

Get connected...

ORION is a not-for-profit, high-speed optical network dedicated exclusively to bringing broadband access and connectivity to Ontario's research and advanced education (R&E) community. Our 5,800-kilometre network links 21 communities throughout Ontario with one of the largest and most powerful research networks ever built.

What ORION allows you to do ...

- link to other ORION user organizations such as universities, colleges, research labs and teaching hospitals at Gigabit speeds;
- connect to CANARIE, Internet2 and other R&E networks around the world;
- access large shared genomic, biotech and other databases;
- undertake large data file transfers;
- enable virtual university and college classrooms or labs with students and facilities in different sites;
- apply new methods of learning and research among universities, colleges, research institutes;
- access a new platform for development and testing of new applications, services and technologies;
- develop new, real-time collaborative projects, including multipoint videoconferencing, grid-computing and advanced research applications; and
- partner with the private sector to undertake applied and theoretical research and development.

An advanced and reliable network ...

- Nortel Network's OPTera* Long Haul Optical Line System backbone;
- Cisco System's Cisco 7600 series routers;
- Optical wavelength capacities at 10 Gbps, scalable to 320 Gbps;
- Technologies incorporating Dense Wave Division Multiplexing (DWDM) at the transmission layer and IP (Internet Protocol) at the routing layer;
- Specialized services including optical light paths, ethernet circuits, wavelengths and VLANs;
- 24/7 network management, monitoring and trouble-shooting;
- Stringent network confidentiality and security; and
- Carrier-class power back-up.



Advanced Services

Advanced Research and Education Service

ORION's standard, default service consists of a point-to-multipoint data packet IP routing connection from any one of our 22 PoPs in Ontario, linking all ORION users to each other, to CANARIE and other Research and Education (R&E) networks around the world at Gigabit speeds. The demarcation point is the PoP where the user's circuit is terminated. The network operates two exit points to the CANARIE network at its downtown Toronto and Ottawa PoPs. ORION will peer with other neighbouring research and education (R&E) networks in the future. The service can deliver ORION and CANARIE routing tables via BGP to the user network edge router. Bandwidth utilization on the service interface may be capped to meet the user's traffic levels.

Layer 2 Transport for Special Projects

ORION can also provide specialized point-to-point high bandwidth connectivity for advanced research or special projects through Gigabit Ethernet circuits of up to 10Gbps, deploying a private high-capacity network between users, such as distributed and grid computing. ORION offers point-to-point Gigabit Ethernet circuits directly through the optical channel and bypassing Layer 3 data devices. The service's two demarcation points are the fiber patch panels at the optical ORION PoPs in the two destination communities. Layer 2 Transport is available between any two ORION PoPs throughout the network. The service has a guaranteed bandwidth of 1.25Gbps full duplex.

Shared Internet Service

The ORION Network Internet Service offers point-to-multipoint data packet IP routing service for access to the commercial Internet. The demarcation point is the ORION PoP where the user's circuit is terminated. ORION operates a single exit point to the public Internet at its Downtown Toronto PoP, but in the future may maintain peering points to route packets to external upstream service providers. The service can deliver full or partial Internet routing tables via BGP to the user network edge router. Bandwidth utilization on the service interface may be capped to meet the user's traffic levels. The service is available at each ORION PoP. Users are not required to subscribe to the ORION Network Internet Service as a condition of subscribing to the ORION Network and are free to make their own arrangements for Internet connectivity with commercial Internet providers.

VLAN Service

The ORION VLAN (virtual LAN Ethernet data transport) Service provides point-to-point connectivity, between two campuses for instance, or access to the Internet Service Provider (ISP) of the user's choice, through a point-to-point virtual circuit through the Layer-3 data devices that bypass the routing layer. The service's two demarcation points are the Ethernet ports on the ORION data equipment at the two ORION end PoPs. The service is available between any two ORION PoPs throughout the network. The service uses Ethernet transport at speeds of 10 or 100 Mps (megabit per second) full duplex, as required.

Supplemental Services

ORANO can also in some cases provide supplemental services in addition to the standard service, such as IPV6 and IP multi-cast as well as professional and technical consultation. Give us a call.



The ORION Advantage

Availability

Minimizing outages is one of ORION's highest priorities. Our network was designed and created to carry production-level traffic on behalf of our users, including critical research data, back-office business systems, classroom and teaching materials, data being transported to and from large databases, or general Internet traffic. Some of that traffic, such as classroom instruction is intolerant to interruptions, degraded service, or long outages. Our users expect a reliable and robust network and such an expectation can only be delivered with full network component redundancy that translates into carrier-class availability to the end user.

Security

ORION designs and configures its infrastructure with physical access security in mind. At each one of our 22 PoPs, our specialized equipment is situated in a secured computer room environment, accessible by authorized personnel only. Special configuration guidelines are followed on all switches, routers and servers, to prevent unauthorized remote access for read, write or relay operations. ORANO does not use dedicated firewalls to limit access to the network but upon requests from users will configure the on-site equipment with special packet filtering access lists. If denial of service attacks are observed by our Network Operations Centre (NOC) or reported by users, we install blocking filters on ORION's backbone routers in order to minimize the impact and work with the network users and service providers to track down and disable the source of the attack.

Back-up

ORION features advanced redundant power plants at each of its 22 PoP locations, with a minimum of 10 hours emergency power backup in case of outages or blackouts.

Support

The ORION Network Operations Centre (NOC) is available, year-round, 24/7. Our operators react to any sign of trouble detected by ORION's sophisticated Network Monitoring System (NMS) or reported by users or other third parties, to initiate a trouble resolution process. Our Network Management Centre uses SNMP and various custom and vendor specific tools to continuously monitor the network and alert the network operators to any unusual activities including outages, poor performance, and hardware or software failures. The NMS also collects data for analysis and network improvement.

Expertise

The ORION Engineering Team, among the most experienced telecommunications professionals in the country, is responsible for network design and technology planning and support. Our users can rely on their support and advice to ensure they have uninterrupted access to one of the world's largest and most advanced optical networking infrastructures.

*For more information, please contact:
Tim Kim, Business Development Consultant
416-507-9860 ext. 235 / tim.kim@orion.on.ca*

