

CloudMetro™ 100

10GE CARRIER GRADE SDN / DISTRIBUTED NFV PLATFORM

The CloudMetro 100 10GE Carrier Grade Distributed NFV Platform offers a new approach to service provider networks. By harnessing cutting-edge technologies, like software defined networking (SDN) and networking functions virtualization (NFV), CloudMetro 100 enables service providers to turn their networks from transport networks into IT-aware networks. This new approach of transforming the network into a dynamic, highly orchestrated, agile and virtualized network enables service providers to increase their service offering and roll out new services within a very short time frame. By virtualizing and running different networking functions as software at the edge of the network, service providers can deploy and offer new services without any truck rolls, minimizing the OPEX and CAPEX involved, and significantly reducing the complexity of new service introduction. By offering multiple IT services within close proximity to customers, service providers can start offering different virtualized IT services, and differentiate themselves from over-the-top (OTT) cloud service providers. In order to enable this technology (called "differentiated NFV" by the ETSI NFV work group), CloudMetro 100 was designed with a VNF-hosting CPU and extensive virtualization capabilities support.

Distributed NFV Hosting Platform

CloudMetro 100 was designed as an innovative distributed NFV platform utilizing an Intel X86 architecture processor, including Intel's virtualization technology (VT-X) support, to host different VNFs, running as TelcoApps, and to provide different networking functionalities in a distributed manner. The hosting CPU runs the NFVTime- OS, an infrastructure layer that enables VNF life cycle management as well as easy VNF and service attachment. The NFVTime- OS layer is also responsible for performing service chaining in order to enable service providers to handle each flow differently, with the flexibility needed to cope with future network needs.

PRODUCT HIGHLIGHTS

- Multi-functional carrier grade distributed NFV platform
- High density 3x10GE +12x1GE ports
- Powerful Intel X86 processor for VNF hosting
- Carrier Ethernet, MPLS (VPWS, VPLS and HVPLS) and OpenFlow transport technologies supported
- Wire speed non-blocking switching capacity
- Support for a large number of services using HQoS

Carrier Grade CE 2.0 / SDN Support

CloudMetro 100 is a state-of-the-art, carrier grade platform that can bridge the gap between CE 2.0 networks and future SDN networks, and an innovative distributed NFV platform. Powered by merchant ASIC, CloudMetro 100 offers 10GE line rate connectivity while running a comprehensive control plane, in either a distributed or central manner. CloudMetro 100 offers service providers flexibility in their choice of transport technologies by supporting multiple transport technologies such as .1Q, Q-in-Q, IP/MPLS and OpenFlow as the emerging SDN data plane technology.

Next Generation Management Support

CloudMetro 100 offers next generation management support, including NETCONF and YANG support. By implementing these modern management models, CloudMetro 100 offers a high level of management flexibility, support in configuration commitment and rollout, and much more efficient management. Since NETCONF and YANG use XML file format, they are well-suited for process automation, and can shorten the NMS / OSS integration cycle.

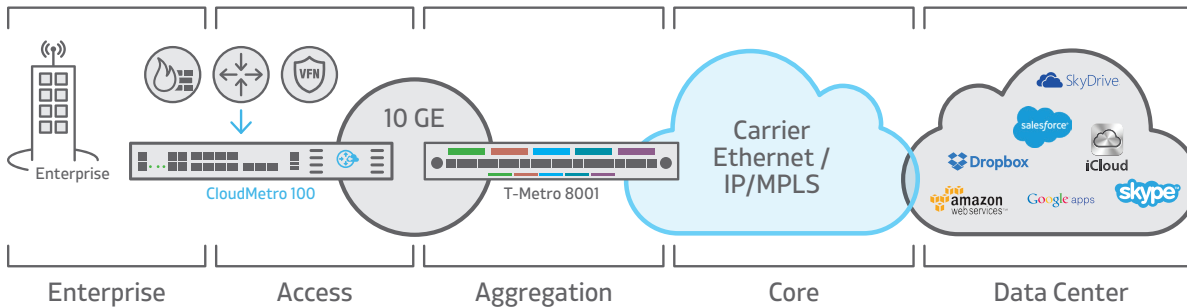
Advanced Hardware-based OAM (operations, administration and maintenance) Support

CloudMetro 100 is embedded with a comprehensive set of OAM and SLA monitoring and testing tools which utilizes the hardware engines on Telco Systems' devices, as well as the software processes, to provide real-time, accurate OAM capabilities. These capabilities include network measurements and service turn-up testing and verification, designed to reduce truck rolls and shorten time for activation and management. CloudMetro 100 supports a wide range of standards, including link level EFM industry standards like IEEE 802.1ag Connectivity Fault Management (CFM) protocols and ITU-T Y.1731 loss and delay measurement, as well as Y.1731 SLM for E-LAN testing, and RFC2544 and Y.1564 for service activation testing.



- Multiple resiliency mechanisms
- Extensive, field-proven service OAM and SLA monitoring and assurance
- Comprehensive VNF hosting and virtualization infrastructure
- Time synchronization (SyncE and IEEE 1588v2)
- MEF, IEEE, ITU-T and IETF standards compliance for multi-vendor interoperability

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PRODUCT SPECIFICATIONS

Hardware Characteristics	3 x 1000FX/10000BaseX SFP+ ports 8 x 100FX/1000BaseX SFP ports 4 x copper 10/100/1000BaseT ports Non-blocking 52Gbps FD platform AC power supplies
Services	All MEF services, IEEE 802.1Q bridging, IEEE 802.1ad Q-in-Q (TLS), MPLS L2VPN - VPWS, VPLS, H-VPLS, Dynamic routing and signaling utilizing OSPF, ISIS, RSVP-TE and T-LDP for path computation and signaling, Virtual OSPF support, OpenFlow 1.3.1
Timing Resiliency	SyncE, IEEE 1588v2 PTP Sub-50ms ITU-T G.8031 EPS, ITU-T G.8032v2 R-APS and MSTP Fast Ring Sub-50ms RSVP-TE FRR, H-VPLS dual home, secondary LSP xSTP, Resilient Link, LAG (static/IEEE 802.3ad LACP)
Quality of Service	Per port/EVC/flow single/dual rate limiting, hierarchical rate limit per EVC Hierarchical QoS – Multi-level SP, WRR and hybrid frames scheduling, CoS marking and mapping per EVC, IPv6 data path support WRED, flow control for congestion handling
Multicast Management	IGMP snooping v1/v2, IGMP Proxy, Multicast VLAN registration (MVR)
OAM	Hardware-based IEEE 802.3ah EFM, IEEE 802.1ag CFM, OAM over VPLS (OAMoVPLS)
Testing & Monitoring	Hardware-based ITU-T Y.1564 and RFC2544 Test Head and service performance analyzer ITU-T Y.1731 PM, SM and SLM Per-port/EVC/VLAN/COS, hardware-based flexible MAC-based loopbacks*
Management	Console, Telnet, SSHv2, Radius, TACACS+, SNMP v1/2/3, xFTP, NTP, DNS resolver, SD card, DHCP client & Zero-Touch provisioning
Security	ACLs, RADIUS, SSHv2, SNMPv3, SFTP, port security, broadcast storm prevention, secured access, IS-IS authentication
General Specifications	Dimensions: (H) 1RU 1.75" (44 mm), (W) 19" (482mm), (D) 11.5" (293 mm) Weight: 8.8 lbs (4 kg) Operating Temperature: 0°C to 50°C (32°F to 122°F) Humidity: 5% to 95% non-condensing Input power: 100-240 VAC, 50/60 Hz
Regulatory Compliance	Safety: NRTL certified: C-UL 60950, CSA 22.2 No. 950, EN/IEC 60950, TUV/GS (EN60950), CB, EN 60825-1/2 EMC: CE Mark: EN50081-1: EN55022 Class A, EN60555-2/3; North America: FCC 47 CFR Part 15 Class A; ICES-003 Issue 4 Class A (Canada); Japan: VCCI Class A; Australia/NZ: CISPR 22 Class A Immunity: EN50082-1, EN/IEC 61000-4-2/3/4/6/11 RoHS Compliance

KEY APPLICATIONS

- Edge distributed NFV hosting platform
- SDN / Carrier Ethernet network evolution
- Virtualized IT-enabled business services
- Advanced automatic traffic engineered (TE) networks
- Next generation mobile backhaul and mobile backhaul (wholesale)
- Small cell mobile backhaul mini aggregator
- Pre-aggregation device with advanced security separation

ORDERING INFORMATION

Part Number	Description
CM-100-AC-x-P02	Carrier-Grade SDN/Distributed-NFV 10GE Demarcation/Aggregation Platform: 3 x 1000Base-FX/10000Base-X (SFP+) UNI/NNI, 4 x 10/100/1000Base-T UNI/NNI, 8 x 100Base-FX/1000Base-X UNI/NNI; 1 x RJ-45 ASCII management console port, 1 x RJ-45 ASCII out of band management port – switch, 1 x RJ-45 ASCII out of band management port – compute node; SyncE and IEEE 1588v2 support; Intel® Core™ i5-4590S 3.7GHz Quad-Core Processor, 16GB memory, 500GB Storage; AC power supplies; 'x' specifies power supply and cord types: NA for North America, EUR: for Europe, UK: for United Kingdom
CM-100-AC-x-P03	Carrier-Grade SDN/Distributed-NFV 10GE Demarcation/Aggregation Platform: 3 x 1000Base-FX/10000Base-X (SFP+) UNI/NNI, 4 x 10/100/1000Base-T UNI/NNI, 8 x 100Base-FX/1000Base-X UNI/NNI; 1 x RJ-45 ASCII management console port, 1 x RJ-45 ASCII out of band management port – switch, 1 x RJ-45 ASCII out of band management port – compute node; SyncE and IEEE 1588v2 support; Intel® Core™ i7-4790S 4GHz Quad-Core Processor, 16GB memory, 500GB Storage; AC power supplies; 'x' specifies power supply and cord types: NA for North America, EUR: for Europe, UK: for United Kingdom

Note: Storage upgrade up to 1TB and/or SSD



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