

Product Overview

VCL1400P is a compact packet aggregation solution which is well suited for deployment in the edge and access part of a packet transport network. It supports full PTN feature set enabling a service provider to provide end-to-end pseudo-wire and Ethernet multipoint services.



VCL1400P can serve as a cell-site transport network element back hauling 4G services and can be used to build aggregation rings of 10 Gbps. It can be used to provide GigE enterprise services and L2 VPN services with advanced QoS support. VCL1400P is available in different factory fitted configurations.

Features and Highlights:

- 64Gbps high Packet Switching Capacity
- Traffic Engineered Pseudowire (MPLS-TP)
- Supports VLAN and Q-in-Q carrier Ethernet
- Supports ERPS and 1:1 Protection with 50ms switching time
- Supports SyncE, 1588v2 Packet Synchronization
- Circuit Emulation for PDH and SONET
- Supports 1+1 redundancy for power supply cards.

Packet Synchronization:

VCL1400P supports SyncE and 1588v2 for distribution of synchronization information over pure packet networks.

Circuit Emulation:

As more services move from TDM to Ethernet, a few TDM circuits are expected to remain in the network for specific customer services and support of legacy infrastructure. Circuit Emulation reduces the cost and simplifies the management of these services using an all Packet Transport Network. The VCL1400P supports DS1 SAToP and OC-3 CEP for carrying this traffic with the reliability and performance of legacy TDM networks.

Packet Transport:

Using the next generation in Packet Transport Network (PTN) technology, the VCL1400P is a 1U packet aggregation solution designed for edge and access applications in the network. With a full PTN feature set enabling end-to-end pseudo-wire and Ethernet multipoint services the VCL1400P has the advanced features for tomorrow's mobile backhaul, enterprise, business, data center, cloud and infrastructure services.

Advanced Ethernet Features:

VCL1400P provides best in class packet switching to create networks with the highest performance. Ingress rate limiting ensures that every packet entering the network is within the SLA bounds preventing any one customer/ service from congesting/choking the network. Each packet is classified so that the appropriate network policies (like prioritization and scheduling) can be applied. Eight CoS queues & scheduling algorithms ensure that there are sufficient options available to manage the data traffic efficiently. Standard G.8032 ERPS (Ethernet Ring Protection Switching) provides 50ms protected packet rings for greater resiliency. Multiple ringlets and multiple ring topologies are supported.

MPLS-TP:

MPLS label-based connection-oriented Ethernet allows networks to easily scale from a few subscribers to millions of subscribers and a few services to thousands of services. The VCL1400P provides MPLS-TP based for engineered traffic flows on trunks, optimizing the network by providing the right amount of packet traffic control. The cost benefits of stat-muxing are combined with traffic engineering to lower CAPEX. OPEX reductions come through faster provisioning, robust protection and quicker root cause analysis during failures.

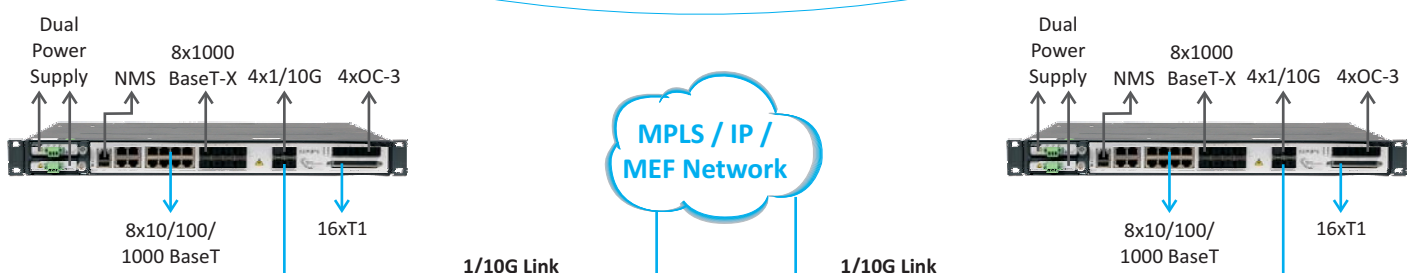
Ethernet OAM:

Allows real-time monitoring of end-to-end circuits, connections or trunks, enabling quick detection and isolation of faults to a particular subnet, trunk, link or node. The VCL1400P supports BFD based Fault OAM and ping/ traceroute at tunnel / pseudowire level. It also supports MPLS-TP based performance OAM for MPLS-TP based PW services. For .1q/,1ad based MEF services, Y.1731/802.1ag based CFM OAM (Port level down MEP) and Y.1731 PM counters are supported.

Flexible Network Architectures:

The VCL1400P has a flexible architecture that allows it to build the network best suited for all services. Linear for rapid deployment. Hub and spoke for cost effective aggregation. Ring and ringlet for high utilization and resiliency. Meshed for low latency and flexible protection. This is achieved with a unique combination of functionality including the ability for every optical port to be a UNI or an NNI.

Application Diagram:



Technical Specifications:**Ethernet Switch Capacity:**

- 4Gbps bidirectional

Interfaces to Ethernet Switch:

- 10 Gig E up to 4 SFP+
- 1 GigE up to 12 SFP
- 10/100/1000bT up to 20
- DS1 up to 16
- OC-3 up to 4
- OC-12 up to 2

MPLS-TP:

- MPLS-TP Connection Oriented Ethernet
- VPWS, VPLS, H-VPLS
- ELAN, EVLAN, EVPL, EPL,
- E-TREE*
- IGMP v1/v2/v3*

Network Protection & Security:

- Ethernet Ring Protection ITU-T G.8032
- 1:1 bidirectional Linear Protection LSP (RFC6378)
- MPLS-TP Mesh
- Link Aggregation Group (LAG)
- Port mirroring and loopback

Ethernet Switching:

- VLAN, QinQ based services
- VLAN Translation / Swap
- Ingress Rate Limiting at 64kbps granularity
- Programmable Committed / Peak Information Rates
- Programmable Committed / Peak Burst sizes
- Egress rate shaping on all ports
- 8 classes of service as per IEEE 802.1p
- 2 Rate, 3 color marking
- HQoS*
- Every Ethernet port UNI/NNI

Power Supply:

- -36V to -60V DC with 1+1 PSU Redundancy option
- Power Consumption 90 Watts

Synchronization:

- SyncE, DCR, ACR
- 1588v2 BC/TC with ToD interface*

Circuit Emulation:

- DS1 MEF8
- OC-3 RFC4842*, MEF8*
- OC-12 RFC4842*, MEF8*

Ethernet/MPLS-TP OAM:

- MPLS-TP OAM RFC5860
- BFD based Fault OAM
- LSP Ping and Traceroute (RFC6426)
- PW Ping
- On demand LM/DM at Tunnel/PW level
- On demand LM/DM at VLAN level
- Y.1731/802.1ag based CFM OAM
- Link integrity (LLCF/LLR)
- SNMPv3*

Environmental:

- Operating Temperature: -40°C to 65°C.
- Relative Humidity: 10% to 90%, non-condensing
- CE, ROHS Compliant
- ETSI/EN 300386
- EN 55022 Class A
- FCC Part 15 Class A

Dimensions:

- 445 mm x 44 mm x 295 mm
- ETSI 19" rack mountable

Ordering Information:**BASE UNIT (SFPs to be ordered separately)**

Part#	Description
VCL1400P-C	VCL1400-P Model C: 19", 1U high Packet Transport System with 8xGE optical (SFP based / without SFPs), 8xGE Electrical ports & 16xDS1 + 4xOC-3 CEM. Supports separate redundant FRU and redundant front -48V DC PSU cards.
VCL1400P-D	VCL1400-P Model D: 19", 1U high Packet Transport System with 8xGE optical (SFP based / without SFPs), 8xGE Electrical ports, 16xDS1 + 4xOC-3 CEM and 4x1G/10G optical (SFP based / without SFPs) Ports. Supports separate redundant FRU and redundant front -48V DC PSU cards.

10G SFP+ (XFP) Options (Maximum 4 x XFPs with Model D):

VCL-EMOD 0380	10G XFP Transceiver Duplex LC receptacle, 1310nm, 20Km, SM (Single-Mode)
VCL-EMOD 0344	10G XFP Transceiver Duplex LC receptacle, 1550nm, 40Km, SM (Single-Mode)
VCL-EMOD 0345	10G XFP Transceiver Duplex LC receptacle, 1550nm, 80Km, SM (Single-Mode)

STM-1 SFP Options (Maximum 4 x SFPs with Model C & D):

VCL-EMOD 0193	155Mbps SFP Transceiver, SONET/OC-3, Fast Ethernet, S-1.1, Duplex LC, 1310nm, 15Km, SMF, +3.3V
VCL-EMOD 0194	155Mbps SFP Transceiver, SONET/OC-3, Fast Ethernet, L-1.1, Duplex LC, 1310nm, 40Km, SMF, +3.3V
VCL-EMOD 0217	155Mbps SFP Transceiver, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, 1550nm, 80Km, SMF, +3.3V
VCL-EMOD 0243	155Mbps SFP Transceiver, SONET/OC-3,, L-1.2, Duplex LC, 1550nm, 150Km, SMF, +3.3V

Gigabit Ethernet (GE) SFP Options**(Maximum 8 x SFPs with Model C and D):**

VCL-EMOD 0206	1.25Gbps SFP Transceiver Duplex LC, 850nm, 550m, MM (Multi-Mode)
VCL-EMOD 0205	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 10Km, SM (Single-Mode)
VCL-EMOD 0231	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 15Km, SM (Single-Mode)
VCL-EMOD 0255	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 40Km, SM (Single-Mode)
VCL-EMOD 0256	1.25Gbps SFP Transceiver Gigabit Ethernet, Duplex LC, 1550nm, 80Km, SM (Single-Mode)
VCL-EMOD 0341	1.25Gbps SFP Transceiver Gigabit Ethernet, Duplex LC, 1550nm, 120Km, SM (Single-Mode)

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