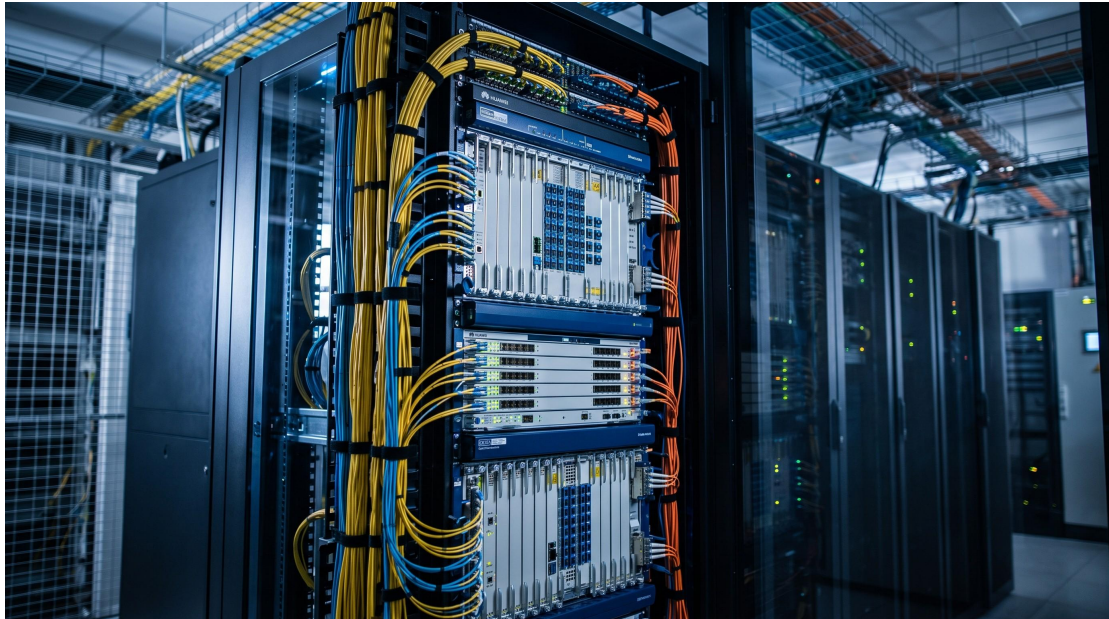


PRODUCT IDENTIFICATION

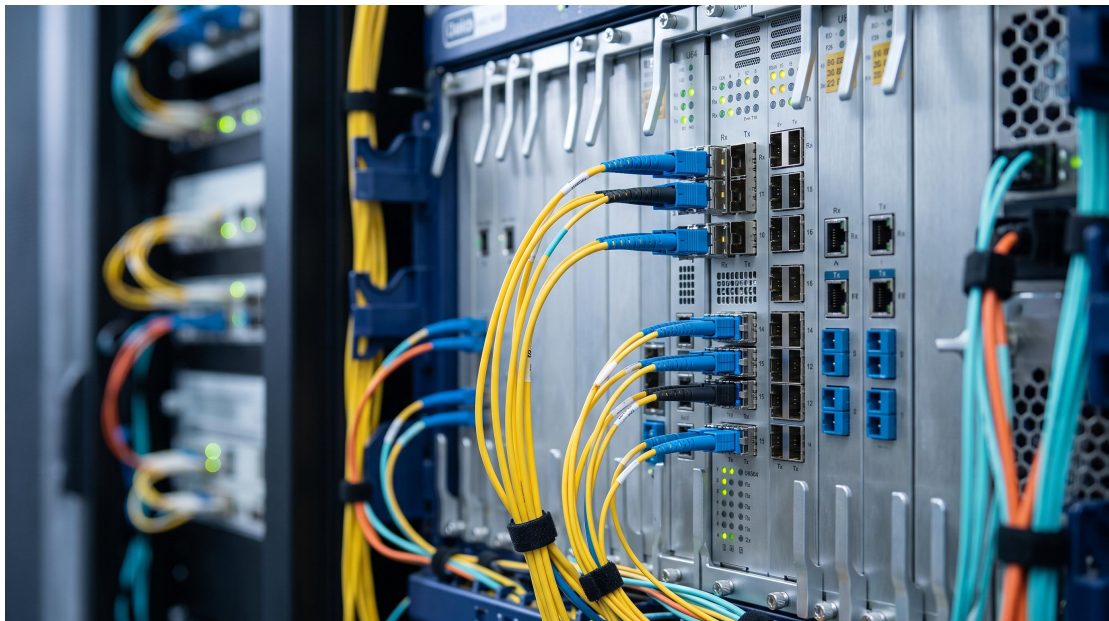
The Huawei OptiX OSN 9800 U64 represents the flagship high-capacity subrack within the OSN 9800 U series, engineered for ultra-large cross-connect capacity and bandwidth requirements in next-generation optical transport networks. As a critical node in super-backbone and backbone layers, the U64 subrack is designed to handle 100G, 200G, and 400G per-channel transmission, with a roadmap extending to 1T/2T. The subrack is delivered as an integrated unit within a 2200mm x 600mm x 600mm cabinet, distinguishing it from smaller shelf-based variants in the portfolio . The platform utilizes a unified switching matrix based on Huawei's T-bit switching chip, enabling the concurrent processing of OTN, VC, and packet services without compromising throughput or introducing blocking under full load conditions .



SYSTEM HARDWARE TOPOLOGY

The OptiX OSN 9800 U64 physical architecture is organized into distinct functional zones to manage the thermal and electrical demands of 64 service slots. The front access area houses 32 service board slots (IU1 through IU32), while the rear access area accommodates an additional 32 service slots (IU33 through IU64). This front-to-back card cage layout facilitates cable routing and maintenance accessibility in dense carrier environments. The system control and cross-connect zone is located centrally, comprising two CTU (Control Unit) boards and multiple XCS (Cross-Connect Switch) boards. Specifically, the front cross-connect area utilizes slots IU71 through IU77, while the rear utilizes IU79 through IU85. The CTU boards, installed in slots IU70 and IU78, operate in a 1+1 backup configuration, managing system clocks and inter-network element communication .

The backplane interconnect logic ensures that service boards in both front and rear areas can communicate with the cross-connect fabric at full line rate. The XCS boards are provisioned in an M:N protection scheme, ensuring that a single cross-connect failure does not degrade the 64 Tbit/s switching capacity of the shelf. For deployments where the U64 operates as a pure regeneration node, the cross-connect boards may be omitted to reduce power consumption and cost . Cooling is managed by four fan tray assemblies located at the top rear of the subrack, with slots IU94 through IU97 dedicated to the upper and lower fan zones .



DATA & CONTROL PLANE CAPABILITIES

The control plane architecture is anchored by the redundant CTU boards, which

provide the synchronization backbone for the entire shelf. The system supports IEEE 1588v2 and Synchronous Ethernet, ensuring timing accuracy suitable for 5G and LTE backhaul requirements . The data plane is governed by the XCS cross-connect fabric, which in the standard U64 configuration delivers 25.6 Tbit/s of ODUk cross-connect capacity, 12.8 Tbit/s for packet services, and 10.24 Tbit/s for VC-4 granularity. This capacity is sufficient to support up to 256 OTU4 ports or 384 100GE ports when fully populated with high-density line cards .

The universal switching matrix eliminates the need for separate fabric cards for different service types. A single service board slot can accept a line card that processes OTN, SDH, and Ethernet traffic simultaneously, with the backplane transporting any encapsulated format to the appropriate egress port. This design simplifies sparing logistics and enables service providers to mix and match interface types based on evolving demand patterns without re-engineering the shelf layout .

COMPONENT BREAKDOWN

The power and interface unit (PIU) subsystem is a distinguishing feature of the U64 architecture, employing a distributed power supply pool rather than a centralized bulk feed. The PIU boards are located in dedicated slots within the power and interface area. The system control, cross-connect, and fan zones are

fed by the IU100 and IU121 PIU pair, with IU100 active and IU121 standby. The rear system control and cross-connect zones are fed by IU106 and IU115. Service board slots are powered by separate PIU groups: slots IU17 through IU32 are served by IU101, IU103, IU118, and IU120; slots IU1 through IU16 by IU102, IU104, IU117, and IU119; slots IU33 through IU48 by IU107, IU109, IU112, and IU114; and slots IU49 through IU64 by IU108, IU110, IU111, and IU113. This zoned power distribution ensures that a single PIU failure affects only a localized group of slots, preserving overall system availability .

OPERATIONAL SPECS MATRIX

The OptiX OSN 9800 U64 is specified for continuous operation in controlled carrier environments. The subrack dimensions are 2200mm (H) x 600mm (W) x 600mm (D) as an integrated cabinet solution. The nominal working voltage is -48V DC or -60V DC, with an operating range of -40V to -57.6V for the -48V nominal and -48V to -72V for the -60V nominal. The system supports a maximum channel rate of 400 Gbit/s per wavelength (OTUC4), with a wavelength range of 1529.16 nm to 1567.13 nm (extended C-band) per ITU-T G.694.1. Channel spacing supports both fixed 50/100 GHz grids and flexible 37.5 GHz to 400 GHz grids. The Mean Time Between Failure (MTBF) for the U64 shelf is rated at 66.83 years, yielding an availability figure of 0.999993167 .

TECHNICAL SPECIFICATIONS

Parameter	Specification
Form Factor	Integrated cabinet, 2200mm (H) x 600mm (W) x 600mm (D)
Service Slots	64 (32 front, 32 rear)
Switching Capacity (ODUk)	25.6 Tbit/s (standard) / 64 Tbit/s (enhanced)
Packet Switching Capacity	12.8 Tbit/s
VC-4 Switching Capacity	10.24 Tbit/s
Max Channel Rate	400 Gbit/s (OTUC4), evolution to 1T/2T
Wavelength Range	1529.16 nm to 1567.13 nm (Extended C-band)
Power Supply	-48V DC / -60V DC nominal, 1+1 input protection
Redundancy	CTU 1+1, XCS M:N, PIU zoned active/standby or load-sharing
MTBF	66.83 years
Operating Temperature	5°C to 40°C (long-term), -5°C to 45°C (short-term)

REGULATORY COMPLIANCE

The platform is designed to meet the applicable sections of ITU-T G.694.1 for DWDM grid spacing and G.709 for OTN frame structures. Equipment-level protection features include 1+1 power input protection, 1+1 fan protection, M:N switch board protection, and 1+1 controller protection. Network-level protection supports Optical Line Protection (OLP), ODUk SNCP, client 1+1 protection, and ASON/WSN for electrical layer restoration. Packet transport protection includes PW APS, Tunnel APS, LAG, and MC-LAG. Safety certifications align with standard carrier-grade ETSI and IEC requirements for enclosed equipment, though specific certificate numbers vary by deployment region and must be verified against the local Huawei delivery documentation .

CABLE ROUTING ARCHITECTURE

Cable management in the U64 subrack is engineered to support the high fiber counts associated with 64 service slots. Fiber routing areas are partitioned between the front and rear of the shelf. Two fiber troughs are provided on the front side, and two additional troughs are located on the rear side. Patch cords from service boards are routed through these upper and lower troughs to the left or right side of the equipment, depending on the cable management plan

for the specific bay. This segregation prevents front-side service cabling from obstructing rear-side cross-connect or power cabling, and vice versa .

Power cabling follows the zoned PIU topology described in the component breakdown. DC feeders are terminated at the PIU boards corresponding to each service slot group. For high-density deployments where power consumption in a service area exceeds 2400 W, two PIU boards must be active simultaneously in a load-sharing configuration rather than a single active with standby. This threshold is critical for cable sizing and breaker coordination during site planning. Grounding is provided via the cabinet frame, with bonding points distributed to ensure equipotential bonding across all removable boards and the backplane .

[IMAGE_2]