Managed Private Optical Network

With applications like high-speed trading, medical imaging, content delivery, synchronous replication and cloud solutions, the demand for bandwidth continues to increase—exponentially. These applications place significant strain on available network resources, driving a need for increased scalability and performance.

Built to meet this increased demand, our Managed Private Optical Network (MPON) is a flexible, dedicated solution capable of supporting multiple technologies, protocols and applications across a wide area. MPON provides a turnkey, dedicated, private network with custom designed Dark Fiber routes, DWDM equipment installation and around-the-clock monitoring, maintenance and troubleshooting by our Network Operations Center.

MPON is a great option for organizations looking for a Dark Fiber solution that does not require in-house technical and operational personnel to install, monitor and troubleshoot the network.

Key Benefits

**Custom Solutions**
A custom, Dark Fiber, dedicated network with all of the privacy, security and bandwidth required that is more cost effective than building it yourself.

**Expertise**
Access to technical and operational teams without the need to staff DWDM expertise internally, reducing your technical risk and overhead.

**Service**
A single point of contact—as compared to working with multiple providers—increasing efficiency and peace of mind.

**Control**
Software and equipment updates performed on your schedule—minimizing network impact.

More than 25 Years of Expertise

**NYSE S&P 500**

**Our Solutions**
- Towers
- Small cells
- Dark Fiber
- Ethernet
- Wavelength
- Managed SD-WAN
- Internet Access
- **Private Networks**
  - Colocation
  - Cloud Connect
  - Optical Encryption
  - DDoS Defense
  - Bandwidth on Demand
  - Fixed Wireless
  - Ultra-Low Latency
  - Video Transport

For more information, please contact 1-833-635-0915 or visit CrownCastle.com
Key Network Features

- 25 years of experience applied to the design, installation, monitoring, maintenance and upgrade of advanced DWDM networks
- Multiple high availability options for fiber and equipment protection, giving you the uptime you need and a guaranteed SLA
- Enhanced security with private fiber and equipment, and optional FIPS-certified Layer 1 optical encryption adds extra protection for your data in flight
- Ability to engineer a design with the latest available equipment and software for higher density and peak performance
- Optimal fiber routes and equipment, with optional built-in upgrades to meet your future needs
- Monitoring and managing all DWDM nodes and fiber via an out of band management connection to our Network Operations Center
- 24/7 network surveillance and monitoring

Key Security Features (optional)

- NIST-compliant AES-256 encryption
- Elliptic Curve Cryptography (ECC) algorithms and certificates
- Diffie-Hellman secured key negotiation (including Elliptic Curve)
- x.509 certificate support for authentication
- Easily integrates into enterprise Public Key Infrastructure (PKI) using x.509 certificate-based authentication
- Support for Certificate Revocation List (CRL)
- Hitless AES-256 key rotation every second
- TLS-secured and mutually authenticated interface for encryption monitoring and management by customer personnel
- SNMPv3 support

Technical Specifications

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Key Solution Components</td>
<td>Dark Fiber between desired locations DWDM nodes with ROADM technology</td>
</tr>
<tr>
<td>Bandwidth Options &amp; Hand-off Protocols (non-encrypted)</td>
<td>- 1Gbps (plus): 1 GigE, OTU1</td>
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<td></td>
<td>- 10Gbps: 10 GigE, FC800/1200, OC-192/192c, OTU2</td>
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<tr>
<td></td>
<td>- 40Gbps: 40 GigE, OC-768, OTU3</td>
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<tr>
<td></td>
<td>- 100Gbps: 100 GigE, OTU4</td>
</tr>
<tr>
<td>Bandwidth Options &amp; Hand-off Protocols (Encrypted)</td>
<td>- 10Gbps: 10 GigE, FC800, FC1200, OC-192/192c</td>
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</tr>
<tr>
<td>Optional Protection Options</td>
<td>- Backup circuit on diverse route</td>
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<tr>
<td></td>
<td>- Optical Protection Switch for automatic failover to backup path</td>
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<td></td>
<td>- Guaranteed SLA options determined by the design you select</td>
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<tr>
<td>Bit Error Rate</td>
<td>1x10-9</td>
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<tr>
<td>Mean Time to Repair (MTTR)</td>
<td>4 hours</td>
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<tr>
<td>Availability</td>
<td>Configurations from 99.9% to 99.999% availability</td>
</tr>
<tr>
<td>Topology</td>
<td>Customized to meet your needs, ranging from a single point-to-point wave to multiple-ring networks</td>
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Crown Castle owns, operates and leases more than 40,000 cell towers and approximately 85,000 route miles of fiber supporting small cells and fiber solutions across every major US market. This nationwide portfolio of communications infrastructure connects cities and communities to essential data, technology and wireless service—bringing information, ideas and innovations to the people and businesses that need them.