3M Services GmbH
vormals Quante Netzwerke

CM-4140 Carrier Ethernet + Transport (CE+T) Solution
A Carrier-Class Packet Transport Network (PTN) Solution

Orckit-Corrigent’s CM-4140 is a cost-optimized, low power and small-footprint MPLS and MPLS-TP based Packet Transport Network (PTN) switch, providing high service availability and scalability, together with end-to-end “point-and-click” management via its service and application-oriented CM-View Network Management System (NMS).

Supporting multiple 10GE, GE, PDH and SDH interfaces in a 3RU form factor and a fully redundant architecture, the CM-4140 is ideally suitable for the 1st aggregation layer of residential multi-play and mobile backhaul networks. It is capable of cost-effectively aggregating traffic from CPE/CLE, DSLAM, ADM, and cell sites, as well as any other high-speed access technology.

The CM-4140 offers modular architecture together with a full suite of carrier-class, MPLS and MPLS-TP based technologies for SDH migration, enterprise VPN, residential triple-play and mobile backhaul applications.

In addition, the CM-4140 significantly reduces OPEX by providing easy migration from legacy TDM to Packet Transport Networks with its seamless support of PDH services and SONET/SDH grooming, cross-connect and transport services. By cost-effectively enabling a mixture of Ethernet and TDM traffic, the CM-4140 provides an agile platform enabling TDM migration, Carrier Ethernet, and mobile backhaul services over unified PTN.

Orckit-Corrigent’s CM-4140 fully-redundant network element provides fully-non-blocking switching capacity of 84 Gbps, full duplex. It can be deployed in any configuration, including ring, mesh and tree topologies, over one or multiple 10 Gbps wavelengths.

Orckit-Corrigent is uniquely positioned to address carrier’s needs for next-generation Packet Transport Networks.

Services and Applications
Orckit-Corrigent’s CM-4140 offers a unique and optimal solution for providing any PDH and SDH services migration to MPLS and MPLS-TP based PTN, as well as any Carrier Ethernet and mobile backhaul services.

Equipped with an application-aware Call Admission Control (CAC) and an enhanced, inherent traffic management capabilities, the CM-4140 guarantees end-to-end performance during congestion and protection events, achieving optimal bandwidth utilization at all times.

The CM-4140 is dual stack MPLS and MPLS-TP based PTN solution of choice for the delivery of the following services:

- Network convergence of new Ethernet-based and legacy TDM services
- Any TDM private-line services, from PDH E1/E3 till SDH STM-1/4/16
- E-Line, E-LAN and E-Tree services with differentiated QoS, application classification and SLA assurance
- Application-aware delivery of content-rich multi-Play residential services
- Packet based mobile backhauling services

These services enable the delivery of residential end-user applications such as Multi-Play (VoIP, broadcast video, VoD, IPTV, nPVR, and HSDA), and Business Ethernet services (Ethernet Private Line (EPL) and Layer 2 VPNs).

The CM-4140 facilitates the migration towards packet transport network by providing a viable path to convergence through the introduction of timing, synchronization, and circuit emulation technologies, which enables smooth TDM migration to PTN.

The CM-4140 is fully interoperable with Orckit-Corrigent’s CM-4314, CM-4206, CM-111, CM-110 and CM-View products.
Technical Specifications

General Specifications
- 1 or 2 MSM and up to 4 EIM modules
- 84 Gbps capacity, full duplex, fully redundant
- Front access modules, hot insertion
- HWID: 5.25”(3RU) x 19” x 15” / 133 x 483 x 381 mm

Main Switching Modules (MSM)
- 1 port 10 Gigabit Ethernet (XFP, SFP+)
- 20 ports 1 Gigabit Ethernet (SFP)

Extension Interface Modules (EIM)
- 1 port 10 Gigabit Ethernet (SFP+/XFP)
- 8 ports OC-3/12, STM-1/4, 2 ports OC-48, STM-16, CEP (SFP)
- 4 ports OC-3 or STM-1, 1 port OC-12 or STM-4, SAToP (SFP)
- 24 ports T1 or E1, SAToP
- 63 ports E1/T1

Power Specifications
- DC Voltage (range): -40 to -72 VDC
- AC Voltage (range): 110-240VAC, 50-60Hz
- Redundant power supply modules (AC, DC, AC+DC)
- Power Consumption (max): 250W

Applications
- SDH migration to packet transport network
- Carrier Ethernet metro aggregation
- Enterprise VPN
- Mobile backhauling
- Residential triple-play, including IPTV, VoD, VoIP, HSI

Services
- E-Line, E-LAN, E-Tree services
- Virtual Private LAN Services (VPLS)
- Virtual Private Wire Services (VPWS)
- MEF certified
- SDH private line: VC-12/3/4-nc circuits over packet (CEP)
- SAToP services on channelized STM-1/4
- Ethernet over SDH (EoS) to native Ethernet interworking

Ethernet Functionality
- Ethernet protocol (IEEE 802.3)
- Ethernet MAC learning, forwarding and flooding
- - Unicast
- - Multicast
- - Broadcast
- Ethernet static MAC configuration
- VLAN Manipulations: no change (transparent) / change (translate) / trunk (stack)
- Ethernet provider bridging (IEEE 802.1Q, 802.1ad)
- Link aggregation (IEEE 802.3ad)

Multicast Functionality
- IGMP proxy
- MLD
- MVR

Management
- CM-View NMS
- - Service oriented NMS, point-and-click GUI
- - Full FCAPS support
- - Bi-directional A-Z provisioning (tunnel and LSP)
- - Classes of Service (CoS): 8 classes of services with strict priority (SP) and Weighted Fair Queuing (WFQ) scheduling algorithms, supporting, Best Effort, Guaranteed bandwidth, delay/jitter sensitive and TDM traffic
- - TMF 814
- - CORBA, SNMPv2/v3
- - TL1
- - SNMPv2/v3

Multistack MPLS and MPLS-TP Functionality
- IETF PWE3 encapsulation
- Label swap, push, pop
- DiffServ: L-SP, L-LSP
- RSVP-TE
- LDP
- MPLS-TP LSP static provisioning
- Multi-Segment PW (MS-PW)

Protection
- MPLS Fast Reroute (FRR)
- MPLS end-to-end LSP protection
- MPLS dual-homed tunnel protection
- MPLS-TP 1:n linear LSP protection
- MPLS-TP dual-homed PW protection
- Ethernet IEEE 802.3ad Ethernet Link Aggregation (LAG)
- Ethernet Ring Protection (ERP, ITU-T G.8032)
- RPR steer protection (IEEE 802.17)
- SDH MSP 1+1 linear protection
- SDH SNCP
- SDH Dual Node Interconnect (DNI)
- Equipment protection
- - Power, controller and fabric protection
- - Hot-swappable modules

Routers
- ISIS-TE routing protocol
- OSPF-TE routing protocol
- BGP routing
- Static routing

OAM
- Ethernet OAM (IEEE 802.1ag and ITU-T Y.1731)
- MPLS OAM (LSP ping, LSP traceroute)
- MPLS-TP OAM (CC/IS/RS/RL/LT)
- Bidirectional Forwarding Detection (BFD)

Environmental Specifications
- Operating temperature range: 23 - 131°F (-5 to +55°C)
- Operating humidity range: 5 - 85% RH (non-condensing) at 104°F (40°C)
- Altitude: 13125 feet (4000 meters) maximum
- Storage temperature range: -40 to +158°F (-40 to +70°C)
- Storage humidity: 93% RH (non-condensing) maximum

Transportation conditions: ETSI 300 019, class 3.1

Environmental Specifications
- Storage conditions: ETSI 300 019, class 3.1
- Transportation conditions: ETSI 300 019, class 3.1
- EMC: EN 300 386, EN55022, FCC, VCCI
- NEN5 Level 3: Telecordia GR-1089-CORE, Telecordia GR-63-CORE
- Safety: UL60950, EN60950, IEC60950

Security
- Access Control List (ACL)
- TACACS+
- SSH

Equipment protection
- SDH Dual Node Interconnect (DNI)
- Equipment protection
- - Power, controller and fabric protection
- - Hot-swappable modules

Timing and synchronization
- Synchronous Ethernet (ITU-T G.8261) on 10GE, GE interfaces
- IEEE 1588v2 master / slave / boundary clock
- 2 BITS in/out: 2Mbps, 2MHz, 64Kbps composite clock
- Internal Stratum 3 clock (holdover state)
- Primary and secondary sources (supports 55M bits)
- SDH sync on STM-n interfaces
- ACR, DCR, loop timing on SAToP

Traffic Management
- Network wide Call Admission Control (CAC)
- Classes of Service (CoS): 8 classes of services with strict priority (SP) and Weighted Fair Queuing (WFQ) scheduling algorithms, supporting, Best Effort, Guaranteed bandwidth, delay/jitter sensitive and TDM traffic

Performance
- Carrier Ethernet metro aggregation
- Enterprise VPN
- Mobile backhauling
- Residential triple-play, including IPTV, VoD, VoIP, HSI