



WHITE PAPER

From the Inside Looking Out: The Power of Local Information for Centralized Network Management

SYNOPSIS | Centralized, SNMP-based NSM solutions provide rich diagnostic, fault management and reporting information. However, the majority of these solutions are network-dependent, so when the primary network connection is down or disrupted, they lose connectivity and visibility to devices in the field.

Uplogix solutions complement NSM solutions by providing persistent connectivity and control to managed devices. Centralized management tools benefit from reliable and more detailed device data whether the network is up or down.

The device-level data used by traditional centralized management tools includes device statistics collected via ICMP, SNMP get requests and SNMP traps based on predetermined thresholds and rules. These tools gather and receive this important information from devices over the network. If the network isn't available, the data isn't either, and centralized network management cannot do its job.

The problem is that disruptive incidents are tough for IT departments to prevent because there are so many variables to control in complex and highly distributed network environments. Just some of the many possibilities include the following:

- ▶ Service provider's WAN link connecting a remote office is goes down
- ▶ Technician's simple error on a remote switch drops that device offline later that night
- ▶ Kernel panic on a device in a remote location causes the device to stop responding

Each of these events occurs in even the best-managed networks, and on the most reliable platforms. The resulting disruptions often limit visibility into the remote locations impacted. This restricts IT's ability to troubleshoot, track configurations, enforce security policies, and provide timely fault assistance.

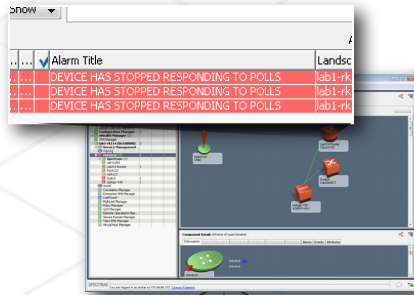
Adding Local Management to Centralized Tools

With uninterrupted access to device-level data, centralized tools can extend capabilities beyond the moment of outage. As examples, here is the impact on the above scenarios:

- ▶ WAN link disruption could be quickly confirmed as the service provider's fault in seconds or minutes instead of hours or days; service provider triangulation actions could be executed and reported and the remote office infrastructure would be accessible for hands-on management
- ▶ Technician error on a remote switch could be rolled back immediately as an un-committed configuration change
- ▶ An unresponsive device could be automatically power cycled in the first few minutes of outage.

Guaranteed and consistent data improves monitoring, makes troubleshooting easier, allows configurations to be tracked and security policies to be maintained, and accelerates fault resolution.

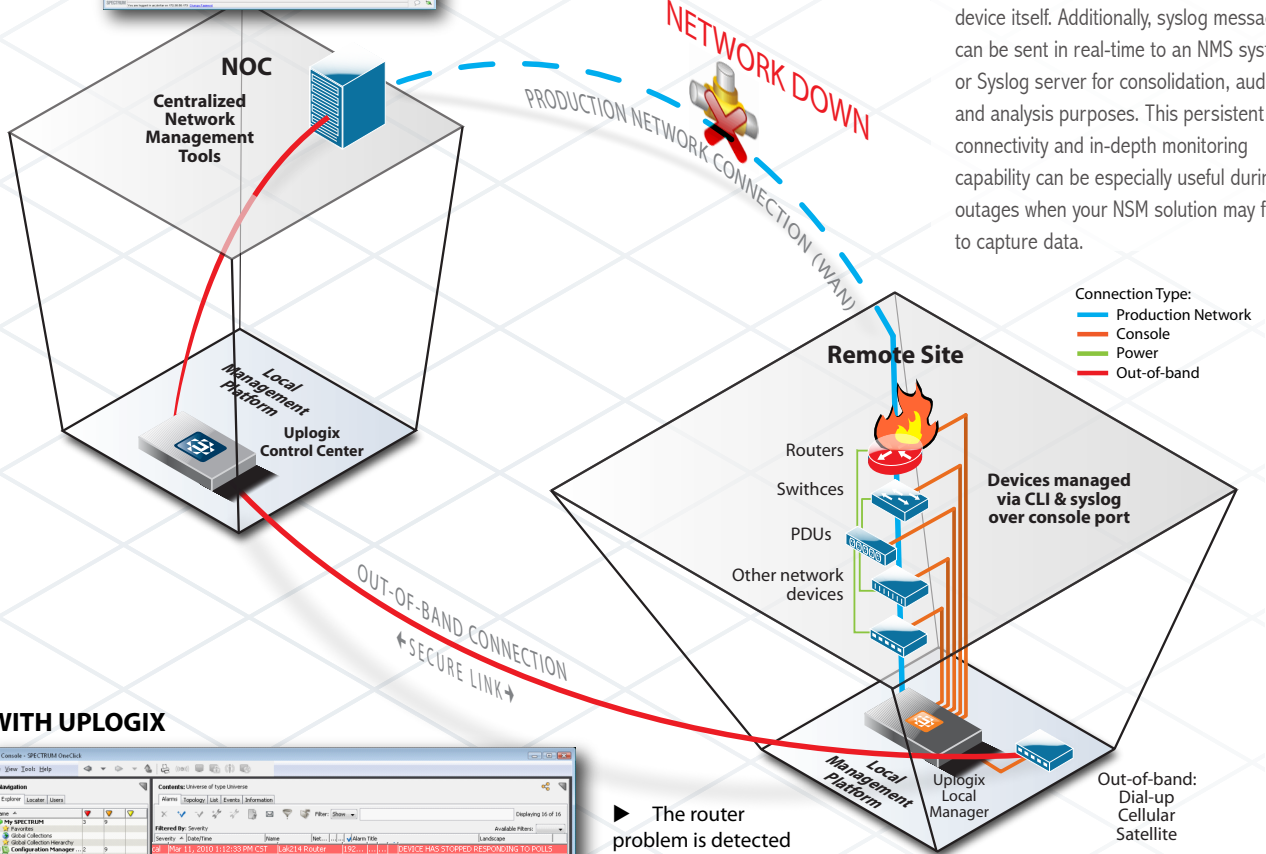
WITHOUT UPLOGIX



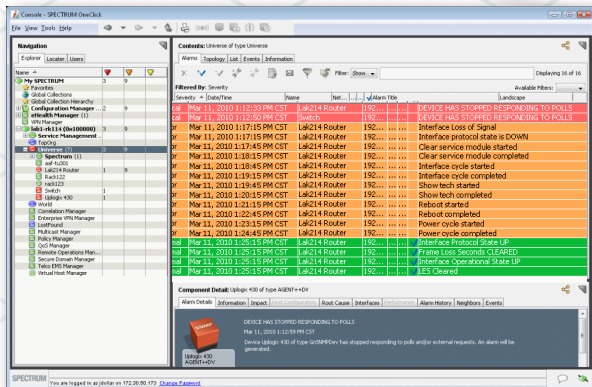
▶ With the primary router down, SNMP polling returns inaccurate information to centralized tools that all devices are down just because they are unreachable.

Troubleshooting is difficult-to-impossible without someone onsite.

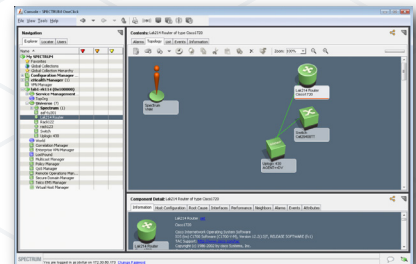
Since Uplogix is directly connected to the devices being managed, they can continue to work even when the primary network connection is unavailable, performing system monitoring, maintenance, and recovery tasks locally, securely and efficiently. Uplogix also seamlessly integrates with NSM solutions. System alarms, events and device performance data can be forwarded to NMS systems from the Uplogix Control Center via SNMP messages that appear as if they came from the managed device itself. Additionally, syslog messages can be sent in real-time to an NMS system or Syslog server for consolidation, auditing and analysis purposes. This persistent connectivity and in-depth monitoring capability can be especially useful during outages when your NSM solution may fail to capture data.



WITH UPLOGIX



▶ The router problem is detected within seconds and an out-of-band link is established. Uplogix relays information to centralized tools. Automated recovery actions can restore the device to an operating state and report actions taken to NSM in the NOC. ▶



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Information is stored locally on each LM and delivered at regular intervals to the Uplogix Control Center in the NOC and forwarded to centralized tools where it can be used to replace or augment statistics that might be missing or incomplete. Uplogix generates traps based on standard rules and policies. Traps generated by Uplogix Local Managers are forwarded to centralized tools even when the network isn't available themselves.

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Uplogix makes your existing tools work better

Uplogix ensures that device-level data keeps flowing even if the primary network is temporarily unavailable. Uplogix Local Managers (LMs) collect device statistics and SYSLOG messages out-of-band, via a device's console port. This information is stored locally on each LM and delivered at regular intervals to the Uplogix Control Center in the NOC and forwarded to centralized tools where it can be used to replace or augment statistics that might be missing or incomplete. Uplogix generates traps based on standard rules and policies. Traps generated by Uplogix Local Managers are forwarded to centralized tools even when the network isn't available.

Uplogix collects and stores information commonly used by centralized tools:

- ▶ **Device statistics** | These are the raw statistics about device state, such as error frames, CPU-status, or carrier transitions. Traditionally these statistics are requested via SNMP ping across the network at regular intervals (i.e., every 15 minutes), and this information is delivered on a best effort basis by the device.

With Uplogix, these same statistics are collected directly from devices at much more frequent intervals (i.e., every 30 seconds), but without impacting network or system performance. Uplogix stores and forwards this data to centralized tools on a guaranteed delivery basis. So not only does local management provide more granular device statistics at tighter intervals, it does so with less network overhead and with guaranteed delivery, even during disruptions.

- ▶ **SYSLOG messages** | These are the unsolicited event records reported by devices. They generally tell that something has happened, where it's happening, and what it is related to, such as "port 16 is having problems with duplex mismatch," or "port 4 dropped a packet -- out of memory."

Uplogix gathers SYSLOG messages over console (the most reliable method) and time and date stamps according to UDP. They are used along with device stats to generate traps.

- ▶ **Traps** | These are alarms based on pre-determined rules and thresholds using device statistics and SYSLOG data, such as "if more than three malloc errors occur in five minutes" or "utilization > 50%" send an alarm. Centralized tools receive traps via SNMP on a best effort basis, which means a device can generate and send a trap, but doesn't know if it arrives. Likewise, traditional management tools don't know that a device sends a trap unless it is actually received.

With Uplogix, traps are generated by the LM rules engine, which uses parameters and thresholds modeled on Cisco TAC best practices. Uplogix LMs store and forward traps on a guaranteed delivery basis. So when a trap is generated, centralized tools will receive it even if the network is not available.

Conclusion

Most centralized management systems have comprehensive and very powerful centralized reporting and analysis capabilities designed to allow IT administrators to make sense of problems in complex systems and to maintain an overall sense of the health of the operating environment. Local management can improve these systems by adding device state and performance data that can only be collected via direct console port connection, thereby augmenting the SNMP and Syslog data typically relied on by centralized consoles.

ABOUT UPLOGIX // Uplogix provides the industry's first local management solution. Our co-located management platform automates routine administration, maintenance and recovery tasks—securely and regardless of network availability. In comparison, traditional network and systems management depends on the network, uses multiple tools, and remains labor intensive. Uplogix puts the power of your most trusted IT administrator everywhere, all the time.

Uplogix is privately held and headquartered in Austin, Texas. For more information, please visit www.uplogix.com.

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