



## FSP 3000 OLS for terascale metro data center interconnects

### Compact and optimized solutions for terascale cloud DCI connectivity

Data center interconnect (DCI) networks are in continuous evolution to meet ever-increasing bandwidth demand at lowest cost per bit. Coherent interfaces are becoming increasingly diverse to meet a wide range of performance, scale and cost objectives, driving the need for flexible and future-proof open line system (OLS) infrastructure. OLS infrastructure has become a strategic asset for scale, cost-efficiency, and simplified operations.

#### OLS: a key DCI component

OLS components, such as amplifiers and filters, usually have a longer lifespan and renewal cycle than optical transponders/muxponders. OLS infrastructure is a long-term asset. A flexible, scalable and future-proof OLS that can handle the variety and continuous evolution of coherent interfaces is essential to any effective long-term DCI strategy.

#### From 100GbE to 400GbE

With the rise of digitalization and cloud-based applications, data center interconnect traffic is growing exponentially. DCI networks need to evolve to meet ever-increasing demand for terascale capacity at the lowest possible cost. Currently, the bottleneck is in the metro area, and several solutions are being developed for cost-efficient and simple point-to-point metro DCI. Applications being deployed today include coherent as well as PAM4 direct detect modulation. The need to lower cost per bit is also pushing the transition to 400GbE in the metro area. Emerging applications include the use of DWDM pluggable coherent 400ZR optics, defined by the OIF, as well as other 400GbE interfaces with higher power and baud rates.

#### The FSP 3000 DCI OLS meets all DCI demands

Our FSP 3000 DCI OLS provides an open, compact and cost-efficient optical layer engineered to meet current and future metro terascale DCI demands. The FSP 3000 OLS supports both coherent and direct detect modulation, as well as all varying signal baud rates and modulation schemes. Also the latest coherent DWDM 400ZR/ZR+ optics, which are strongly emerging in metro DCI applications. With an open architecture, and open programming interfaces, it avoids technology and vendor lock-in, while driving down capex and opex costs.

#### Your benefits

- **Terascale capacity**  
Scalable architecture enabling up to 38.4Tbit/s duplex capacity per fiber pair
- **Truly open line system**  
Open hardware architecture, open programming interfaces and open business model
- **Operational simplicity**  
Built-in OCM, OTDR and OSC functions for accurate and comprehensive channel, system and fiber monitoring
- **Application-optimized solutions**  
Amplifier and filter options engineered to meet specific DCI applications demands, e.g., PAM4 direct detect and 400ZR coherent applications
- **DCI form factor**  
Numerous chassis options (from 1RU to 12RU, AC/DC, front/rear access, etc.) to meet any footprint demand
- **Easy integration into SDN environments**  
Open programming interfaces and ADVA's Ensemble Controller for management and abstraction with T-API standardized open northbound interface

The modular approach of our FSP 3000 OLS enables operators to create the solution that meets their exact requirements. What's more, its compact footprint and low power consumption makes it ideal for data center deployments.



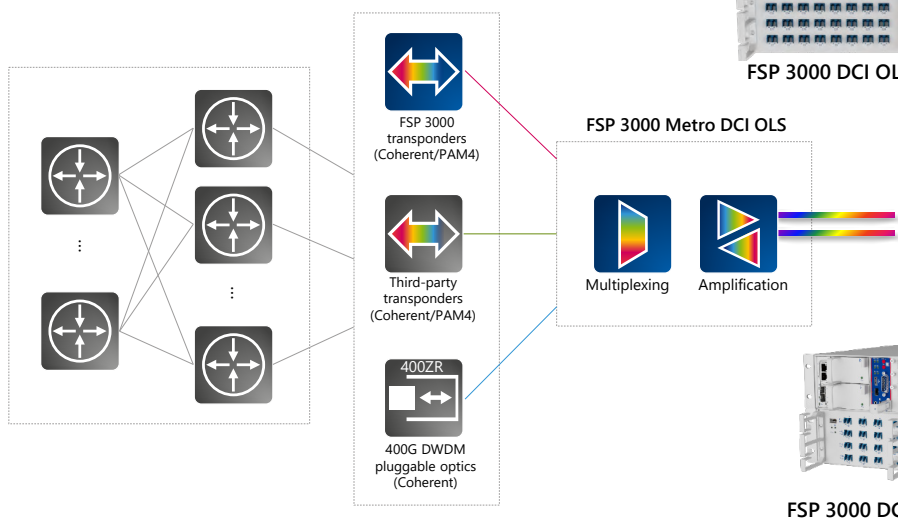
## Application-optimized DCI OLS solutions

PAM4 direct-detect and coherent wavelengths have different OLS demands. The FSP 3000 DCI OLS offers filters and amplifier options, which have been engineered to meet these specific demands. For example, the “23-Twin” amplifier module optimized for emerging 400ZR applications, or the FSP 3000 SmartAmp™ amplifier designed to meet PAM4 100Gbit/s application demands.

### FSP 3000 DCI OLS optimized for 400ZR

OIF’s 400ZR interfaces have specific OLS demands for the transport of up to 45 low-power 400Gbit/s wavelengths with DP-16QAM modulation over amplified DWDM point-to-point links with up to 120km (fiber-dependent). Furthermore, 400ZR are directly plugged into switches or routers. The absence of transponders drives cost down but also eliminates important features provided by transponders, such as demarcation or encryption, and imposes limitations on relevant functions such as channel management and monitoring.

The FSP 3000 DCI OLS optimized for the transport of 400ZR wavelengths has been engineered not only for the optimum transport of OIF’s 400ZR wavelengths, but also for the optimum surveillance and management of the network. It consists of two major components. The “23-Twin” amplifier module includes pre- and post-amplification designed to meet 400ZR reach demands (up to 120km). Furthermore, it has integrated OSC, OCM and OTDR functions for system, channel power and fiber monitoring - and all in just one card that fits in a 1RU data center shelf. Together with a OIF’s compliant mux/demux 65-channel filter in a 2RU chassis, this makes our FSP 3000 400ZR optimized DCI OLS solution ideal for ultra-compact and cost-efficient data center interconnect applications.



### 400ZR-optimized FSP 3000 DCI OLS

- “23-Twin” amplifier with pre-amp and booster
  - Integrated OTDR for fiber monitoring; all ports monitored
  - Integrated OCM for channel power monitoring; OPT, OPR monitored in all traffic ports
  - Integrated OSC for network management
  - Up to 120km reach for 400ZR (on G.652 fiber)
  - 2-slot card that fits in any FSP 3000 chassis size, including 1RU data center chassis
- 65-channel mux/demux filter
  - OIF non-shifted 75GHz grid
  - 6.5dB maximum insertion loss
  - 2RU chassis with IEEE-1394 interface

### FSP 3000 DCI OLS optimized for 100G PAM4

Metro PAM4 direct-detect connectivity has specific demands, such as the need for dispersion compensation. Our innovative SmartAmp™ integrates high-power pre-amplification and tunable dispersion compensation with automated fiber dispersion measurement and auto-dispersion tuning in one card. It provides a cost-effective turn-key solution for up to 4.8Tbit/s transmission capacity in just a 2RU chassis.

