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Coriant® 7100 PSX-3S

Proven and Feature-rich Packet Switching in a Compact and Cost-effective Form Factor

A number of trends have been driving network operators to deploy WDM optical transport with integrated packet switching. These trends include the demand for more bandwidth and greater agility with key applications including Ethernet services, fixed broadband aggregation, mobile backhaul, SONET/SDH migration, and more recently, cloud connect services. To meet this demand over the last decade and more, Coriant has developed the packet switching capabilities of its market-leading packet optical platforms, the Coriant® 7100 Packet Optical Transport Platform and the Coriant® mTera® Universal Transport Platform (UTP). Leveraging the same packet switching software and delivering up to 376 Gbps in 1RU, the Coriant® 7100 PSX-3S provides a compact and cost-effective packet switch optimized for aggregation and access applications.

MINIMIZING FOOTPRINT WITH 376 GBPS IN 1RU

The 1RU 7100 PSX-3S has twenty-six multi-rate physical ports that can provide GbE, 10GE, OTU2, and 100GE interfaces. Two ports can support 100GE (QSFP28) or quad 10GE (QSFP+ with breakout cable). Four ports can support 10GE (SFP+) or OTU2 (SFP+). Twelve ports can support 10GE (SFP+) or GbE (SFP). Eight ports can support either eight GbE with SFPs or sixteen GbE with CSFPs, which deliver two GbE per port. As shown in Table 1, these ports can be used to deliver up to two 100GE interfaces, up to four OTU2 interfaces, up to twenty-four 10GE interfaces and up to twenty-eight GbE interfaces, with a maximum interface capacity of 376 Gbps.

	7100 PSX-3S Physical Ports			
	2x100GE/Quad 10G	4x10GE/OTU2	12x10GE/GbE	8xGbE/Dual GbE
Maximum 100GE = 2*	2x100GE	4x10GE/OTU2	12x10GE/GbE	8/16xGbE
Maximum OTU2 = 4*	2x100G or 8x10GE	4xOTU2	12x10GE/GbE	8/16xGbE
Maximum 10GE = 24*	8x10GE	4x10GE	12x10GE	8/16xGbE
Maximum GbE = 28*	2x100G or 8x10GE	4x10GE/OTU2	12xGbE	16xGbE
Maximum Capacity = 376 Gbps	2x100G = 200G	16x10G = 160G		16x1G = 16G

* Other ports can also be used

Table 1 - Coriant® 7100 PSX-3S: Maximum Interfaces and Capacity

ADDRESSING A WIDE RANGE OF AGGREGATION AND ACCESS APPLICATIONS

An ideal solution for aggregation and access deployments, the 7100 PSX-3S addresses a wide range of services and provides an MEF CE 2.0 compliant platform with support for Ethernet connectivity services, including E-Line, E-LAN, E-Tree, and E-Access. Additional business use cases include cloud connect services and private metro Ethernet networks for enterprises. Other services include fixed broadband and 3G/4G mobile backhaul.

BENEFITS OF THE CORIANT® 7100 PSX-3S

- **Leverage** the proven and feature-rich packet software of Coriant industry-leading packet optical platforms, the Coriant® 7100 Series and the Coriant® mTera UTP
- **Minimize** footprint with 376 Gbps interface capacity in a compact 1RU platform with 250 mm depth
- **Avoid** the cost of external 10G transponders with optional OTU2 support on four of the 10GE interfaces
- **Grow** Ethernet service revenues with hard QoS and integrated Ethernet service activation testing
- **Maximize** network availability with redundant power, Ethernet and MPLS-TP fault management, and a comprehensive set of packet protection mechanisms



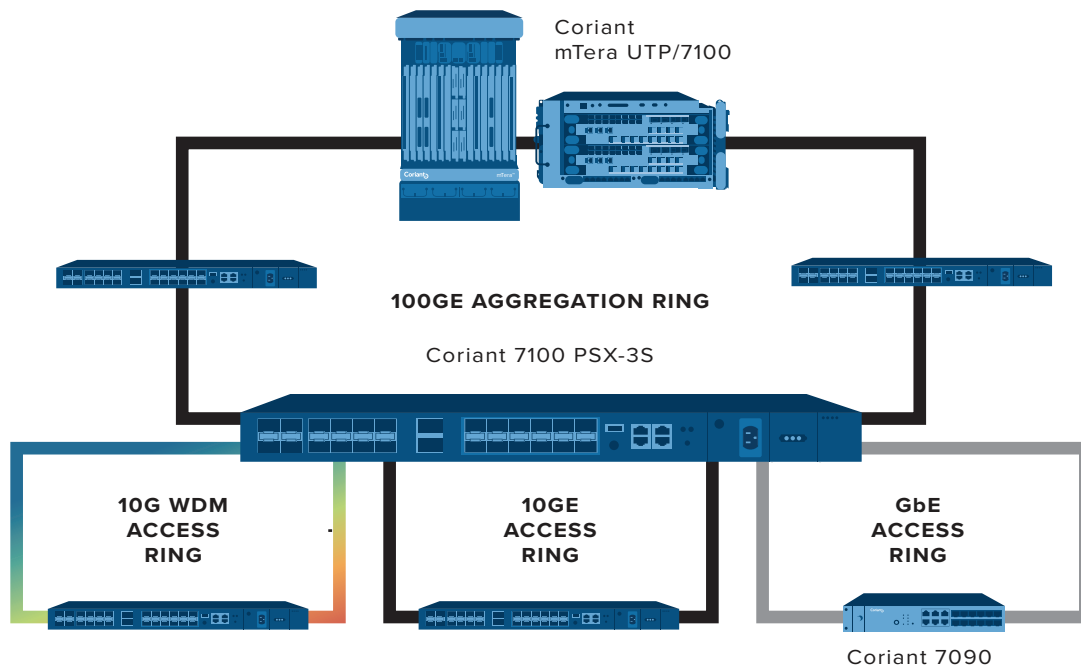


Figure 1 - Coriant® 7100 PSX-3S Applications

The 7100 PSX-3S can be deployed as a standalone unit or as part of a solution with the 7100 Series, mTera UTP, and/or Coriant® 7090 Packet Transport Solutions with guaranteed interoperability and end-to-end management. As shown in Figure 1, aggregation applications include 100GE rings aggregating 10GE rings comprised of 7100 PSX-3Ss or other 10GE access devices such as the Coriant® 7090-15 CEM Packet Transport Platform or the Coriant® 7090-60 CEM Packet Transport Platform and GbE rings comprised of GbE access devices such as the Coriant® 7090-05 CE Packet Transport Platform, the Coriant® 7090-07 CE Packet Transport Platform, or the Coriant® 7090-2 CEM Packet Transport Platform. Access applications include 10GE white light rings and WDM rings leveraging its four OTU2-capable 10G ports. Access deployment in environments that lack climate control is supported with an extended temperature range of -40°C to +65°C. The 7100 PSX-3S can also provide cost-effective GbE fanout for the mTera UTP, maximizing the utilization of the mTera UTP's high capacity slots.

CHOOSING FROM ETHERNET BRIDGING, VLAN CROSS-CONNECT, AND MPLS-TP

Leveraging the 7100 Series/mTera UTP packet software, the 7100 PSX-3S provides the ability to define each interface, and even virtual interface, for any of the following switching types:

- Carrier Ethernet: Bridging
- Carrier Ethernet: VLAN cross-connect (VLAN XC)
- MPLS-TP: VPWS
- MPLS-TP: VPLS and H-VPLS

This flexibility enables network operators to choose the switching types that best meet their scalability requirements, service offerings, and operational practices today, while retaining the ability to migrate to other switching types as their needs and service offerings evolve.

MAXIMIZING MEF ETHERNET SERVICE REVENUES WITH HARD QUALITY OF SERVICE

Quality of Service (QoS) mechanisms include classification based on ports, Layer 2 through 3 headers, and policing and shaping. The 7100 PSX-3S also supports four queues per VLAN/LSP and eight queues per port with support for both weighted fair queuing (WFQ) and strict priority hierarchical scheduling. Unintentional overbooking is prevented by connection acceptance control (CAC) in the network management system, enabling hard QoS that is complemented by Y.1731 performance monitoring including two-way delay and two-way loss.

AVOIDING DOWNTIME WITH COMPREHENSIVE PROTECTION AND FAULT MANAGEMENT

The 7100 PSX-3S offers protection against power supply failures with dual field replaceable power supplies (DC or AC). The fan unit is also field replaceable and can tolerate a failure of one of its fans. At the network level, the 7100 PSX-3S supports a range of protection mechanisms including G.8032 ERP for Ethernet Bridging, G.8031 1:1 VLAN protection for VLAN cross-connects, and G.8131 based LSP 1:1 protection for MPLS-TP. RSTP/MSTP and 802.1AX link aggregation are also supported. The 7100 PSX-3S also supports a comprehensive set of OAM capabilities including Y.1731, 802.1 CFM OAM, 802.3 Link OAM with Dying Gasp, and G.8113.2 PW and LSP OAM. These OAM capabilities enable faults to be quickly detected, located, and repaired.

SPEEDING SERVICE DELIVERY WITH ZERO TOUCH PROVISIONING AND RFC 2544/Y.1564 SERVICE ACTIVATION TESTING

The 7100 PSX-3S supports Zero Touch Provisioning (ZTP), which enables installation and commissioning tasks including establishing DCN connectivity, installation software upgrades, and device configuration to be automated, speeding deployment, minimizing the risk of configuration errors, and reducing costs. In addition, the 7100 PSX-3S supports RFC 2544 and Y.1564 Ethernet service activation testing. This speeds the activation of new Ethernet services enabling faster revenue collection while also reducing the operational costs of service activation by avoiding the need for onsite testing.

BUILDING DWDM RINGS WITHOUT THE NEED FOR EXTERNAL TRANSPONDERS WITH FOUR OTU2 INTERFACES

In addition to support for GbE and 10GE CWDM pluggables, the 7100 PSX-3S supports 10G DWDM pluggables including an 88 channel tunable option. Furthermore, four of the 7100 PSX-3S's ports can be configured for 10GE over OTU2 leveraging GFP-F framing. These interfaces offer extended reach with support for Generic Forward Error Correction (GFEC) and Enhanced Forward Error Correction (EFEC), 80 km of chromatic dispersion tolerance, and 10 ps of Polarization Mode Dispersion (PMD) tolerance, enabling unregenerated wavelengths of over 1,000 km in amplified, dispersion compensated ROADMs. Additional capabilities on these interfaces include GCC in-band management and PRBS test and loopback for cost effectively validating the wavelength during activation.

OFFERING COMPREHENSIVE END-TO-END PACKET MANAGEMENT WITH THE CORIANT TRANSCEND™ SOLUTION

The Coriant Transcend™ Software Suite includes the Coriant Transcend™ Chorus for network management and operations, the Coriant Transcend™ Symphony SDN controller, and the Coriant Transcend™ Maestro multi-domain orchestrator. The Transcend solution provides comprehensive end-to-end management and orchestration for the 7100 PSX-3S and the other members of the Coriant product portfolio including the 7100 Series, mTera UTP, and the 7090 Series. Key features include network inventory, capacity management, advanced troubleshooting, performance monitoring, service provisioning and supervision, and service and subscriber management. Open APIs include a REST API (Presto) to support the MEF Lifecycle Service Orchestration (LSO).

TECHNICAL SPECIFICATIONS

Physical

- Height: 1RU, 43.18 mm, 1.7 in
- Width: 443.23 mm, 17.45 in
- Depth: 250 mm, 9.84 in
- 376 Gbps Maximum Interface Capacity
- Maximum Power Consumption: 210 W
- Power Supplies: Dual DC, Dual AC, or Hybrid DC/AC; field replaceable
- Field replaceable fan module supporting a single fan failure
- Airflow: Front air intake, right air exhaust
- Extended Temperature Range (no 100GE): -40°C to +65°C
- Normal Temperature Range (with 100GE): -5°C to +50°C

Physical Ports

- 2x100GbE (QSFP28) or 4x10GbE (QSFP+ with breakout)
- 4x10GE/OTU-2 DWDM SFP+
- 12x10GbE (SFP+) or GbE (SFP)
- 8xGbE (SFP) or 16xGbE (2xGbE per port with CSFP)

Maximum Interfaces

- 100GE: 2
- OTU2: 4
- 10GE: 24
- GbE: 28

WDM Support

- WDM Pluggables:
 - 1G CWDM SFP
 - 10G CWDM SFP+
 - 10G DWDM Fixed SFP+
 - 10G DWDM Tunable SFP+ (88 Channels)
- Up to four 10GE/OTU2 Interfaces:
 - 10GE into OTU2 with GFP-F framing
 - G.709 Forward Error Correction Options: No FEC, FEC, EFEC
 - In-band Management (GCC0, GCC1, GCC2, and GCC1+GCC2)
 - Fault Management (GFP, ODU2, OTU2, OCH)
 - Performance Monitoring (ODU2, OTU2, OCH)
 - PRBS Test and Loopback

- Chromatic Dispersion Tolerance: -340 ps/nm to +1360 ps/nm (~ -20 km to +80 km, SMF-28 fiber)
- PMD Tolerance: 10 ps

Carrier Ethernet Features

- MAC Bridging (802.1D)
- VLAN Bridging and Provider Bridging (802.1Q)
- VLAN Cross-connect
- Multiple Virtual Switches
- VLAN Translation
- L2CP Tunneling

MPLS-TP Features

- P2P, bidirectional, co-routed LSPs
- Ethernet PW encapsulation (T-PE) and multi-segment PWs (S-PE)
- LSP switching
- IETF based LSP fault management
- RFC 4115 and 2698 based policing
- VPWS, VPLS, and H-VPLS
- MEF 6.1 compliant single and double rooted multi-point EVC

TECHNICAL SPECIFICATIONS

Network Protection

- G.8031 Ethernet 1:1 VLAN protection, also over LAG interfaces
- G.8032v2 Ethernet ring protection
- G.8131 based LSP 1:1 protection
- 802.1AX Link Aggregation with LACP and Active/Standby LAG
- RSTP/MSTP

OAM

- 802.1 CFM OAM
- 802.3 Link OAM
- Y.1731 OAM FM and PM
- G.8113.2 PW and LSP OAM
- Port/VLAN/flow mirroring
- PM on policers and shapers
- RMON and VLAN Statistics
- RFC2544 and Y.1564 Ethernet service activation testing
- PRBS Test and Loopback on OTU2 interfaces

QoS and Traffic Management

- Classification based on Port and MAC L2, L2.5, L3 headers
- 4 queues per VLAN/LSP, 8 queues per port
- RED, WRED, and tail drop, WFQ and strict priority
- Multi-level hierarchical scheduling and shaping (port, VLAN/LSP)
- P-bit manipulation (mark, override, regeneration)
- IEEE 802.3x flow control on access ports

Timing and Synchronization

- RJ48: Sync interfaces (E1/T1 Input/Output, TOD input or output)
- PPS (Input or Output, SMA connector)
- Synchronous Ethernet
- 1588v2 hardware ready

Management

- Coriant Transcend™ Software Suite
- Coriant® 7191 Craft Station
- Command Line Interface (CLI)
- Two RJ45 Ethernet Management Interfaces

- RJ48 Alarm Contacts
- RS-232 Console
- Zero Touch Provisioning (ZTP)
- SNMPv2/v3 (Packet) and TL1 (Network Element and OTU2)
- In-band management VLAN
- GCC In-band management on OTU2 Interfaces
- IP DCN with OSPF
- RADIUS Client
- SSH
- SFTP
- Syslog

Certifications

- MEF CE 2.0 Compliant
- Safety: EN60950-1:2006 and IEC60950-1:2005
- EMC: EN 300 386:2008 and FCC Part 15, Class A
- NEBS Level 3
- ETSI 3.1
- Extended Temp: GR-3108 CI 2

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