

Case Study

Government Test Range Updates Sensor Management Network for Maximum Uptime and FIPS 140-2 Compliance



When a U.S. government military test range needed to update the sensor management network that monitored equipment locations across its vast property, it needed a solution that could provide the highest level of system management to support its strategic military equipment testing. The information gathered from these tests is extremely critical to the military, which leaves little room for error or downtime. The facility wanted a sensor management solution that would ensure maximum uptime and also meet the Federal Information Processing Standards (FIPS) 140-2 requirement for government communications equipment. After evaluating a number of vendors, the test range administrators chose an out-of-band and sensor/alarm management solution from MRV Communications.

Background

The desert-based test range is spread across roughly 3,000 square miles of dry, desolate land. Throughout the facility, there are more than 50 locations containing video cameras and other monitoring devices that track equipment tests and gather comprehensive data for military evaluation. The video monitoring equipment is extremely critical to the operations of the facility, and failures can result in costly delays of test range operations.

Monitoring this equipment and the environment in these shacks are alarm sensors that track everything from temperature to physical security inside and around the shack. If something is not right within the shack environment, a trap is triggered and a signal sets off an alarm in the network operations center (NOC) alerting the facility managers to the problem.

Historically, service technicians were sent into the field when a problem occurred within the network to troubleshoot the issue. These technicians would have to routinely visit the shacks for visual inspections and would need to react very quickly and schedule an emergency visit in the event that the video monitoring equipment wasn't responding. These trips were not only time consuming, but dangerous for the technicians, as roads are rough and unpaved and other local hazards such as snakes and poisonous insects are often found within the shacks.

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Although the test range's existing system had provided a sufficient solution, the facility learned that the equipment was being discontinued, and could not be upgraded or repaired in the future. This triggered the need to choose a new system that would monitor the different contact points in each shack including the fuel sensors of its diesel tanks, which provide backup power for the facility. With MRV's LX Series offering FIPS 140-2 certification, the test range was able to choose a solution that met both its network and security compliance needs as well as provide for future enhancements.

MRV Solution

NOC operators at the test range chose MRV's LX 4008 eight-port console server for out-of-band management connectivity, which combined with its LX-7204 sensor management platform, provided a complete remote location management solution.

The sensor manager alerts technical staff to a door opening, power outages, or fuel levels for a back-up power generator along with many other physical and environmental conditions via dry contact and 20mA analog sensor input modules. The LX-7204 sensor manager is used to monitor approximately 64 ports in the test range's specific configuration, however the system is field expandable and can support up to 128 alarm points.

The combined solution comprised of the LX-7204 alarm management capabilities and the LX4008T console server provides traditional out of band management capabilities such as remote serial port and modem access with advanced sensor/alarm monitoring from a single IP address and/or Web-based graphical user interface (GUI).

Another driver, which moved the test range's network operators to choose MRV'S LX Series of console servers, was its FIPS 140-2 certification. This government certified program means that the devices provide higher encryption levels, suppress unsecure protocols and provide an audit trail for all access transactions network equipment among other requirements. FIPS 140-2 is the second of four security levels defined within FIPS and includes both data encryption and a product design that detects evidence of tampering.

LX Series Console Servers

The LX Series Console Servers are offered in a number of configurations from 4 to 48 serial ports, AC/DC redundant power options, and integrated v.92/GSM-GPRS modem. The devices support rich security and management functionality in addition to featuring distributed clustering and automation capabilities, encryption and security certifications.

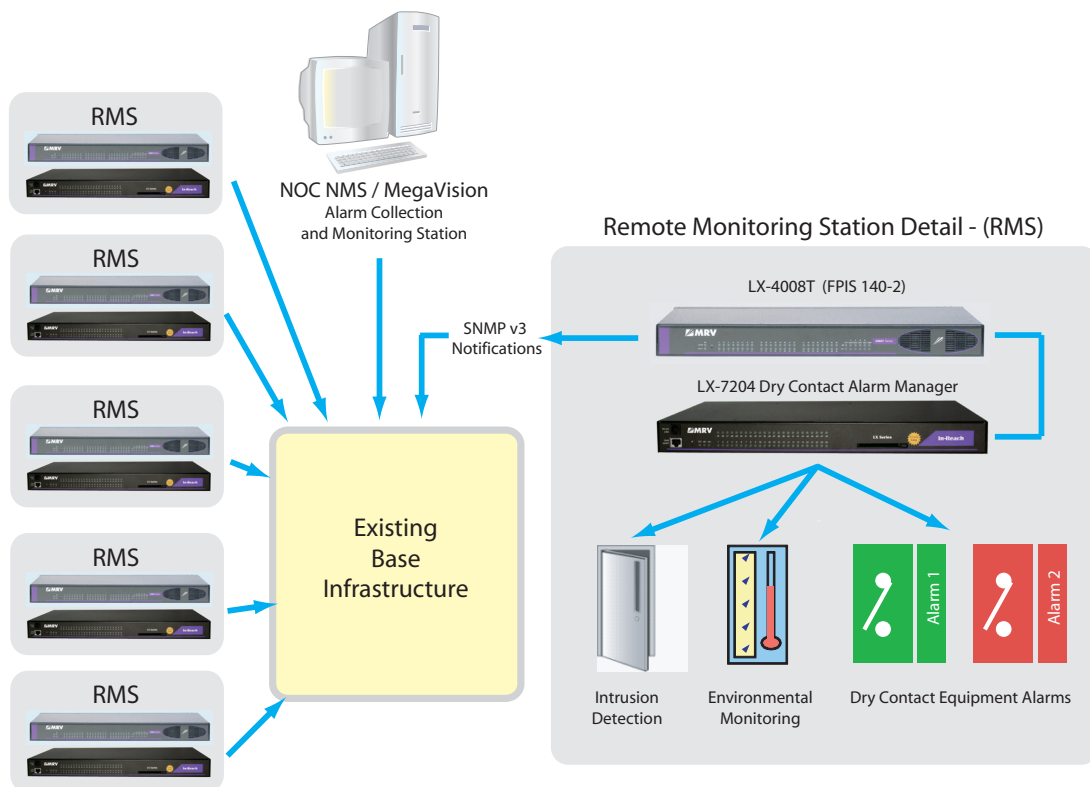
- **Wide Range of Applications —**
Enterprise data centers, Remote/branch offices, Telco central and remote facilities, Utilities, Test and development labs
- **Remote console connectivity —**
Access equipment via IP or modem to device serial console ports from any location
- **24 x 7 Lights out management —**
provide for unmanned, remote service, or automated testing
- **Automated Notification & Actions —**
Reduce response time and increase system availability and simplifies operations
- **Power, Environmental, Infrastructure Management —**
Monitor and control resources remotely via a single management interface
- **Industry-leading security —**
High level of encryption and secure access methods including FIPS 140-2 Certification
- **Ease of Configuration —**
CLI, SNMP, and Web based management interfaces
- **Connectivity via Ethernet, Serial, dial-up and/or cellular modem**
- **Multi-level user profiles —**
allow user experience customization or manage equipment sharing

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Implementation

The test range worked with MRV to set up the console servers and sensor management platforms at each shack located throughout the facility. Network managers are utilizing the system to monitor doors, power generators and temperature humidity sensors at each individual shack location with up to 32 individual elements being monitored at each location.

The LX 4008T provides an IP-based SNMP management interface for the devices that do not natively support IP connectivity, allowing easy management across the network and reducing reliance on proprietary solutions and multiple management consoles. This SNMP capability allowed the network managers to easily integrate the MRV solution into their existing third-party network management platform, which is used to monitor other devices across the facility.



MRV's solution has opened multiple capabilities that the test range plans to implement in the future. The facility plans to implement an eight-port control output module in their LX 7204 alarm manager that will allow for trigger/action-based automation to control devices based on a number of network and environmental conditions. Additionally, the facility plans to implement MRV's LX-5250 power control solution that gives centralized equipment maintenance staff the ability to power cycle or power down equipment on a per power outlet basis. This power management capability provides improved troubleshooting of unstaffed locations by reducing and (in most cases) completely eliminating the need to schedule remote site visits to address network or facility issues.



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Success!

The test range was able to make a seamless transition from its previous system to the MRV solution. With the new system in place, the facility has experienced a quick return on investment, as network operators no longer need to send staff members out on a routine basis, but only in response to a legitimate alarm. The granularity of information about the remote location allows the proper resources and tools to be dispatched to the location, further reducing the cost and time to address issues. By implementing the MRV solution, the test range staff was not only able to replace their previous vendor's equipment with no loss of service, they also gained more flexibility and control over their network today and for the future.

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 a info@mrv.com or call us for assistance.

MRV Los Angeles
20415 Nordhoff St.
Chatsworth, CA 91311
800-338-5316
818-773-0900

MRV Boston
300 Apollo Drive
Chelmsford, MA 01824
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

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