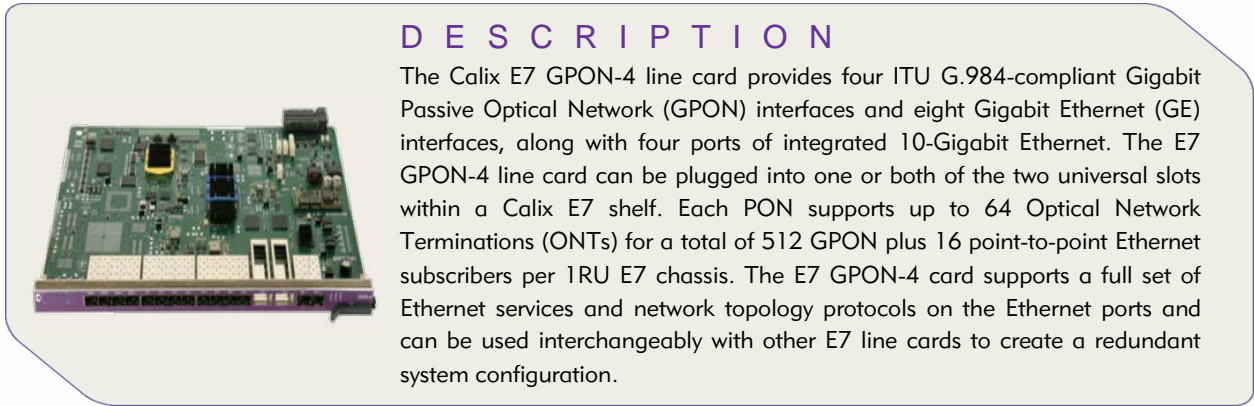


Calix E7 GPON-4



DESCRIPTION

The Calix E7 GPON-4 line card provides four ITU G.984-compliant Gigabit Passive Optical Network (GPON) interfaces and eight Gigabit Ethernet (GE) interfaces, along with four ports of integrated 10-Gigabit Ethernet. The E7 GPON-4 line card can be plugged into one or both of the two universal slots within a Calix E7 shelf. Each PON supports up to 64 Optical Network Terminations (ONTs) for a total of 512 GPON plus 16 point-to-point Ethernet subscribers per 1RU E7 chassis. The E7 GPON-4 card supports a full set of Ethernet services and network topology protocols on the Ethernet ports and can be used interchangeably with other E7 line cards to create a redundant system configuration.

CALIX E7 GPON-4 KEY ATTRIBUTES

GPON AND POINT-TO-POINT ETHERNET: The Calix E7 GPON-4 card provides multiservice capability over IP/Ethernet-based networks. Each GPON-4 provides 4 GPON OLT ports that subtend up to 64 ONTs each, for a card capacity of 256 GPON ONTs, 512 per E7 1RU chassis. An additional eight GE ports per card can provide high-bandwidth, point-to-point Ethernet services to individual subscribers or be used to aggregate other Ethernet devices.

Multiple E7 systems can be linked together using low cost, industry standard 10GE SFP+ copper cables, resulting in a high-density configuration serving over 1000 GPON ONT subscribers in as little as 2RU space (1:64 split). GPON-4 card features and capabilities include:

- Based on ITU G.984 GPON family of standards
- GPON: 2.488 Gbps downstream, 1.244 Gbps upstream
- GEM (Ethernet) based GPON
- Interoperable with Calix family of 700 ONTs
- Integrated 10GE and GE aggregation and transport
- Class B+ ODN, +28 dB link budget, up to 1:64 splits
- Extended reach GPON up to 40 km with 1:8 split
- Hardened for central office and remote terminals

INTEGRATED HIGH-CAPACITY AGGREGATION:

The E7 GPON-4 card is built on a core Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces. Each GPON OLT port has a dedicated 2.5Gbps switch interface. Industry standard pluggable modules are used for all interfaces, including ITU G.984 compliant GPON, GE SFP, 10GE XFP, and 10GE SFP+. The SFP+ ports also support SFP modules, extending their versatility.

IP SERVICES DELIVERY: The Calix E7 GPON-4 card delivers a full spectrum of IP access services over GPON and Point-to-Point Ethernet networks.

- IPTV – broadcast and Video on Demand (VoD)
- MEF compliant business services
- High-Speed Internet (HSI) access
- Voice – Native SIP/VoIP and TDM Gateway support
- T1 services
- CATV: 1550nm RF video overlay; 1610nm RF return

NETWORK RESILIENCY: All Calix E7 cards support a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport, and uplink.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation

MOBILE BACKHAUL: With integrated network synchronization, hierarchical QoS and support for T1 services, the GPON-4 card transport uncompromised mobile broadband traffic while also supporting triple play residential and MEF certified business services from a single platform. A powerful collection of classification, policing, and scheduling algorithms let operators manage per-subscriber and per-service traffic flows to maintain priority/delay/loss service differentiation within the E7 network.

SCALABLE IPTV SUPPORT: The E7 supports industry standard IGMP snooping to identify and replicate multicast video sent between the set-top box and the video distribution network, providing efficient, scalable, high-quality IPTV distribution on both GPON and Ethernet interfaces.

SPECIFICATIONS

Calix E7 GPON-4

<p>PORTS</p> <p>4 GPON OLT ports 8 SFP ports for optical GE and 100/1000BaseT copper modules 2 XFP ports supporting 10GE 2 SFP+ ports supporting 10GE</p> <p>PACKET SWITCHING CAPACITY</p> <p>Wire speed forwarding across all Ethernet and GPON OLT ports 32,000 MAC addresses per system 9,000 byte jumbo frames 1500 byte frames over GPON 4,096 VLANs 800 IGMP Multicast channels</p> <p>QUALITY OF SERVICE</p> <p>Service classification based on port, SVLAN-ID, CVLAN-ID, p-bit Port and flow-based policing to 1Mbps increments 8 CoS queues per port Strict priority scheduling with minimum bandwidth guarantee Congestion avoidance: Tail Drop</p>	<p>STANDARDS AND RFC SUPPORT</p> <p>TR101 VLAN Service models IEEE 802.1ag Connectivity Fault Management (G.8032 support) 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 802.1w RSTP IEEE 802.3ad/802.1AX Link Aggregation RFC 2236 IGMP v2 RFC 2376 IGMP v3 RFC 3046 DHCP Relay Agent Information Option ("Option 82") RFC 4541 IGMP snooping RFC 4553 Structure-Agnostic Time Division Multiplexing (TDM) over Packet (SAToP) ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)/Enhanced EAPS ITU-T G.984 GPON</p>	<p>SYNCHRONIZATION</p> <p>Synchronization enabled by E7 line cards External reference timing Built-in Stratum-3 clock Hardware-ready to support IEEE 1588v2 and Synchronous Ethernet</p> <p>COMPLIANCE</p> <p>NEBS Level 3 compliance (GR-63-CORE, GR-1089-CORE, GR-3028) UL 60950 FCC Part 15 Class A</p> <p>POWER SPECIFICATIONS</p> <p>GPON-4 power/heat dissipation: 75 Watts</p> <p>OPERATING ENVIRONMENT</p> <p>Temperature: -40 to +65° C (-40° F to +149° F) Humidity: 10 to 95% (non-condensing)</p> <p>STORAGE ENVIRONMENT</p> <p>Temperature: -40 to +85° C (-40° F to +185° F) Humidity: 5 to 95%</p>
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CALIX 700 ONT

The E7 GPON-4 card supports a family of Calix 700 ONTs, including Single Family Unit (SFU), Small Business Unit (SBU), Multi-Dwelling Unit (MDU), and rack-mount models. Calix 700GX ONTs support auto sensing GPON and GE network interfaces, allowing service providers to manage service changes without subscriber onsite technical support.

ORDERING INFORMATION

CALIX E7 LINE CARDS

100-01773..... E7 GPON-4 (4xGPON OIM, 8xGE SFP, 2x10GE XFP, 2x10GE SFP+)

CALIX OPTICAL AND COPPER PLUGGABLE MODULES

Calix offers a full suite of optical and copper modules for E7 line cards.

- GPON OIM..... 2.5Gbps GPON (Class B+ ODN with minimum 28dB link budget, up to 1:64 splits)
- ER-GPON OIM..... 2.5Gbps Extended Reach GPON (up to 40 km with 1:8 split)
- SFP..... 1 GE optical and copper Small Form-factor Pluggable (SFP) modules
- XFP..... 10GE optical 10 Gigabit Small Form-factor Pluggable (XFP) modules
- SFP+ 10GE optical and copper Small Form-factor Pluggable (SFP+) modules
 GE SFP modules may also be used in SFP+ ports at a 1Gbps rate

