MRV | EMPOWERING THE OPTICAL EDGE

Application Note

Data Center Solutions - Network Monitoring and Infrastructure Management

Secure Remote Control, Energy Management, Application and Performance Monitoring

Today's enterprise networks carry time-sensitive financial transactions, life-saving patient records, and valuable manufacturing orders. The modern day data center is the heartbeat of any company. Big or small, every organization relies on their data center to provide access and services. The level of dependency on the data center means that change is always in process and availability is of the utmost importance.

The critical nature of the data center as the nerve center also means that the bulk of an IT department's time and money is spent ensuring that the systems are operational, and ready to expand to support growth. Network outages or application degradations often result in financial loss, delays in treatments, or customer dissatisfaction.

Global 1000 manufacturing, banking, insurance, retail, energy, and healthcare organizations are taking a variety of approaches to reduce the time to repair and restore network services across their enterprise. This document highlights a number of "Best Practices" that allow IT management staff to improve security and availability while reducing costs for equipment and staffing for their enterprise data centers utilizing MRV Communications product portfolio of management, power and transport solutions.

Remote Device Management

Access switches, routers, servers, storage equipment, and security appliances regardless of the physical location

Network\Application Performance Monitoring and Troubleshooting

Improve network, device, and application troubleshooting from a central location with a complete non-intrusive media connection capability and enable network management solutions such as Deep Packet Inspection (DPI).

Power Management

Reduce power associated costs, remotely enable\disable\reboot devices, support green initiatives

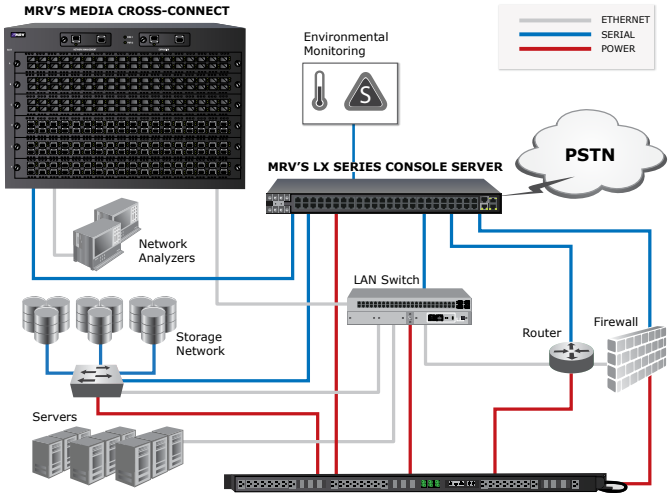
Remote Device Management Solutions

MRV's Out-of-Band Networking solutions provide a cost effective way to obtain maximum efficiency from your data center equipment and personnel. Secure, real-time remote access makes manpower-intense tasks and access to shared equipment easy to manage, greatly easing troubleshooting and planning.

MRV's remote presence solutions are based on the LX Series Console Server. Secure console management capabilities combined with powerful alarm and power control make MRV's LX Series Console Servers ideal for converging serial console management with power, alarm, and sensor management in a single IP infrastructure. Security features include per port multi-level password protection, RADIUS, SecurID, SSH and SNMPv3.

Features:

- Secure remote equipment access from any location
- Integrated device, power and environmental alarm management
- Out-of-band access for remote troubleshooting and access even when network is down
- Comprehensive data buffering and logging
- Multi Level User access
- Operating system independent (Windows, Linux, Unix, MAC)



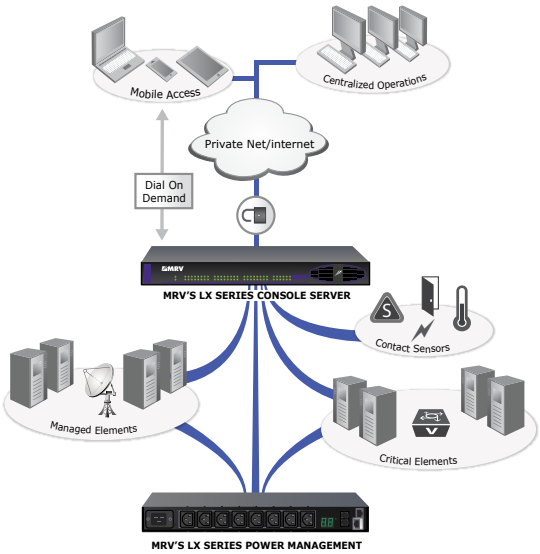
The LX Series Console Server can be used to access the serial management port of devices from over the network. Administrators and engineers can securely access the devices without leaving their offices or homes, allowing for easy device configuration and software upgrades. The LX Series Console Servers allow automation by executing scripts, power control and notification of events as a result of configured thresholds being exceeded, a pattern match condition occurring as a result of messaging from an attached serial device console port, as well as many other configurable trigger events.

Many data center outages are caused by conditions outside of communications, processing, or storage device failures. Many failures are caused by environmental and physical infrastructure conditions such as temperature, moisture, or power sources. The LX Series Console Servers provide a single management interface not only for all attached devices via serial console interfaces, but also to non-networked sensors such a temperature sensors, contact closures, and power sources providing a single point of monitoring and control for all data center equipment and supporting infrastructure.

Complete Out-of-Band connectivity is available via in-band Ethernet as well as optional internal modem allowing full access to attached equipment. Security is improved as the need to access equipment physically is reduced. Rack and floor space can be freed up allowing additional equipment to be deployed, as the need to have dedicated work areas for IT staff in the lab is eliminated.

MRV'S LX SERIES OF CONSOLE SERVERS

Out-Of-Band Networking Solution



Network\Application Performance Monitoring and Troubleshooting

With the colossal growth of bandwidth and new services in all areas of carrier networks, hosting centers, and corporate networks, there is a need for network management and troubleshooting tools that go beyond just maintaining the hardware and "keeping the network up". The expansion of 10 Gbps traffic and CPU virtualization has created a huge amount of complex traffic. In order to manage your network you have to know what's running on your network. That knowledge doesn't stop at the packet header; you need visibility to the payload, the application layer information, and the user information, so basic physical diagnostics are not sufficient. In addition, you need to respond quickly to security threats, DOS attacks, congestion and other issues that can impact or even halt network operations.

Accessing network layers to obtain information is problematic. Using span ports, which affect network performance by loading the processors, is not an ideal point for routine network access. Additionally, the cost of high-speed test, analysis, filtering and data recording equipment prohibits widespread deployment; the need to maximize utilization of test tools becomes a necessity in order to obtain palatable ROI.

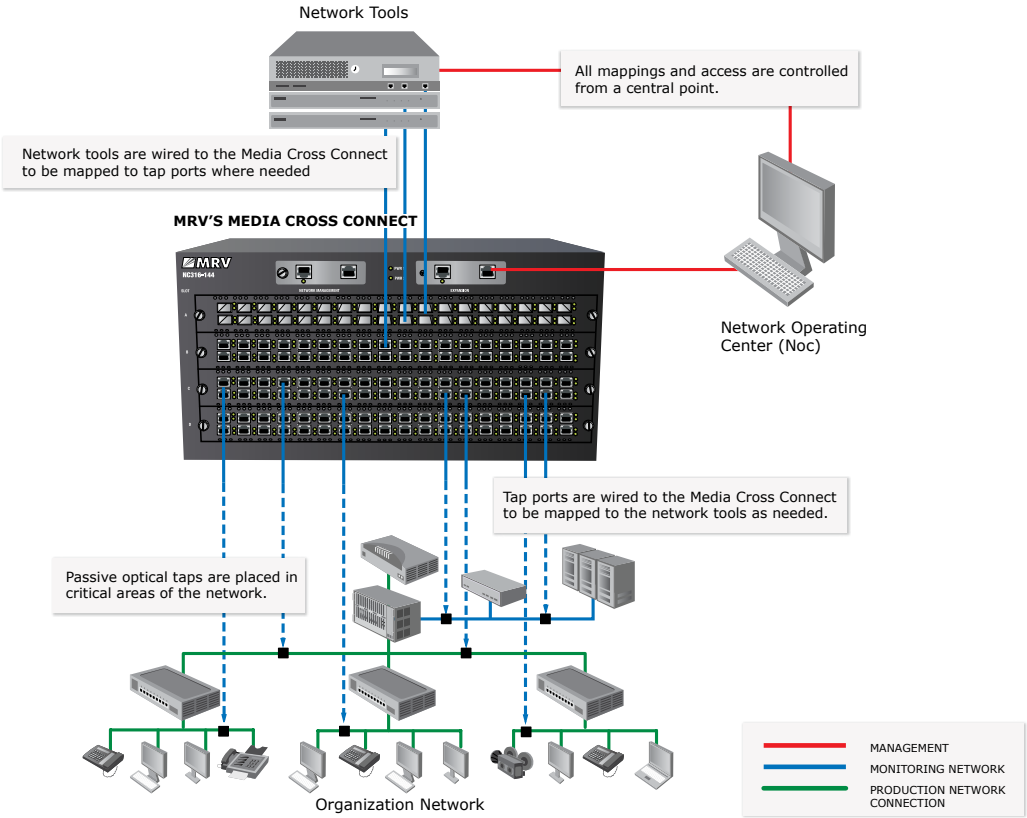
How do you maximize utilization of assets and gain access to the hot spots for visibility to the information you need to manage your network? MRV's Media Cross Connect (MCC) physical layer switch in combination with OPTimize – our line of Optical Passive Taps provides line-rate access to any point in your network to allow centralized control of monitoring and troubleshooting. Affordable network management and control can be a reality!

MRV Test Access Solution

OPTimize provides transparent access to every single bit of traffic data in an optical link at line speed without any effect on user traffic or switch performance. When combined with an MCC, a software-controlled layer one switch, OPTimize can be placed in critical points of the network and through remote management; these points can be routed for protocol or traffic analysis, intrusion detection, or general network troubleshooting - all from a centralized location. (See figure 1)

Figure 1: MRV's Test Access Solution

Provides transparent access to all critical traffic data



Power Management

In the past, electricity was a relatively low-cost and limitless resource for technology solutions. Those days are long gone as the top recurring cost for a test lab is electricity. Corporate directives to become more environmentally friendly regarding energy use also drive the desire to more efficiently manage power resources.

The need for companies to become good global citizens can be just as important as the traditional ROI calculation. It is important to gain control and reduce the power budget, and many corporations are instituting programs and incentives for reducing their carbon footprint. An intelligent power management system is integral to attaining these objectives. As "green" marketing continues to gain momentum, more and more companies will look to get better control over their power resources.

The total utility cost for operating a data center ranges beyond the standard electric bill to operate routers, switches, servers and other equipment. It is estimated that for every dollar spent powering IT equipment, fifty cents disappears into capital equipment and power required to cool the excess heat generated the equipment. In extreme cases, some organizations will run out of power in their local power grid in just a few years. In these cases, the utility is unable to provide enough capacity to the local area and limits future growth. Many data centers have unused floor space because they can not add equipment without additional power or cooling available, greatly increasing the costs for the data center because managers are paying for floor space they cannot utilize.

Finally, everyone has experienced a problem with their PC, router, or phone where the device wasn't working and the fix was: "Well, I rebooted it and the problem is gone…" A study shows that 72% of all third party service calls resulted in a simple reset to correct a problem. Being able to perform that reset without dispatching a technician saves a tremendous amount of time and energy.

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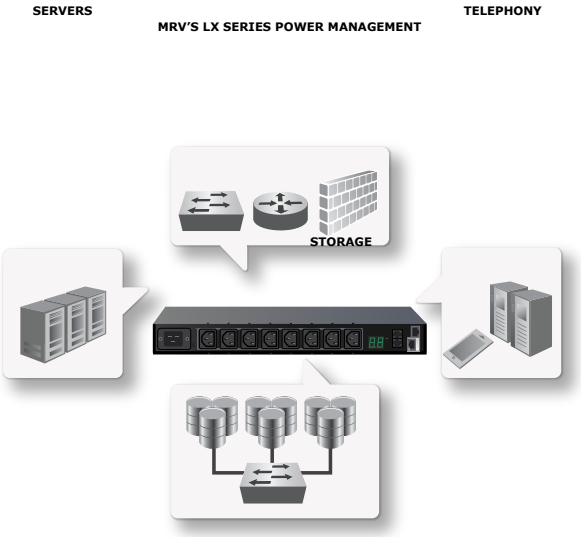

Features:

- Reduce energy costs
- Improve reliability and service levels
- Improve power consumption and forecasting
- Remotely access status indicators and power usage
- Maximize UPS runtime
- Reduce capital equipment costs
- Customize thresholds to trigger corrective actions and notifications

The LX-5260 Power Control Series Devices provide system administrators and operators with the ability to remotely power cycle and manage equipment. Paired with an LX Series Console Server, the LX-5260 Power Control Series provides a wide range of options to fit any power environment for North American and International applications. Power options include 110V, 208V, 208V 3 Phase, and 230V power sources with a number of outlet densities from 8 to 24 outlets in both horizontal and vertical configurations.

Using the LX-5260 Power Control Series, test equipment can be remotely shut down or rebooted either on demand or as part of an automated test script. With the addition of environmental sensors, including temperature and humidity, flooding or fire control, the operating conditions of the lab can be monitored as well, providing for yet another level of controllable parameters.

Summary

MRV offers a complete infrastructure management solution for any size or style data center. MRV's LX Series Console Servers provide remote serial connectivity to all devices in the data center while also providing management and control of the power infrastructure. The Media Cross Connect provides layer 1 connectivity and "tapping" support providing virtually limitless connectivity options greatly simplifying networking traffic monitoring and troubleshooting. Whether used as a complete solution or as individual tools, MRV's data center management solution provide a comprehensive set of tools to more efficiently utilize IT staff while reducing operational and capital equipment expenses.

Contact us at **info@mrv.com**

MRV Communications

http://www.mrv.com

ABOUT MRV COMMUNICATIONS

MRV Communications is a global leader in converged packet and optical solutions that empower the optical edge. For more than two decades, the most demanding service providers, Fortune 1000 companies and governments worldwide have trusted MRV® to provide best-in-class solutions and services for their mission-critical networks. We help our customers overcome the challenge of orchestrating the ever-increasing need for capacity while improving service delivery and lowering network costs for critical applications such as cloud connectivity, high-capacity business services, mobile backhaul and data center connectivity.

MRV operates Worldwide sales and service offices across four continents.

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