Media Cross Connect™ (MCC) Product Family

Overview

For a network equipment manufacturer, storage system manufacturer, carrier, or enterprise, the test lab environment presents unique challenges. Companies are facing increased competitive pressure to get products and services to market, while the tests to ensure delivery of a quality product are becoming more complex. Today's test labs are moving toward test automation with sophisticated software, but the physical connectivity of equipment remains a laborious manual process.

The Media Cross Connect from MRV provides the missing link to true lab automation. Connect all test beds and equipment one time to the MCC, and all changes in topology are then controlled through software to increase test velocity and minimize capital expense through equipment sharing.

The Media Cross Connect Product Family

The Media Cross Connect (MCC) is a scalable, physical layer switch (ISO Layer 1) that allows users, through software control, to connect any port to any other port within the system providing the flexibility, reliability, and remote automated control needed to optimize any dynamic testing environment.

Designed to meet the requirements of any size environment, the MCC helps to ensure that test commitments are met while increasing test quality and improving test velocity in demanding test and simulation environments. Wire-once technology allows expensive test equipment or test beds to be easily shared among users, minimizing capital expenses.

MCC solutions are built on a family of 19" rack mountable chassis designed to be fully non-blocking in all configurations. The chassis support any of the interface blades offered by MRV to customize each system for specific applications. The modular chassis family includes models that accommodate two, four, or eight interface blades. Each chassis is powered by hot-swappable power supplies with optional redundancy. The four-slot and eight-slot chassis are available in DC powered versions.

Applications

- Industry Environments
  - Network equipment manufacturing
  - Storage equipment manufacturing
  - Carriers
  - Enterprise
- Laboratory Environments
  - New product development
  - Interoperability
  - Software Regression
  - Customer Support

Features

- **Wire-Once Technology** – Initial connection of all test sets and test infrastructure to the MCC allows future changes in test topologies or configurations to be performed through software.
- **Software Port Mapping** – Compatible ports can be mapped using software commands in bi-directional, one-way, multipoint, or Fibre Channel arbitrated loop configurations.
- **Increased Lab Productivity** – Minimized retests due to fiber contamination or breakage, and increased test accuracy and velocity. Easy to use web-based GUI controls mappings and can store often-used topologies for reuse.
- **Decreased Capital Expenditures** – Shared expensive test equipment and test beds among users minimizes equipment costs without compromising capabilities.
- **Wide Protocol Support** – T1/E1 to 10 Gbps Ethernet LAN, WAN PHY, and Fibre Channel.
- **Wide Media Support** – Copper cable, fiber optics, and pluggable SFP and XFP transceivers.
- **Simple Integration into Existing Systems** – System management through a robust industry-standard CLI and automated mapping through Tcl API or on-board SNMP agent tools with scripting language support.
- **Future-Safe Modular Architecture** – Scalable solutions built on modular chassis that support any protocol or media combination through interchangeable and hot-swappable blades.

MCC Chassis	Blade Slots	Max # of Ports	Power Supplies	Rack Units
NC316-72	2	72	2 AC	4
NC316-144	4	144	2 AC or 2 DC	5
NC316-288	8	288	4 AC or 4 DC	9

Interface Blades

The type and quantity of ports in an MCC chassis are determined by the blades used in the system configuration. Each blade has 8 to 36 ports, depending upon the type, and supports a variety of protocols with data rates up to 10Gbps. In certain applications, installing both copper and SFP blades provides media conversion capabilities within the MCC eliminating the need for external equipment. For a detailed description of the interface blades offered by MRV, refer to the MCC Interface Blade datasheet.

Blade Type	# of Ports	Interfaces/Protocols
T1/E1	36	T1/E1
DS3/E3/STS-1	18	DS3/E3/STS-1
RJ-45	36	10/100/1000 Base TX Copper Ethernet
SFP	36	Any protocol up to 2.5 Gbps, 10/100/1000 Base Fiber Ethernet, 1 Gbps/2 Gbps Fibre Channel, Sonet OC-3, OC-12, OC-48 (1)
SFP FC CDR	36	Any protocol up to 4.25 Gbps, 10/100/1000 Base Fiber Ethernet, 1 Gbps/2 Gbps/4 Gbps Fibre Channel with CDR, Sonet OC-3, OC-12, OC-48
SFP MR CDR	36	Any protocol up to 4.25 Gbps, 10/100/1000 Base Fiber Ethernet, 1 Gbps/2 Gbps/4 Gbps Fibre Channel with CDR, Sonet OC-3, OC-12, OC-48
10G XFP	9	10 Gbps Ethernet LAN Phy , Fibre Channel
10G XFP MR	8 (2)	Multi-rate up to 11.3 Gbps including Ethernet LAN, WAN PHY or Sonet OC-192 with or without FEC (3), Fibre Channel, Infiniband

(1) 2-slot and 4-slot chassis
(2) Intra-blade port mapping only
(3) Use only XFPs that do not require a reference clock

Management

Each MCC chassis is managed using a robust, industry-standard command line interface (CLI) accessed through either a serial connection or an Ethernet port. An on-board SNMP agent and a Java-based graphical user interface (GUI) are also accessed from the network.

Automation using the MCC's Tcl application programming interface (API) increases test velocity and provides for unattended dynamic testing. MCC automation is also available through scripting CLI commands with the Perl/Expect interface, SNMP tools, or using the CLI source command.

MCC Applications in Laboratories

The MCC is ideal for use in any testing environment to increase productivity and minimize capital and operational expenses. The amount of equipment needed to support the test workload is minimized by sharing expensive test sets and test bed equipment among users. Test lab productivity is increased by storing and recalling frequently used topologies, scripting configurations, and tests to be performed automatically. Eliminating manual manipulation of optical cables minimizes the effects of cable wear and fiber contamination on test results for more accurate tests and fewer re-tests. Tests such as cable breaks or port failover simulation, multi-casting test patterns at wire speed, and simulating long-haul cable scenarios are easily accomplished using the flexible mapping configurations of the MCC. Typical examples of MCC use in the lab are illustrated in FIGURE 1 and FIGURE 2.

FIGURE 1
Typical MCC lab application

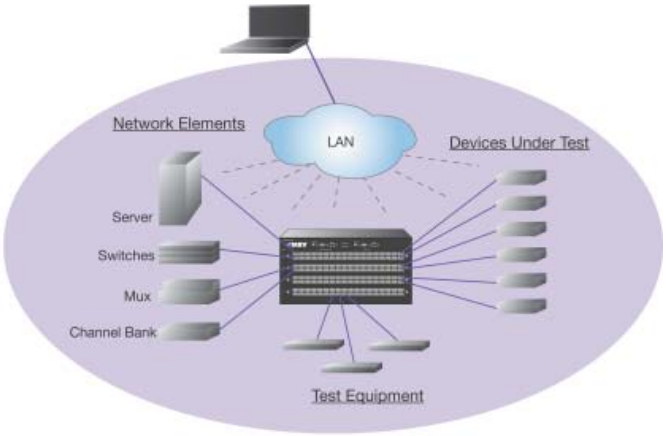
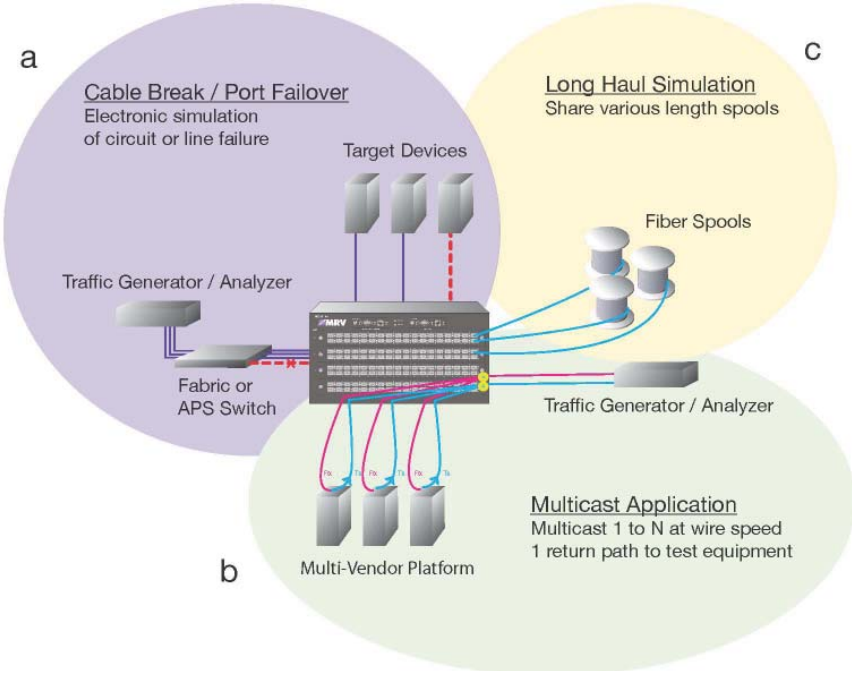


FIGURE 2
Network simulation test

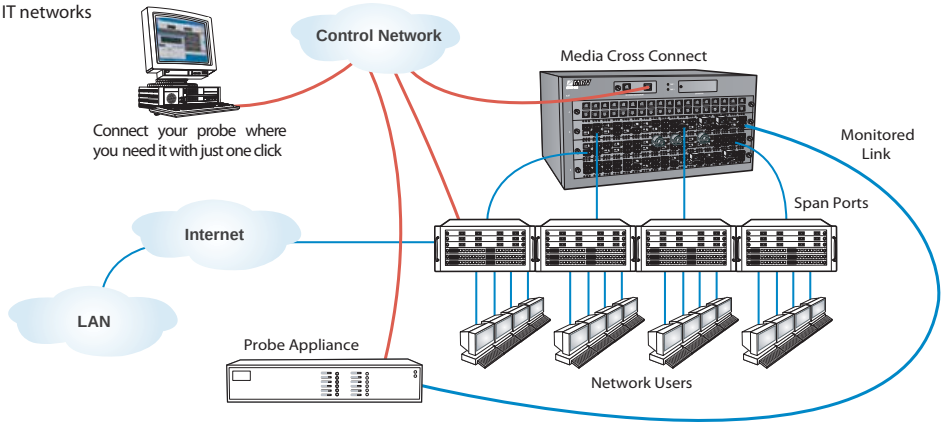


MCC Applications in Enterprise IT Networks

The many users and high data rates in a typical enterprise network does not lend itself feasibly or economically to constant monitoring of all network activity. The typical strategy uses statistical tools to identify potential issues in order to isolate compromised data flows for more focused analysis. In order to minimize network downtime, it is critical to have timely access to management tools to identify the problem. With the remote access and mapping capabilities the MCC offers a strategy to provide this efficient link to quickly and remotely deploy network monitoring equipment, helping IT managers to shorten response time and lower the total solution cost. This MCC application is illustrated in FIGURE 3.

Datasheet

FIGURE 3
Sharing probes and analyzers in IT networks



Physical Specifications: CHASSIS		
Operating Temperature		0°C to 50°C (32°F to 122°F)
Storage Temperature		-40°C to 70°C (-40°F to 158°F)
Cooling Air		25 mm (1") clearance from external chassis vents to allow unobstructed air flow through the unit
Relative Humidity		85% maximum, non-condensing
Physical Dimensions:	NC316-72PMC	156 mm high x 442 mm wide x 286 mm deep (6.12" x 17.4" x 11.25") -- rack height 4U*
	NC316-144PMC	221 mm high x 438 mm wide x 305 mm deep (8.7" x 17.25" x 12") -- rack height 5U*
	NC316-288PMC	400 mm high x 438 mm wide x 305 mm deep (15.75" x 17.25" x 12") -- rack height 9U*
Maximum Weight:	NC316-72PMC	9.5 kg (21 lbs)
(loaded chassis)	NC316-144PMC	15.0 kg (33 lbs)
	NC316-288PMC	28.6 kg (63 lbs)
Maximum Power:	NC316-72PMC	191 Watts (652 BTU/hr)
(loaded chassis)	NC316-144PMC	374 Watts (1276 BTU/hr)
	NC316-288PMC	808 Watts (2757 BTU/hr)
Compliance		FCC Part 15, Class A; IC, Class A; EMC Directive: Emission (Class A) and Immunity; LVD Directive: Electrical Safety; CE Marking; TUV CUE Mark (Canada, USA, EU); WEEE Directive: Wheelie Bin Mark; RoHS Directive, China RoHS

*1U=1.75"=44.45 mm

Maximum chassis weights are estimated maximum configuration weights calculated with the heaviest blades currently available. Maximum power usage is calculated with 1 Watt per SFP, the maximum power usage from the SFP standard.

Detailed ordering information is available at *www.mrv.com/tap* .

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.

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