AOLT-4000N

GPON OLT (ETSI)

Feature Summary

- 9 RU, ETSI 515 mm hole to hole rack mount, 500 mm aperture
- Requires front access only
- Supports card hot swap
- Redundant 1+1 controller and 1+1 aggregation switch card options
- 1+1 (from different cards) uplink protection option
- 1:1 (same card) uplink protection option
- Stable GPON
  - Complies with ITU-T G.984.x and G.988 2.488Gbps downstream and 1.244Gbps upstream
  - DBA (Dynamic Bandwidth Allocation) and QoS based on 384 T-CONTs per PON port 128 bit AES encryption and FEC
- High performance layer 2 switching
  - Full throughput for all ports (non-blocking)
  - High capacity packet switching (16K MACs SNI, 32Kx10 MACs GPON (32K/4))
  - Powerful layer 1~ 4 filtering and QoS IGMP
  - snooping/proxy for multicasting
- Flexible SNI networking
  - 802.3ad LAG and 802.3ad LACP (option)
  - G.8031 linear and G.8032 ring ERPS V1/v2 option (future)
- Various interfaces
  - Downlink interface: 4+4 GPONs (SFPs) per GLCPx10
  - Uplink interface: 8 x 1GbE (SFP) and 2 x 10GbE (XFP) per SWT x2
- Excellent operation and management
  - Management via EMS (SNMPv2c/v3), CLI(Telnet/console) and syslog
- Security
  - Layer 1~4 packet filtering (ACL) DHCP packet filtering
  - DHCP Option 82
  - MAC restriction per port
  - Broadcast/multicast/DLF packet limit
  - Port flood guard for abnormal traffic
  - Loop detection and blocking
- Dual shelf power inputs
- Dual BITS/SSU clock input
- Central office dry alarm contacts via the control card
- Integrated fiber management
- Forced air cooling with field replaceable air filter

Applications

The AOLT-4000N is designed for carrier central office or MSO hub environments for enabling cost-effective FTTx services.

Flexible Configuration

Two control card slots for 1+1 CTL cards. Two switch and timing slots for 1+1 SWT cards with redundant 10-GbE and 1-GbE Service Node Interfaces (SNI) uplinks. Ten line card slots for 10 GLCP cards.

Data Plane Connectivity

The AOLT-4000N's data plane consists of redundant 10Gbps connections to each card slot from the two dedicated double-width SWT slots in the shelf.

Control Plane Connectivity

The AOLT-4000N's control plane consists of redundant 1Gbps connections to each card slot from the two dedicated CTL slots.

Synchronization Connections

Inputs for redundant BITS/SSU timing interfaces for GPON and TDM synchronization and outputs for sourcing clocks for external synchronization use.

Switch Capacity

Dual star redundant architecture with 20 Gbps bandwidth to each card slot and 400 Gbps bandwidth total capacity.

High Availability

High availability architecture where removal or insertion of any single card does not affect existing connections on other cards. Even in a system with a single CTL card, a failure of the control card does not affect the working traffic. To increase control plane availability, a second mate CTL card can be inserted in the AOLT-4000N chassis, providing 1+1 redundancy for the control plane. Likewise to increase data plane availability, a second mate SWT card can be inserted in the AOLT-4000N chassis, providing 1+1 redundancy for the data and signaling plane.

AEMS or SNMP Managed

With the CTL card installed, AOLT-4000N is either remotely or locally managed from either Alphion's Element Management System (AEMS) or with a 3rd party EMS using SNMP or a legacy NMS.

SPECIFICATIONS

GPON interface

Standard: ITU-T G.984.1,2,3,4 and G.988 compliant
Downstream: 2.488Gbps, 1490nm, Class B+ and C+
Upstream: 1.244Gbps, 1310nm, Class B+ and C+
Service distance: up to 60km
(depending on split ratio and reach extension)
Split ratio: up to 64/128 T-CONT: 384 per OLT port
GEM ports: 4K per OLT port

Switching

Two-stage layer 2 switching (store and forward)
Switching capacity:200Gbpsx2 Ethernet switching
Switching performance:
    Full throughput for all ports (non-blocking) 16K MACs
    SNI, 32Kx10 MACs GPON (32K/4) 4095 VLANs
Layer 2 line rate forwarding
MAC-forced forwarding (RFC4562) on SNI
Multicasting: IGMP snooping/proxy
STP (802.1d), RSTP (802.1w), MSTP (802.1s) (future)
802.3ad LAG and LACP (future)
DHCP relay with Option 82
Security:
    Packet filtering (access control list), port flood guard
    Dynamic, Reflexive, TCP intercept time based ACLs
    (future) MAC address limitation per UNI port

Protection Option

G.8031 linear and G.8032 ring ERPS v1/v2

QoS

8 priority queues per port
802.1p, ToS, DSCP marking/remarking
Scheduling: SPQ, WRR, DRR
SrTcm and TrTcm
Congestion control
    Head of line blocking prevention Back
    pressure, 802.3x

Management

Alphion EMS (SNMPv2c/v3), CLI (Telnet/console), syslog,
RMON Remote software upgrade via TFTP and FTP
RADIUS, TACACS+ authentication for management access
Alarm contacts (critical, major, minor, audible, visual)
802.1ag (CFM, CCM, Linktrace) (future)
ITU-T Y.1731 (CFM,AIS, Test, MCC, PMM) (future)
NTPv4 (RFC5905) (future)
Built-in temperature sensor

System

Synchronization:
    Redundant BITS/SSU 1544/2048 KHz and 1544/2048 Kbps
    inputs
    Redundant BITS/SSU 1544/2048 KHz and 1544/2048 Kbps
    outputs per G.812
    Automatic holdover (Stratum 3 or 3E local OCXO) on loss of
    reference inputs
Capacity:
    2 slots redundant control cards (CTL)
    2 slots redundant switch and timing cards (SWT)
    10 slots GPON line cards (GLCP)
BITS/SSU clock:
    Two inputs 75 ohms BNC and
    DB9 Two outputs 75 ohms BNC
    and DB9
Management ports:
    LCT MGT A 10/100Base-T
    Out-of-band MGT B
    10/100Base-T Craft interface
    USB 2.0 (type B)
Alarm:
    Five outputs
DB15 Power
Supply:
    -40 to -60 VDC, dual input individually controlled by circuit
    breaker cooling:
    Forced air cooling with fans

Dimensions

W x D x H: 537 mm x 300 mm x 400 mm
Weight: 46lb/17kg (chassis with fan tray)
    65lb/30kg (fully loaded)
Frame mounting: ETSI 515 mm hole to hole, and 500mm aperture

Operating environment

Temperature   -5 to +50ºC
Relative humidity   5% to 95% (non-condensing)

Compliance

EMC EN55022, CISPR-22 Class A Safety
EN60950, UL60950, CE
Laser safety IEC-60825-1 Class 1, ITU-T G.664
Environmental EN300 019-1-3, QM-333 B2
category Chassis EN300 119-4
Transient EN/IEC61000-4-4 (2001) level 2
Immunity
    Radiant RF EN/IEC61000-4-3 (2002) level 2
    Conducted EN/IEC61000-4-6 (2001) level 2
Surge EN/IEC61000-4-5 (2001) 0.5 KV (line), 1.5 KV (earth) ESD
EN/IEC61000-4-2 (2001)