

CM-4140 Carrier Ethernet + Transport (CE+T) Solution

A Carrier-Class Solution

Orkit-Corrigent's CM-4140 is a cost-optimized, low power and small-footprint MPLS-based Carrier Ethernet + Transport (CE+T) 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 GBE and 10GE interfaces in a very small form factor and a fully redundant architecture, the CM-4140 is ideally suitable for the 1st aggregation layer of residential multi-play networks. It is capable of cost-effectively aggregating traffic from DSLAMs, Wimax, Active Ethernet, as well as any other high-speed access technology.

The CM-4140 offers modular architecture together with a full suit of carrier-class, MPLS-based Ethernet services for business customers. It can also be used as a high-end, managed CLE for enterprise customers.

In addition, the CM-4140 significantly reduces OPEX by providing easy migration from legacy TDM to Ethernet networks with its seamless support of 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 the deployment of advanced residential multi-play and business services, as well as gradual adaptation and migration of legacy services, over the same infrastructure.

Orkit-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.

Orkit-Corrigent is uniquely positioned to address carrier's needs for next-generation Carrier Ethernet platforms.

Services and Applications

Orkit-Corrigent's CM-4140 offers a unique and optimal solution for providing both residential and business services over a converged platform.

Equipped with an application-aware Call Admission Control (CAC) and an enhanced, inherent traffic management module,



the CM-4140 guarantees end-to-end performance during congestion and protection events, achieving optimal bandwidth utilization at all times.

The CM-4140 is the solution of choice for the delivery of the following services:

- Application-aware delivery of content-rich Multi-Play residential services
- E-Line, E-LAN and E-Tree services with differentiated QoS, application classification and SLA assurance
- Network convergence of new Ethernet-based and legacy TDM services
- Varied TDM private-line services
- Non-blocking SONET/SDH low-order and high-order cross connections

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

The CM-4140 facilitates the migration towards an all-IP network by providing a viable path to convergence through the introduction of SONET/SDH-like Synchronous Ethernet, which enables real migration of TDM to Ethernet.

The CM-4140 is fully interoperable with the CM-4314 and CM-4206 product line.

Mechanical Specifications

- 1 or 2 MSM and up to 4 EIM modules

Main Switching Modules (MSM)

- 20 ports 1 Gigabit Ethernet (SFP)
- 1 port 10 Gigabit Ethernet (SFP+ / XFP)
 - Synch Ethernet (optional)

Extension Interface Modules (EIM)

- 1 port 10 Gigabit Ethernet (SFP+ / XFP)
 - Synch Ethernet (optional)
- 8 ports OC-3/STM-1, 2 ports OC-12/STM-4, CEP (SFP)

Physical Structure

- HWD: 5.25"(3RU) x 19" x 15" / 133 x 483 x 381 mm
- Front access modules
- 84 Gbps capacity, full duplex
- Front access, hot insertion

Redundancy and Resiliency

- Two Main Switching Module (MSMs) working active-standby mode
- The extensions are switched to work with the active MSM
- Full redundancy of MSM, extension cards and power supplies
- GE redundancy on the main board through LAG

Power Specification

- Input Voltage (range): -40 to -72 VDC
- Power Consumption (max): 400W

Services

- Ethernet E-Line service
- Ethernet E-LAN service
- Ethernet E-Tree service
- TDM private line service
- SONET/SDH HO/LO non-blocking cross-connect

Applications

- Application-aware delivery of content-rich Multi-Play residential services
- E-Line, E-LAN business services with differentiated QoS, application classification and SLA assurance
- Network convergence of new packet based services with legacy TDM services

Application Aware Traffic Management

- Application-aware Call Admission Control (CAC) for multi-play applications
- Classes of Service (CoS): 5 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

CM-View Network Management System (NMS)

- CLI based CLI
- SONET/SDH OAM&P
- SNMPv3, CORBA, TMF 814

Ethernet Functionality

- Ethernet protocol (IEEE 802.3)
- Ethernet MAC learning, forwarding and flooding
 - Unicast, Multicast, Broadcast forwarding
- Ethernet static MAC configuration
- VLAN Manipulations: no change (transparent) / change (translate) / trunk (stack)
- Ethernet provider bridging (802.1Q / 802.1ad)
- Link aggregation (802.3ad)
- Ethernet OAM (IEEE 802.1ag and ITU-T Y.1731)
- Ethernet Traffic Classification based on:
 - Port
 - Ethernet MAC
 - Ethernet VLAN
 - EtherType
 - IEEE 802.1p
 - IPv4 TOS and DSCP

SONET/SDH Functionality

- LO and HO SONET/SDH Cross-connect functions
- SONET/SDH OAM

Multicast Functionality

- IGMP proxy
- MVR

Routing

- OSPF routing protocol
- Static routing

MPLS Functionality

- IETF PW3 encapsulation
- MPLS label swap, push, pop
- MPLS DiffServ: E-LSP, L-LSP
- RSVP-TE
- LDP
- MPLS OAM (LSP Ping, LSP Trace-route)
- PW3 OAM (VCCV)
- Virtual Private LAN Services (VPLS)
- Virtual Private Wire Services (VPWS)

Protection

- MPLS end-to-end LSP protection
- MPLS dual-homed PW protection
- RPR over Ethernet Protection (steer)
- Ethernet network protection:
 - IEEE 802.3ad Ethernet Link Aggregation (LAG)
- SONET/SDH 1+1 linear protection
- Equipment protection:
 - Power, controller and fabric protection
 - Hot-swappable modules

Environmental Specifications

- Operating temperature range: 23 to 131°F (-5 to +55°C)
- Operating humidity range: 5% to 85% RH (non-condensing) @ 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

Regulatory Approval

- CE and UL
- Environmental: ETSI 300 019 class 3.1
- EMC: EN 300 386, EN55022, FCC - VCCI
- NEBS Level 3: Telecordia GR-1089-CORE, GR-63-CORE
- Safety: UL60950, EN60950, IEC60950

