



Telemetry Networks: Monitor and Control Remote Sites

Optimize Management of Remote Site Equipment

Remote Site Management Challenges

Large network operators – including mobile wireless providers, wireline carriers, infrastructure-based service providers, utilities, and government agencies – are under constant financial and competitive pressure to improve the quality, breadth, and profitability of their services. Yet operating, maintaining, and securing a wide-area telecom or data control network grows ever more complex. Network administrators must monitor and control numerous heterogeneous elements, often at distant, unmanned locations with limited connectivity. Elements at these remote sites typically span multiple generations of equipment and overlay networks, with each one using a separate management platform and legacy communication protocol. This drives up requirements for site access equipment – and administrative costs.

To alleviate these limitations, an effective telemetry solution must:

- Allow plug-and-play operation to quickly accommodate future services
- Enable fast, efficient access to remote network elements
- Support remote IP connectivity to each site and each device
- Permit protocol/topology segmentation for security reasons
- Integrate easily with network performance platforms

Examples of telemetry network functions include mobile wireless cell site management and SCADA-based monitoring and control of remote sub-stations within utility networks. Figure 1 illustrates possible telemetry requirements in a mobile wireless carrier's network.

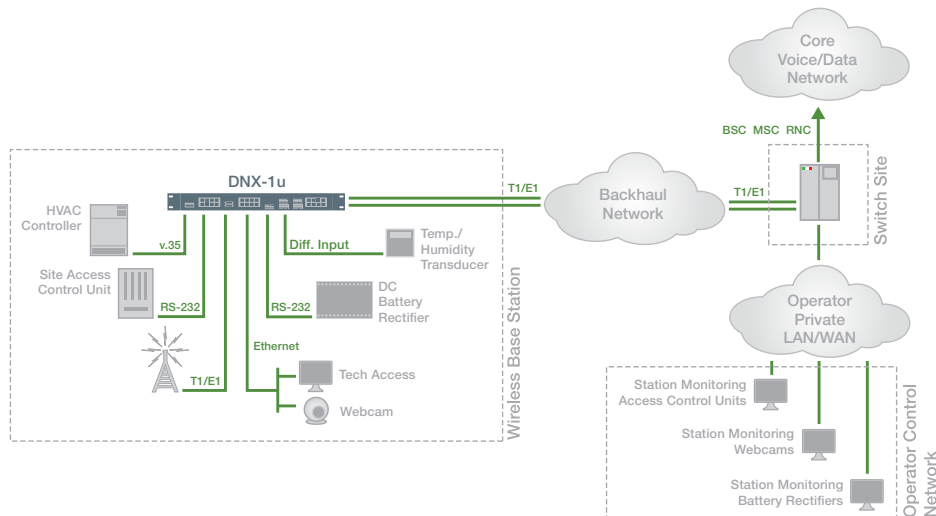


Figure 1: Mobile Wireless Telemetry Environment

Features and Benefits

- Legacy Equipment Consolidation
- IP-Based Management and Diagnostics
- Remote Element Visibility and Control
- Pre-Dispatch Alarm Isolation and Analysis
- Truck Roll, Rack Space, and Other OpEx Savings

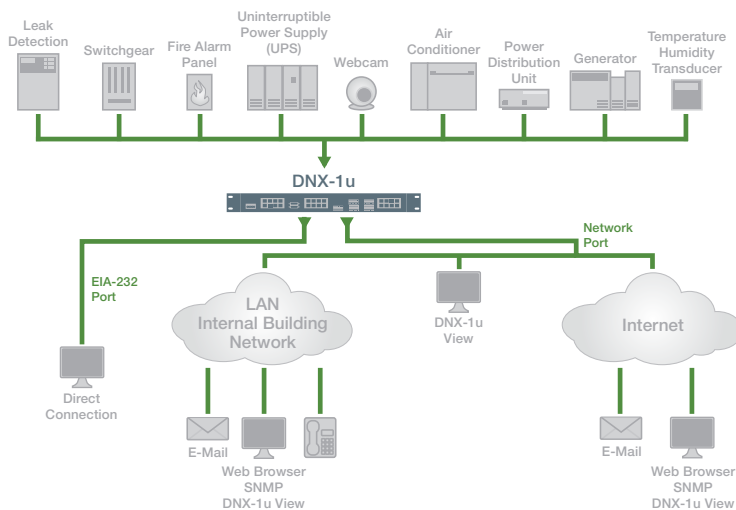


Figure 2: The DNX-1u Access Gateway – A Versatile and Compact Telemetry Solution

DNX-1u: An Integrated Telemetry Solution

The DNX-1u Access Gateway, Sycamore's answer to telemetry network challenges, combines multiple transmission interfaces and cross-connect functionality with sophisticated telemetry capabilities. Whether installed in a mobile network BTS/Node B, a utility sub-station, or a carrier POP, the DNX-1u allows most remote devices to be managed from a centralized location.

Analog inputs on the DNX-1u monitor signal levels and generate alarms when configurable thresholds are exceeded. Contact closures can be configured as general purpose outputs and remotely toggled to enable recycling of devices. The DNX-1u can also send alarm notifications via SNMP for integration with other network performance, monitoring and management tools.

Using the DNX-1u's Ethernet/IP connection, service technicians can quickly and easily access the central network to check email, view a work order, or conduct a remote test – improving operational efficiency and response times.

For mission-critical, high-availability telemetry applications, the DNX-1u offers multiple T1/E1 facility protection schemes (Automatic Protection Switching); and end-to-end path protection when used with the ENvision Plus Network Management System (NMS).

The DNX product line scales beyond the compact DNX-1u for applications requiring increased transmission capacity and interface options. DNX Cross-Connects can efficiently handle intermediate and centralized grooming and consolidate large telemetry networks onto narrowband and broadband facilities.

Benefits of an Integrated Approach

- **Better Informed Technicians** – Pre-dispatch alarm isolation and analysis
- **Faster Service Restoration** – Problem resolution in minutes rather than hours
- **Fewer Truck Rolls** – Eliminate unnecessary site visits
- **Reduced Operational Expenses** – Reduce truck rolls, travel time, and related expenses
- **Significant Soft Savings** – Minimize revenue losses due to service outages or dissatisfied customers

Example Network Elements

- **Power Management Systems** – Power distribution, battery back-up, and rectifiers
- **Heating, Ventilation and Air Conditioning Systems** – Temperature and humidity stability for environmentally sensitive equipment
- **Access Control Systems** – Card readers (entry and exit), door locking mechanisms, and logging software to record who entered/exited, and when
- **Surveillance Systems** – Closed-circuit video and Ethernet-based webcams provide 'active' remote security and visually identify visitors before permitting site access

For more information about our intelligent networking products and solutions, please contact your Sycamore Sales Representative.

Sycamore Networks, Inc. • 220 Mill Road • Chelmsford, MA 01824-4122, USA • Phone: 978-250-2900 • Fax: 978-256-3434 • www.sycamorenet.com

Sycamore Networks, Inc. (NASDAQ: SCMR) is a leading provider of intelligent bandwidth management solutions for fixed line and mobile network operators worldwide. From multiservice access networks to the optical core, Sycamore products enable network operators to lower overall network costs, increase operational efficiencies, and rapidly deploy new revenue-generating services.

Sycamore assumes no responsibility for the accuracy of the information presented, which is subject to change without notice. Sycamore and Sycamore Networks are trademarks or registered trademarks of Sycamore Networks, Inc. in the United States and/or other countries. Copyright © 2009 Sycamore Networks, Inc. All Rights Reserved.

