Media Cross Connect™ (MCC) Product Family

"Programmable and modular physical layer switching system"

Overview

The Media Cross Connect (MCC) product family is a modular and programmable patch panel system designed especially to facilitate test automation in demanding test and simulation environments. The flexible MCC design fits nicely with many other applications including digital video distribution, enterprise networks, and media conversion with fiber optics.

MCC chassis options include modular units with maximum configurations of 288, 144, and 72 ports and data rates ranging from 0 to 10 Gbps. These units mount in 9U, 5U, and 3.5U rack space, respectively. Each modular MCC chassis mounts in a standard 19" rack and accommodates any of the MCC blades in the main backplane slots. Special slots are provided to host the EM316LNXNM-MCC Network Management (NM) module and for future expansion of the MCC design. There are also standalone 1U blades with 32 and 34 ports.

MCC chassis support 1+1 redundant power supplies for mission critical reliability. There are also options for either AC or DC power in the 144 or 288 chassis.

The NM module provides several management options including command line, SNMP, and graphical user interface for remote or local administration of the MCC system. A local command line console may be connected to the NM serial port for an out-of-band command line interface (CLI) session. A remote management station may connect to the CLI securely through SSH or optionally through telnet. CLI access can use native or Radius server authentication for additional security. The SNMP interface supports the powerful MegaVision graphical network management system that provides a unique graphical interface for MRV devices and full IP/SNMP access to any supporting network devices. The EM316LNXNM-MCC includes MegaVisionJ, a built-in version of the graphical network manager to monitor and provision the MCC chassis directly from any network station equipped with a standard web browser.

Applications

- Test Lab Automation
- Enterprise Network Monitoring
- Digital Video Distribution
- Wave Division Multiplexing
- Carrier Interoperability Labs

Features

- Programmable port mapping
  - Any-port-to-any-port connectors
  - Remote and local monitoring of port mappings
  - Remote and local administration of port mappings
- Wide variety of industry standard ports
  - SFP (2R and 3R) (0 Gbps – 4.25 Gbps)
  - XFP (10 Gbps Ethernet and Fibre Channel)
  - T1/E1
  - DS3/E3/STS-1
  - Ethernet (10/100/1000 Mbps)
- EM316LNXNM-MCC network manager compatibility
  - Dedicated management module slot
  - Command line interface (serial, SSH, or telnet)
  - SNMP V1, V2, and V3
  - MegaVisionJ (single sytem graphical manager)
  - MegaVision Pro® (full network graphical manager)
  - Automation with simple scripts
- Security
  - Secure Shell (SSH)
  - Radius authentication
  - SNMP V3
- 19" rack-mountable
- High-density modular design
  - 32 or 34 ports in 1U
  - 72 ports in 3.5U
  - 144 ports in 5U
  - 288 ports in 9U
- Hot-swap support
  - Blades
  - Power supplies
  - Network management module
  - SFP and XFP transceivers

The NM module supports scripting for management automation. Scripting provides seamless integration into test labs and other constantly changing environments.

The MCC blades provide the modular port configuration that allows the system to perform many functions. Any compatible ports within the chassis may be dynamically mapped together. With the appropriate blade and port configurations, the MCC may be wired once to support ever-changing environments such as test labs or model networks with programmable reconfiguration, and it can even simulate network failures and other changing conditions.

In production environments, the MCC may be used to monitor remote traffic without interrupting workflow by simply mirroring an output port to another port with a management station. This multicast function may also take a single input and map to many output ports for applications like video distribution. By duplicating the signal at the physical layer, extremely high data throughputs are maintained independent of the evolving protocol standards in use today.

Each MCC blade integrates a specific type of physical port and supported protocols into the system. Within the limitations of the physical devices and protocols, each of these ports may be mapped to individual ports or groups of ports anywhere in the chassis. Each port type may have different capabilities, so each MCC blade supports the industry standards applicable to the supported ports.

The SFP and XFP sockets allow the MCC system to address nearly any network environment.

- Single-mode
- Multi-mode
- Multi-rate
- Single fiber bi-directional
- Coarse Wave Division Multiplexing (CWDM)
- Dense Wave Division Multiplexing (DWDM)
- Copper Ethernet

The SFP and XFP blades support all major protocols through the full range of hot-swappable MRV transceivers. Other blades provide more specialized support with dedicated connections built into the device.

BLADE SELECTION AND DESCRIPTION

	**EMPMC-36RJ** The 36 RJ-45 ports support 10/100/1000 Base-TX Ethernet with auto-negotiation, duplex and MDI/X sensing, jumbo packet support, and 3R.
	**EMPMC-18T1E1** The 18 RJ-48 ports support T1 and E1 independently on each port.
	**EMPMC-18DT3E3** The 18 Coaxial (1.0/2.3) ports independently support DS3, E3, STS-1.
	**EMPMC-9XFP** The 9 XFP ports support 10 Gbps Ethernet and Fibre Channel with 3R.
	**EMPMC-36SFP** The 36 SFP ports support data rates up to 4.25 Gbps using Ethernet, OC-3, OC-12, OC-48, and Fibre Channel with 2R.
	EMPMC-36SFP3R The 36 SFP ports support data rates up to 4,25 Gbps using Ethernet, OC-3, OC-12, OC-48, Fibre Channel with 3R.
	EMPMC-36SFP3RMR The 36 SFP ports support up to 4.25 Gbps data using Ethernet, SONET (OC-3, OC-12, OC-24, OC-48), and Fibre Channel (1, 2, and 4 Gbps) with 2R and 3R options.

The MCC product family offers many benefits in its wide set of applications. The table below lists a few of these advantages and their most common application categories.

Benefits / Applications	Test Lab Automation	Enterprise Network Monitoring	Digital Video Distribution	Wave Division Multiplexing	Carrier Interoperability Labs
Testing Efficiency	X				X
Wiring accuracy	X	X	X	X	X
Network topology automation and scheduling	X	X	X	X	
Simple test replication and accuracy	X				X
Improved time to market	X				X
Improved time to resolution		X	X	X	
24/7 "lights out" testing	X				X
Equipment sharing	X	X	X	X	X
Media conversion	X	X	X	X	X
DWDM and CWDM transponder pool				X	
100% network visibility		X	X		
Multicast data without signal degradation	X	X	X	X	X
Improved return on investment (ROI)	X	X	X	X	X
Reduced capital expenses	X	X		X	X
Reduced operational expenses	X	X	X	X	X

Diagram 1

Test Lab: All the devices under test and the test equipment are connected through the MCC.

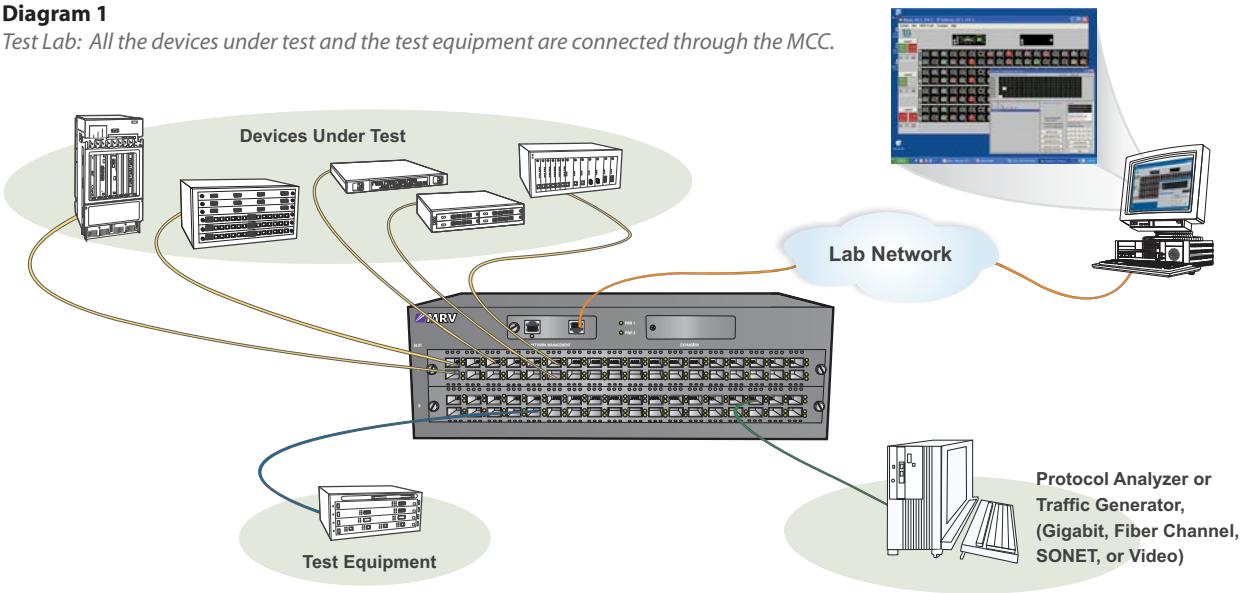
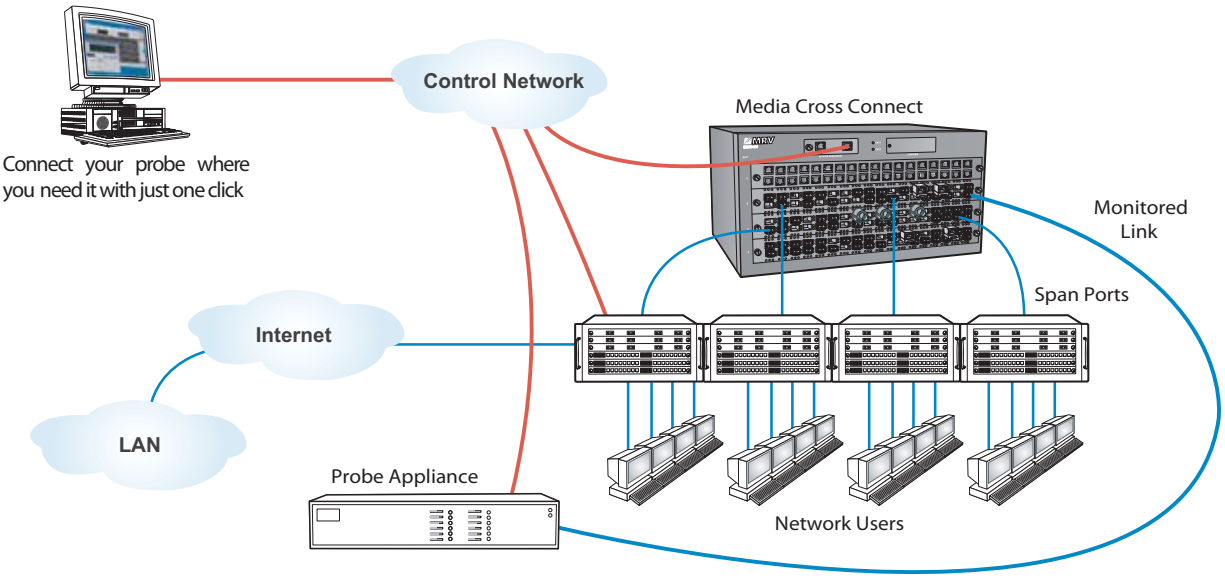


Diagram 2

The Flexibility of Sharing Expensive Network Tools



Physical Specifications		
Operating Temperature		0°C to 50°C (32°F to 122°F)
Storage Temperature		-40°C to 70°C (-40°F to 158°F)
Relative Humidity		85% maximum, non-condensing
Physical Dimensions:	**NC316-XP32/34**	45 mm high x 440 mm wide x 300 mm deep (1.77" x 17.32" x 11.81")
	NC316-72PMC	156 mm high x 442 mm wide x 286 mm deep (6.12" x 17.4" x 11.25")
	NC316-144PMC	221 mm high x 438 mm wide x 305 mm deep (8.7" x 17.25" x 12")
	NC316-288PMC	400 mm high x 438 mm wide x 305 mm deep (15.75" x 17.25" x 12")
Weight:	**NC316-XP32/34**	4.2 kg (9.2 lbs)
	NC316-72PMC	5.9 kg (12.8 lbs) including one power supply and one blank panel
	NC316-144PMC	8.1 kg (17.8 lbs) including one power supply and two blank panels
	NC316-288PMC	14.8 kg (32.6 lbs) including two power supplies and four blank panels
Compliance		FCC Part 15, Class A; IC, Class A; EMC Directive: Emission (Class A) and Immunity;
		EMC: LVD Directive: Electrical Safety; CE Marking; TUV CUE Mark (Canada, USA, EU);
		WEEE Directive: Wheelie Bin Mark; RoHS Directive, China RoHS

CHASSIS

Ordering Information	
NC316-288PMC4X	Modular, 288-port, 8 line card, Media Cross Connect chassis 4.25Gbps with two 90-240 VAC power supply and Linux-based management card, add two NC316-144RPSAC for power redundancy.
NC316-288PMC4XD	Modular, 288-port, 8 line card, Media Cross Connect chassis 4.25Gbps with two 40-58 VDC power supply and Linux-based management card, add two NC316-144RPSDC for power redundancy.
NC316-144PMC4X	Modular, 144-port, 4 line card, Media Cross Connect chassis 4.25Gbps with one 90-240 VAC power supply and Linux-based management card, add one NC316-144RPSAC for power redundancy.
NC316-144PMC4XD	Modular, 144-port, 4 line card, Media Cross Connect chassis 4.25Gbps with one 40-58 VDC power supply and Linux-based management card, add one NC316-144RPSDC for power redundancy.
NC316-72PMC4X	Modular, 72-port, 2 line card, Media Cross Connect chassis 4.25Gbps with one 90-240 VAC power supply and Linux-based management card, add one NC316-72RPSAC for power redundancy.
NC316-XP32-3NX	32-port SFP to SFP Media Cross Connect chassis with CDR and Linux-based management card; dual power supplies.
NC316-XP34-3NX	32-port SFP to SFP Media Cross-Connect chassis with CDR; 2 multi-rate monitoring ports(SC) with Linux -based management card; dual power supplies.

MANAGEMENT

Ordering Information	
EM316LNXNM-MCC	Linux-based CLI/SNMP management module for Media Cross Connect systems.

BLADES (LINE CARDS)

Ordering Information	
EMPMC-36RJ	Interface blade for 72/144/288-port chassis with 36 10/100/1000 Ethernet ports with RJ-45 connectors, hot swappable.
EMPMC-18T1E1	Interface blade for 72/144/288-port chassis with 18 T1/E1 ports with RJ-48 connectors, hot swappable.
EMPMC-18DT3E3	Interface blade for 72/144/288-port chassis with 18 DS3/E3/STS-1 ports with coaxial (1.0/2.3) connectors, hot swappable; add 1600125-901 cable adapter (1.0/2.3 to BNC) as needed.
EMPMC-9XFP	Interface blade for 72/144/288-port chassis with 9 10-Gbps XFP ports, hot swappable.
EMPMC-36SFP	Interface blade for 72/144/288-port chassis with 36 SFP ports, hot swappable.
EMPMC-36SFP3R	Interface blade for 72/144/288-port chassis with 36 SFP ports, CDR for 1/2/4 Gbps Fibre Channel, hot swappable.
EMPMC-36SFP3RMR	Interface blade for 72/144/288-port chassis with 36 SFP ports, CDR for 1/2/4 Gbps Fibre Channel, SONET and Ethernet, hot swappable.

REDUNDANT POWER SUPPLIES

Ordering Information	
NC316-144RPSAC	Redundant AC power supply for NC316-144PMC4X and NC316-288PMC4X.
NC316-144RPSDC	Redundant DC power supply for NC316-144PMC4XD and NC316-288PMC4XD.
NC316-72RPSAC	Redundant ACpower supply for NC316-72PMC4X.

ACCESSORIES

Ordering Information	
NC316-288CMB	Cable management bracket for 288-port chassis..
NC316-144CMB	Cable management bracket for 144-port chassis.
NC316-72CMB	Cable management bracket for 72-port chassis.
PMC144FP-1	Blank panel, single slot for 72/144/288-port chassis.
1600125-901	Coax, 1.0/2.3 to BNC 75 ohm Cable assembly, 36 inches long.

MRV has more than 50 offices throughout the world. Addresses, phone numbers, and fax numbers are listed at www.mrv.com.
Please e-mail us at **sales@mrv.com** or call us for assistance.

MRV (West Coast USA)
20415 Nordhoff St.
Chatsworth, CA 91311
800-338-5316
818-773-0900

MRV (East Coast USA)
295 Foster St.
Littleton, MA 01460
800-338-5316
978-952-4700

MRV (International)
Business Park Moerfelden
Waldeckerstrasse 13
64546 Moerfelden-Walldorf
Germany
Tel. (49) 6105/2070
Fax. (49) 6105/207-100

