

ZTE ZXONE 9700 Packet OTN Product

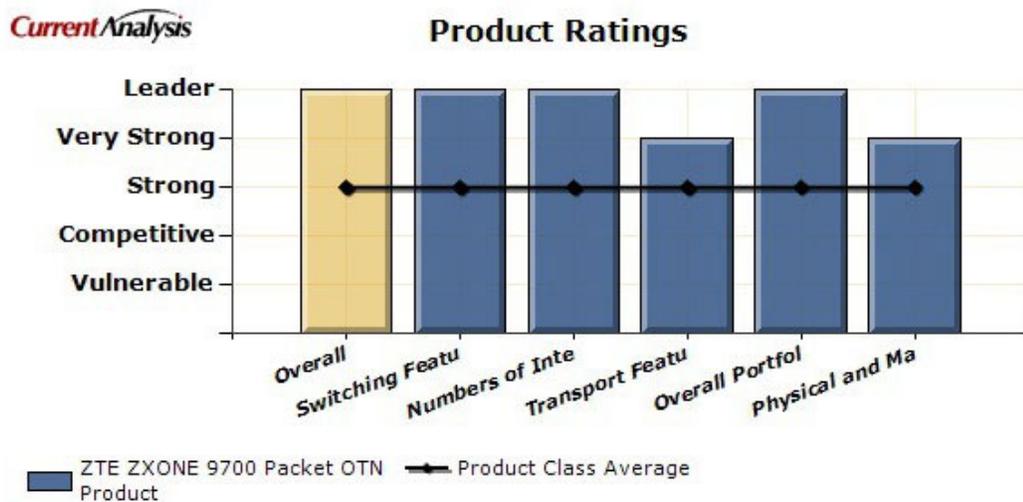
Hunt, Glen | March 21, 2016

Product Assessment - Metro Packet-Optical Transport



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Summary



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Competitive Strengths

- ZTE’s ZXONE 9700 S3 provides the highest OTN switching capacity – 14.4 Tbps – in the class, enabling an operator to meet surging traffic demand, grooming a switching a mix of traffic types.
- The ZXONE 9700 series terminates class-leading numbers of DWDM lines, maximizing connection flexibility. The S3 terminates the highest number of 100G 40G and 10G wavelengths per chassis and per rack in the class, WDM wavelengths.
- The ZXONE 9700 series also offers high numbers of high-speed client interfaces, enabling operators to aggregate and switch large numbers of these interfaces.
- The ZXONE 9700 series supports a high EDFA-based amplifier span (second in class), enabling operators to minimize the number of expensive amplifiers on the fiber route and potentially avoid placing amplifier sites at hard-to-reach locations.
- The ZXONE 9700 series supports the longest 200G/400G regenerator span in the class– 1,200 km – enabling operators to double system capacity in numerous applications, both metro and regional.
- The ZXONE 9700 provides class-leading per-slot backplane capacity – 400 Gbps –which supports single-slot 200G line modules and 400G super-channel modules.



Competitive Weaknesses

- The ZXONE 9700 supports the lowest SONET/SDH switching capacity in the class, which may restrict operators’ ability to network their legacy.
- ZTE has not indicated that JTIC, NEBS, ROHS, CAN or OSMINE certifications have been obtained or planned for the platform, restricting its use in operator networks requiring these certifications.

Current Perspective

LEADER

The ZTE ZXONE 9700 series is a leader in the metro packet-optical transport market based on its high OTN switching, wavelength termination and client port capacities, and long amplifier and 200G/400G regenerator spans. The portfolio is offered in a variety of chassis sizes to match the capacity requirement of each operator metro site – the quarter-rack S1 (4.4 Tbps capacity), half-rack S3 (9.2 Tbps) and full-rack S3 (14.4 Tbps

capacity). ZTE also offers the S6, a back-to-back chassis that supports 28.8 Tbps of OTN switching capacity, but because of its depth (600mm) and dual-sided access, it is primarily utilized as a core packet-optical platform. Operators generally prefer to deploy transmission equipment with single-sided access, and no more than a 300mm depth, in their metro offices.

The ZXONE 9700 S3 supports the highest OTN switching capacity in the class, enabling operators to groom and switch the surging traffic (of mixed types) in the metro. It also terminates class-leading numbers of DWDM lines, enabling operators to terminate large numbers of wavelengths without needing to employ multiple chassis/switches, which would increase complexity and space at networking sites. The platform’s long EDFA- based amplifier span enables operators to minimize the number of amplifiers on a fiber route and potentially avoid placing some high-cost amplifier sites. In addition, the ZXONE

9700 series supports the longest 200G/400G regenerator span in the class, enabling operators to double system capacity in numerous networks, whether metro or regional. The system also offers the highest packet switching capacity in the class, at 14.4Tbps, giving operators the opportunity to greatly expand packet switched traffic in the metro, driven by 100G Ethernet ports on edge and core routers. ZTE’s market strength, until recently, has concentrated in the Asia Pacific region with operator traction noted in Indonesia, Thailand, Malaysia, Singapore, Vietnam and Australia. The vendor notes recent penetration into Latin American in countries such as Brazil, Argentina, Mexico, Columbia and Peru; and further penetration into Europe with the UK, Austria, Spain, Portugal and France.

However, the ZXONE 9700 series SONET/SDH cross-connect capacity is relatively modest, which may limit the ability of operators to groom and switch tributaries within SONET/SDH lines in the metro. The vendor has not indicated NEBS or OSMINE certifications for the platform, restricting its use in operator networks requiring these certifications.



Strengths and Weaknesses**Strengths**

- ZTE's ZXONE 9700 S3 provides the highest OTN switching capacity – 14.4 Tbps – in the class, enabling an operator to meet surging traffic demand, grooming a switching a mix of traffic types. High OTN switching capacity is not only important because of across-the-board traffic growth, but the emerging 100G wavelengths will drive tremendous OTN switch traffic as the switches aggregate traffic to fill the 100G wavelengths, maximizing their utilization.
- The ZXONE 9700 series terminates class-leading numbers of DWDM lines, maximizing connection flexibility. The S3 terminates the highest number of 40G and 10G wavelengths per chassis and per rack in the class, and the second highest number of 100G DWDM wavelengths. High numbers of these line ports per chassis enable operators to terminate large numbers of wavelengths without needing to employ multiple chassis/switches, which would increase complexity at networking nodes, and high numbers per rack save valuable equipment room space.
- The ZXONE 9700 series also offers high numbers of high-speed client interfaces, enabling operators to aggregate and switch large numbers of these interfaces. The portfolio provides the highest numbers of 10G (OC-192/STM-64, OTU-2 and 10GbE) and 2.5G (OC-48/STM-16 and OTU-1), and the second highest number of 100G (100GbE and OTU-4), ports per chassis and per rack in the class. High numbers of high-speed client connections from large enterprises, data centers and packet-optical access (POA) platforms will require large numbers of these ports.
- The ZXONE 9700 series supports a high EDFA-based amplifier span (second in class), enabling operators to minimize the number of expensive amplifiers on the fiber route and potentially avoid placing amplifier sites at hard-to-reach locations. EDFAs are less expensive and simpler to operate than Raman amplifiers, which support longer spans. Amplifier span is particularly important on fiber routes that traverse areas, such as mountains, jungles and lakes, for which support of intermediate amplifier equipment is cost-prohibitive.
- The ZXONE 9700 series supports the longest 200G/400G regenerator span in the class – 1,200 km – enabling operators to double system capacity in numerous applications, both metro and regional. This doubling of system capacity comes at only marginally greater cost than 100G transport, so the cost per transmitted bit is nearly halved. This 1,200 km reach is key because many large metro areas are within 1,200 km of each other.
- The ZXONE 9700 provides class-leading per-slot backplane capacity –400 Gbps – which supports single-slot 200G line modules and 400G super-channel modules. The emergence of 200G as cost-optimized transport in the metro introduces the need to support the 200G module in a single chassis slot to save cost and space. As metro traffic demand increases, operators will seek further capacity increases in metro transport, to 400 Gbps/wavelength, which will again be most efficiently served with a single-slot module.

Weaknesses

- The ZXONE 9700 supports the lowest SONET/SDH switching capacity in the class, which may restrict operators' ability to network their legacy SONET/SDH infrastructure and services effectively. SONET/SDH switching allows operators to aggregate and groom SONET/SDH tributaries into a higher-level SONET/SDH signal within the DWDM platform, minimizing the number of SONET/SDH network elements, thereby saving CapEx and OpEx.



- ZTE has not indicated that JTIC, NEBS, ROHS, CAN or OSMINE certifications have been obtained or planned for the platform, restricting its use in operator networks requiring these certifications.

Metrics

Line Capabilities

Rating	Very Strong
Wavelength Capacity on Fiber Pair	96
Metro/Cost- Optimized 100G Option	500, LR4 - 10km; ER4: 40km
Metro 200G/400G Option	1200 km
Maximum Span without Intermediate Amplifier	190km with EDFA, 210km with RA
Maximum 100G Wavelengths/Chassis	144
Maximum 40G Wavelengths/Chassis	72
Maximum 10G Wavelengths/Chassis	720

Switching Features

Rating	Leader
SONET/SDH High-Order Cross- Connect Capacity	240 Gbps
SONET/SDH Low-Order Cross- Connect Capacity	40 Gbps
OTN Switching Capacity and Granularity	S3:14.4 Tbps; S2: 9.2 Tbps; S1: 4.4 Tbps; ODU0/1/2/2e/3/4/flex
Packet Switching Capacity	S3:14.4 Tbps; S2: 9.2 Tbps; S1 4.4 Tbps
Per-Slot Capacity	400 Gbps

Client Interfaces

Rating	Leader
OC-768/STM-256 ports/chassis	72
OC-192/STM-64 ports/chassis	720
OC-48/STM-16 ports/chassis	576
OC-12/STM-4 ports/chassis	576



OC-3/STM-1 ports/chassis	576
OTU-4 ports/chassis	144
OTU-3 ports/chassis	72
OTU-2 ports/chassis	700
OTU-1 ports/chassis	576
100GbE ports/chassis	144
10GbE ports/chassis	720
GbE ports/chassis	576
ESCON, FICON, Fibre Channel ports/chassis	576 FC 100/200ESCON, 720 FC 400/800/1200
Other Interfaces	72 40GE-LAN/WAN, 576 DVB-ASI

ROADM and Transport Features

Rating	Very Strong
ROADM Capacity/Capability	20 degrees
Line Protection Capabilities	OCH 1+1 and spring, OMS 1+1, OTS 1+1, OLP, SNCP, ODUK spring and dynamic recovery based WASON
Tributary Protection Capabilities	Clinet 1+1

Physical Attributes

Rating	Very Strong
Chassis Dimensions and chassis/rack	1772mm (H) x533mm (W) x286.8mm (D)
Interface Configuration	36, client or line
4-Degree ROADM Size	12
Power Consumption without Switch	386
Power Consumption with Switching	1867 W

Protocols and Management

Rating	Very Strong
Certifications	CE, CB, ETL, FCC



Ethernet Protocols Supported	Supports E-Line, E-LAN, E-Tree services; Stacking VLAN, Q-in-Q, IEEE 802.3ah, IEEE 802.1ag, IEEE 802.3ad, IEEE 802.3X, IEEE 802.1p, IEEE 802.1D, IEEE 802.1Q, IEEE 802.1ad, IGMP Snooping, MSTP(IEEE 802.1s) and so on.
MPLS Support	Supported
Control Plane Support	ZXUCP A200 is the intelligent control plane for WDM/OTN network.
Transport SDN Support	Software-Defined Optical Networking (SDON)
Network Modeling Tools	Integrated service aggregation model, OTN electrical crossing model, ROADM optical crossing model and line parameter model, supporting link, ring, and mesh network topologies. The system has fiber-break plan and WASON failure simulation fort wavelength route planning and route recovery for services.

