FTTx OLT Solution

C9516

Features

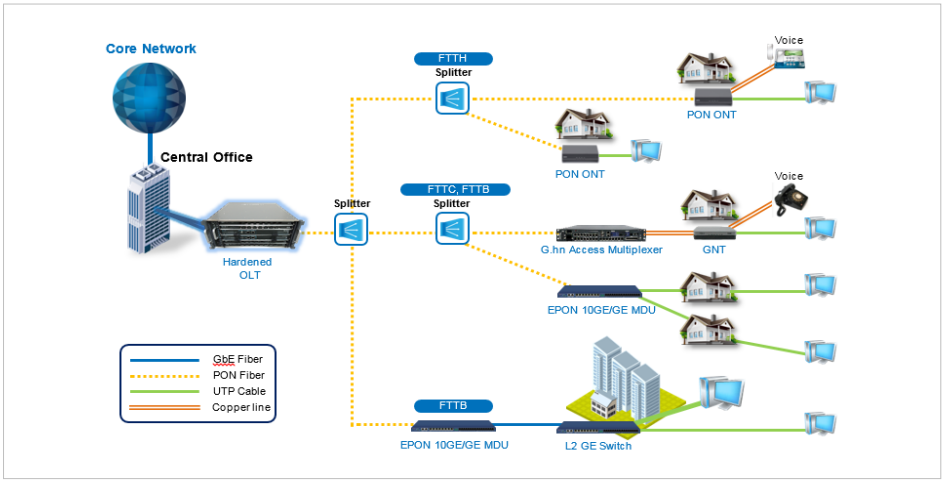
- 952 Mpps Non-blocking Architecture
- Up to 16x10GEPON & 16x10GbE Uplink
- Coexistence optical transceiver
  - 10Gbps/10Gbps
  - 10Gbps/1Gbps
  - 2Gbps/1Gbps
  - 1Gbps/1Gbps
- Turbo EPON optical transceiver
  - 2Gbps/1Gbps
- Full Redundancy for main modules
  - 2 x SCM (Switch & Control Module)
  - 2 x LIM (Line Interface Module)
  - 2 x PIM (PON Interface Module)
  - 2 x PSM (Power Supply Module)
- Full L2/L3 protocol support
- DPoE supported

System Overview

The ubiQuoss C9516 is a next-generation Ethernet Passive Optical Network (EPON) optical line terminal (OLT), supporting full 1G and 10G EPON functionality in a high-density, fully redundant, temperature-hardened platform. Based on ubiQuoss' C9500 OLT and built on a leading Layer-3 switch platform, the C9516 is at the forefront of PON-based access network technology. The C9516 delivers compact size, traffic management, multiple EPON modes (1G/1G, Turbo (2/1), 10G/1G, 10G/10G), and DPoE support along with other capabilities that are required by evolving access networks. With the headroom to provide expanded bandwidth and advanced feature sets, the C9516 supports the increasing deployment of FTTx networks, including fiber-to-the-home, fiber-to-the-business, fiber-to-the-desk, and fiber-to-the-tower.

As a scalable EPON OLT, the C9516 allows network operators to control costs and capacity with a "pay as you grow" platform. Additional blades, redundancy, line cards, and optics can be installed as needed, making the C9516 virtually future-proof. The chassis features 6 blade slots that can accommodate two switch and control units (SCUs), up to two line interface modules (LIMs), and up to 3 PON interface modules (PIMs). The LIM slots, which provide the NNI/uplink connections, accept eight-port 1GE or 10GE blades. The PIM slots accept eight-port 1G EPON or universal EPON blades to support 1G/1G, Turbo (2/1), 10G/1G, and 10G/10G EPON. Additionally, non-hardened C9500 OLT blades can be used in place of temperature-hardened units when the C9516 is located in a temperature-controlled environment. For added compatibility the same software that operates the C9500 OLT is used to run the C9516, providing craft familiarity, accelerating feature development, and lowering overall approval and support costs.

Deployment Diagram



ubiQuoss Inc.

68, Pangyo-ro, 255beon-gil,

Bundang-gu, Seongnam-si,

Gyeonggi-do, 463-400, Korea

TEL : +82-70-4865-0570

FAX : +82-31-8017-1184

URL : www.ubiquoss.com

oversea.group@ubiquoss.com

Specification

HW Specification

System Architecture & Console

- Dual Switch & Control Module (SCM)
- Uplink Slot (LIM) 2EA
  - 1GbE * 4 ports and 10GbE * 4 ports per Slot (via configuration setting)
  - 10GbE * 8 ports per Slot
- PON Slot (PIM) 2EA
  - 1GEPON/Turbo EPON/10GEPON * 8 ports per Slot
- FAN Module (FMU)
  - 7 Fans in a single slot
- Power supply module (PSM) 2EA
- Dual clock board (1588v2, SyncE) – planned
- RS-232C, 10/100 Base-T

Memory

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

Physical Dimension

- 440mm(W) x 177mm(H) x 471mm(D)
- 19 inch Rack Mount, 4 RU height
- Max. 31Kg (fully loaded)

Environment Condition

Input power and frequency

- AC 100 ~ 240V, 50Hz/60Hz
- DC -48V

Power Consumption

- Max. 800W

Operating Temperature

- -40℃ ~ 70℃

Humidity

- 5 ~ 95%

Performance

Switch Fabric Performance

- 720 Gbps non-blocking

Throughput

- 536 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

ubiQuoss

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