# CX600-X1/X2-M Series Metro Services Platform Product Brochure

HUAWEI TECHNOLOGIES CO., LTD.

# Product Overview

Huawei CX600-X1/X2-M Series Metro Services Platform (MSP) is a high end Ethernet product .It focuses on Ethernet services access in metro area. It mainly locates at metro access and aggregation point.

CX600-X1/X2-M series is adapted to hardware forwarding mechanism and non-blocking switching technology, based on routing platform. CX600-X1/X2-M series focuses on DSLAM, MSAN, enterprise and BTS aggregation, and is the most cost-effective small UPE in the industry. CX600-X1/X2-M series supports 120/240G capacity, high-density interface and rich interface types. With the compact design, CX600-X1/X2-M series is only 220mm depth to meet the requirement of access aggregation. Meanwhile, featuring carrier-class reliability, powerful L3 functions, and advanced QoS, industry leading 1588v2 clock synchronization feature, superior scalability, interoperability, CX600-X1/X2-M series fully supports FMC universal service bearing.

The pictures of CX600-X1/X2-M series is as follows, including CX600-X1-M4, CX600-X2-M8 and CX600-X2-M16.

| CX600-X1-M4 | CX600-X2-M8 | CX600-X2-M16 |
|---|---|---|
| | | |

# Key Features

## Large Capacity & All-Type Interfaces With 220mm Depth

Adopting compact design, CX600-X1/X2-M series is 220mm depth and can be in the same rack or cabinet with access equipment (DSLAM, MSAN, ect). With 120/240G capacity, CX600-X1/X2-M series supports flexible interface type such as10GE, GE, FE, channelized STM-1,E1, etc, meeting the requirement of universal scenario access. The future evolution with 120/240G forwarding capacity makes it ready for the future network development.

## Intelligent & Powerful L3 Functions

Based on the unified mature multi-service platform VRP8, CX600-X1/X2-M series offers powerful L3 functions, supplies the most mature clock synchronization, such as ACR, Sync. Ethernet, and 1588v2, achieves GPS-grade Clock for any mobile network. Meanwhile, CX600-X1/X2-M series integrates intelligent functions for FMC applications, meeting the trend of intelligent service downward.

## Outdoor Solution

CX600-X1/X2-M series with enhance NPU can work well in -40°C ~ 65°C environment, Huawei also can provide outdoor cabinet. Huawei can provide perfect outdoor solution, meet various deployment scenario requirements.

## Uniform Platform & Management

CX600-X1/X2-M series is uniform platform and uniform management with Huawei CX600 series. It supports end equipment plug &play, end-to-end service configuration. Working with the backbone and edge equipments such as CX600-X3/X8/X16, ME60.CX600-X1/X2-M series helps operators to build metro that is multi-service bearing, network hierarchy clear, easy operation and maintenance.

CX600-X1/X2-M series can also interoperate with other vendor equipment, achieving seamless access at the edge and all the L3 functions interoperation with metro, effectively protecting operator's investment.

## Efficient OAM Features

CX600-X1/X2-M series supports Ethernet OAM fault management including: Ethernet in the First Mile OAM (EFM OAM), conforming to IEEE 802.3ah and Connectivity Fault Management OAM (CFM OAM), conforming to IEEE 802.1ag.

Conforming to ITU-T Y.1731, the CX600-X1/X2-M series supports performance management by inserting the timestamp into 802.1ag LB messages to measure the delay, jitter, and packet loss ratio when the messages are transmitted. In this manner, the CX600-X1/X2-M series can detect the end-to-end performance of traffic in a specified time period and on a specified network segment.

Conforming to RFC2544, the CX600-X1/X2-M can measure the network performance index defined by RFC544 without testing instrument.

IP FPM can provide flexible service-oriented IP frame measurement solution.

For Mobile Backhaul networks, especially the future oriented LTE network, CX600-X1/X2-M series adopts advanced Hierarchical L3 solution, deploying HVPN technology, which can guarantee efficiency, security, and reliability. L3 to edge solution makes the OAM more effective, and it can achieve E-to-E segment by segment fault demarcation and confirm each IP base station status.

Cooperating with performance management tools such as U2000, CX600-X1/X2-M series can provide SDH like network OAM, service oriented, intelligent warning, and refined positioning. Besides, the ISP can monitor the network status in real time through the NMS. The ISP then check whether the forwarding capacity of the network complies with the Service Level Agreement (SLA) signed with users and locate faults. The ISP does not need to carry out detection on the user side, which greatly decreases maintenance costs.

# Deployment Scenario

The typical deployment scenario of CX600-X1/X2-M series in Metro Ethernet solution is showed in the following picture. With deployed in MEN aggregation layer, the CX600-X1/X2-M series can carry Residential, VPN and Mobile services.

Residential Service: CX600-X1/X2-M series enables the MEN to have a residential hybrid approach of L3 service edge design, e.g. to form a distributed L3 edge for VoIP/IP/BTV/VoD whilst a centralized L3 edge for High Speed Internet (HSI) service. Generally, the CX600-X1/X2-M series can satisfy middle to large range coverage network requirement of Multi-Play services.

VPN Service: The CX600-X1/X2-M series supports flexible L2 and L3 VPN deployed in the Metro, providing intelligent solutions for different kinds of applications. With its Hierarchical QoS and reliable protection method, CX600-X1/X2-M series enable the carrier deliver different Service Level Agreements (SLA) for end-users.

Mobile Service: The CX600-X1/X2-M series is deployed between Base Transceiver Station (BTS) and Base Station Control (BSC) for 2G solution or between NodeB and Radio Node Controller (RNC) for 3G solution, providing an efficient and flexible transport tunnel with E2E PWE3. Besides that, CX600-X1/X2-M series can fully support Synchronous Ethernet-based clock synchronization mechanisms, as well as the 1588 Version 2 feature (clock and frequency), which can meet the future requirements for fixed mobile convergence and long-term evolution (LTE).

# Product Specifications

The main specifications of the CX600-X1/X2-M series are summarized in the following table.

| Item | Description | | |
|---|---|---|---|
| | CX600-X1-M4 | CX600-X2-M8 | CX600-X2-M16 |
| Capacity | Backplane Bandwidth: 1.27Tbps<br>Switching capacity: 480 Gbps<br>Port capacity: 240 Gbit/s | Backplane Bandwidth: 2.54Tbps<br>Switching capacity: 480 Gbps<br>Port capacity: 240 Gbit/s | Backplane Bandwidth: 2.84Tbps<br>Switching capacity: 480 Gbps<br>Port capacity: 240 Gbit/s |
| Slots | 1 for NPU, 2 for MPUs,<br>4 for PICs | 2 for NPUs, 2 for MPUs,<br>8 for PICs | 2 for NPUs, 2 for MPUs,<br>16 for PICs |
| Interface Types | 40GE 10GE-WAN/LAN GE/FE<br>OC-3c/STM-1c POS OC-12c/STM-4c POS<br>Channelized STM-1<br>E1/CE1(75/ 120ohm) | | |
| Clock Transmission | Synchronous Ethernet, IEEE 1588v2 | | |
| L2 Ethernet | IEEE802.1q, IEEE802.1p, IEEE 802.3ad, IEEE 802.1ab, STP/RSTP/MSTP, DHCP, VLAN Switch, and User Binding | | |
| IPv4/IPv6 Routing Protocols | Static routing, RIP, OSPF/OSPFv3, IS-IS/IS-ISv6, BGPv4/BGP4+, IPv6 over IPv4 Tunnel, IPv6CP, IPv6 ACL/ Telnet, 6PE&6vPE, IS-IS MT | | |
| L2/L3 VPN | LDP over TE, VPLS/H-VPLS, Policy Routing to VPN, L2 VPN/VLL with Martini, VLL/VPLS access L3 VPN Instance, QinQ, MPLS/BGP L3 VPN, Inter-AS VPN | | |
| Multicast | IGMP v1/v2/v3, IGMP Snooping, IPv6 Multicast, Static Multicast Routing, PIM-SM/SSM, MBGP | | |
| QoS | WRED, H-QoS with 5 levels, VLL/PWE3 QoS, Access Network QoS Control | | |
| Network Reliability | BGP/BGP4+/ISIS/ISIS6/OSPF/OSPFv3/PIM/IGMP/LDP/RSVP-TE/L3VPN NSR<br>BGP/IGP/Multicast Fast Convergence, IP/LDP FRR, TE FRR, VPN FRR, VLL FRR<br>BFD for Static Routing, IS-IS, RSVP, LDP, TE, LSP, PW, OSPF, BGP, VRRP, PIM, Ethernet OAM(L2 LSA, 802.1ag and 802.3ah), Y.1731, PWE3 End to End Protection | | |
| Dimensions (W×D×H) | 442mm×220mm×132mm(DC)<br>442mm×220mm×175mm(AC) | 442mm×220mm×222mm(DC)<br>442mm×220mm×264mm(AC) | 442mm×220mm×353mm(DC)<br>442mm×220mm×353mm(AC) |
| Weight | 13KG (fully configured) | 21KG (fully configured) | 25KG(fully configured) |
| Typical Power Consumption | <350W | <550W | <650W |
| Environment | Work temperature:<br>CX600-X1-M4/CX600-X2-M8: -40°C to +65°C<br>CX600-X2-M16: 0°C to +45°C<br>Restriction on temperature variation rate: 30°C/hour<br>Long time work humidity: 5% RH to 85% RH, non-condensing<br>Shot time work humidity: 0% RH to 95% RH, non-condensing<br>Long time work altitude: ≤3000 m | | |

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