



Utility Network Optimization

Improve Operational Efficiency and Reduce Costs

Simplifying Modernization

Utility operators do more than deliver critical energy services. In a post-9/11 world, mounting regulations demand modernization while burdening operators with strict guidelines for survivability and security. Often, utility network operators are also asked to create additional revenue by selling unused bandwidth capacity along their right-of-way corridors. These imperatives entail streamlining operations and upgrading network systems.

Sycamore Networks DNX Cross-Connects and ENvision Plus NMS cost-effectively solve utility network challenges by providing more efficient circuit provisioning and remote management. Moreover, building resiliency into the network at all levels minimizes downtime and safeguards vital utility network infrastructure against natural or man-made disasters.

Utility Infrastructure

A utility network typically includes aging multiplexers connecting conventional telecom services (T1/T3, E1/E3) to low speed circuits for substation control systems (DS0 level). This consumes excessive rack space and power, complicates interconnections, and precludes interoperability with the IP services proliferating in utility networks.

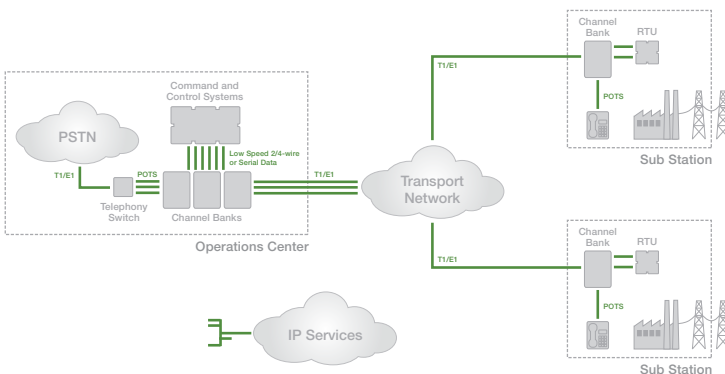


Figure 1: Typical Utility Network

Cost-Effective DNX Solutions

The DNX platform combines digital cross-connect, CSU, and multiplexer functions in a single, highly-reliable network element. Replacing multiple legacy devices reduces CapEx and OpEx and conserves rack space. Flexible bandwidth control allows grooming individual DS0s or groups of DS0s between substations and the central switching location, or at any other point in the transport network. Carrier-class, integrated circuit/packet processing accommodates growing IP-based services. Support for voice, low-speed data, SCADA, and other critical utility functions, and grooming this traffic onto the modernized network, eases the transition from analog to digital, and from copper to optical. DNX platforms also incorporate utility-specific features, like Rapid Trunk Conditioning, which prevents utility telecom link rogue line noise from tripping breakers prematurely.

Features and Benefits

- Legacy Telecom Equipment Consolidation
- Gradual Network Modernization
- Network Resiliency, Facility and Path Protection
- Disaster Recovery and Site Protection
- Remote Management and Integral Diagnostics

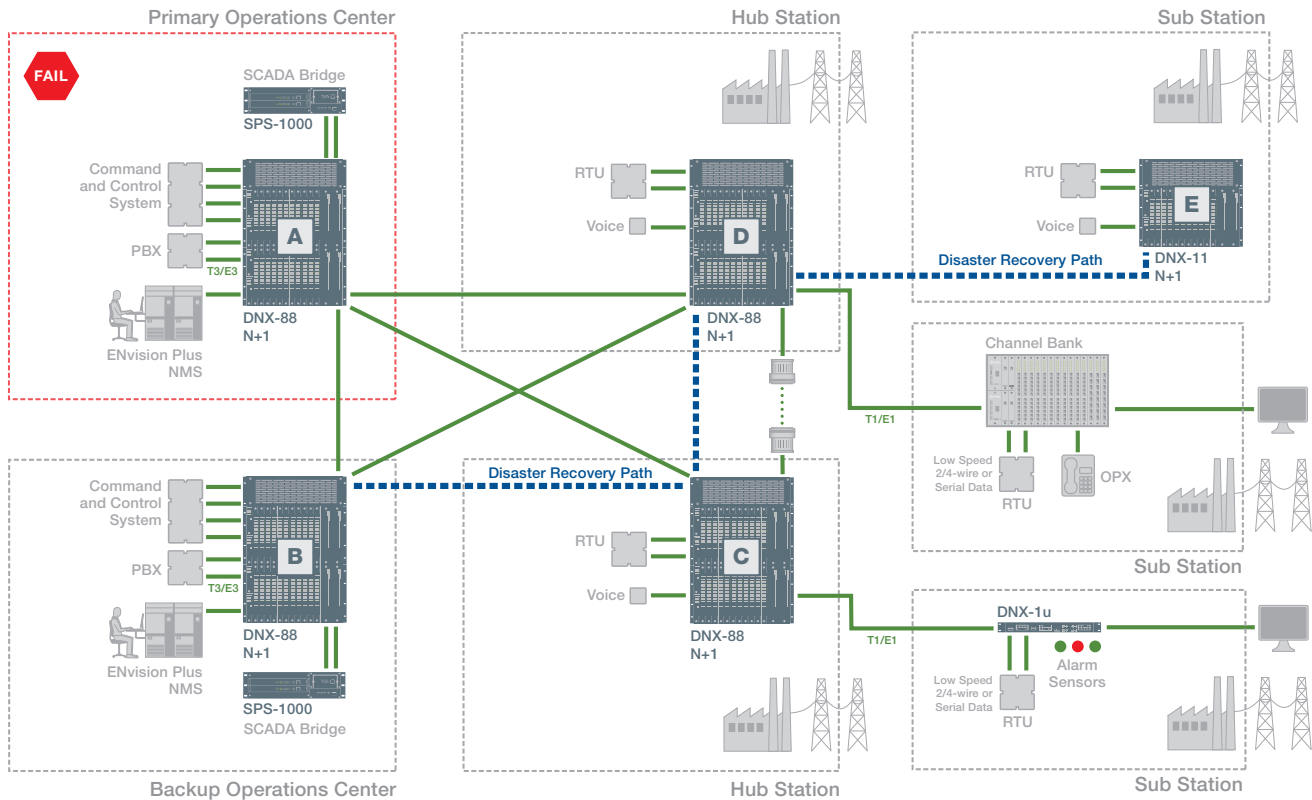


Figure 2: Path and Site-Level Protection in a Critical Infrastructure Network

Network operators use ENvision Plus to pre-provision for automated disaster recovery, including bulk activation of backup connections and reverting back to primary connections. For example, ENvision Plus can activate backup path B-C-D-E in the event of a primary NOC failure that disrupts normal path A-D-E.

Network Resiliency and Disaster Recovery

DNX systems offer redundant common components, service and protect optical interfaces, and N+1 redundancy for narrowband and broadband network interfaces. Automatic Protection Switching (APS) flexibly assigns working and protection links, with user-definable failover and recovery criteria to minimize or eliminate service disruptions.

ENvision Plus ensures path and site-level protection of DS0-level services (e.g., OPX, PBX trunks, and SCADA circuits) with real-time, automatic rerouting of traffic to alternate paths in the event of primary path failure, or operator-initiated rerouting to re-home the services endpoint to an alternate site. Utility network operators use ENvision Plus to pre-provision for automated disaster recovery, including bulk activation of backup connections and reverting back to primary connections. In the case of a site-level failure, automatically rerouting traffic along a recovery path to a backup location can save hours - even days - of critical recovery time, and help utility network operators meet NERC/FERC reliability requirements. ENvision Plus also allows fast circuit provisioning, automated diagnostics, remote site telemetry, and real-time performance monitoring.

Improve Efficiency While Reducing Costs

Evolving utility networks must be able to accept optical handoffs from the LEC or incorporate optical rings. The need for SONET to DS0 level capability is one of the driving forces behind updating utility network architecture. DNX optical interfaces enable operators to provision and test individual DS0s all the way up to OC-3/STM-1. Acting as an access concentrator, the DNX platform efficiently aggregates low speed interfaces. Grooming discrete T1s into broadband interfaces conserves valuable ports on voice and data service delivery platforms, deferring or eliminating further investment in these platforms.

Sycamore Networks helps utility network operators address pressing operational and business challenges with solutions that make economic sense today and expand possibilities for the future.

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

