The WDM/OTN Bandwidth Cloud solution offers:

- Planning and rolling out new networks with simplified OAM and quick deployment.
- As much as possible, the WDM/OTN Bandwidth Cloud solution eliminates problems typically associated with shared network with ultra-large capacity into a single platform. And to keep the transition as smooth as possible, the WDM/OTN Bandwidth Cloud solution eliminates problems typically associated with planning and rolling out new networks with simplified OAM and quick deployment.

The WDM/OTN Bandwidth Cloud solution offers:

- 40 G/100 G technologies for structuring high-bandwidth channels plus a terabit OTN cross-connection that allows sharing of high-bandwidth channels network-wide.
- ASON technology for automated resource and connection management to simplify network administration with added intelligence and reliability.
- OTN with PID technology that enables a simple network implementation without the need for additional signal modification: the network is DCM-free, amplifier-free, and OSNR-free.

With the WDM/OTN Bandwidth Cloud Solution

Enterprises continue to change the way they do business. Cloud computing, VoIP, video conferencing, data centers, and other advanced IT applications fuel demands for more and more bandwidth. Energy, government, finance, and education are just a few of the fields that require high-bandwidth services, though the need to expand bandwidth extends across all sectors and industries.

WDM, or wavelength-division multiplexing, is a core backbone technology that delivers bandwidth at high speeds with high capacity and long-reach coverage. These inherent characteristics make WDM the technology of choice for metro and access areas as well. Traditional WDM networks, however, have not kept pace with optical transport network (OTN) solutions in terms of service deployment, resource allocation, and network protection.

To bring the benefits of WDM to enterprise networks, Huawei has developed a customized solution to meet these critical needs:

- Rapid service delivery to meet market demand
- Reduced transmission costs with increased bandwidth
- Enhanced reliability for increasingly complex networks

The WDM/OTN Bandwidth Cloud solution from Huawei packages a dynamic, intelligent, and reliable shared network with ultra-large capacity into a single platform. And to keep the transition as smooth as possible, the WDM/OTN Bandwidth Cloud solution eliminates problems typically associated with planning and rolling out new networks with simplified OAM and quick deployment.

The WDM/OTN Bandwidth Cloud solution offers:

- 40 G/100 G technologies for structuring high-bandwidth channels plus a terabit OTN cross-connection that allows sharing of high-bandwidth channels network-wide.
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- OTN with PID technology that enables a simple network implementation without the need for additional signal modification: the network is DCM-free, amplifier-free, and OSNR-free.

High-Capacity 10 G/40 G/100 G Shared Pipe Delivers ‘Zero Waste’ Bandwidth

- 100% utilization: The ODUk/ODUFlex matrix allows the cross-connection of any service to a 40 G/100 G line so that 40 G or 100 G bandwidth can be shared by the entire network.
- Investment protection: Any of the 10 G, 40 G, or 100 G line cards can be used in the same platform, so the existing network is easily upgraded to a 40 G/100 G system (maximum line capacity is 10 G/40 G/100 G x 80-ch (0.8 T to 3.2 T to 8 T).

O&I Grooming Delivers ‘Zero Wait’ Provisioning

- Non-blocking signal grooming: Any combination of services can be cross-connected by the 2/4/9-Degree ROADAM + 3.2/6.4 Terabit OTN matrix.
- PID components: Integrated photonic integrated device (PID) supports up to 20 channels in one port, enabling construction of stepped networks with 40 G, 80 G, 120 G, and 200 G transport without concern for wavelength assignment. Dispersion Compensation Module (DCM), Optical Signal-to-Noise Ratio (OSNR), and amplifiers — a simple PID line port connection activates the link.
- Short Design Time: Network planning is easy with no bandwidth reservation requirements or wavelength conflicts to resolve.

Intelligent & Reliable ASON Delivers ‘Zero Downtime’ Service

- Anti-Failure Connection Management: The intelligent, Automatically Switched Optical Network (ASON) connection management function virtually eliminates connection failures — once a route is established, the connection stays active.
- Fast Fault Localization: Huawei’s U2000 Integrated Network Management System (NMS) provides unified management and visual O&M tools to help operators reduce O&M costs as well as manage network upgrades.

A Record of Success Makes Huawei the Smart Choice

- Fast, flexible deployment: Up to 4Q2013, over 200 operators globally have chosen Huawei’s 100G product to build their backbone network. According to Ovum 4Q13 report, Huawei has ranked No. 1 in rolling 4Q in global 100G market (4Q13-1Q13). Huawei’s 45% global market share in 40 G line cards and in-depth experience with 40 G commercial rollouts around the world ensures expert assistance when you are ready to roll out your network. Huawei’s record of success in fast 40 G deployments includes submarine systems, G.653 fiber systems, and legacy fiber systems, which are particularly suited for 40 G solutions.
- Standards Compliance: As the leading ASON provider to commercial operators, Huawei has accumulated years of experience in the OTN field; in fact, Huawei has led the innovation and development of OTN and Wavelength Switched Optical Network (WSON) standards. Always at the forefront of the global WDM market, Huawei was chosen to build nearly all WDM/OTN ASON networks worldwide.
- Reliable Transmission: Huawei maintains its industry record for the longest 100 G transmission: 4,000 km for a terrestrial network and 10,000 km for a sub-sea network.
- Ongoing support and development: Huawei continues to innovate ultra-high-speed transport solutions and recently launched the industry’s first end-to-end 400 G prototype using the advanced PDM-16QAM modulation format, enabling non-regeneration transmission over a distance of 1,000 km.

With the WDM/OTN Bandwidth Cloud Solution
WDM/OTN Bandwidth Cloud Application

Core/Backbone OSN 8800 T32/T64, OSN 9800
- 40G/100G effective transport
  Smooth upgrade to 40 G/100 G,
  > 4,000km
  Share the 40G/100G bandwidth via ODUk XC.

Metro/Aggregation OSN 8800 T16/UPS, 6800
- Fast Provisioning, simple OAM/Connect and play.
  OTN and PID technologies simplify networking and eliminate the transport limitations that require DCM, OSNR, and amplifiers.

Edge/Access OSN 1800 I/II/V
- Full service in single transmission:
  Unified access transmission for all service from 2M to 10G via ODUflex and ODU0 mapping technologies.

E2E WDM/OTN Bandwidth Cloud Solution

ASON

<table>
<thead>
<tr>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
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</thead>
<tbody>
<tr>
<td>2 M to 10 G Access</td>
<td>O+E Grooming</td>
<td>19’ WDM equipment</td>
<td>1.6 T ODUk</td>
<td></td>
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<tr>
<td>700 G ODUk/PKT/C</td>
<td>360 G ODUk XC</td>
<td>2/4/9-D ROADM</td>
<td>800 G PKT</td>
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<tr>
<td>1.28 T VC4</td>
<td>4/9-D ROADM</td>
<td>40 G/100 G 4,000km</td>
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<td>40 G/VC4</td>
<td>1.6 T PKT</td>
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<tr>
<td>4 G/VC3/VC12</td>
<td>640 G VC4</td>
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<tr>
<td>6.4 T ODUk</td>
<td>Universal Switch</td>
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<tr>
<td>1.28 T VC4</td>
<td>20 G VC3/VC12</td>
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<tr>
<td>6.4 T/12.8 T</td>
<td>600 G ODUk</td>
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<tr>
<td>3.2 T ODUk</td>
<td>80 G VC3/VC12</td>
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<tr>
<td>1.28 T VC4</td>
<td>P2D: 40-200G</td>
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<tr>
<td>Universal Switch</td>
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<tr>
<td>5 G VC3/VC12</td>
<td>40G/100G</td>
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<td>360 G ODUk XC</td>
<td>40/100G</td>
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<tr>
<td>40 G/100G</td>
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<tr>
<td>2/4 G/100G</td>
<td>40/100G</td>
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<td>4,000km</td>
<td>4,000km</td>
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</tbody>
</table>

OSN 1800  V  OSN 6800  OSN 8800  UPS  OSN 8800  T16  OSN 8800  T32  OSN 8800  T64  OSN 9800  U32  OSN 9800  U64

O2000
The OptiX OSN 9800 product series is Huawei’s next-generation OTN platform for converged packet-optical, intelligent, and optimized networks. These high-performance switching engines offer up to 12.8 T cross-connection capacity and feature a universal switching matrix for easy upgrades to 25.6 T in a single chassis.

The OptiX OSN 9800 series includes a high-density, flexible architecture that supports any combination of carrier Ethernet, OTN, and SDH transport protocols. The integrated GMPLS (Generalized Multiprotocol Label Switching) control plane adds operations automation and resiliency for robust traffic engineering.

The OptiX OSN 9800 OTN Platform Leads the Industry in Intelligence, Reliability, and Agility

- **Highly resilient transport:** The GMPLS control plane provides field-tested electrical layer ODUk-level (k=0, 1, 2, 3, 4, flex) and optical layer k-level protection and restoration features, as well as automated operations and rapid commissioning.
- **Efficient, dynamic traffic management:** The PCE (Path Computation Element)-based centralized intelligence feature offers exceptional support for multi-domain and multi-region networks.
- **Software-Defined OTN:** Designed for 400 G/1 T transmission, this feature enables bandwidth and distance to be easily adjusted in the software.

A Green Solution with Low OPEX

- **Energy-saving:** The OptiX OSN 9800 series incorporates precise, dynamic energy-saving routines, π-type cooling system, smaller chipsets, and optimized structure to significantly reduce power and cooling costs.
- **High efficiency:** A proprietary, online optical performance monitor executes optical Signal-to Noise Ratio (SNR) and optical power online monitoring on any wavelength (10 G/40 G/100 G) without test instruments, guaranteeing faster network provisioning, immediate fault diagnosis, and reduced operating costs.
- **Simplified administration:** The Visualized Bandwidth Management Mode provides graphical displays for a wide range of service management and reporting functions to help build bandwidth pools, provision services, and enable ordered expansion of the network.
OptiX OSN 8800 T64 & T32
Intelligent Transport Platform for Integrated OTN/WDM/SDH

High-Capacity Distribution, Unified O&E Switching
- An integrated 3.2 T/6.4 T ODUk (k=0, 1, 2, 3, 4, 5, 6, 7) & 1.6 T Packet switch distributes traffic with full, flexible granularity at the electrical layer
- 3 x 10G (80 x 100 G) Reconfigurable Optical Add-Drop Multiplexer (ROADM) switch supports dynamic optical wavelength transport
- O&E hybrid switch ensures complete end-to-end connection with services pass-through and selective wavelength channel add and drop
- Exclusive 64-slots-per-subrack design supports massive services access, switching, and transport, reducing space requirements by up to 80% and power consumption by up to 55%

Ultra-Broadband Transport, Unified 40 G/100 G Channel
- 100 M to 100 G services can be mapped into ODUk (k=0, 1, 2, 3, 4, 5, 6, 7) & 1.6 T Packet switch distributes traffic with full, flexible granularity at the electrical layer
- 3 x 10G (80 x 100 G) Reconfigurable Optical Add-Drop Multiplexer (ROADM) switch supports dynamic optical wavelength transport
- O&E hybrid switch ensures complete end-to-end connection with services pass-through and selective wavelength channel add and drop
- Exclusive 64-slots-per-subrack design supports massive services access, switching, and transport, reducing space requirements by up to 80% and power consumption by up to 55%

Enhanced Network Reliability, Unified O&E ASN
- The ASN provides alternate recovery routing to enhance network security, strengthen service availability, and lower maintenance cost
- SLA (Service Level Allocation) categories of Diamond, Gold, Silver, Copper, and Iron enable customized Quality of Service (QoS) options for client services delivery
- Built-in advanced planning tools provide network design and restoration simulation, enabling efficient network engineering
- Over 250 network deployments of ROADM+OTN+SDH ASN applications establish Huawei’s expertise developing and supporting advanced switching technologies

Precise Clock Transport
- Both OTN and SDH networks support clock transport
- The platform supports a physical 2M clock as well as SyncE transport
- Enhanced network protection with an end-to-end network monitor ensures high clock reliability

Unique Optical Doctor, Optimizing Network Maintenance
- The platform supports ONSR and power monitoring of any wavelength at 10 Gbit/s, 40 Gbit/s, or 100 Gbit/s
- Proprietary on-line analysis software facilitates network maintenance by monitoring services and identifying faults at each service layer

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>OptiX OSN 8800 T32</th>
<th>OptiX OSN 8800 T64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (mm)</td>
<td>600 (H) x 498 (W) x 295 (D)</td>
<td>600 (H) x 498 (W) x 580 (D)</td>
</tr>
<tr>
<td>Number of card slots</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Switch</td>
<td>Optical</td>
<td>Electrical</td>
</tr>
<tr>
<td>2.2 T ODUk 9=0, 1, 2, 3, 4, flex, 1.28 T VC4 &amp; 80 G VC3 &amp; VC12, 1.6 T Packet</td>
<td>6.4 T ODUk (k=0, 1, 2, 3, 4, flex), 1.28 T VC4 &amp; 80 G VC3 &amp; VC12</td>
<td></td>
</tr>
<tr>
<td>Number of Wavelengths</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Wavelength Range</td>
<td>192.1 THz to 196.05 THz (Band-C, ITU-T G.694.1)</td>
<td>192.1 THz to 196.05 THz (Band-C, ITU-T G.694.1)</td>
</tr>
<tr>
<td>Max Rate per Channel</td>
<td>100 G (OTU4)</td>
<td>100 G (OTU4)</td>
</tr>
<tr>
<td>Reach</td>
<td>Maximum 350 km (81dB)</td>
<td>Maximum 350 km (81dB)</td>
</tr>
<tr>
<td>Client Interface Type</td>
<td>OTU1/OTU2/OTU3/OTU4</td>
<td>OC-3/12/48/155/622</td>
</tr>
<tr>
<td>Connector</td>
<td>SFP/XFP</td>
<td>SFP/XFP, LC/PC</td>
</tr>
<tr>
<td>Connected</td>
<td>SFP+W, LC/PC</td>
<td>SFP+W</td>
</tr>
<tr>
<td>Line Interface Type</td>
<td>OTU/OTU2/OTU3/OTU4</td>
<td>OTU/OTU2/OTU3/OTU4</td>
</tr>
<tr>
<td>Connector</td>
<td>SFP/XFP</td>
<td>SFP/XFP</td>
</tr>
<tr>
<td>Fiber</td>
<td>G.652</td>
<td>G.652</td>
</tr>
<tr>
<td>Connected</td>
<td>SFP+W</td>
<td>SFP+W</td>
</tr>
<tr>
<td>Topology Point-to-Point</td>
<td>Chain</td>
<td>Chain</td>
</tr>
<tr>
<td>Fiber Synchronization</td>
<td>2 MHz, 10 MHz</td>
<td>2 MHz, 10 MHz</td>
</tr>
<tr>
<td>Protection Mechanism Protocol</td>
<td>OTN network level protection: optical line protect, optical channel protect, ODUk (k=0, 1, 2, 3, 4, 5, 6, 7), 100 G, 40 G, 10 G, 1 G</td>
<td>OTN network level protection: optical line protect, optical channel protect, ODUk (k=0, 1, 2, 3, 4, 5, 6, 7), 100 G, 40 G, 10 G, 1 G</td>
</tr>
<tr>
<td>Protocol</td>
<td>OTN network level protection: optical line protect, optical channel protect, ODUk (k=0, 1, 2, 3, 4, 5, 6, 7), 100 G, 40 G, 10 G, 1 G, 100 M</td>
<td>OTN network level protection: optical line protect, optical channel protect, ODUk (k=0, 1, 2, 3, 4, 5, 6, 7), 100 G, 40 G, 10 G, 1 G</td>
</tr>
<tr>
<td>Hardware</td>
<td>Flexi-transport 1+1 backup, control board 1+1 backup and power 1+1 backup, clock 1+1 backup</td>
<td>Flexi-transport 1+1 backup, control board 1+1 backup and power 1+1 backup, clock 1+1 backup</td>
</tr>
<tr>
<td>Optical intelligent platform</td>
<td>Optical intelligent platform (ODUk &amp; VCx)</td>
<td>Optical intelligent platform (ODUk &amp; VCx)</td>
</tr>
<tr>
<td>Electrical intelligent platform (ODUk &amp; VCx)</td>
<td>Electrical intelligent platform (ODUk &amp; VCx)</td>
<td>Electrical intelligent platform (ODUk &amp; VCx)</td>
</tr>
<tr>
<td>Optical wavelength protection and restoration</td>
<td>Optical wavelength protection and restoration</td>
<td>Optical wavelength protection and restoration</td>
</tr>
<tr>
<td>Multiple classes of service for different client SLA QoS, including the diamond services, golden services, silver services, and copper services</td>
<td>Multiple classes of service for different client SLA QoS, including the diamond services, golden services, silver services, and copper services</td>
<td>Multiple classes of service for different client SLA QoS, including the diamond services, golden services, silver services, and copper services</td>
</tr>
<tr>
<td>Services optimization, migration, and restoration</td>
<td>Services optimization, migration, and restoration</td>
<td>Services optimization, migration, and restoration</td>
</tr>
<tr>
<td>Service equilibrium and Shared-Risk Link Group (SRLG)</td>
<td>Service equilibrium and Shared-Risk Link Group (SRLG)</td>
<td>Service equilibrium and Shared-Risk Link Group (SRLG)</td>
</tr>
<tr>
<td>Mount Method</td>
<td>LTI 350/600 cabinet, 23-inch rack</td>
<td>LTI 350/600 cabinet, 23-inch rack</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5°C to 45°C</td>
<td>-5°C to 45°C</td>
</tr>
<tr>
<td>Cooling</td>
<td>Fan Cooling</td>
<td>Fan Cooling</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 to 90% RH</td>
<td>10 to 90% RH</td>
</tr>
<tr>
<td>Power Input</td>
<td>DC – 48V/–60V</td>
<td>DC – 48V/–60V</td>
</tr>
</tbody>
</table>
When huge bandwidth is needed to transmit enterprise data, make custom-built OTN/WDM your first choice

- Industry needs increasing information management, more services, bigger data centers — and more transport capacity. To upgrade metro networks to meet your needs, OTN/WDM is the obvious selection.
- Core requirements of an enterprise network include simple network planning, rapid service deployment, easy bandwidth upgrades, and convenient Operations Administration and Maintenance (OAM). Huawei’s “OTN Bandwidth Cloud” solution meets these needs by providing customized networks and solutions.

Digital OTN: Enables Efficient Construction; PID+OTN: Matches Metro Transport Requirements

Traditional metro network problems include: lack of fiber-optic links, complex maintenance, and low reliability. OTN can solve these problems perfectly.

- OEO repeaters are costly. Traditional WDM construction with optical regenerators is less expensive, but analog limitations have to be considered. This creates complex design and maintenance issues.
- Huawei combines Photonic Integration Device (PID) with OTN to provide a big “pipe” and flexible, all-service traffic grooming with non-analog network construction methods.
- PID integrates key components in a single chip to enable a high maximum capacity 200G OTN system, which lowers costs and makes it possible to configure OEO repeaters at each site.
- OTN delivers flexible grooming and digital maintenance capabilities to easily provide digital service ADM.

“Thanks to its high integration features, the PID now requires less fiber connections and reduces concerns with photonic parameters. Maintenance becomes much easier and power consumption has been lowered. This is just the OTN I want!”

— A high-ranking telecommunications operator.

### Digital OTN value

- Eliminates complex photonic configuration (DCM/DFA).
- A network needs only one PID module for easy design and construction.
- PID has 20 times the capacity of SDH and inherits its efficient maintenance and mature protection mechanism. Plus SDH maintenance personnel easily can make the shift to OTN.
- The PID is a highly integrated system, reducing the typical traditional configuration of 3 sub-racks down to 1 sub-rack, saving 70% on space.

### Specifications

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<thead>
<tr>
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<th>OSN 8800 UPS</th>
<th>OSN 6800</th>
<th>OSN 8800 T16</th>
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<tbody>
<tr>
<td>Dimensions (H x W x D)</td>
<td>410 mm x 448 mm x 295 mm</td>
<td>400 mm (9U) x 487 mm x 295 mm</td>
<td>450 mm (10U) x 447 mm x 295 mm</td>
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<td>Mount method</td>
<td>ETSI 300600 cabinet, 19-inch to 23-inch rack</td>
<td>ETSI 300600 cabinet, 19-inch rack</td>
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<tr>
<td>Transport technology</td>
<td>DWDM (G.694.1, G.694.2)</td>
<td>2.5G, 5G, 10G, 40G, and 100G line speed</td>
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<tr>
<td>DA/EDFA, Raman</td>
<td>5,000 km at 10G; 4,000 km at 40G/100G without regeneration</td>
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<tr>
<td>Electric cross-connect</td>
<td>GE/ODU1/Any, L2 switch on VLAN, Stack VLAN</td>
<td>GE/ODU1/Any, L2 switch on VLAN, Stack VLAN</td>
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<tr>
<td>DC: -48 to -60 V</td>
<td>-48 V to –60 V DC input</td>
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<tr>
<td>Mount method</td>
<td>ETSI 300/600 cabinet, 23-inch rack</td>
<td></td>
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</tr>
</tbody>
</table>

### Optical cross-connect

- RSADM: 160G at 400G, 1", 4 to 9 degrees
- RSADM: 80, 400G, CWDM, 2/4/8, CWDM OADM, 2/4/8 CWDM OADM
- OTU client side 1+1 protection, GE/ANY service SW SNCP

### Capacity

- STM-1/155/622/2500
- OTN network level protection: optical line 1+1 protection, secondary power 1:N protection
- OTN network level protection: optical Wavelength Shared Protection (OWSP), ASON
- Optical line 1+1 protection (1+1 OMSPP), Intra-card dual feeding/DOP dual feeding (ID-PF)

### Protection

- OTU client side 1+1 protection, secondary power 1:N protection
- OTU client side 1+1 protection, secondary power 1:N protection
- OTU client side 1+1 protection, secondary power 1:N protection
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)
- Optical line 1+1 protection (1+1 OMSPP)

### Network topology

- Point-to-point, Ring, and Mesh
- DC: -48 to -60 V

### Power

- DC: -48 V to –60 V DC input
**OptiX OSN 1800 — Mini-Size, Full Service Access**

The OptiX OSN 1800 is a compact multi-service optical transport platform designed for the metropolitan network edge. It provides a green, cost-efficient, high-broadband solution for enterprises in industries such as energy, government, finance, and education.

- **Full service access:** all types of service access from 2 Mbit/s to 10 Gbit/s
- **Space-saving installation:** 1/2U box can be mounted on racks, outside of cabinets, on walls or poles; 1U, 2U and 5U are available with 19-inch to 23-inch rack
- **Power supply with protection:** 220 V AC and -48 V DC power supply with 1+1 protection
- **Large capacity:** system capacity can be expanded from 8x wave CWDM to 40x wave DWDM. OSN 1800 V chassis permits a maximum of 700 Gbit/s OTN cross-connections and 700 Gbit/s packet switching capacity, plus 40G SDH higher-order and 5G SDH lower-order cross-connections. It has 14 service slots.
- **Ultra-long transmission distance:** 2.5G service transport over maximum of 120 km; 10G transport up to 140 km
- **Powerful protection capability:** all boards operating at a rate of 10G or lower benefit from embedded 1+1 optical line protection
- **Convenient maintenance:** no on-site management is required after installation; supports remote in-band G.709 management

**Success Story: Redundancy Solution for ShengJing Bank**

Diagram: 1+1 Cold Redundancy. [Solution] Full Network Protection

- **WDM NE (Active)**: Fiber distance: 140 km
- **WDM NE (Backup)**: 1+1 hot redundancy of FC&GE services on the client side

Application:
A large amount of video monitoring information needs to be transmitted and shared between government offices. Applying the OptiX OSN1800 as a WDM system at the access layer is a cost-effective, high-speed broadband method that solves the lack of fiber resources.

**OSN 1800 Solution:**
- 8 GE DWDM (ELOM board): service at each access site > 4 GE
- 4 GE CWDM (LQG board, 70 km line SFP): service at each access site is 3 - 4 GE, and the total distance is < 70 km
- 2 GE CWDM (LDGF board): service at each access site ≤ 2 GE

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**Efficient Video Transmission**

Application:
A large amount of video monitoring information needs to be transmitted and shared between government offices. Applying the OptiX OSN1800 as a WDM system at the access layer is a cost-effective, high-speed broadband method that solves the lack of fiber resources.
Customer benefits:
- Ample bandwidth: 4 GE video can be transmitted from a sub-bureau to each police station, satisfying high-quality monitoring requirements.
- Small space: only 1U rack space is required for equipment at each police station, minimizing space requirements.
- Highly reliable service transmission: switching time is less than 50 ms for Intra-Board 1+1 protection.

Success Story: GE and 10 GE Services over Single-Fiber Bidirectional Leased Lines for Communications Operator KDDI Corporation

Customer benefits:
- Transmission of 10 GE services over a single-fiber system.
- Easy network expansion to support leased-line services such as FE, GE, 155 Mbit/s, and 10 GE.

Application:
Many enterprise IT parks or university branch campuses use leased optical fibers because they do not have their own. As their demand for larger bandwidth increases, so does the need for more leased fibers in their private WDM networks. Huawei proposes a large-capacity single-fiber bidirectional WDM solution that significantly reduces construction costs.