



OATN SERVICE MODEL

The OATN is the most advanced telecommunications network in the region, with a service model that sets a new standard for telecommunications providers in the North Country. The network delivers carrier-class services to the underserved communities of the region, and provides economic development opportunities that did not previously exist.

The Authority has established (10) Points of Presence (POPs) in the North Country, all of which provide connectivity to a gateway in Syracuse. The POPs include:

- Watertown
- Gouverneur
- Canton
- Potsdam
- Massena
- Ogdensburg
- Alexandria Bay
- Lowville
- Pulaski
- Syracuse

These ten (10) POPs have the infrastructure capable of delivering advanced telecommunications services, including Ethernet (10/100/1000), ATM, SONET (OC-3/12/48/192) and TDM (DS-1/DS-3) to a variety of carrier, public, and private institutions throughout the North Country. These services can support all TDM and IP-based applications, including Internet, Video/Distance Learning, Storage Area Networks (SANs), and other advanced applications.

TECHNICAL OVERVIEW

The Development Authority of the North Country (Authority) has created the Open Access Telecommunications Network (OATN), providing the necessary foundation that is needed to stimulate economic development in the North Country. By supporting the changing telecommunications needs of our business institutions and educational facilities, the OATN positions the region for job growth.

Utilizing the most advanced telecommunications equipment available in the core of the network, the system is designed to provide carrier-class services, and be scalable to accommodate future growth. At the heart of our technical solution is a next-generation OC-192 Synchronous Optical Network (SONET) platform, providing optical transport and connectivity. The SONET platform offers exceptional versatility and functionality. Most notable is Resilient Packet Ring (RPR) technology, which provides The Authority with the ability to segment OATN customers' Ethernet traffic on the optical network while still providing all of the benefits inherent with SONET technology. RPR, as a standards-based service offering, not only

provides optimized bandwidth utilization, but has the ability to interconnect to other common carriers and large customers as the OATN network grows. In addition to providing Ethernet connectivity for customers, the network accommodates Asynchronous Transfer Mode (ATM) switching and traditional Time Division Multiplex (TDM) services. The Multi-service ATM Switch is a versatile and scalable platform that supports a broad range of services with carrier-grade reliability while offering a seamless path for network growth. The Multi-service Switch also supports frame relay, IP routing and switching, MultiProtocol Label Switching (MPLS), circuit emulation and voice services that enable the Authority to provide a host of other service offerings.





ABOUT DEVELOPMENT AUTHORITY OF THE NORTH COUNTRY

The Development Authority of the North Country is a New York State chartered public benefit corporation created in 1985. Its service area is Jefferson, Lewis and St. Lawrence counties. The Development Authority was created to address the infrastructure and community development needs of the region. Its mission is to enhance the health and well-being of its communities.

ABOUT NORTEL

Established more than a century ago, Nortel has a proud tradition of innovation and global leadership in shaping the evolution of communications. Today, Nortel delivers networking and communication services infrastructure to service providers and enterprises in more than 150 countries. Specializing in designing and building optical networks for service providers and their enterprise customers, Nortel Networks leads the industry with more than 250,000 optical network elements deployed in more than 1,000 customer networks in 65 countries.

OATN Backbone

The core of the OATN is built on a SONET OC-192 platform. The OC-192 platform provides 10 GB/s of bandwidth that can be delivered to other Carriers and end-users as TDM (DS-1/DS-3, OC-X), Ethernet and ATM Switching. The backbone is comprised of an OC-192 with (9) network elements installed in POPs on the main ring. Lowville is connected via an OC-48 subtending ring.

RPR/Ethernet

Resilient Packet Ring (RPR) provides a standard resilient methodology for delivering ring based Ethernet services natively over SONET. The use of RPR to deliver Ethernet to customers allows them to enjoy a “cloud” based switched service that provides “any-to-any” Ethernet connectivity directly between sites. This capability is increasingly important as multimedia traffic increases in importance. Also a key feature is the ability to identify Ethernet destinations, and connect them directly over the OC-192 using the shortest path, without having to leave the ring, get routed, and rejoin the ring. The 2.5 GB RPR allows traffic to traverse the ring in both directions using the shortest path. All Gigabit Ethernet connections from the SONET mux’s terminate in aggregation switches. Using RPR configuration tools, the Authority can control bandwidth limits and traffic direction, while providing the highest levels of security. Future scalability of the design is simple as adding RPR instances, VPNs, if applicable, and load balancing.

TDM (DS-1/DS-3)

The OATN provides traditional TDM services including DS-1 and DS-3. All TDM services are delivered over our SONET backbone and distributed from our POP locations. TDM services are typically delivered to customer premise locations over fiber, using optical modems.

SONET/Wavelength Services

SONET is a proven-reliable standard for optical transmission. The Authority offers all standard SONET transmission services to its customers, including OC-3, OC-12, OC-48 and OC-192. The Authority also makes a full range of wavelength services available to its customers.

NETWORK MANAGEMENT

ATM Switching

The Authority's Multi-service ATM Switch is an extremely versatile element in the OATN. Following are some of the data services that can be offered by the Development Authority:

- ATM (Ds-x, OC-x)
- Ethernet
- Frame relay

Virtual Private Networks

The OATN features a powerful range of standards-based Internet Protocol (IP) routing protocols, interfaces and services. The premier IP services are its network-based IP Virtual Private Network (IPVPN) solutions. Two different IPVPN services are available — one based upon RFC2764 and the other based on the RFC2547bis draft. The RFC2764 solution is optimized for an ATM core while the RFC2547 solution is optimized for an MPLS core. These value-added VPN solutions provide an excellent service differentiation delivered on a carrier-grade Multi-service Platform. IPVPN solutions provide a scalable, IP QoS enabled, cost efficient solution. They allow OATN customers to take advantage of L3 VPN service at a low cost.

Layer 2 Service Interworking

The Authority offers a robust Frame Relay and ATM feature set. As Ethernet has become increasingly popular in the market, it has been added to the OATN's portfolio of Layer 2 services. The OATN has expanded its service offerings to provide layer 2 services that interwork with, and can be carried across, an MPLS core.

SONET/SDH Interfaces

The Multi-service Switch provides an extensive inventory of optical interfaces for both access and trunking applications. These optical interfaces support both SONET and Synchronous Digital Hierarchy (SDH) standards and allow for inter-working with other SONET/SDH devices to provide for more flexible network architectures.

Voice Over Applications PVG Solutions

Our Multi-service Switch supports the flexibility of providing voice over ATM using AAL-2 (VoATM) or voice over IP (VoIP).

The OATN is monitored from our Network Operations Center (NOC) in Watertown. The NOC provides our OATN engineers with complete visibility to all core network equipment. OATN engineers are aware the moment that service is affected and have the ability to take remedial action.

The Authority has a comprehensive provisioning and monitoring system based on the following tools:

- **Preside Multi-service Data Manager** for the 15K Multi-service Switch to handle the monitoring and configuration aspects of the ATM network.
- **Preside Site Manager** for the Optical Metro 3500 network which handles fault and configuration of the SONET and RPR aspects of the backbone.
- **Ethernet Network Management System** for the overall discovery, topology and fault management, and monitoring of the different network layers in the Development Authority network, from the backbone to the Customer Provided Equipment (CPE). Optivity Network Management System (NMS) provides a centralized window to look at the health of the network.
- **Ethernet Switch Manager** for provisioning and configuration management of the enterprise-class data products, including the backbone aggregation and CPE products.

In addition to monitoring network equipment, the NOC also monitors environmental alarms at all POP locations to ensure that the equipment is secure and operating in a properly controlled environment.



Development Authority of the North Country

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Water & Sewer Facilities

Warneck Pump Station
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Watertown, NY 13601

315-782-8661

Solid Waste Management Facility

23400 NYS Route 177
Rodman, NY 13682

315-232-3236

Open Access Telecom Network

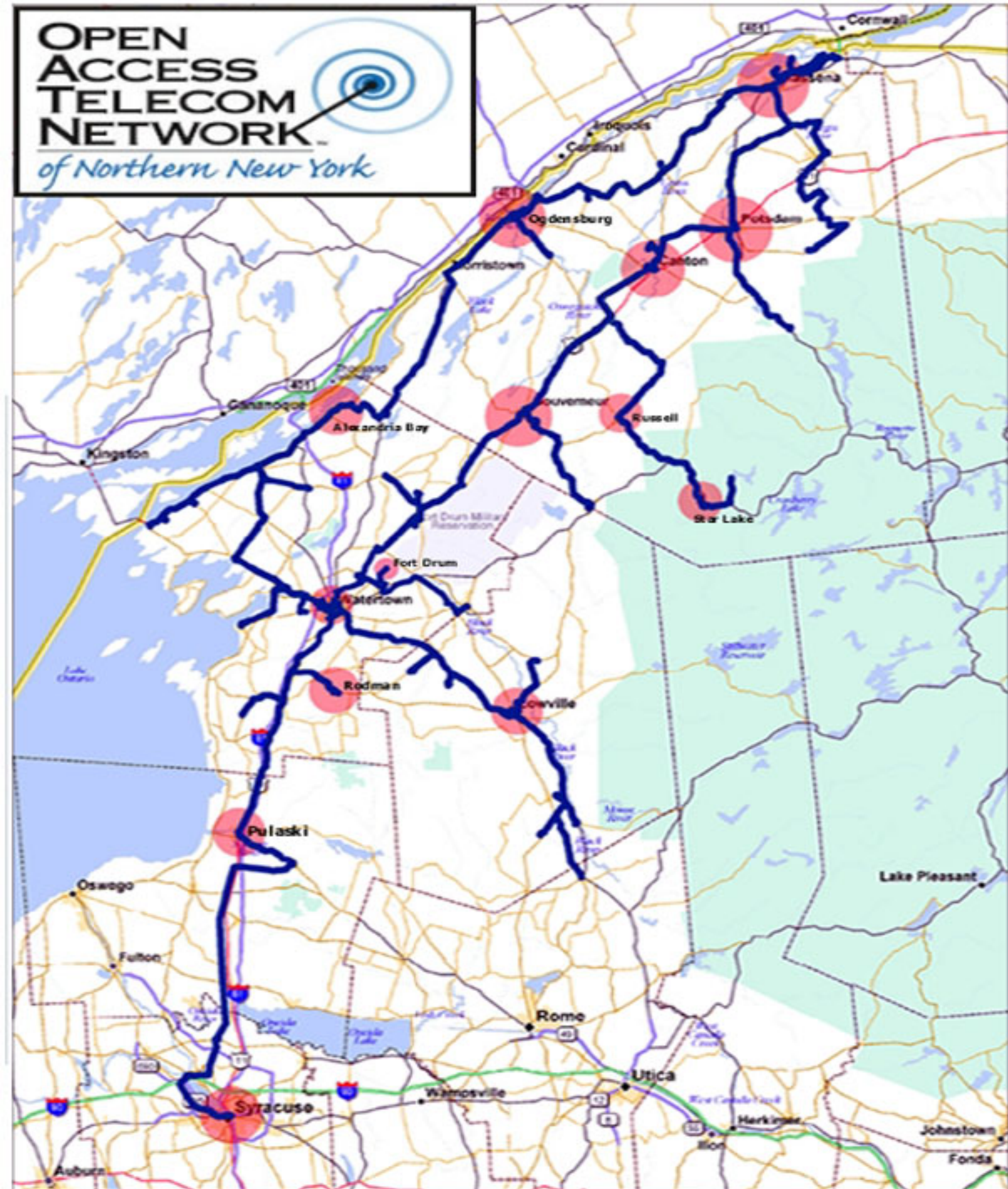
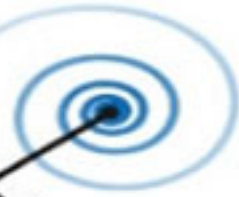
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www.danc.org

OPEN ACCESS TELECOM NETWORK™

of Northern New York



Over 750 miles of fiber and 14 Central Office (CO) locations including, Watertown, Alexandria Bay, Ogdensburg, Massena, Potsdam, Canton, Gouverneur, Fort Drum, Pulaski, Syracuse, Rodman, Lowville, Star Lake and Russell