FSP 3000 OLS

A versatile and truly open line system

Cloud and 5G technology offer enterprises, carriers and service providers enormous potential for growth. However, this continuous and rapid change also creates the need for more network capacity and flexibility. It's essential to build today's networks on an open, flexible and scalable optical layer ready to accommodate evolving demand and innovation. Featuring a fully modular and open design, our FSP 3000 open line system (OLS) provides complete versatility and best performance in metro, core and data center interconnect (DCI) applications.

Truly open

Open disaggregated optical networking is one of the industry's hottest trends. By decoupling terminal functions from the line system, this approach offers complete flexibility to adopt the latest technology when and where needed. Our FSP 3000 OLS is truly open, allowing total freedom to evolve and optimize each network layer separately. Network operators can leverage and expand their network at any time with the technology of their choice. What's more, with open and standard interfaces, our FSP 3000 OLS easily integrates into software-controlled infrastructure.

Build your own OLS

Our FSP 3000 OLS empowers network operators to create the solution that meets their exact requirements. With a modular architecture, multiple amplification and multiplexing options, and different chassis sizes, our FSP 3000 OLS enables customized solutions. Operators can simply mix and match the optimum filters and amplifiers and pack them into the best-fitting shelf. This makes our FSP 3000 OLS ideal for any type of network infrastructure.

Future-proof investment

Coherent modulation schemes are becoming increasingly diverse to maximize transport network capacity and minimize the cost-per-bit of transport. Flexible terminals with variable modulation formats and baud rates enable highest capacity-reach ratio. The ultimate network performance relies also on line system capabilities, and that's why open line systems have increasingly become important strategic assets. With a combination of high-performance features, our FSP 3000 OLS transports any coherent modulation format as well as all varying signal baud rates with best performance. The high-resolution flexgrid as well as the modular architecture of our ROADMs guarantee a future-proof OLS that can scale and accommodate any modulation format and baud rate. What's more, our FSP 3000 OLS provides a new level of flexibility through configurations also with the ability to support direct detect technologies.

Your benefits

➤ **Open hardware**
No technology or vendor lock-in; successfully tested in multi-vendor environments

➤ **Open programmable interfaces**
Easy integration into software-defined networks with open, programmable APIs

➤ **For any type of network infrastructure**
Modular design with multiple amplifiers and filter options that fit in multiple chassis sizes

➤ **Application-optimized components**
Amplifiers and ROADM options engineered to meet metro, core and DCI-specific demands

➤ **Visualization and control**
Comprehensive monitoring and diagnostic tools, spectrum visualization and fiber surveillance

➤ **Eco design**
Low footprint and power consumption with high consolidation of functions per module

➤ **Flexible footprint**
Chassis sizes from 1RU to 12RU, ETSI/data center racks, AC/DC power options
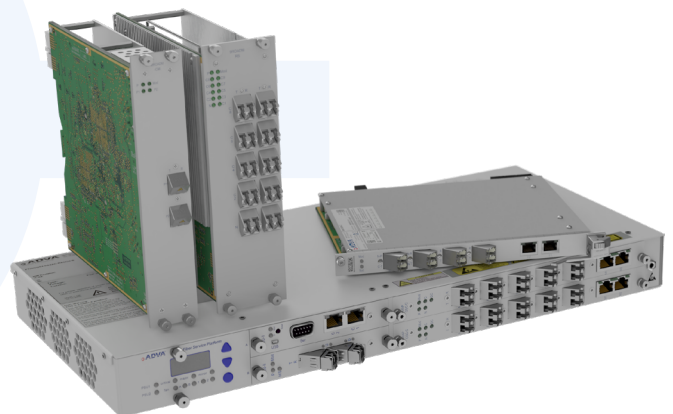
Capacity-reach performance

High-power amplification and flexible multi-degree ROADMs are key to develop high-capacity core network infrastructure with minimum cost-per-bit. For this reason, our FSP 3000 OLS offers advanced high-power EDFA and hybrid EDFA-RAMAN amplification options, with switched and variable gain, that enable operators to overcome long distances and multiple spans with ultra-high capacity wavelengths. In addition, integrated OTDR and OSC functions ensure highest network availability and control. To guarantee on-demand bandwidth planning without restrictions, our FSP 3000 OLS offers high-resolution flexgrid ROADM nodes with a scalable and modular architecture. 1:9 and 1:32 WSS modules, as well as fixed, colorless, directionless and contentionless add/drop options, ensure that our FSP 3000 ROADMs can easily and cost-efficiently accommodate evolving network demands. What's more, our FSP 3000 OLS also opens the door to new revenue opportunities by supporting managed spectrum services.

Transforming metro networks

While core networks usually have a mesh architecture, transport aggregation in the metro usually happens through rings and linear chains architecture. For this reason, 2-degree nodes are predominant. Compactness is also key due to the limited availability and high cost of space in metropolitan areas. Our innovative MicroROADM™ without WSS technology, and our MicroAmp™ that consolidates all common terminal functions (OSC, EDFA, OTDR and OTC ports) in just one module, have been specifically engineered to meet metro network demands. They enable compact 2-degree ROADM nodes with low first-in cost and high operational simplicity, as well as an ultra-compact bidirectional in-line amplifier that can be equipped in a single 1RU chassis.

Compact and cost-efficient metro DCI

Data center interconnect (DCI) networks are in continuous transformation to meet ever-increasing demand for terascale capacity at the lowest possible cost and footprint. In the metro area, the distance between data centers is usually limited to about 100km. Several solutions are being developed for cost-efficient and simple point-to-point metro DCI. Applications being deployed today include coherent DCI up to 600Gbit/s as well as PAM4 direct detect modulation. Emerging applications include the use of coherent 400G ZR optics, in definition by the OIF and also other higher baud rates. Our FSP 3000 DCI OLS provides a compact and cost-efficient universal optical layer for both PAM4 and coherent wavelengths for any rate, including 400G ZR. Coherent and PAM4 solutions share many of the OLS components. However, some modules have been specifically engineered for each solution. For example, our SmartAmp™ amplifier for PAM4 wavelengths that integrates high-power pre-amplification and auto-dispersion compensation in one card. What's more, our FSP 3000 DCI OLS offers multiple filter options as well as optical line protection and optical channel monitoring options, that fit in a compact DCI-optimized 2RU shelf.

Filterless optical networks

The ever-increasing demand for bandwidth is forcing operators to extend the use of coherent wavelengths to the edge. This is accelerating the demand for new OLS solutions that enable the efficient transport and aggregation of coherent wavelengths while meeting distinct access network demands. Our FSP 3000 filterless OLS is the ideal solution for ultra-compact and cost-efficient metro access aggregation. It offers low-priced OLS deployments in small form factor, with simple setup and configuration. Our FSP 3000 filterless optical solutions can have any standard access network topology such as tree, linear chain and horseshoe topologies with single or dual head-ends. Add/drop nodes are colorless, enabling the flexible allocation of any wavelength or color to any port. What's more, with less active components in the network, our filterless OLS solution offers high reliability and operational simplicity. And thanks to its gridless nature, our filterless OLS solution is capable to transport any current or future coherent format, enabling access networks that can last over time and grow with network demands.

High-level specifications

- Open, modular and scalable OLS architecture with a pay-as-you-grow design
- Fixed grid and high-resolution flexgrid solutions
- Numerous fixed filters and reconfigurable optical add/drop modules
- Multiple amplification options using erbium fiber and/or Raman amplification
- Real-time optical line system optimization, channel equalization, span loss equalization
- Optical channel monitoring with full support of third-party wavelengths
- Single platform with tailored solutions for access, metro and core network infrastructure and DCI
- Small form-factor design with compact modules
- Multiple chassis options to match any footprint and power demands

> **❝Our FSP 3000 OLS empowers network operators to create the solution that meets their exact requirements.❞**

◈ADVA™