

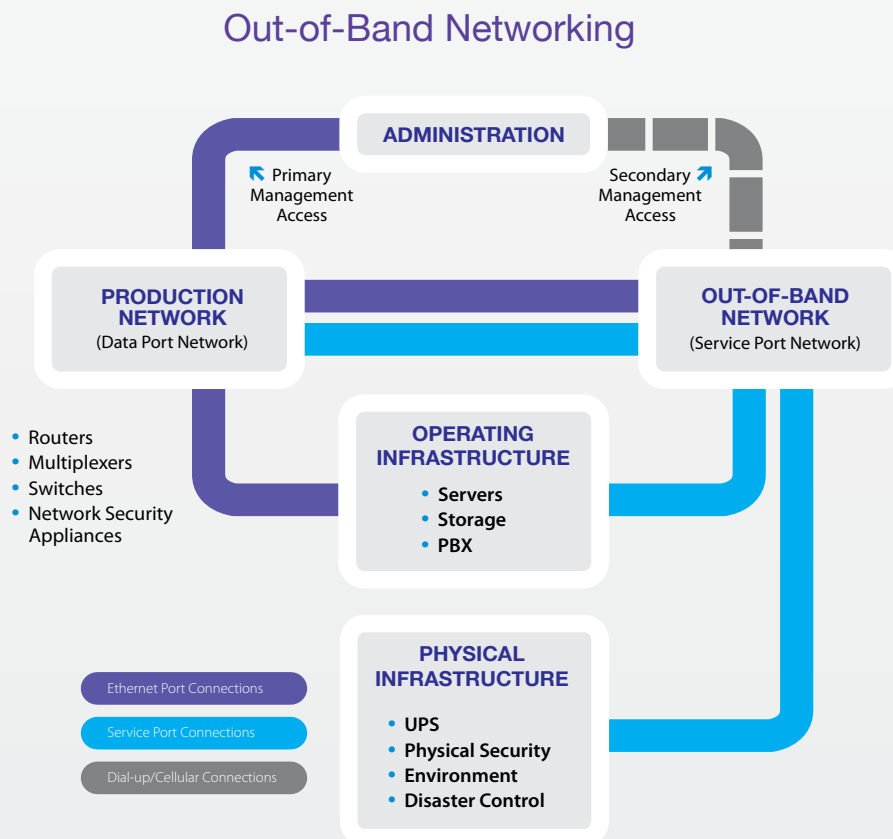
# Out-of-Band networking



Connectivity Unlimited™

**Out-of-Band Networks** provide secure remote service port access, remote power management and environmental monitoring to devices in an organization's networks and infrastructures. This nearly eliminates the need for physical presence at a device to correct problems or manage its everyday operation. This mode of unmanned operation is called Out-of-Band or Lights Out Management.

The diagram below illustrates the complementary relationship between an organization's Production Network, Out-of-Band Network and the devices in an organization's infrastructures.



Normally, an Operating Infrastructure device such as a server is managed through the switches and routers in the organization's Production Network. But when the server becomes disconnected from the Production Network due to an error, it frequently requires physical presence at the server to restore it to normal operation. This can nearly be eliminated by using an Out-of-Band Network to remotely power cycle the server and manage it back into the Production Network using the server's service port. The same is true for devices such as switches and routers in the Production Network.

Secure remote access to devices in an organization's Physical Infrastructure can usually only be performed through the Out-of-Band Network.

Primary access to the Out-of-Band Network itself is usually through the Production Network. But when a Production Network failure causes Out-of-Band Network equipment to become disconnected, access can be established through a modem to restore Production Network and Out-of-Band Network equipment to normal operation. Using an Out-of-Band Network to aid in the management of an organization's networks and infrastructures can cut costs, increase security, lower risk and, in many cases, increase service levels.

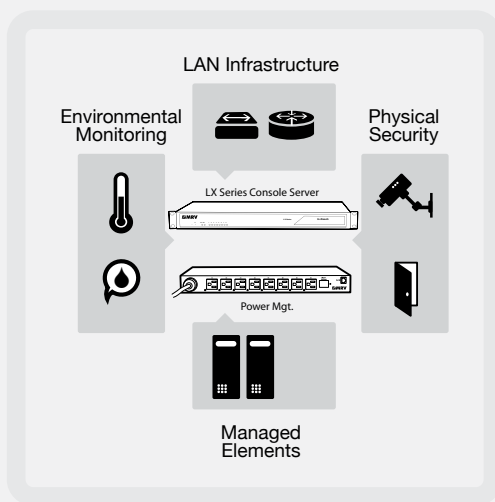
## Cutting Costs

Since Out-of-Band Networks can nearly eliminate the need for administrative personnel to be physically present at a device, personnel can be minimized and centralized, resulting in significant cost savings. The cost of downtime is also reduced since devices can be brought back online quickly without the delays of dispatching personnel to device locations.

In many data centers, power and cooling challenges limit future expansion and bring additional capital equipment and utility costs. Current trends include the increased use of 3 phase power, higher amperage circuits, higher cabinet density and increased current/environmental monitoring. Advanced power management capabilities can reduce energy costs, cooling and space requirements, and extend equipment life span. In test labs, power management enables time based equipment sharing, greatly reducing energy and capital equipment costs.

Consolidating power, environmental and physical plant management into the existing IP infrastructure reduces the number of management applications and associated training, support, and maintenance of those applications, while also streamlining operations providing further savings in operational costs.

## Remote Location



## Remote Access

- Eliminate Onsite Personal
- Disaster Recovery

## Physical & Environmental Monitoring

- Heating & Cooling, Moisture
- Doors, Windows

## Power Management

- Device Power Cycling
- Power Sequencing

## Simplifying Operations

Like any other network, an Out-of-Band Network must implement secure access and authentication protocols. Advanced Out-of-Band Network solutions automatically verify access through an organization's existing security infrastructure. Support for security standards such as SSH v2, RADIUS, SecurID, TACACS+, SNMP v3, NIST FIPS 140-2, and others is essential to assure security and operational simplicity.

Further operational simplicity can be achieved through SNMP-based communications with existing Network Management Systems such as HP OpenView®, Tivoli®, BMC Patrol® and CA-Unicenter®. Also, equipment in the Out-of-Band Network itself may need to be updated with new configuration specifications or updated firmware. Some Out-of-Band Network equipment suppliers require costly software and/or management appliances to achieve these goals, adding a layer of complexity and additional cost. Advanced Out-of-Band Network equipment provides these features without the need for additional equipment and/or software.

## Increasing Security, Lowering Risk

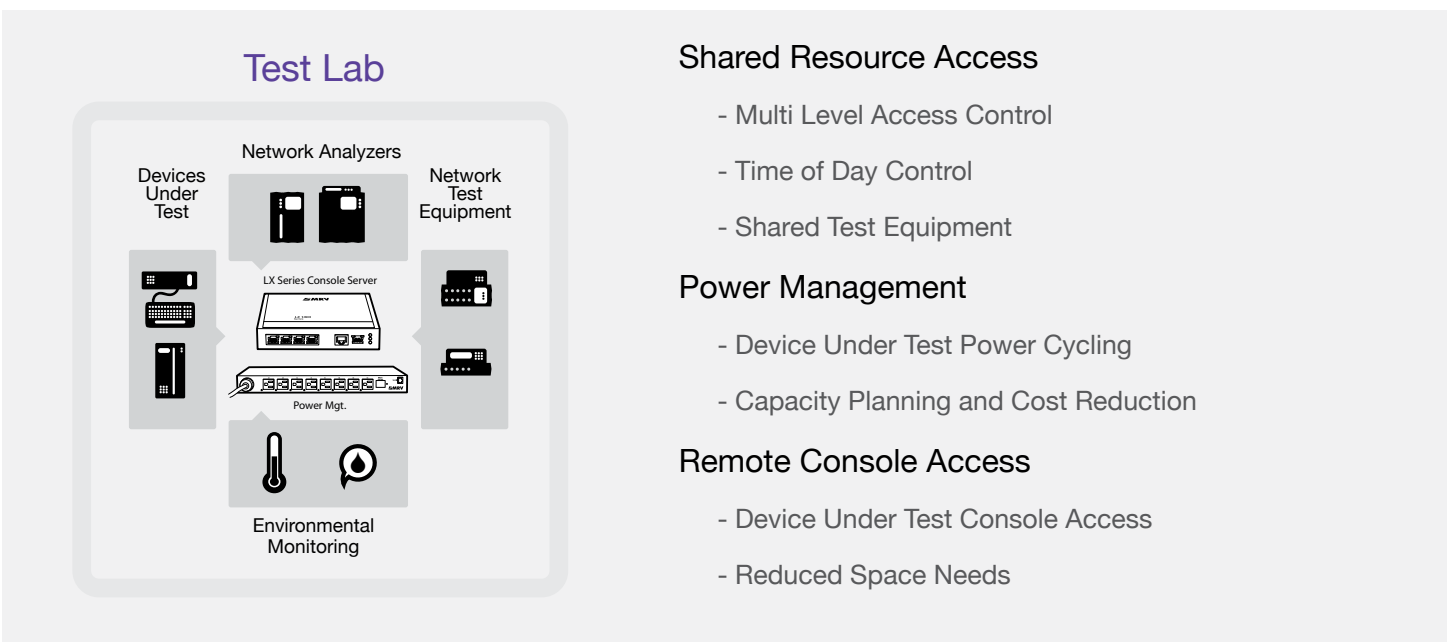
Out-of-Band Network equipment connects to service ports protecting them from unauthorized, undetected access. Disconnecting Out-of-Band equipment from a service port can cause an immediate alarm report, increasing overall security.

Most operating systems and many applications generate logs that are stored on the hosting device and also written to the device's serial port. Some Out-of-Band Network equipment can capture this data through the hosting device's service port, store it externally, and initiate corrective actions. Many companies use this captured data as a record of system activity to meet security and auditability requirements of government regulations such as Sarbanes-Oxley, HIPAA, GLBA, NIPSOM Chapter 8 and California Bill 1386, thus lowering the risk of non-compliance.



Enhancements in security and safety can be realized through accessing remote service ports and detection devices provided by Physical Infrastructure equipment. Some Out-of-Band Network equipment can detect and report the status of devices such as door alarms, fire alarms and even lighting used on communications towers. They may also provide on-line access to the service ports of security and fire control panels as well as uninterruptible power supplies.

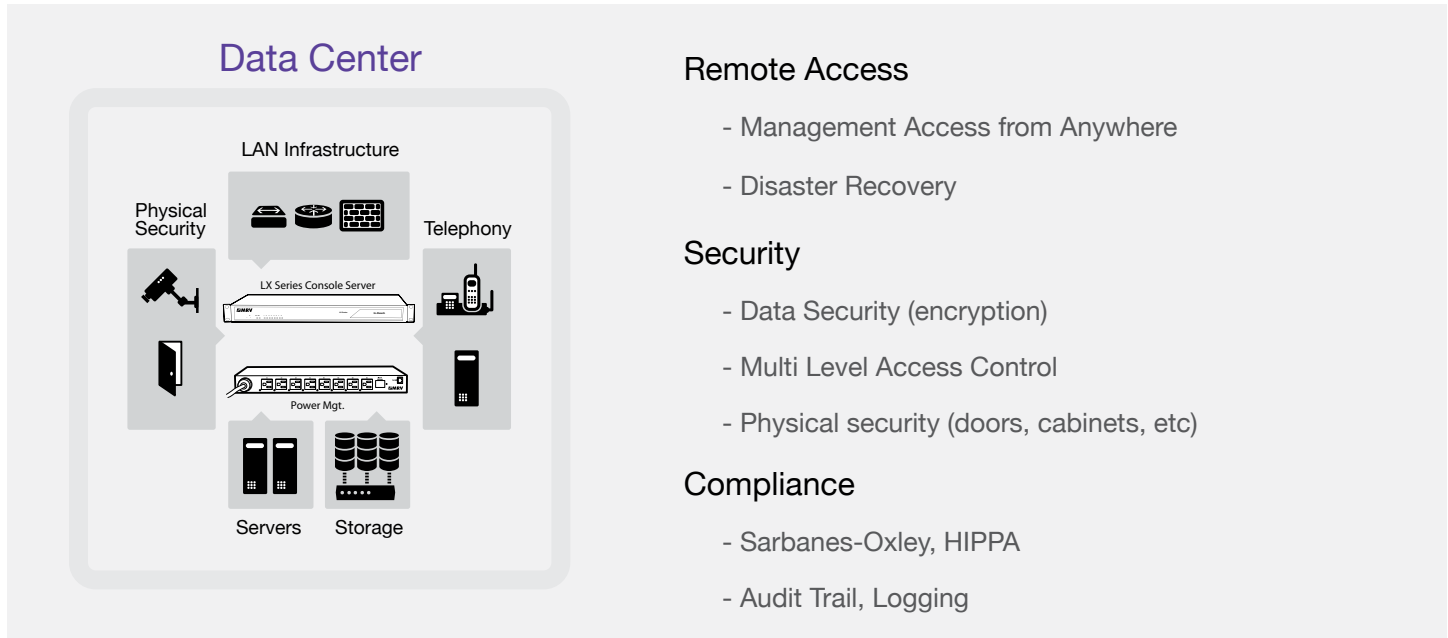
Many organizations are becoming more aware of the risk of security attacks, and are moving to eliminate the use of commonly used protocols and features that don't meet today's security standards. Advanced Out-of-Band Network solutions support these security policies by supporting higher security modes.



## Improving Service Levels

One of the most common strategies to improve service levels is redundancy. This is a complex and costly approach that cannot be justified for most applications. Using Out-of-Band Networks to provide near immediate access to disconnected devices, downtime is minimized and service levels improved without the need for complex redundant systems.

Integrating the monitoring and control of Operational and Physical Infrastructures via a network connection not only reduces staffing needs, it also allows for real-time analysis, greatly reducing risk by reducing reaction time from hours to minutes.



Advanced Out-of-Band Network Solutions consist of intelligent appliances that can integrate with existing security and network management systems. They also provide features to manage the Out-of-Band Network itself and to provide instant notification of events occurring in an organization's networks and infrastructures.



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**Out-of-Band management is an essential element in an effective IT management strategy, enabling a collaborative multi-disciplinary IT operations to improve service levels, produce a consistent approach for meeting security and compliance needs, and do this in a cost effective manner.**

**J. Jeffrey Nudler**

Senior Analyst, Enterprise Management Associates

## Console Servers

The LX Series of secure console servers meets a wide range of datacenter, laboratory, remote site and carrier requirements.

- Secure serial port access (SSH v2, RADIUS, SecurID, TACACS+, others)
- Models from 1 to 48 ports, AC/DC
- Clustering support for enterprise wide upgrades in seconds
- Ports configurable for serial port or sensor networking
- Secure dial-up via V92 or wireless GPRS access
- Rich graphical browser interface for full configuration
- Industry standard Command Line interface
- Automated event notification and response
- Programmable Trigger/Action capabilities
- FIPS 140-2 mode eliminates insecure protocols/features
- IPv6 support
- NEBS Level 3 certified



## Power Management

The 5250/4800 Power Control Series provides industry-leading features with a variety of options.

- Remote power management (off, on, cycle)
- Usage monitoring per unit/group
- Trigger/Action based automation
- Power-up sequencing
- Username/Password per outlet
- 110-120v, 208-240v, -48v AC/DC models
- Zero, 1U and 2U models



## Sensor Networking

The 7304/7204 Sensor Manager extends the LX Series with a high density, modular platform with

- Up to 128 sensor points
- Dry contact inputs or outputs
- Analog inputs
- Supports all LX Console Server capabilities



**MRV Corporate Headquarters**

Corporate Center  
20415 Nordhoff Street  
Chatsworth, CA 91311  
Tel: 818.773.0900

**MRV International**

Business Park Moerfelden  
Waldeckerstrasse 13  
64546 Moerfelden-Walldorf  
Germany  
Tel: (49) 6105/2070

**MRV Boston**

295 Foster Street  
Littleton, MA 01460  
Tel: 978.952.4700



**MRV Sales**

Tel: 800.338.5316  
Tel: 978.952.4700  
sales@mrv.com

**MRV Service and Support**

Tel: 800.435-7997  
Tel: 978.952.4888  
service@mrv.com

Additional MRV locations can  
be found at [www.mrv.com](http://www.mrv.com)