



UPLOGIX



UPLOGIX WHITE PAPER

## Automating VSAT Networks with Uplogix Local Management

WWW.UPLOGIX.COM



For more information about Uplogix support for VSAT networks, see [uplogix.com/VSAT](http://uplogix.com/VSAT)

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## Executive Summary

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Uplogix offers a new approach to reducing the risk, cost and complexity of supporting VSAT network environments. Uplogix Local Managers (LMs) co-locate and connect serially with network and satellite communications equipment to provide non-stop local management and control.

Using device manufacturers' best practices and an integrated rules engine, Uplogix LMs can solve most common device problems autonomously. The level of automation is completely configurable to fit different deployment scenarios and network management requirements. Before Uplogix, many errors with devices in VSAT deployments required a site visit by a technician or an admin at the NOC attempting to recruit someone onsite to troubleshoot sensitive equipment.

If Uplogix can't fix a problem autonomously in VSAT deployments, the LM uses an integrated modem to dial out to cellular or low-earth orbit (LEO) satellite to establish a secure, out-of-band connection giving the NOC access to remote devices.

Uplogix offers a solution proven in the industry with companies like Harris Caprock as part of their standard VSAT deployment to some of the most extreme environments on the planet. They have found that Local Management lowers the cost and increases the reliability of their VSAT networks.

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## The Challenge of Managing Remote VSAT Networks

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Satellite communications represent a cost effective and reliable means of transporting voice, video and data to and from remote locations. However, as the adoption of satellite-based communication networks continues to grow, so do the management challenges.

For example, the convergence of voice, video and data transmission via satellite is driving increased demands on the network to deliver uninterrupted availability, reliability and security. And, as more mission critical applications become dependent on the network, tolerance for network problems approaches zero.

In particular, maintaining high availability of satellite networks at remote locations presents a number of unique management challenges for operational and IT staff. Communications are often disrupted due to environmental interference which can require a dispatch of a service technician to the remote site to re-establish connectivity. Likewise, routine network maintenance such as re-provisioning an antenna controller or upgrading a router's operating system with the latest security patch often necessitates a costly on-site visit. Addressing a satellite network outage on an isolated oil platform in the North Sea, for example, can be a very expensive, difficult and time-consuming challenge for any IT staff.



Existing network monitoring tools fall short of meeting these challenges because they only work in-band, or when the network is up, and lack the automated capabilities to correct problems without manual intervention. IT staff have been left to manage with tools designed for centralized, terrestrial-based networks that are not able to respond to the unique challenges of satellite-based communications.



### KEY BENEFITS OF LOCAL MANAGEMENT FOR VSAT

#### BUSINESS BENEFITS

- Reduces the time and resources spent on satellite network maintenance, support and recovery
- Increases business availability by providing “always-up” network monitoring and management
- Enforces management security and enables compliance even during outages
- Centralizes and standardizes control of core and remote network infrastructure

#### TECHNICAL BENEFITS

- Immediately diagnoses and repairs service failures through intelligent automation
- Minimizes on-site tech support and engineer visits to remote locations with out-of-band connections and automation
- Provides a single point of management control for both terrestrial and satellite-based network equipment
- Delivers continuous monitoring data and management control even during outages

### Uplogix Lowers Support Costs Through Automation

Uplogix automates hundreds of routine network maintenance and recovery tasks to help organizations both reduce their remote support costs and operator errors through best-in-class, standardized procedures. The level of automation is completely configurable to fit different deployment scenarios and network management requirements.

Automated capabilities of Local Management include:

- ▶ Detecting and diagnosing equipment and communications failures
- ▶ Executing pre-defined, best-practice recovery procedures
- ▶ Provisioning and re-provisioning services
- ▶ Configuring devices via remote administration
- ▶ Measuring and managing remote network service levels from an end-user's perspective

## Uplogix Solutions for VSAT

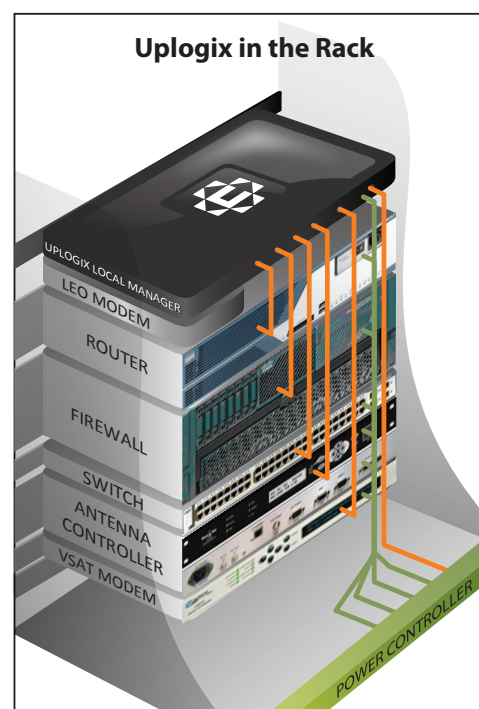
Uplogix offers a new approach to reducing the cost and complexity of supporting satellite network environments. Uplogix Local Management combines automation with the ability to enable operators to remotely monitor and control both satellite and terrestrial-based network equipment. The Local Managers co-locate and connect serially with network and satellite communications equipment. With functionality to connect as needed through alternative means such as a LEO satellite system, Uplogix can provide non-stop local management and control.

Administrators can manage all Uplogix LM's via the Uplogix Control Center—a centralized, web-based portal that presents a full inventory of both Uplogix LM's and the infrastructure equipment connected to them. Working via the Control Center console, operations staff can schedule and coordinate all network maintenance and management operations to be performed by Uplogix. In addition, the Control Center serves as the central repository and reporting interface for all data collection and audit logs provided by the LM's.

Whether deployed on a windswept drilling platform in the North Sea, an undisclosed desert location, or the remote office of a small bank in a developing country securely connected to corporate headquarters through a satellite link, Uplogix increases uptime and functionality in VSAT networks, primarily through use of the following features and functionalities uniquely integrated into a single device.

### Secure Out-of-Band Access

The ability to connect out-of-band is a requirement for remote management of satellite networks. Uplogix solutions don't rely on the network to manage the network. With multiple backup modem options including LEO satellite using Iridium or Globalstar, cellular via CDMA or GPRS, or PPP/dialup through an internal v.92 or external DB-9, Uplogix LM's can automatically (or on command) reestablish connectivity to the NOC and the Uplogix Control Center via a secure out-of-band path. This enables secure, always-on access and connectivity to the remote devices you need to manage.



## Power Management

Satellite network infrastructure devices can enter states that are not recoverable through normal remote administrative commands. This often leads to a hard reboot, which requires power cycling the device and is not possible without local control. Uplogix achieves this control by combining the functionality of remote power management through a physical connection to a PDU over the console port with the intelligence of the Uplogix Local Management Platform.

Power to non-responsive remote devices can be controlled as well as more complex recovery actions such as recovering from a failed configuration change. For example, Uplogix can power cycle a satellite modem, break into the reboot sequence and restore the last known good configuration file for the device—all within seconds and without having to dispatch a support technician on-site.

## GPS Integration

Uplogix provides special support for VSAT modems in a mobile state with GPS integration. The GPS device is connected directly to the Uplogix LM which passes the information on to the satellite modem. If the GPS information is interrupted, the embedded rules engine in the LM continues to feed the modem the last known coordinates, preventing the modem from locking up. This location information is also stored internally and can be transferred to the Uplogix Control Center for compliance with regulations governing documentation of vessel location.





## Auto recovery with SurgicalRollback™ from Uplogix

When a device fails due to a configuration or software problem, the immediate need is to bring the device back online by restoring it to its previous working state. Uplogix can immediately roll the device back to the last known good configuration using the unique SurgicalRollback™ feature—an automated safety net to recover from configuration errors without requiring an on-site visit.

### How SurgicalRollback Works

1. Utilizing an out-of-band connection such as a LEO satellite, the administrator connects and authenticates to the co-located Uplogix LM via secure (SSHv2) connection. Uplogix initiates a connection to the failing device and starts a terminal connection.
2. During the terminal initialization to the device, a current running configuration is cached by Uplogix.
3. The administrator makes changes to the device and executes OS commands for the device.
4. If the user logs out of the device during the session or loses connection due to a configuration error, or loss of the satellite signal, a running configuration is pulled again by Uplogix.
5. A list of changes made during the session is collected and Uplogix prompts the user with a confirmation to accept, reject or delay the changes made. If the user session times out due to configuration error or general inactivity after a configurable amount of time, the LM backs out all uncommitted changes made during that session. The default action is to rollback all uncommitted changes and start a countdown to SurgicalRollback. If there is no response, the LM will roll back only changes made to the device, bringing the device back to its initial working state.

### How SurgicalRollback Works



Connects and authenticates to Uplogix via secure (SSHv2) connection

Connects to device via Uplogix

Initiates a terminal connection to device



During the terminal initialization to the connected device, a current running configuration is cached by the Uplogix LM



Makes changes to the connected device

Executes OS commands for the device



If during the session the user logs out of the device or loses connection due to a configuration error, a running configuration is pulled again

Generates a list of changes made during the session and prompts the user with a confirmation to accept, reject or delay the changes made. If the user session times out due to configuration error or general inactivity after a configurable amount of time, the LM backs out all uncommitted changes made during that session.

The default action is to rollback all uncommitted changes

Starts countdown to SurgicalRollback

If no response, Uplogix will rollback only changes made to the device

Logs event and changes and sends data to Control Center for reporting purposes

### Proactive alerting

In the same time it takes traditional network monitoring tools just to discover a problem at a remote site, Uplogix can find it, fix it, and alert that the problem has been resolved.

Alerts are based on permissions:

- ▶ Users/groups subscribe to resources they are responsible for to receive emailed alerts containing alarms about that resource.
- ▶ Subscriptions define which network device resources a given user will receive alerts for.
- ▶ Users will receive alerts for any resource on which they have permission and are subscribed to.
- ▶ Each alert is sent with currently active alarms and the relevant data matched to each alarm condition.

### Service Level Verification

The Uplogix Local Management platform includes Service Level Verification (SLV) which monitors, measures and manages the performance of critical network services and applications from an end-user's perspective, including TCP/IP communications, web-based transactions and voice over IP (VOIP) telephony.

Uplogix LMs capture 40 specific QoS metrics that reflect the health of the IP-based telephony system using standard Harvard sentences and "tone" tests to gauge IPT performance and monitors important metrics such as jitter, latency, packet loss, MOS scores, and R values. By performing continuous active testing to measure QoS performance indicators, Uplogix enables enterprises to more quickly diagnose issues and resolve them, before they impact business operations.

## CASE STUDY: Harris CapRock

The Global Connectivity Services business of Schlumberger was acquired by Harris and combined with CapRock Communications and continues to provide secure, reliable communications for oil and gas customers with locations around the world. A core team of highly skilled network engineers manages this global communications infrastructure, providing 24/7 proactive monitoring and management of the underlying network and communications equipment.

The group's primary objective with Uplogix was to optimize their service offering by deploying a next generation communication management solution that could automatically detect, diagnose and resolve network-related faults and improve end-to-end communications from global teleports to customers' remote locations. Having this type of solution in place would help the IT staff provide more proactive technical support, reduce trips to resolve service outages and enhance management of the communication infrastructure supporting the customer network. Management also wanted to offload and improve the routine maintenance operations being performed manually, such as provisioning and configuring devices.

### Ensuring Constant Connectivity

By leveraging out-of-band capabilities, Uplogix LMs are always able to manage Harris CapRock's network even when the main satellite broadband link is down or degraded. Since the LM is serially connected to all devices under management, it continues to monitor and control connected devices in the case of an outage. Uplogix will automatically establish an alternate management connection via integration with an external modem to a LEO satellite in order to send important monitoring, logging, and audit data back to the Uplogix Control Center for staff to see and use.

This unique capability has helped Harris CapRock staff greatly improve both the quality and availability of service they provide their customers by enabling them to more quickly and correctly triage support events and remotely resolve critical service problems. Now Uplogix ensures that a secure communications path is always available between the site under management and the NOC, and that staff has



Harris CapRock delivers uncompromising communications solutions to customers anywhere in the world. The company's end-to-end solutions provide customers with integrated fixed and mobile satellite communications and network services.

Harris CapRock serves its customers through three primary markets: Energy, Government and Maritime.

Headquartered in Houston, Texas, Harris CapRock's global assets include four self-owned and operated teleports, eleven regional support centers, four 24/7 Network Operations Centers (NOC's) and partner global networks strategically located around the world. Whether on a ship at sea, an offshore oil platform or stationed at a critical support facility, customers have access to the same communication capabilities found at the corporate office.



constant access and visibility with up-to-the-minute performance statistics from all networked sites under management.

### Minimizing Tech Support Trips

Before deploying Uplogix, when communications went off-line due to an outage or service disruption, the electrical or barge engineer onboard an offshore platform was conscripted to become the eyes and ears of the Harris CapRock engineers back at the NOC to troubleshoot the problem. If the problem could not be solved due to the lack of local technical expertise, language barriers, or personnel availability on the rig, a support technician would be dispatched to solve the problem. The Mean Time to Recovery (MTTR) could therefore take many hours or even days, depending on the rig's location and availability of technical expertise.

Uplogix minimizes these costly inefficiencies by continuously monitoring, diagnosing and autonomously repairing service-related problems within minutes. If the co-located Uplogix LM cannot fix the problem on its own, it forwards, through a secure out-of-band path, detailed performance and diagnostic data as well as recommended recovery actions to Harris CapRock's NOC engineers so that they can remotely repair the problem and restore service without having to send a technician on-site.

### Reducing Configuration Errors

Satellite communications are subject to frequent service disruptions caused by interference due to bad weather. To restore service, Harris CapRock's operational staff often has to reconfigure and re-provision devices, such as satellites, antenna controllers and other communications equipment. This manual process can be both time-consuming and occasionally error-prone.

A rules engine in the Local Manager automates this routine maintenance by applying best-practice procedures provided by the device manufacturer. The Uplogix platform's automated capabilities have helped provide Harris CapRock's staff with a secure, consistent and repeatable approach to remotely perform these routine maintenance tasks error-free with minimal manual intervention required.

## Conclusion

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Maintaining high availability of satellite networks at remote locations presents a number of unique management challenges for operational and IT staff. Current network monitoring tools fall short of meeting these challenges because they only work in-band, or when the network is up, and lack the automated capabilities to correct problems without manual intervention. By their very nature, most VSAT implementations are in locations that are difficult to get to, or not staffed with dedicated IT personnel.

The Uplogix Local Management platform offers a new approach to reducing the cost and complexity of supporting VSAT network environments. Uplogix Local Managers enable operators to remotely monitor and control both satellite and terrestrial-based network equipment. The LMs co-locate and connect serially with network and satellite communications equipment to provide non-stop local management and control.

Uplogix automates numerous network support, maintenance, configuration and recovery procedures—reducing the time, cost and error associated with manual support of remote VSAT network deployments.

To learn more about Local Management from Uplogix, please visit us online or contact us for a technical demo and free evaluation of the benefits of Uplogix in your infrastructure:

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- ▶ [sales@uplogix.com](mailto:sales@uplogix.com)
- ▶ 877.857.7077

**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](http://www.uplogix.com).

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