\Orchestrating a brighter world   **NEC**

SpectralWave™
DW7000
Converged Packet/Optical Transport System

■ **Product Overview**

The DW7000 is a converged packet optical transport system which addresses growing demands for scalability, flexibility and cost efficiency. The DW7000 is suitable for core and metro optical networking applications ranging from simple point-to-point to complex mesh configurations.

■ **Scalable Transport and Multi-layer Switching**

The DW7000 is designed as a highly-scalable transport system providing a capacity of up to 96 channels at 100Gbps or 64 channels at 400Gbps that can readily accommodate future traffic growth. The DW7000 also provides multi-layer switching capabilities, i.e. switching at L0 (wavelength), L1 (OTN) and L2 (packet) layers, which allows operators to configure flexible and efficient networks.

■ **Flexible, Robust and Cost-effective Networking**

The DW7000 supports linear, ring and mesh topologies allowing for flexible network design. In particular, the multi-degree CDC (Colorless, Directionless, Contentionless) ROADM capability allows operators to assign any wavelength/direction to the output of a given transponder by software. It provides flexible, robust and cost-effective optical path routing as well as traffic restoration, making the DW7000 an excellent fit for mesh networks.

■ **Industry-leading 100G/400G Transponders**

The DW7000 100G/400G transponders have unparalleled transmission performance along with NEC's superb link engineering capability, which minimizes the number of regenerators. They are also built on ecological design (extremely compact, low-power, lightweight), contributing to TCO reduction.

■ **Alien Wavelength Application**

The 100G transponders can also be connected to existing DWDM systems from other vendors to provide cost-effective capacity expansion, known as the "alien wavelength" application. NEC has a field-proven track record in this application with technical and economical advantages.

■ **ODU - Aggregation**

Switchponder card integrates both L1 Switching and WDM Transponder functions into a single card. It provides variety of client interfaces and improves the wavelength usage in WDM networks.

■ **Unified Management**

The MS5000 Network Management System manages DW7000 nodes as well as NEC's other network elements, both optical and wireless.

■ **Future-proof Architecture**

The DW7000 has a future-proof architecture ready for T-SDN (Transport Software-defined Networking) and beyond-400G transmission such as 1Tbps.

T-SDN Controller provides multi-layer control and management capabilities. Some of its major components include but are not limited to:
➤ Optical Network Planner
➤ Multi-layer PCE (Path Computation Element)
➤ Virtual Routing

400Gbps/1Tbps transmission is achieved by adopting a superchannel technology. NEC further provides flexible and efficient optical networking when such high-speed transmission and mesh networking are in place. Some key features that are planned include:
➤ Impairment-aware routing
➤ Network defragmentation
➤ Optical Multicasting
➤ Optical Grooming

Technical Summary

- **Client Interface**
  Ethernet: FE, GbE, 10GbE, 40GbE, 100GbE
  SDH/SONET: STM-1,4,16,64,256/OC-3,12,48,192,768
  PDH: E1
  OTN: OTU1, OTU2, OTU2e, OTU3 OTU4
  SAN: 1G/2G/4G/8G/10G FC
  Infiniband: SDR/QDR/DDR IB
  CPRI: Option 1/2/3/4/5/6/7
  Video: SD-/HD-/3G-SDI, DVB-ASI

- **WDM Interface**
  100G DP-QPSK @ 50GHz spacing)
  400G 4SC DP-QPSK @ 150GHz spacing
  400G 2SC DP-16QAM @ 75GHz spacing

- **Transmission Capacity and Distance**
  9.6Tbps, 4,000km (100G DP-QPSK)
  12.8Tbps, 3,000km (400G 4SC DP-QPSK)
  25.6Tbps, 1,000km (400G 2SC DP-16QAM)

- **Optical Cross-connect (Multi-degree ROADM)**
  Max. degrees: 8
  Max. capacity: 204.8Tbps (C-band)
  187.2Tbps (L-band)

- **Electrical Cross-connect (ODU-XC)**
  Max. capacity: 2.8Tbps (upgradable to 7Tbps)
  Granularity: ODU0/1/2/2e/3/4/flex

- **Ultra Long Span Amplifier**
  Product family: Power Booster, Counter Raman,
  Co-propagating Raman, ROPA
  Max. span: 92dB

- **Protection and Restoration**
  1+1 optical path protection with dual-port transponder
  1+1 optical path protection with transponder redundancy
  Network restoration featuring 1+R and 1+1+R

- **Link Measurement**
  Integrated OTDR and optical spectrum analyzer function
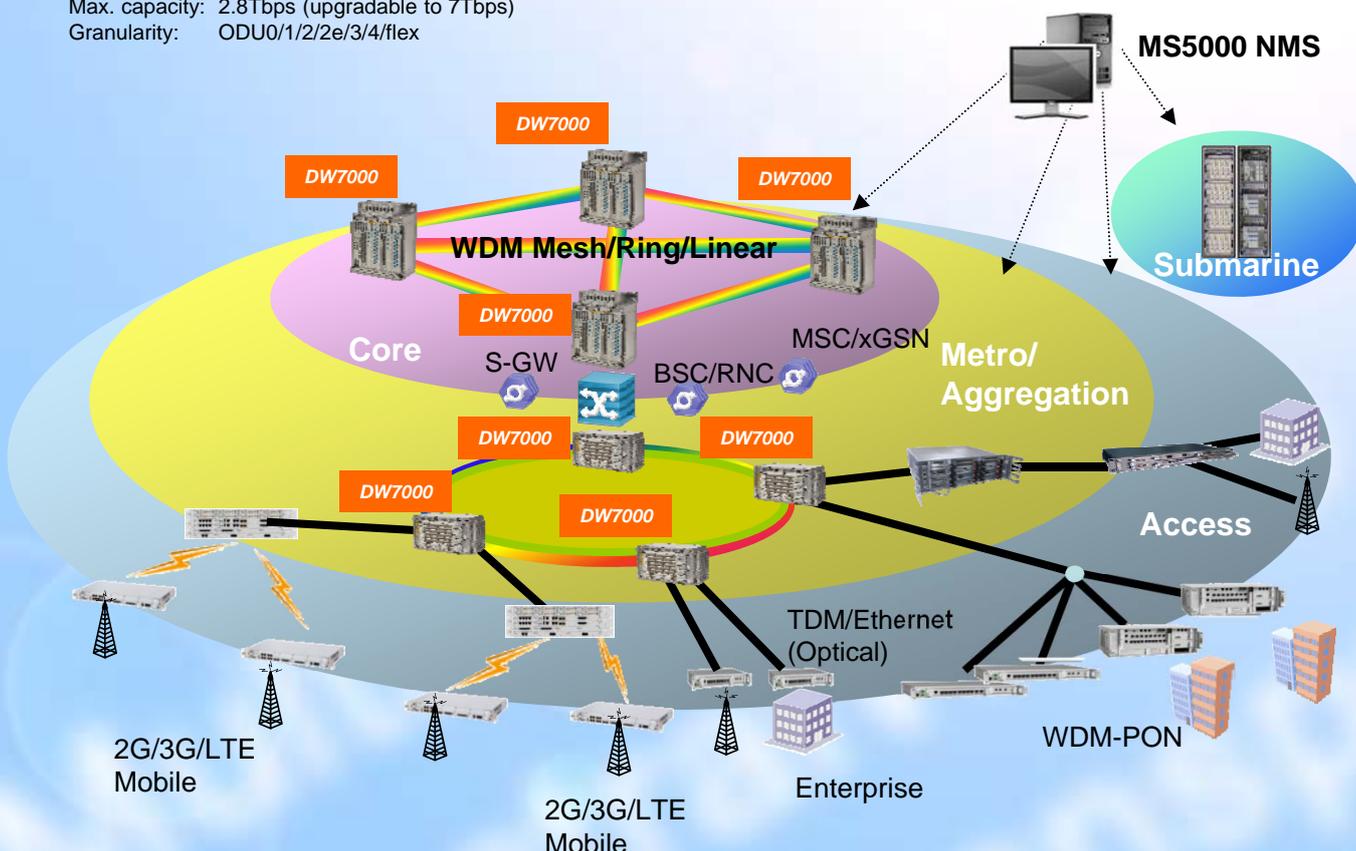
- **Management**
  Unified network management by MS5000
  Built-in Web-based equipment management

- **Environment**
  Operating Temperature Range: 5ºC to +40ºC
  Relative Humidity: 5% to 85% w/o condensation
  EMC: CISPR22(Class A), CISPR24
  Safety: IEC 60950-1, IEC 60825-2

- **Power Requirements**
  Voltage: -48V DC

DW7000 in typical carrier network

⚠ Safety Precautions	* Before installing, connection or using this product, be sure to carefully read and observe the cautionary and prohibited matters provided in the instruction manual.

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For inquiries, contact :

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http://www.nec.com/en/global/solutions/nsp/opt/dw7000/

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