



UPLOGIX WHITE PAPER

## Automating VSAT Networks with Automated Remote Management

WWW.UPLOGIX.COM



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

Contents

Executive Summary . . . . . 1

The Challenge of Managing Remote VSAT Networks . . . . . 2

Local Control of Remote Networks . . . . . 3

    Together, Uplogix ARM Appliances and the Uplogix  
    Control Center Lower Support Costs Through Automation . . . . . 4

Uplogix Solutions for VSAT . . . . . 4

    Secure Out-of-Band Access . . . . . 5

    Power Management . . . . . 5

    GPS Integration . . . . . 6

    Auto recovery with SurgicalRollback™ from Uplogix . . . . . 6

    Proactive alerting . . . . . 7

    Service Level Verification . . . . . 7

ROI Example: Schlumberger. . . . . 8

    Ensuring Constant Connectivity . . . . . 8

    Minimizing Tech Support Trips . . . . . 8

    Reducing Configuration Errors . . . . . 9

Conclusion . . . . . 9

## Executive Summary

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Uplogix offers a new approach to reducing the risk, cost and complexity of supporting VSAT network environments. Uplogix Automated Remote Management (ARM) appliances 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 appliances 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, the ARM appliance uses its integrated, external modem to dial out to a 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 Schlumberger as part of their standard VSAT deployment to some of the most extreme environments on the planet. They have found that ARM 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 capa-

bilities 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 ARM 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
- 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 ARM Appliances Lower Support Costs Through Automation

Uplogix appliances automate 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.

Uplogix appliance’s automated capabilities 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

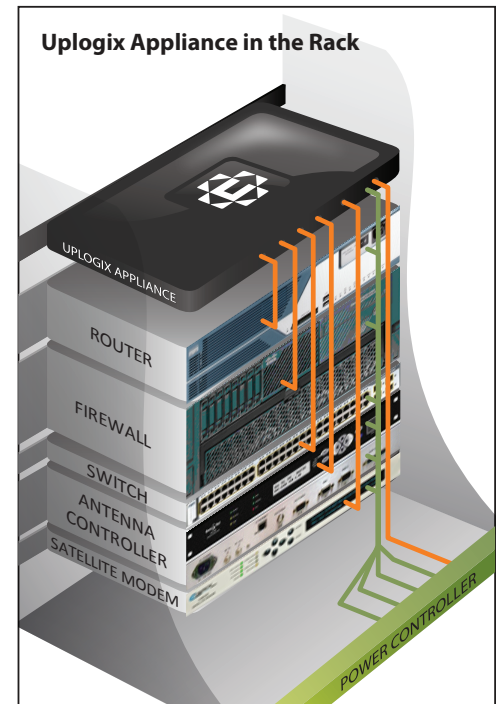
Uplogix offers a new approach to reducing the cost and complexity of supporting satellite network environments. Uplogix Automated Remote Management appliances combine automation with the ability to enable operators to remotely monitor and control both satellite and terrestrial-based network equipment. The appliances 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 appliances via the Uplogix Control Center—a centralized, web-based portal that presents a full inventory of both Uplogix appliances 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 appliances. In addition, the Control Center serves as the central repository and reporting interface for all data collection and audit logs provided by the appliances.

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 appliance.

### 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 ARM appliances 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.



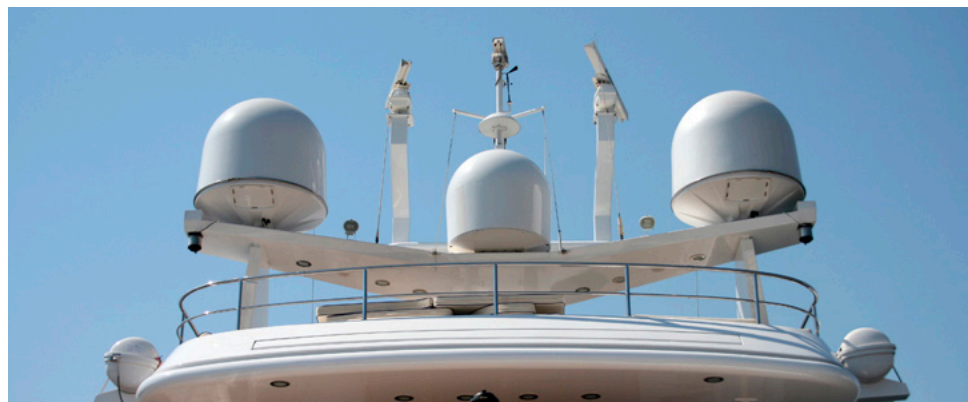
### Power Management

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 Remote Management Operating System (RMOS).

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 appliances 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 appliance which passes the information on to the satellite modem. If the GPS information is interrupted, the embedded rules engine in the Uplogix appliance 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 appliance via secure (SSHv2) connection. The appliance 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, a running configuration is pulled again by Uplogix.
5. A list of changes made during the session is collected and the Uplogix appliance 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 appliance 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 appliance 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 appliance

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 appliance 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 Advanced version of the Uplogix RMOS 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 appliances 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: Schlumberger

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The Remote Connectivity Group within Schlumberger Information Solutions is responsible for providing secure, reliable communications for oil and gas customers with locations around the world. Schlumberger's primary objective 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.

### Ensuring Constant Connectivity

By leveraging out-of-band capabilities, Uplogix appliances are always able to manage Schlumberger's network even when the main satellite broadband link is down or degraded. Since the appliance is serially connected to all devices under management, it continues to monitor and control connected devices in the case of an outage. The appliance 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 Schlumberger's staff to see and use.

This unique capability has helped Schlumberger 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 appliances ensure that a secure communications path is always available between the site under management and Schlumberger's NOC, and that Schlumberger's staff has 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 Schlumberger 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.

## Schlumberger

Schlumberger is the world's leading oilfield services company supplying technology, information solutions and integrated project management that optimize reservoir performance for customers working in the oil and gas industry. The company employs more than 64,000 people of over 140 nationalities working in more than 80 countries.



Uplogix minimizes these costly inefficiencies by continuously monitoring, diagnosing and autonomously repairing service-related problems within minutes. If the co-located appliance 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 Schlumberger'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, Schlumberger'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.

The Uplogix Remote Management Operating System (RMOS) is the intelligence behind ARM. A rules engine in the RMOS automates this routine maintenance by applying best-practice procedures provided by the device manufacturer. The Uplogix platform's automated capabilities have helped provide Schlumberger 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 staff.

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

Uplogix appliances have shown that ARM can automate 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 Automated Remote Management from Uplogix, please visit us online or contact us for a technical demo and free evaluation of the benefits of ARM in your infrastructure:

- ▶ [uplogix.com](http://uplogix.com)
- ▶ [sales@uplogix.com](mailto:sales@uplogix.com)
- ▶ 877.857.7077 (North America)
- ▶ 44(0)207 193 2798 (EMEA)

**ABOUT UPLOGIX //** Uplogix provides the first fully-integrated remote management solution. Our collocated management appliances automate routine administration, maintenance and recovery tasks—securely and regardless of network availability. In comparison, traditional network and systems management requires multiple tools, relies on the network, 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 with European offices in London. For more information, please visit [www.uplogix.com](http://www.uplogix.com).

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