



AXOS

Calix E9-2 Control and Aggregation Switch Card (CLX3001)

DESCRIPTION

The Calix E9-2 System Control and Aggregation Card (CLX3001) is designed to deliver unconstrained scale and bandwidth enabling service providers to converge mobile, business and residential services networks. This convergence as well as the CLX3001's ability to redefine the access edge of the network and collapse functions into a single system enable service providers to realize dramatic reductions in total cost of operations and ownership. The Calix E9-2 CLX3001 is built on the AXOS platform and allows service providers to deploy rapidly and meet the demands of the always on world.





FUNCTIONAL DESCRIPTION

REDEFINED ACCESS

EDGE: The E9-2 collapses the functions of the traditional OLT, the aggregation switch and the edge router with subscriber management into a single system reducing the rack space and power used in the data center / central office and more importantly reducing the number of systems required to be provisioned and managed.

KEY FEATURES AND CAPABILITIES

- Highly scalable and modular 10G PON OLT system, scaling up to 128 NG-PON2/XGS-PON ports per system.
- Up to 560G aggregate network and uplink capacity in the form of active/active configurations, with the support for multiple high speed networking interfaces ranging from 1G SFP, to 10G SFP+, and 100G QSFP.
- Fully redundant: Data, Control, Management and Power.
- L2 and L3 business and residential subscriber services, including MEF CE 2.0, Triple Play (Voice/Video/Data) and IPTV (up to 4096 IGMP channels).
- 9216 MTU size.
- Full suite of subscriber management functions, including subscriber's IP address management, Authentication, Authorization and Accounting (AAA) via Radius, Diameter and TACACS+.

CARRIER CLASS AGGREGATION:

The Calix E9-2 CLX3001 enables the E9-2 Intelligent Edge System to deliver unconstrained bandwidth and provides non-blocking carrier class redundancy for mobile, business and residential services. Two CLX3001 can be installed in an E9-2 shelf, providing up to 160G fully redundant connectivity to every line card in the system.

AXOS PLATFORM:

The E9-2 Intelligent Edge System is built on the Calix AXOS platform ensuring faster time to revenue and an always-on network.

NON-BLOCKING UPLINK:

Each CLX3001 has 16 C-QSFP inter-connect ports, two QSFP+ ports (40/100GE), eight SFP+ (10GE) ports and two SFP (1 GE) ports, enabling highly scalable solution for service providers ensuring the utmost in network flexibility.

MANAGEMENT:

The CLX3001 is managed utilizing the Calix Operations Cloud for full FCAPS capability. In addition, CLX3001 supports Command Line Interface (CLI), and as well as Netconf with YANG models for provisioning.

INDUSTRY STANDARDS COMPLIANCE:

The E9-2 meets all applicable industry compliance standards including NEBS Level 3, UL, FCC and CE mark.



MINIMUM SOFTWARE RELEASE

Calix E9-2 AXOS Release 3.1.0 or later

UPLINK PORTS

2 x 40/100GE QSFP28 ports per card
8 x 10GE SFP+ ports per card
2 x 1 GE SFP ports per card

AGGREGATION PORTS

Four 4x100 C-QSFP inter-connect ports

QUALITY OF SERVICE

Service classification based on port, SVLAN-ID, CVLAN-ID, p-bit, DSCP, IP and MAC addresses, ACL, and dynamic subscriber's policies
CoS mapping between DSCP and 802.1p
Port and flow-based policing to 1Mbps increments
8 CoS queues per port
Strict priority and Weighted Round Robin (WRR) scheduling with minimum bandwidth guarantee
Congestion avoidance: Tail Drop and (Weighted Random Early Discard) WRED
9216 byte MTU size

NETWORK TIMING AND SYNCHRONIZATION

BITS, SyncE, 1588v2
Built-in Stratum-3 clock

STANDARDS AND RFC SUPPORT

TR-101 VLAN Service models
IEEE 802.1ag Connectivity Fault Management
IEEE 802.1D Rapid Spanning Tree
IEEE 802.1p CoS Prioritization
IEEE 802.1 MAC Bridges
IEEE 802.1Q VLAN tagging
IEEE 802.1ad VLAN stacking (Q-in-Q) support
IEEE 802.1AX Link Aggregation
RFC 3376 IGMP v3
RFC 3810 MLDv2
RFC 4607 PIM-SSM
RFC 4541 IGMP (Termination for Proxy Configuration)
IPv4 and IPv6 RFCs
RFC 2328 OSPFv2
RFC 2866 Radius Accounting
RFC 3588 Diameter
TACACS+
DHCP Server
DHCP Relay
DHCP Proxy
ARP and ARP Proxy

COMPLIANCE

NEBS Level 3 compliance
(GR-63-CORE, GR-1089-CORE, GR-3028)
UL-60950, Standard for Safety, Issue 1, April 1, 2003
FCC Part 15 Class A
CE Mark

POWER AND HEAT DISSIPATION

CLX3001 power consumption: 300 Watts (with Optics)
Heat dissipation: 1023 BTU/Hour

OPERATING ENVIRONMENT

Temperature: -5° to +55° C (23° F to +131° F)
Humidity: 10 to 95% (non-condensing)

STORAGE ENVIRONMENT

Temperature: -40° to +85° C (-40° F to +185° F)
Humidity: 5 to 95%

WEIGHT

6lbs., 0 oz.
2.72 kg

DIMENSIONS

Width: 17" (43cm)
Height: 1.7" (4.3cm)
Depth: 13" (33cm)



NOTES

Only QSFP+ and SFP+ pluggable transceiver modules and Direct Attach cables purchased from Calix are supported. The use of 40/100GE QSFP+, 1/10GE SFP+ pluggable transceivers and Direct Attach cables not purchased directly from Calix is not supported and will void all product warranties covering the Calix equipment to which such third-party materials are connected.

Refer to the Calix Optical Transceiver Modules Datasheet (#250-00191) for a complete list of modules and specifications.

CALIX E9-2 LINE CARDS

100-04465.....E9-2 CLX3001 Aggregation Switch (4 x 400GE C-QSFP, 2 x 100Gbps QSFP+, 8 x 10GE SFP+, 2 x 1GE SFP)

CALIX E9-2 CARD INTER-CONNECT CABLES

100-04713, 100-04714C-QSFP to 4 x 100GE QSFP28 Direct Attach Breakout Cable, 1m, 3m

CALIX PLUGGABLE TRANSCEIVER MODULES

The CLX3001 supports pluggable modules for all network interfaces.

100-01662.....1GE SFP, Single Mode dual fiber transceiver, 10km

100-01512.....10GE SFP+, Single Mode dual fiber transceiver, 10km

100-04041.....QSFP, 40GE Multi Mode dual fiber transceiver, 100m

100-04045.....QSFP, 40GE Single Mode dual fiber transceiver, 10km

100-04651.....QSFP, 40GE Single Mode dual fiber transceiver, 40km

100-04650.....QSFP28, 100GE Multi Mode Optical Transceiver, 100m

100-04744.....QSFP28, 100GE Single Mode Optical Transceiver, 10km

CALIX Direct Attach Cables

100-04472, 100-04752QSFP28 100GE Direct Attach Cable (DAC), 1m, 3m

100-04489.....QSFP28 to 4 x 25GE SFP28 Direct Attach Breakout Cable, 3m