# FSP 3000 AgileConnect™

Scalable optical transport for profitable growth

Today's optical transport demands are constantly changing. High-bandwidth services and cloud-based applications are booming and software-defined networking is evolving to the domain of transport networks. Network operators and enterprises need a flexible and scalable solution fit for this challenging environment while keeping costs at a minimum.

The increasing need for bandwidth delivered to any location in the shortest possible time, together with the need for low latency and robust security, is transforming optical networks and how they are managed. Our FSP 3000 has been designed to efficiently deal with this new environment, lowering its complexity and minimizing cost-per-bit and operational efforts. Thanks to its modular design and latest technology, our FSP 3000 supports a wide range of services and applications. With our ConnectGuard™ encryption technology and other security features such as intrusion detection, the FSP 3000 AgileConnect™ enable secure and robust optical network solutions that can scale, providing a solid foundation to accommodate tomorrow's needs. What's more our FSP Network Hypervisor in conjuction with our FSP 3000 MicroConnect™ and OpenFabric™ technology is the most cost-effective foundation for software-defined metro network evolution.
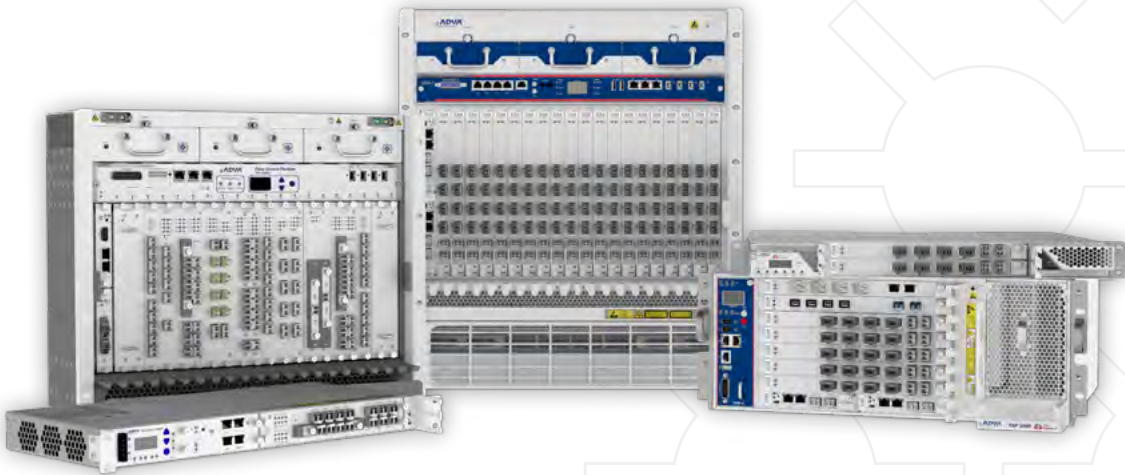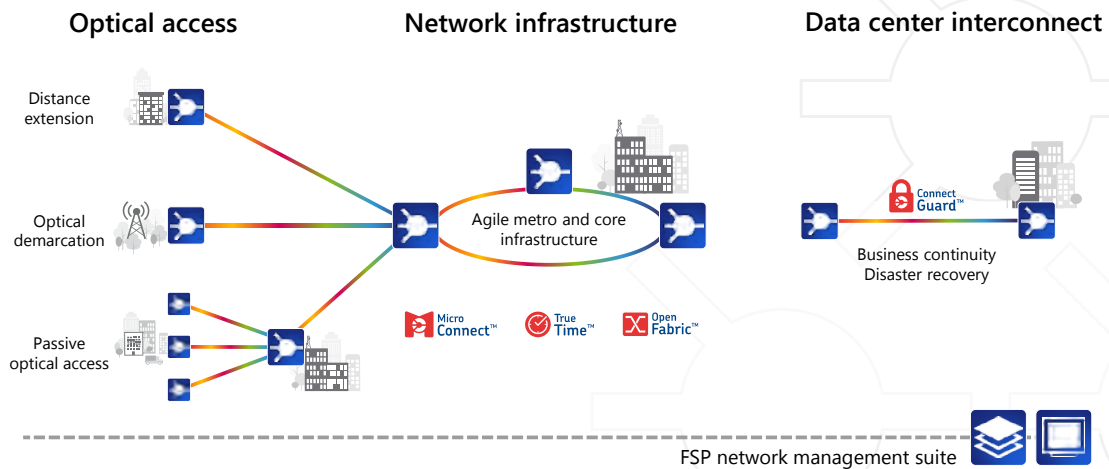
Your benefits

- ✔ **Pay-as-you-grow design**
  Modular and scalable architecture that ensures both low initial cost and flexibility into the future

- ✔ **Highly-reliable networks**
  Variety of channel and module protection mechanisms, monitoring and test functions; centralized network intelligence for ultimate availability

- ✔ **Operational simplicity**
  Service turn up at your fingertips using centralized network intelligence and control plane technology

- ✔ **ConnectGuard™ encryption technology**
  Certified data encryption with 100% throughput for any service on the transport layer

- ✔ **Dynamic and scalable optical layer**
  Multitude of ROADM options from the metro-optimzed 2-degree MicroROADM™ to multi-degree colorless, directionless for flexgrid optical layer

- ✔ **Guaranteed storage interoperability**
  Optimized transponder modules for business continuity applications, qualified by all storage system and server vendors

High-level specifications

General information

- DWDM, CWDM and hybrid solutions; from access to the core
- Point-to-point, ring and mesh topologies with optional protection mechanisms
- Multi-rate protocol-aware transponders and muxponders

Services and applications

- Continuous support of services from 125Mbit/s to 112Gbit/s
- Wide range of native service types: Ethernet, OTN, SONET / SDH, ESCON, Fibre Channel, FICON, Coupling Link, Infiniband, audio and video

Optical layer and capacity

- DWDM: 4, 8, 16, 40, 80, 96 and 128 channels
- CWDM: 16 channels
- Hybrid: 12chCWDM+40chDWDM
- Wide variety of filters and ROADM options for fixed and flexible optical layers

Innovative technology

- MicroConnect™: metro-optimized ROADM optical layer
- OpenFabric™: innovative metro OTN cross connect
- TrueTime™: precise timing delivery and time-sensitive OTN

ConnectGuard™ encryption

- Layer 1 AES-256 data encryption with ultra low latency and 100% throughput
- Diffie-Hellman dynamic key exchange (2048 bit)
- BSI, FIPS certified

Power and environmental

- EcoDesign
- -48VDC or 100-240VAC PSUs, 1:1 redundant
- Variety of active and passive chassis from 1HU to 12HU; 19in/ETSI/NEBS rack mounting

Applications in your network

Optical access
Network infrastructure
Data center interconnect

Distance extension

Optical demarcation

Passive optical access

Agile metro and core infrastructure

Micro Connect™   True Time™   Open Fabric™

Connect Guard™

Business continuity Disaster recovery

FSP network management suite

Data center interconnect for business continuity

- Open line system (OLS) and open YANG-based software architecture
- Complete security suite including encryption, intrusion and tamper detection
- Multi-service support certified by major vendors including latest protocols such as 32Gbit/s Fibre Channel

End-to-end network infrastructure

- Scalable system architecture for cost-effective optical network infrastructure
- Centralized network intelligence for network abstraction and easy integration into SDN environments
- Innovative technology for cost-effective and value-added solutions

ADVA™
Optical Networking

Wavelength technologies

- DWDM schemes
  - 4, 8, 16, 40 channel, C-band, 100 GHz spaced
  - 80-channel, C-band, 50 GHz spaced
  - 96-channel, C-band, 50 GHz spaced
  - 128-channel, C-band, 37.5 GHz spaced
- CWDM: 16 wavelengths/20 nm according to ITU-T G.694.2
- Hybrid CWDM/DWDM
- Flexgrid

Topologies

- Point-to-point
- Point-to-multipoint
- Linear add/drop
- Multiplexed add/drop (drop and continue)
- Ring (+ feeder + dual homing)
- Hubbed-ring
- Meshed

Maximum distance

- Total optical transparent distance (without regeneration) > 3000 km
- Maximum span budget: 50dB

Protection

- Versatile protection
- Channel protection
- Path protection
- Channel card protection
- Client layer protection

Services

- Ethernet 100Mbit/s, 1Gbit/s, 10Gbit/s, 40Gbit/s and 100Gbit/s (LAN and WAN)
- ESCON and Fibre Channel/FICON 1Gbit/s, 2Gbit/s, 4Gbit/s, 8Gbit/s, 10Gbit/s, 16Gbit/s and 32Gbit/s
- InfiniBand 5GIB and 10GIB
- STM-1, -4, -16, -64 / OC-3, -12, -48, -192
- OTU-1, -2, -3 and -4
- Uncompressed video (SD-SDI, HD-SDI, 3G-SDI)
- CPRI up to 10Gbit/s
- Any rate interface ranging from 125Mbit/s to 112Gbit/s

Mapping of services

- Over SDH/SONET, OTN and GFP

Channel Modules

- Transponders (from 2.5Gbit/s to 100Gbit/s))
- Muxponders (agregating from 100Gbit/s to 100Gbit/s onto 10Gbit/s , 10Gbit/s, 200Gbit/s)
- Add/drop multiplexers (dynamic routing of sub-aggregate traffic 100Mbit/s to 100Gbit/s)
- Cross connects (cross connect function for sub-aggregated services from 1Gbit/s to 100Gbit/s)

Optical Layer

- Fixed filter from 1 to 128 channels WDM
- Reconfigurable optical add drop modules (ROADM) from 1 to 9 degrees with multiple fixed, colorless and/or directionless add/drop structures
- Multiple amplifications solutions using Erbium fiber and/or Raman amplifiers for span budgets of 50dB and more
- Automated optical layer with channel equalization and span loss equalization
- Optical supervisory functions like optical channel monitoring with full support of third-party wavelengths
- Tailored solutions from access, metro and regional/long-haul

Commons

- 1RU, 4RU, 7RU, 9RU and 12RU shelf variants
- Power supply modules from 50 to 1200W (AC, DC, full redundant)
- Various controller modules (from compact to redundant and high performance)
- Multiple management interfaces (USB, RJ45, digital IO-housekeeping)
- Separate network management channel options

Equipment management

- Embedded CRAFT/terminal interface
- Embedded Web based graphical user interface with "point and click" provisioning via HTTPS
- Full support of SNMPv1, SNMPv3, TL1
- Full support of FTP, SFTP, SCP, SSH, TELNET
- Embedded FSP Network Hypervisor supports RESTCONF and NETCONF
- Remote authentication via RADIUS or TACACS+
- Enhanced user mgmt. with multiple security options

Product specifications are subject to change without notice or obligation.

ADVA
Optical Networking

Environmental

- Standard temperature (operating): +5°C to +40°C
- Extended temperature active (operating): -33°C to +55°C
- Extended temperature passive: -40°C to 85°C
- Relative humidity (non-condensing): 5% to 85% (operating) / 5% to 90% (short-term)
- Outdoor enclosures for passive components

Regulatory compliance

- NEBS level 3
- ETSI EN 300019-1-3
- IP20. Use in a pollution degree 2 environment and indoor controlled office environments only
- CE, FCC, NRTL, VCCI
- Class 1M laser product with hazard level 1M
- WCAG 2.0 certification for low barrier access to the Network Element Director (NED) user interface for visually and physically impaired
- Ecodesign ISO-14001:2015 certified

Before you install, operate and service the FSP 3000 AgileConnect™ (FSP 3000R7) system, review and read the FSP 3000R7 Documentation Suite. The FSP 3000R7 Hardware Guide contains important safety and permissible configuration information, as well as installation and maintenance procedures. Other manuals in the FSP 3000R7 Documentation Suite contain operating procedures. To avoid personal injury and equipment damage due to incorrect usage, you need to be familiar with the documentation contents.

Product specifications are subject to change without notice or obligation.

© 08 / 2018 ADVA Optical Networking. All rights reserved.   Page 4 of 4

ADVA™
Optical Networking