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7200 OSP

Metro/Regional



7200 OSP

- Metro core component of Xtera's Agile Optical Networking Solution
- Carrier Ethernet Transport solution combining WDM networking Ethernet aggregation and Ethernet tunnel switching
- Integrated wavelength switching and transport of optical signals from 100 Mb/s to 40 Gb/s
- Standards-based sub-wavelength aggregation and switching with GFP

Wavelength networking that delivers simplicity and cost savings to metro optical networks

7200 OSP (Optical Switching Platform)

The Xtera 7200 OSP (Optical Switching Platform) is widely recognized for consolidating key optical transport capabilities within a single network element. The 7200 OSP provides WDM transport with transparent wavelength and Ethernet sub-wavelength switching and aggregation. The result is a cost- and space-efficient optical networking platform that supports transparent services while also enabling high growth Ethernet high-speed metro services.

The 7200 OSP is the industry's first multi-degree WDM switching platform that seamlessly bridges the metro access and metro core networks with both dense/coarse WDM links and transparent and Ethernet interfaces. The unique integration of optical add/drop, optical switching, and Carrier Ethernet Transport in the 7200 OSP greatly simplifies the engineering of complex WDM networks and Ethernet service delivery and is therefore very cost-effective to deploy and effortless to operate, as compared to islands of traditional OADMs (Optical Add/Drop Multiplexers) with collocated MSPPs.

The Xtera product family of the 7200 OSP at the Metro core, the 3300 OSM (Optical Services Multiplexer) in the access, and fully managed by the Xtera 8600 NMS (Network Management System) at the NOC, creates a very cost-effective, operationally simple, and flexible network architecture for delivering high-speed metro services today and scale for the future.

Carrier Ethernet Transport Solution

The 7200 OSP integrates Carrier Ethernet Transport capabilities into its universal interfaces. At the optical level, the 7200 OSP supports transparent aggregation of up to 9 full-rate Gigabit Ethernet signals onto a single wavelength for increased WDM link efficiency. Each Gigabit Ethernet signal may also be independently switched and groomed between multiple client ports and WDM links for optimal use of network resources. Within the Ethernet service layer, the 7200 OSP supports standards-based Carrier Ethernet tunnels over the WDM links. Ethernet services can be aggregated and switched over multiple Ethernet tunnels. At all levels, the 7200 OSP supports carrier-grade OAM capabilities.

Outstanding operational advantages

The 7200 OSP is well known for delivering operational advantages that are unmatched in the industry. The universal multi-rate OIC means that a line interface can change from being a groomed OC-48 to a transparent Gigabit Ethernet without the need for a truck roll. With hitless moves, adds and changes, full bridge-and-roll capability and integrated multi-layer performance monitoring on all nodes, the 7200 OSP delivers substantial OPEX savings as compared to OADM solutions.

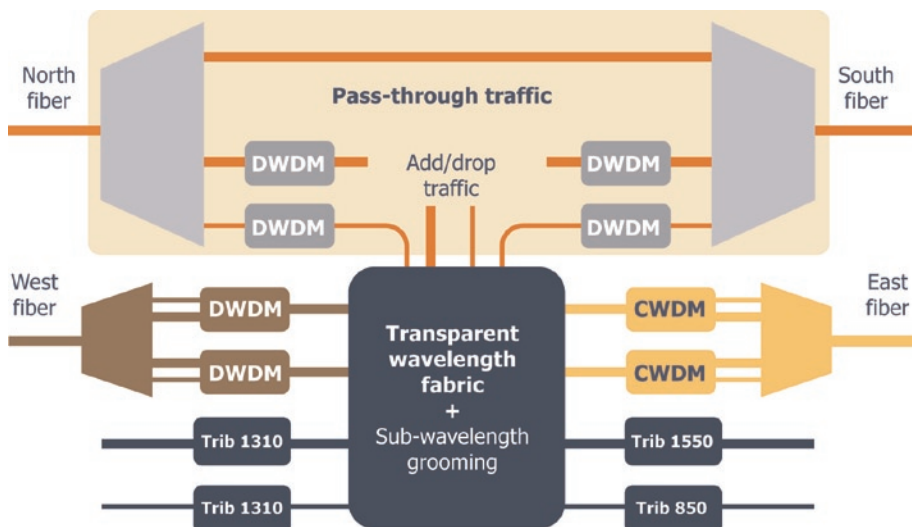


7200 OSP

Metro/Regional

The 7200 OSP is a fully integrated modular transport platform with a unique digital and optical architecture

- Industry's first multi-degree WDM switching platform
- Support for both DWDM and CWDM links with wavelength translation
- Outstanding operational advantages
- Layer 1 + performance monitoring of all wavelengths
- High availability with sub-50 ms switching to protect interfaces
- Flexible network topology support (e.g. rings, mesh, etc)
- Advanced lightpath maintenance and diagnostics.
- Intelligent network management



Flexible topology support

The 7200 OSP can be deployed in ring, mesh, star or linear network topologies. The multiple topology capability of the 7200 OSP helps carriers manage the location and timeframe for the migration from ring to mesh networks. In the metro core and regional areas, mesh networks help carriers get more bandwidth utilization from their fiber plant depending on the traffic demand distribution. Mesh networks can also provide more efficient protection and restoration schemes that result in increased capacity on a given fiber plant to deploy additional revenue-generating services.

Universal switching fabric card with variable granularity

The unique switching fabric of the 7200 OSP means that it is the only architecture available in the industry today that supports transmission and switching of transparent wavelengths and sub-wavelengths – all within a single, compact network element. For maximum wavelength usage, multiple client signals can be aggregated onto a single wavelength. The universal switch fabric in each 7200 OSP provides switching capacity of 320 Gb/s that is fully non-blocking. The switching fabric can switch signals from 100M to 10G. The fabric may also be expanded to 1.3 Tb/s.

Multi-degree DWDM and CWDM links

The 7200 OSP simplifies the optical network by integrating switching with WDM, resulting in significant reductions in optical equipment, space requirements and network complexity. Universal multi-rate OIC (Optical Interface Cards), are available for client applications, as well as 8-channel CWDM, and 8-, 16-, 24-, 32- and 40- channel DWDM versions for line interfaces. The 7200 OSP can switch seamlessly from any CWDM to DWDM wavelength without resorting to back-to-back nodes and external patch cords. Unlike OADMs, there is no wavelength banding and the 7200 OSP switching fabric provides full re-use of all wavelengths, eliminating wavelength stranding. Additionally, with the use of SFP and XFP optics for client and line interfaces, network designs are optimized on a per wavelength basis while allowing for a "pay-as-you-grow" cost model.

Layer 1+ performance monitoring

The 7200 OSP provides a universal performance monitoring module on each LPC (Line Processing Card) that can be used to monitor the client's data signal in a non-intrusive mode for layer 1+ performance. The module supports layer 1+ performance monitoring for various data protocols (e.g. SONET/SDH, Ethernet, Fibre Channel and ESCON). Threshold crossing alarms are supported based on detected protocol-level error rates or optical power level performance problems, which can be used to trigger protection switching around network problems. This allows service providers to maintain high-speed service performance even when faced with degraded or hard failure service impacts.



7200 OSP

Metro/Regional

Advanced lightpath maintenance and diagnostics

The 7200 OSP supports extensive lightpath, sub-wavelength and L2 tunnel maintenance and diagnostic features such as channel loopbacks, BERT, bridge-and-roll, path trace and path list. This sophisticated set of maintenance and diagnostic features allows carriers to deploy large-scale optical networks that can be effectively operated and maintained.

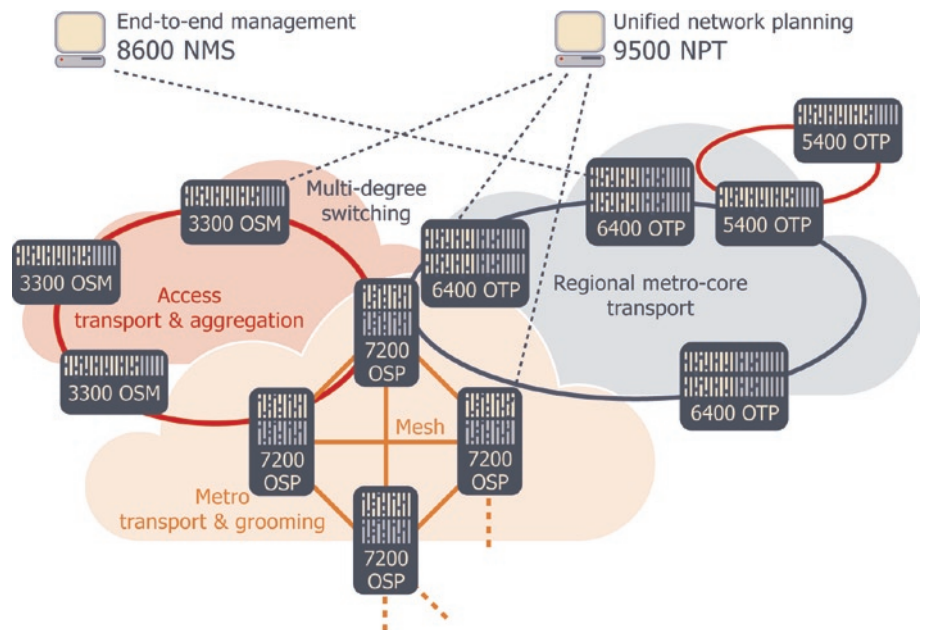
Simplified network engineering

Similar to SONET/SDH, the 7200 OSP can be engineered in a link-by-link fashion. Link engineering is straightforward to implement and can significantly reduce a carrier's time-to-revenue. Xtera's simplified engineering is also very cost-effective for doing adds, moves and changes, with minimum impact to existing customers.

Intelligent network management

Operators can manage the 7200 OSP using either a text-based command line interface or the Meriton 8300 EMS (Element Management System) or the Xtera 8600 NMS. The 8600 NMS simplifies management of optical networks by integrating element and network management functions and automating common operational tasks, including setup, maintenance and teardown of optical paths. Xtera Networks understands the importance of our customer's installed management infrastructure and the role that the OSMINE™ process and industry standards, such as TMF 814, play with respect to integration into an existing OSS. The 7200 OSP supports industry-standard management interfaces for operator familiarity and ease of integration with legacy systems. SNMP, TL1 and an optional TMF 814 interface (via the 8600 NMS) are available for integration into existing OSS environments.

Xtera's Agile Optical Networking portfolio comprises the 3300 OSM at the access layer, 7200 OSP for multi-degree switching in the metro core and the 6400 OTP for flexible transport in metro core-regional networks, all supported by unified network planning and management systems.



Specification

System architecture and shelf

- Scalable switching architecture from 320 Gb/s to 1.3 Tb/s
- Supports data signals and optical wavelengths up to 40 Gb/s
- Variable switching fabric card granularity from 100 Mb/s to fully transparent wavelength switching
- LPC for WDM networking, Carrier Ethernet
- Transport and Ethernet tunnels via IEG
- Fully redundant system infrastructure for carrier level availability
- In-service upgradeable hardware and software.

Optical Interface Cards (OIC)

- 8-port universal multi-rate client interface card with plug-in optics
- 20-port universal sub-rate multiplexing multi-rate client interface card with plug-in optics
- 2-port universal multi-rate 10G interface card with plug-in optics
- Dual 10G G.709 transponder card
- 8-channel CWDM line cards
- 8-channel DWDM line cards
- 40-channel DWDM line cards
- Line cards are in-service scalable from a single wavelength to its full capacity.

Lightpath management and protection

- Centralized point-and-click path setup
- Distributed routed path management
- Auto-discovery of topology and equipment
- Dedicated 1+1 lightpath protection
- Pre-provisioned shared lightpath protection
- Dynamic re-route lightpath protection
- Performance degradation-initiated protection switching

Ethernet circuit, tunnel management and protection

- Centralized point-and-click VLAN, Ethernet circuit and tunnel setup
- 802.3ad link aggregation protection
- 1+1 Ethernet circuit and tunnel protection
- Performance degradation-initiated protection switching



7200 OSP

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Maintenance and diagnostics

- Per-channel optical performance monitoring
- In-service layer 1 performance monitoring for all transparent wavelengths including GigE and 8B/10B SAN protocols
- In-service layer 2 performance monitoring for all Ethernet protocols (GigE, 10 GbE)
- Carrier Ethernet transport OAM suite
- Full SONET/SDH performance monitoring (section, line, path)
- Full wavelength and SONET/SDH loopbacks
- In-service lightpath and Ethernet sub-wavelength bridge-and-roll.

Node and network management

- TL1, and SNMP interfaces
- Graphical Craft Interface (via 8300 EMS)
- Standards-based CORBA interface (via 8600 NMS)

Operating environment

- 40 to 72 VDC
- 5° to 40° C (41° to 104° F)
- 5% to 85% relative humidity, non-condensing
- -60 to 1800 m above sea level (-196.8" to 5905").

Regulatory approvals

- Environmental/NEBS: GR-63-CORE, ETS 300 019-1-1
Class 1.2: ETS 300 019-1-2, Class 2.3: ETS 300 019-1-3, Class 3.2
- EMC: FCC Part 15, ICES-003, EN 300 386- 2/EN 55022/EN 55024, GR-1089-CORE
- Safety: UL 60950, CSA-C22.2 No. 60950-00, EN 60950, GR-1089-CORE, IEC 60950.

Laser safety

- Complies with FDA CDRH 21-CFR1040 and IEC 60825-1:1993 + A1:1997 + A2:2001 and IEC 60825-2:2000
- CLASS 1M laser product
- Invisible laser radiation. Do not view directly with optical instruments (magnifiers) within a distance of 100 mm of the source when open.

Physical dimensions

- Height 91.4 cm (36')
- Width 58.4 cm (23')
- Depth 59.7 cm (23.5')
- Two shelves per standard 2.1 m (7") rack.



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