

Coriant Government Solutions

Information Assurance to Lead and Protect a Nation

Enabling Reliable Communications for Effective Operations

Coriant is your trusted networking mission partner with extensive experience and proven expertise in planning, migrating, transforming, and optimizing government networks to ensure reliable and secure communications. With the Coriant commitment to delivering next-generation transport solutions, we offer government and defense agencies a strategic partnership to provide your critical connectivity through our industry-leading innovation and service and support excellence. Drive your information superiority with anytime, anywhere access to high priority communications and ensure the success of your mission with Coriant solutions.

YOUR STRATEGIC ADVANTAGE

Government, military, and intelligence organizations understand that the security and effectiveness of communications infrastructure depend upon seamless, always-on connectivity. Diverse organizations and mission partners with common goals must share information in real time both nationally and internationally, from the remote battlefield to the local office and everywhere your end-users operate. The networks underpinning our nation's critical communications must be fast, flexible, secure, reliable, and scalable – and built upon technologies that can adapt to the evolving requirements of global applications and service innovation.

The global leap forward in cloud and mobile connectivity is redefining transport networks. Driven by the widespread adoption of high-bandwidth, on demand applications, these trends are driving unparalleled growth in data traffic and placing unprecedented demands on communications networks and, in particular, the backbone infrastructure of underlying transport networks. In this dynamic, cloud-centric networking environment, network architects face formidable challenges, including:

- Ensuring on demand service agility to respond to fluctuating traffic loads
- Efficiently migrating legacy networks and services without service disruption
- Delivering flexible service and connectivity options for mission partners
- Reducing network costs and complexity while enabling simplified network scalability

To meet these challenges and ensure information access, government and defense agencies require a trusted networking partner.

With purpose-built solutions, extensive government networking experience, and an unwavering commitment to secure communications, agile deployment, and legacy migration, Coriant can help you accomplish your mission.

CORIANT: TRANSFORMING NETWORKS TODAY

With a distinguished heritage of technology innovation and service excellence, including over 20 years of experience and expertise in networking solutions for government and defense agencies, Coriant is helping our customers around the world transform and maximize the value of their transport networks as bandwidth demand escalates and end-user needs evolve. Our end-to-end, multi-layer transport solutions provide the resilient foundation for the largest and most demanding networks in the world, and span a wide breadth of critical networking applications, including legacy network migration, packet optical convergence, Data Center Interconnect (DCI), metro and long haul transport, and enterprise private line.





PACKET OPTICAL NETWORKING EXPERTISE AND INNOVATION

Coriant's purpose-built solutions for government and defense agencies are founded upon technology that drives unmatched levels of efficiency, flexibility, and scalability in edge-to-core transport networks. Coriant innovation highlights include:

- **Recognized market leadership** in packet optical networking
- **Unique hybrid switching** for service agnostic infrastructure
- **Unsurpassed density** and lower power consumption
- **Industry-leading optical transport** adaptability and scalability
- **Multi-layer SDN** programmability and control

COMMITTED MISSION-CRITICAL NETWORKING PARTNER

Established packet optical networking leadership and world-class service excellence, combined with a culture dedicated to innovation and forward-looking vision for next-generation transport networks, are key Coriant attributes that underlie our strategic partnerships with government and defense agencies. Our commitment to our government customers is backed by technical expertise in mission-critical networking to deliver the solutions and services that government network operators require for high priority communications.

CORIAN AT A GLANCE

- » **Trusted supplier** to U.S. government, defense, and intelligence agencies for over 20 years
- » **Proven history** of delivering mission-critical and carrier-class networking products and services
- » **IP and optical transport expertise** empowering an industry-leading end-to-end, multi-layer solutions portfolio
- » **JITC-certified** solutions proven in operational deployments
- » **Distinguished heritage** of networking innovation with over 1,800 patents
- » **World-class service and support** with global reach and local expertise
- » **Wide variety of purchasing vehicles** for ease of procurement and quick installation

Intelligent Multi-service Transport – Simple, Flexible, Scalable

Coriant's industry-leading packet optical solutions portfolio is built upon recognized leadership in packet optical networking, proven expertise in coherent optical transmission, best-in-class cloud and data center capabilities, and innovative migration strategies. Our edge-to-core, multi-layer transport solutions offer a broad range of benefits across diverse transport network segments and applications, including:

- **Ease migration from TDM** to packet services while improving resource utilization with packet-optimized transport
- **Optimize service delivery** in access and aggregation networks with a single, unified transport platform
- **Simplify service delivery** with software programmable interfaces for OTN, SONET/SDH, packet, and hybrid mode for line speeds up to 500G now and 1T in the future
- **Improve resiliency and resource utilization** with unique optically meshed network capabilities proven in large-scale networks and advanced packet optical grooming to serve all network architectures
- **Increase flexibility and scalability** by adapting configurations to achieve the most efficient traffic management to meet evolving network requirements
- **Extract maximum value** from your fiber assets with superior 100G+ performance even in the most challenging fiber conditions
- **Extend the lifetime of your network** with flexi-rate innovation supporting the upgrade of 40 channel or other fixed grid systems to 100G/150G/200G without touching your existing line systems
- **Reduce CapEx and OpEx** with a completely automated optical layer enabling simplified network expansion and rapid service activation

CORANT® GLOBAL SERVICES

With a proven track record of delivering best-in-class support and service excellence to government agencies and Tier 1 service providers around the world, Coriant

offers a comprehensive range of high-value support solutions covering all phases of the network lifecycle – planning, designing, implementing, training, maintaining, and optimizing. Coriant® Global Services combine unrivaled expertise in end-to-end packet optical networking and network management, extensive in-house service capabilities, and an established network of global partners to help our customers meet their business objectives and maximize the value of their service infrastructure.

CORANT END-TO-END PRODUCT PORTFOLIO

Packet Optical Transport Solutions

- » 7100 Packet Optical Transport Platform
- » mTera® Universal Transport Platform
- » hiT 7300 Multi-Haul Transport Platform
- » Coriant Groove™ G30 DCI Platform
- » 7090 Packet Transport Platform
- » 7610 Service Edge Platform

Software Defined Networking

- » Coriant Transcend™ SDN Solution

Intelligent Network Management

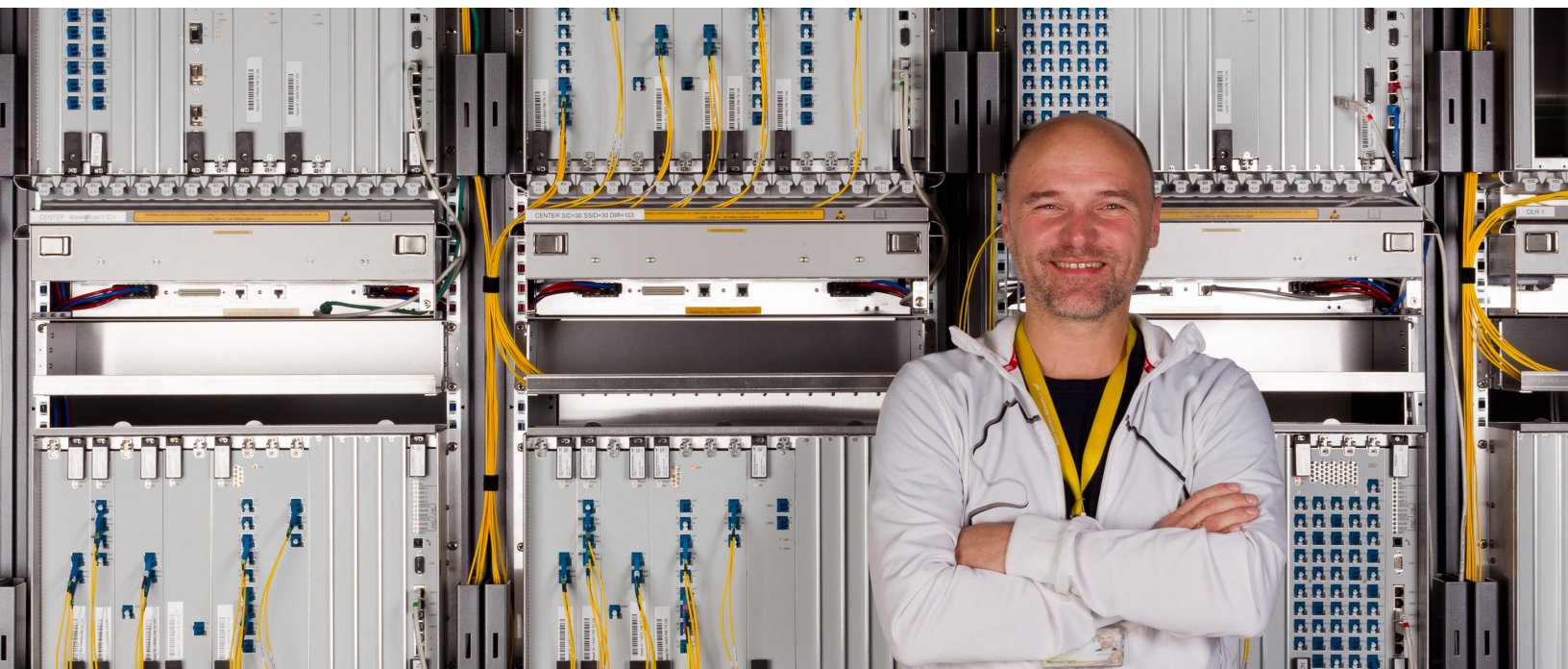
- » Transport Network Management System (TNMS)
- » 8000 Intelligent Network Manager (INM)

Edge Routing Solutions

- » 8600 Smart Router Series
- » 8800 Smart Router Series

MSPP and Cross-Connect Solutions

- » hiT 70xx MSPP
- » SN 9000 Multiservice Switch
- » SN 16000 BB-DCS/Optical Switch
- » 8100 Managed Access System
- » DNX Cross-Connect Platform



CORIAN PACKET OPTICAL SOLUTIONS

Through our industry-leading packet optical solutions, Coriant innovation delivers field-proven platforms to address your evolving network requirements and ensure the success of your strategic mission. Our SDN-ready product portfolio offers government and defense agencies cost-effective information assurance for the command and control of your tactical operations.

Coriant® 7100 Packet Optical Transport Platform

The Coriant® 7100 Packet Optical Transport Solutions provide the industry's most compact, flexible, and feature-rich packet optical transport platforms for access, edge, and regional applications. The 7100 Series, which includes the Coriant® 7100 Nano™ Packet Optical Transport Platform and Coriant® 7100 Pico™ Packet Optical Transport Platform, combines a wide variety of service types including OTN, Ethernet, packet,

SONET/SDH, SAN, and video with fabricless intercard switching and grooming, ASON/GMPLS and SDN capability, and flexible DWDM and ROADM options for a comprehensive transport solution. With a wide range of switching and grooming options and transmission speeds along with a highly automated optical layer, the 7100 Series empowers a truly dynamic optical network.

- **Reduce** CapEx and OpEx with a completely automated optical layer enabling simplified network expansions and service activation
- **Increase** flexibility and scalability by adapting configurations to achieve the most efficient traffic management to meet evolving network requirements

- **Maximize** platform versatility with the broadest and highest density set of features and client interfaces
- **Enable** network growth with seamless migration of the optical layer from grey light to multi-degree ROADM and the service layer from a single 100M service to 704 x 100G wavelengths

- **Accelerate** service activation with cost-effective optical express capabilities between any network locations

The 7100 Series offers government and defense agencies a highly compact, flexible, and integrated transport and multi-service solution for a broad range of mission-critical communications applications.

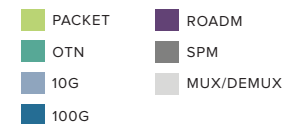
7100 NANO SHELF OVERVIEW

FLEXIBLE SCALABLE PLATFORM

- Universal shelf architecture
- 480G Transparent; 120G OTN; 552G Packet
- 6 Slots per shelf - 8 shelves per system

FULL INTELLIGENT SERVICES LAYER SUPPORT

- 10G, 40G, & 100G Transparent
- SONET/SDH, Packet, OTN Switching
- Full shelf fabricless grooming via meshed backplane

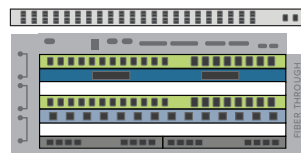


Low Cost—Small Form Factor



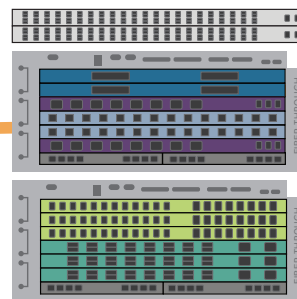
Grey Light System

120G MSPP, 120G OTN SWITCH,
552G PACKET SWITCH



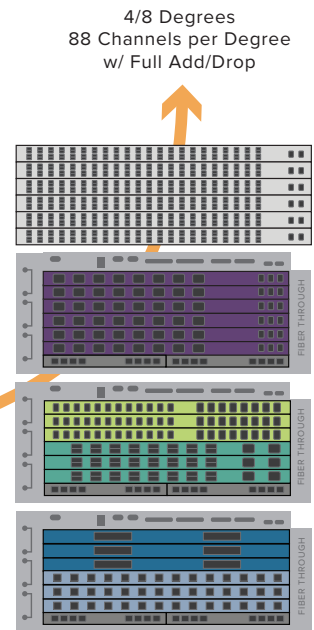
Passive DWDM

88A 10G, 40G, 100G



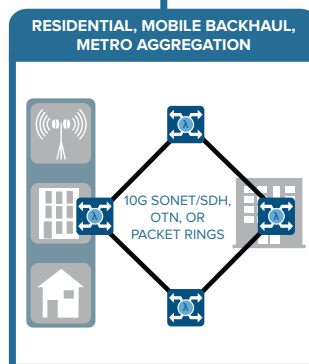
Single Slot ROADM-on-a-Blade

W/ UP TO 6 EXPANSION PORT SHELVES



Multi-Degree Core ROADM

W/ 2 EXPANSION PORT SHELVES



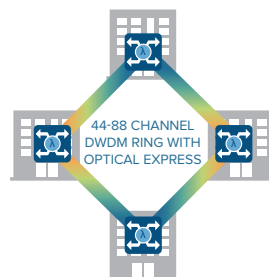
DATA CENTER INTERCONNECT,
FIBER EXHAUST

UP TO 8.8TB OF
POINT-TO-POINT CONNECTIVITY
WITH MULTI-LAYER MULTIPLEXING
AND GROOMING



COST-EFFECTIVE,
SCALABLE WDM RING

44-88 CHANNEL
DWDM RING WITH
OPTICAL EXPRESS



SCALABLE EFFICIENT
OPTICAL MESH NETWORK

FULL 88 CHANNEL OPTICAL MESH
WITH MULTI-LAYER GROOMING
AND MULTI-LAYER RESTORATION

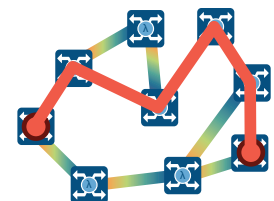


Figure 1: Versatile Multi-service 7100 Nano Configurations

The 7100 Series includes the following shelf configurations:

- **7100 Nano™ Packet Optical Transport Platform (5RU)**
 - 6 universal slots
 - Full shelf grooming via a meshed backplane (no central switch modules required)
 - Switch capacity: 552G packet, 120G OTN, 120G SONET/SDH
- **7100 Pico™ Packet Optical Transport Platform (2RU)**
 - 2 universal slots
 - Full shelf grooming via a meshed backplane
 - Integrated AC/DC power options

All of the 7100 shelf types use the same interface modules, which minimizes sparing and simplifies operations across the entire network. With a strong foundation for metro-based dynamic optical networking, the 7100 Series includes the following capabilities:

- Universal switching architectures for seamless SONET/SDH, OTN, and packet grooming
- High-density 10G and 100G transport
- All pluggable design for interface-by-interface grey light and DWDM configurations
- Support for 2.5G, 10G, 40G, and 100G transmissions
- Integrated, single slot, multi-degree ROADM-on-a-blade

Dynamic packet optical networking not only supports the needs of current networks, but also enables effortless deployment of additional nodes for future expansion via multi-degree ROADM technologies. The 7100 Series offers government and defense agencies fast, effective, and low cost solutions to cope with the evolving demands of end-users and mission partners.

TRANSPONDERS/MUXPONDERS

Multi-Port 10G
Transponder/
Muxponder



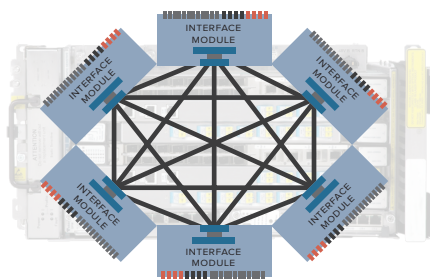
40G
Transponder/
Muxponder



100G
Transponder/
Muxponder



FULL SHELF, FABRICLESS GROOMING MODULES



Fully Meshed Backplane

SONET/SDH
Switch



20G MSPP On-a-Blade
(120G MSPP Switch Per Shelf)

Packet
Switch



92G Packet Switch Module
(552G Packet Switch Per Shelf)

OTN
Switch



20G OTN Switch Module
(120G OTN Switch Per Shelf)

Coriant® mTera® Universal Transport Platform

The Coriant® mTera® Universal Transport Platform (UTP) offers a unified, adaptable transport solution that combines SDN-ready, advanced ROADM capabilities and very low power consumption with innovative universal switching. Universal switching provides non-blocking grooming of multiple protocols on a single, software-programmable port enabling the ultimate in flexibility and adaptability as networks grow. Ideal for dynamic, high-bandwidth applications, the mTera® UTP is an innovative solution for dense metro, regional, or long haul networks providing an efficient gateway between aggregation networks and dynamic, multi-service, all-coherent high speed core networks. The mTera® UTP offers two chassis options: a scalable 14-slot chassis and a compact 8-slot chassis. The 14-slot chassis supports up to 7T of switching capacity for the single shelf configuration and 12T of switching capacity for the dual shelf configuration. The 8-slot chassis supports up to 3.2T OTN and 4T packet switching capacity. The mTera® UTP enables the deployment of cost-optimized optical network solutions by utilizing either the Coriant® Pluggable Optical Layer or ROADM technology common with Coriant's industry-leading portfolio of 7100 and hiT 7300 solutions.

- **Unleash** the most versatile and future-proof switching platform in the market with software programmable interfaces for OTN, SONET/SDH, packet, and hybrid mode for line speeds up to 500G now and 1T in the future
- **Deliver** dynamically controlled TDM and packet switching through an adaptable universal matrix uniquely capable of switching traffic flows for any protocol (L1-L2.5) on any port to provide superior solution support for SONET/SDH migration to OTN/ MPLS-TP
- **Enable** Coriant CloudWave™ Optics for industry-leading optical technology proven in the world's largest mesh networks
- **Optimize** operational efficiency with compact form factor options and the lowest power consumption per bit
- **Improve** overall network efficiency by maximizing utilization of metro and core wavelengths and providing aggregated handoffs to subtended devices

CORIAN® PLUGGABLE OPTICAL LAYER

» The Coriant® Pluggable Optical Layer solution is a revolutionary approach that leverages the advantages of compact pluggable modules to customize metro optical network deployments for metro edge, metro transport, and Data Center Interconnect (DCI) transport applications. By providing the ability to mix and match different components, government and defense agencies can customize metro optical network deployments and pay only for required functionality.

- Enable flexibility to address any metro network design requirement
- Leverage pay-as-you-grow scalability with easy introduction of in-service wavelengths
- Simplify network evolution with seamless transformation from fixed DWDM to ROADM configurations
- Reduce costs by up to 30 percent compared to traditional approaches
- Extend packet optical innovation further to the edge of the metro network

CORIAN® CLOUDWAVE™ OPTICS

» Coriant CloudWave™ Optics offers a versatile suite of software programmable photonic layer technologies for next-generation optical transport networks. Featuring best-in-class photonics, software programmable line side modulation, tunable spectral allocation, and channel frequency flexibility, Coriant CloudWave™ Optics is a key enabler of the Coriant Dynamic Optical Cloud™ Solution, which combines programmable control with a dynamic, universal transport infrastructure. Coriant CloudWave™ Optics significantly enhances service flexibility, resiliency, and network scalability in metro, regional, long haul, ultra-long haul, subsea, and Data Center Interconnect (DCI) transport applications.

- Highest capacity with a powerful combination of flexi-grid, super-channel, and pulse shaping technologies
- Bandwidth on demand with easy-to-use software programmable line rates supporting legacy infrastructure and the flexi-grid optical layer
- Longest reach on any fiber by the most robust optical link control in the market

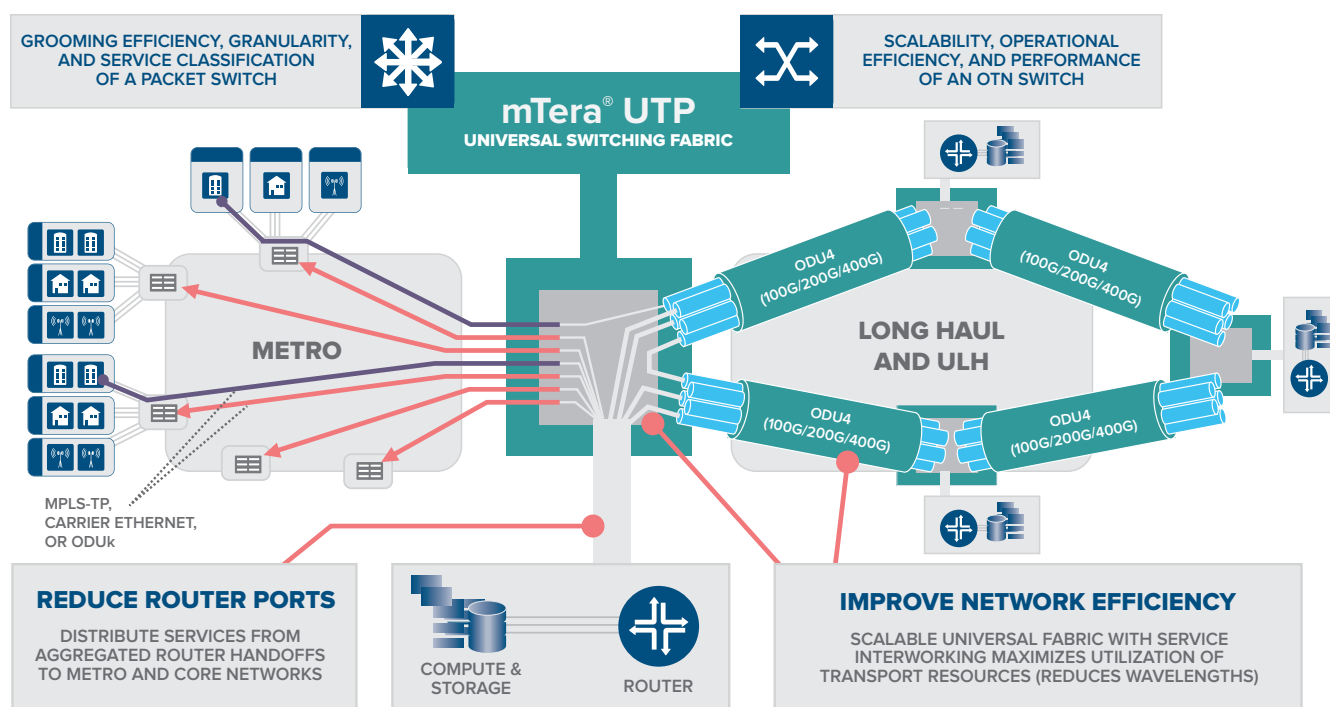


Figure 3: mTera® UTP Innovative Universal Switching

SOFTWARE DEFINED NETWORKING (SDN)

The Coriant Transcend™ SDN Solution unleashes the rich capabilities of SDN and NFV by delivering a truly open, programmable, and automated multi-layer application environment for complete network control and maximum value in the new networked world to lower OpEx/CapEx and create new revenue sources and innovative services. Optimized for easy integration and adaptation, the Coriant Transcend™ SDN Solution is comprised of the following components:

- The Coriant Transcend™ SDN Transport Controller and Coriant Transcend™ SDN Packet Controller
- The SDN enablement of the Coriant Dynamic Optical Cloud™ product and services portfolio, including industry-leading metro-to-core packet optical transport (mTera® UTP, 7100 Nano/Pico, hiT 7300, 7090) and smart edge router (8600, 8800) offerings
- The Coriant Transcend™ SDN Solution supports pre-integration with an OpenDaylight-based demonstration and evaluation environment as well as commercial and customer specific orchestrators and applications

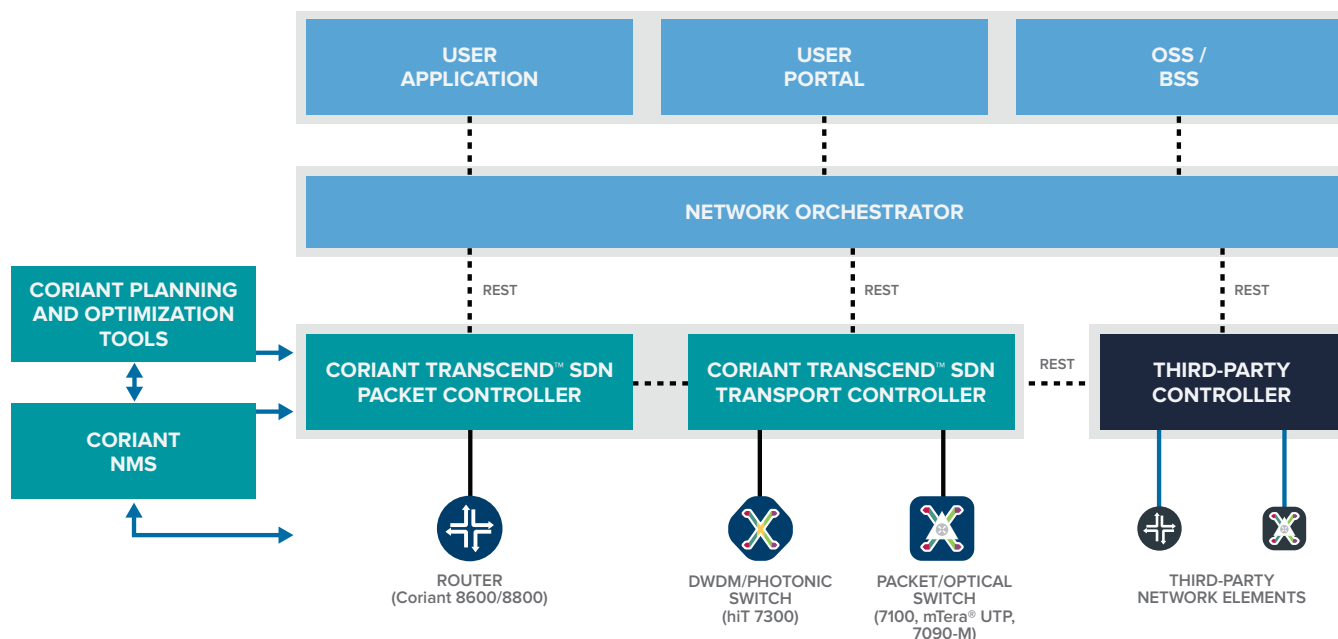


Figure 4: Coriant Transcend™ SDN Solution enables the seamless evolution of the network to SDN

INTELLIGENT NETWORK MANAGEMENT

Coriant® Transport Network Management System (TNMS)

The Coriant® Transport Network Management System (TNMS) is an end-to-end management platform (FCAPS) that enables operators to easily and cost effectively manage multi-layer (PDH, SONET/SDH, IP/Ethernet, MPLS-TP, DWDM), multi-domain (access, metro, core), and multi-vendor networks. TNMS easily integrates into existing OSS environments and empowers a holistic approach to network and service management across a broad range of Coriant's LH/ULH optical transport and metro packet optical transport products.

As a single management system for all equipment types and diverse technologies, TNMS offers supervision of services across all network elements and includes a dedicated GMPLS/ASON manager for enhanced multi-layer control and improved service resiliency. With a feature set field-proven around the world, TNMS combines easy-to-understand network views and simple navigation with uniform fault, configuration, security, performance management, and service correlation functions. The scalable, pay-as-you-grow solution includes a standard and intuitive user interface to ensure straightforward operation and smooth integration into multi-vendor environments.



Simplify Network Migration

As networking technologies and protocols evolve in today's fast-paced communications environment, government and defense agencies are challenged with building reliable and scalable packet-optimized architectures while efficiently migrating legacy network services. Coriant's industry-leading packet optical solutions and outcome-based services form the foundation for intelligent network evolution and provide information assurance. At the same time, Coriant solutions help government and defense agencies meet the capacity demands driven by the high-bandwidth application needs of mission partners and military personnel. Coriant migration solution benefits include:

- **Improve overall service performance** while simplifying network operations, preserving legacy CapEx investments, and expanding new services
- **Reduce cost and complexity** by efficiently integrating diverse technologies and multi-vendor network elements while using less power and reducing space requirements
- **Optimize migration** to new technologies and packet-optimized platforms with a customized service and support plan tailored to specific requirements
- **Minimize time-to-deployment** for new services without any unplanned impact to existing customer traffic or operational systems
- **Ensure mission-critical** service integrity and ongoing network availability with detailed MOPs and best industry practices

ABOUT CORIANT

Coriant delivers innovative, dynamic networking solutions for a fast-changing, cloud-centric, critical communications world. The Coriant portfolio of SDN-enabled, edge-to-core transport solutions enables network operators to reduce operational complexity, improve utilization of multi-layer network resources, and create new revenue opportunities. Coriant serves leading network operators around the world, including government and defense agencies, mobile and fixed line service providers, cloud and data center operators, content providers, cable MSOs, large enterprises, financial institutions, and utility companies. With a distinguished heritage of technology innovation and service excellence, forged by over 35 years of experience and expertise in Tier 1 carrier networks, Coriant is helping its global customers maximize the value of their network infrastructure as demand for bandwidth explodes and the communications needs of businesses and consumers continue to evolve. Learn more at www.coriant.com.

For more information about our products and solutions, please contact your Coriant Sales Representative.

Coriant

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