

FTTx OLT Solution

C9500



System Overview

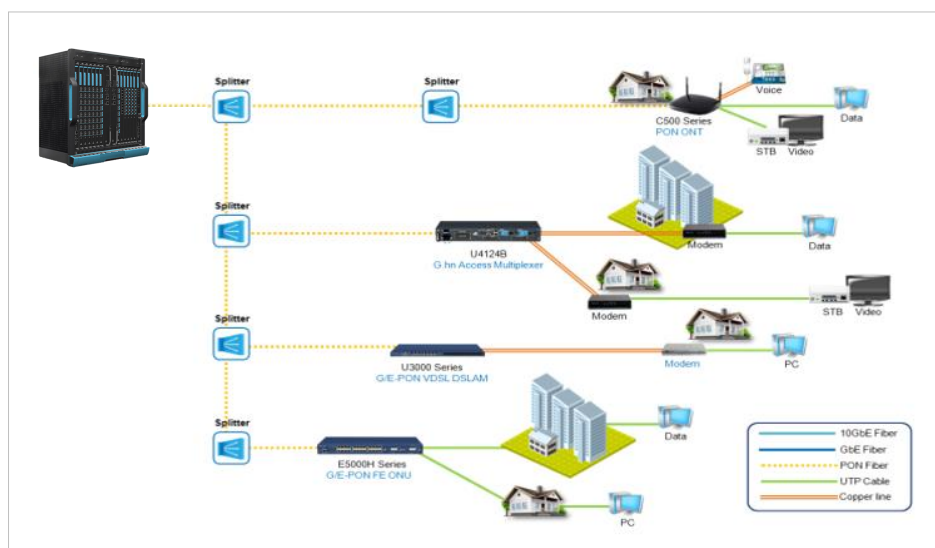
The C9500 supporting 10G EPON/GPON and DPoE is a high density, high capacity, and highly featured PON Optical Line Terminal. This product, built on a latest Layer 3 switch platform, is the forefront solution in the PON based access network segment. The C9500 can perfectly cover all the requirements of Triple Play Service (TPS) and beyond it. Due to its enhanced capacity and traffic management features, not only the services of today but also future ones can be handled aptly by C9500.

The C9500 has a total number of 14 slots that can accommodate 2 SCMs (Switch & Control modules), 2 LIMs (Line Interface Modules), and 10 PIMs (PON Interface Modules). The LIM slots of the C9500 can accept up to two 8-port 10GE cards or 4-port 10GE and 4-port 1GE cards. The PIM slots can accept up to 10 cards (8-port 1G EPON/Turbo EPON/10G EPON).

By way of gradual installation of PIM and LIM besides the modular architecture, any network operator can exploit the scheme of 'pay as you grow' with the C9500. In the perspective of available service and necessary bandwidth, the C9500 will be the best possible future proof solution.

The C9500 incorporates full redundancy design for SCM and PSM to improve availability and reliability of the system. On top of that, the C9500 offers Layer 2 switching, Layer 3 routing, QoS, OAM, and Security features so that it can be placed and adapted to the network operation policy and configuration.

Deployment Diagram



Features

- 1920 Gbps non-blocking switch fabric
- Max 1.44 Bpps throughput
- Fully Redundant System
 - Switching Fabric and Control card
 - 2 x SCM(Switch & Control Module)
 - 10 x PIM (PON Interface Module)
 - 2 x LIM (Line Interface Module)
 - 2 x PSM (Power Supply Module)
- 10 slots for PIM
 - Up to 80 x 10G PON ports per chassis
- 2 slots for Uplink Module
 - Up to 16x10GE ports per chassis
 - 8x10GE ports or 4x10GE and 4x1GE ports per module
 - supporting SFP and SFP+ optic module
- Reliable power supply in dual structure

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Specification

HW Specification

System Architecture & Console

- Uplink Slot (LIM) 2EA
 - 1GE * 4 ports and 10GE * 4 ports per Slot
 - 10GE * 8 ports per Slot
- PON Slot (PIM) 10EA
 - 10G EPON * 8 ports per Slot
- RS-232C, 10/100/1000 Base-T

Memory

- 2GB Main Memory
- 1GB (NAND), 128MB(NOR) , 2MB(NOR) FLASH

Physical Dimension

- 482.6 mm(W) x 443.3 mm(H) x 292.5 mm(D)
- 19 inch Rack Mount, 10 RU height. 14 slots
- Max. 53.86 Kg

Environment Condition

Input power and frequency

- -43VDC ~ -53VDC

Nominal Power consumption

- 1,600 W
- 5,460 BTU
- At nominal -48Vdc and 25C temperature, with a chassis fully configured including redundancy and with traffic running on all cards at full speed

Maximum power Consumption

- 2,200 W
- 7,508 BTU
- (The maximum possible value over the voltage range and over the temperature range)

Operating Temperature

- 0 ~ 50°C

Humidity

- 5 ~ 95%

Performance

Switch Fabric Performance

- 1,920 Gbps non-blocking

Throughput

- 1,440 Mpps wire-speed Switching

Service and features

EPON

- Max 4 bidirectional unicast LLID per ONU
- Max 256 bidirectional unicast LLID per OLT port
- Wire speed processing
- 10Gbps/10Gbps up/downstream Symmetric rate

- 1.25Gbps/2.5Gbps upstream/downstream Asymmetric rate (Turbo mode)
- 1.25Gbps/10Gbps upstream/downstream Asymmetric rate
- 128-bit Advanced Encryption Standard (AES) encryption engine for PON security and privacy with up to 128 unique keys.
- AES-128 Downstream Encryption
- Forward Error Correction(FEC) encoding and decoding
- Flexible optical transceiver interface for multiple vendor support.
- Hardware-based configurable Dynamic Bandwidth Allocation (DBA)
- IEEE 802.1D bridging: 8K MAC Address learning and aging on local interface
- IEEE 802.1p with four priority queues
- IEEE 802.1Q VLAN mapping
- Supports Local and Remote Loop-back test

Layer 2

- MAC address
 - Up to 32K~256K(Shared) MAC Management
- VLAN
 - Max 4K VLANs, 802.1Q Support
 - 802.1ad Q-in-Q
 - Tagging/Stacking
 - Port to VLAN Mapping
 - Service to VLAN Mapping
- Link Aggregation
 - 802.3ad Link Aggregation
 - Load-balancing based on src and des MAC/IP
- Spanning Tree
 - 802.1d Spanning Tree Protocol(STP)
 - 802.1w Rapid STP(RSTP)
 - 802.1s Multiple STP(MSTP)

Layer 3

- Routing
 - Static Routing
 - RIPv2(IPv4)
 - RIPng(IPv6)
 - OSPFv2(IPv4)/v3(IPv6 - TBD), IS-IS
 - BGP4(IPv4)/4+(IPv6 - TBD)
 - VRRPv2(IPv4)/v3(IPv6 - TBD)
 - PBR(Policy Based Routing)
 - ECMP Max 8 Routes : Restricted by Software - Max 128K Routing Entries
- Multicast
 - PIM-SM, PIM-SSM
 - IGMP v2/v3, IGMP Proxy
 - Max. 16K(L2)/8K(IPMC) Group Support
 - IGMP snooping, IGMP Join/Leave
 - PIM-ECMP Support
 - IGMP Join Filter/Count Limit
- DHCP
 - DHCP Relay
 - Blocks illegal IP users
 - DHCP option82
 - DHCP Snooping
 - DAI(Dynamic ARP Inspection)

QoS

- Layer 2: Source/Destination MAC Address, VLAN ID, COS Field
- Layer 3: Source/Destination IP address, DSCP
- Layer 4: Source/Destination TCP/UDP port
- TCP control flag
- Marking/Remarking: DSCP, 802.1p
- Packet Drop
- Mirroring to Port, Redirect to Port
- Metering, Rate Limiting with 1Mbps unit
- 8 queues per port
- SPQ, DWRR, Hybrid (SPQ+DWRR)
- Egress rate shaping per port/queue with 1Mbps unit

Security

- Packet Filtering
 - Netbios, NBT filtering
 - DHCP filtering
 - Packet filtering with ACLs
 - Ether type VLAN ID
 - Destination/Source IP address
- Abnormal Traffic blocking
 - Block the Illegal Source MAC address
 - ALL 0's, 1's, System Mac, Default G/W Mac
 - Block the Illegal Source IP address
- Storming Control
 - Broadcast, DLF, Multicast packet rate control
 - Cut-off of illegal traffic per Source MAC
- IP anti-spoofing
- ARP packet traffic limit
- Blocking of user-to-user flows Subscriber Isolation
- MAC Address Anti Spoofing
- User Protection
 - ARP spoofing / ARP cache poisoning - IP spoofing
 - DHCP spoofing
 - Broadcast flooding
 - MAC address spoofing
 - MAC flooding
 - 802.1Q tagging

System Security

- Access Control
 - RADIUS
 - TACACS+
 - Telnet, SNMP with ACL
 - DHCP, 82/60 option DHCP, PPPoE(option105) and static IP
- Protection
 - CPU Packet Filtering with ACL
 - CPU overload Packet traffic sender block
 - TCP sync attack protection with sync cookies
 - CPU packet rate-limit
- Management
 - Management packet priority control

Management

- Remote Access
 - Telnet, SSH, SNMP v1/v2/v3
 - GUI Based Management through EMS

- OS/Configuration
 - Remote OS Upgrade using TFTP, FTP
 - Dual Flash Image
 - Remote Configuration Data Download
- Others
 - NTP
 - Packet monitoring with TCPDUMP
 - RMON, Syslog
 - Type based Port, CPU Packet statistics

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Seamless Network Solution

All IP Convergence

Perfective Technology

The best partner of the main Internet Service Providers in Korea

Best OAM (Operation, Administration, Maintenance) Support

Many Experience of System Deployment