chassis, fans and AC controller module)	18.1 kg (40 lb)
Power Supplies	Up to 2 AC (260 W), DC (260 W) for load sharing	Up to 5 AC (750 W), DC (750 W) for load sharing
Power Input Module	12 A thermal circuit breaker with integrated on/off switch; occupies one slot	
Operating Environment	0 to 45°C (32 to 113° F), 5 to 90% humidity, non-condensing	
Safety Compliance	Complies with UL 1950, third edition; CSA C22 No. 950; EN 60950	
Emissions/Immunity Compliance	FCC part 15, class A; EN 55022; EN 50082-1	
EU Directives	Meets all applicable requirements of current EU directives	
Telecommunications	FCC part 68, IC CS 03, CTR 21 (module-specific)	
Network Terminal Server Protocols	TCP/IP, PPP, Telnet, BOOTP/TFTP, SNP, LAT, TLI, TN3270 and Multisessions.	
AC Power Supplies (Managed)		
Output per Power Supply	130 W +5 V @ 12 A; +12 V @ 4.0 A; -12 V @ 3.0 A	
Input per Power Supply	110–240 VAC, 5 A (max)	
AC Overload Protection	5.0 A, 250 V slow-blow fuse	
DC Power Supplies (Managed)		
Output per Power Supply	150 W, +5 V @ 12 A; +12 V @ 4.0 A; -12 V @ 3.0 A	
Input per Power Supply	-36 to -72 VDC; 5.0 A (max) input peak	
DC Overload Protection	8.0 A, 100 VDC slow-blow fuse	
Weight	2.27 kg (5 lb)	

Ordering Information

Chassis	
N9-9006-021	6-slot chassis including AC controller module and cooling fans. Requires AC power supply.
N9-9106-021	6-slot chassis with SwitchPlane including AC controller module and cooling fans. Requires AC power supply.
N9-9115-021	15-slot chassis with SwitchPlane including AC controller module and cooling fans. Requires AC power supply.
N9-9106-022	6-slot chassis with SwitchPlane including DC controller module and cooling fans. Requires DC power supply.
N9-9006-022	6-slot chassis including DC controller module and cooling fans. Requires DC power supply.
N9-9115-022	15-slot chassis with SwitchPlane including 2 redundant AC controller modules. Requires AC power supply.
N9-9115-023	15-slot chassis with SwitchPlane including DC controller module and cooling fans. Requires DC power supply.
N9-9115-024	15-slot chassis with SwitchPlane including 2 redundant DC controller modules. Requires DC power supply.
Power Supplies	
N9-020-119	Spare AC controller module.
N9-020-119D	Spare 48-Volt DC controller module.
N9-020-119DR	Spare redundant DC controller module. For use with N9-9015 or N9-9115 only. Customer must provide the Ethernet address for the redundant module when order is placed.
N9-020-119R	Spare redundant AC controller module. For use with N9-9015 or N9-9115 only. Customer must provide the Ethernet address for the redundant module whenorder is placed.
N9-125-020	Unmanaged AC power supply.
N9-130-020	Managed AC power supply.
N9-145-020	Unmanaged DC power supply.
N9-150-020	Managed DC power supply.

Ordering Information

Terminal Server Modules	
N9-000-723	Access Server I/O module, 20 ports via RJ-45 connectors. Supports concurrent hardware modem control and hardware flow control. Used with N9-720-004 and N9-720-006 processor cards
N9-000-724	Access Server I/O module, 24 ports via three Telco connectors. Used with N9-720-004 and N9-720-006 processor cards
N9-720-000-4	Access Server processor module, 4 MB RAM. Used with N9-000-723 or N9-000-724 I/O cards
N9-720-000-6	Access Server processor, 6 MB RAM. Used with N9-000-723 or N9-000-724 I/O cards
Ethernet Management Processor Modules	
N9-210-000	Management processor module.
Ethernet Concentrator I/O Modules	
N9-000-203A	20-port 10Base-T Enhanced I/O module. Integrated RJ-45 connectors.
Software & Documentation	
MED-CSK-13	Flash memory card, 2 MB, used by 720, 1620, 1640 and 1608B and 1604.
MED-CSK-17	CD-ROM Master product software kit: Access server, and gateway software and documentation, includes the CCL scripts and UNIX APGEN formerly purchased under MX-440-0360.

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