

Product Highlights

DWDM Integrated on Switch Line card

- High density DWDM solution for Cloud Data Centers
- Cost and performance optimized for Data Center Interconnect (DCI) to transport massive volumes of traffic through metro or long haul networks.
- Ethernet over DWDM: Transparent to Layer2 and Layer3 applications

Wire-speed Encryption

- IEEE 802.1AE MACsec encryption
- 100G Wire Speed encryption on every port

Metro and Long Haul Applications

- 100G DP-QPSK Modulation
- Robust OSNR and CD tolerance
- 80km of un-amplified reach
- 3000km+ amplified reach

Unmatched Density

- 6x100GbE on a 1RU Line card
- 9.6 Tbps per fiber pair
- 96 channels at 50GHz spacing and 48 channels at 100GHz spacing

Proven Architecture and technology

- Utilizes industry adopted and deployed 100G Coherent technology
- Best in class switch silicon
- Proven to be the most reliable

Highly Scalable

- Compatible with 10G, 40G and 100G line cards for 7500E Series
- Use of pluggable optics for pay as you grow

Investment protection

- Supports Flex Grid operation for future growth
- Future proof 7500 system architecture

Arista Extensible Operating System

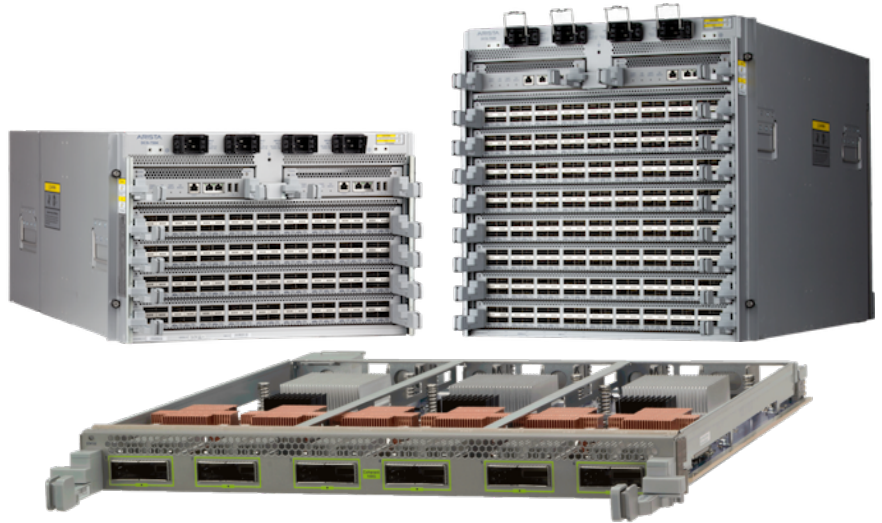
- Single binary image
- Fine-grained truly modular network OS
- Stateful Fault Containment (SFC)
- Stateful Fault Repair (SFR)
- Full access to Linux shell and tools
- Extensible platform - bash, python, C++

Overview

The phenomenal growth in demand for bandwidth, driven by mobile, video streaming and cloud applications, is driving the need for connecting several geographically dispersed data centers to maintain seamless content delivery and provide application agility. To keep up with the global trend of price reduction for bandwidth, interconnecting these geographically dispersed data centers has to be operationally simple and economically efficient. Traditional transport infrastructure does not meet the density challenge and is not economically viable for bulk data center interconnect.

The Arista 100G DWDM solution is integrated to a 7500E Series line card offering high-density with un-compromised performance at an efficient cost point. It utilizes proven coherent optical technology to enable simple, reliable and scalable data center interconnect solutions for both metro and long haul applications

One of the major challenges for data center operators is to protect the data from passive wire tapping, intrusion and other attacks when it leaves the data center premise. Most of the existing encryption solutions require additional systems that are expensive to deploy and manage. The Arista 100G DWDM line card provides IEEE 802.1AE defined MACsec encryption at wire speed on every 100GbE port for secure transport of data over distance.



Arista 100G DWDM Coherent Line card for 7500E Series

Arista EOS

All Arista products including the 7500E Series runs the same Arista EOS software, binary image simplifying network administration with a single standard across all switches. Arista EOS is a modular switch operating system with a unique state sharing architecture that cleanly separates switch state from protocol processing and application logic. Built on top of a standard Linux kernel, all EOS processes run in their own protected memory space and exchange state through an in-memory database. This multi-process state sharing architecture provides the foundation for in-service-software updates and self-healing resiliency together with stateful switchover without the loss of data plane forwarding.

Arista EOS enables advanced monitoring and automation capabilities such as Zero Touch Provisioning, LANZ, VM Tracer and Linux based tools to be run natively on the switch.

100G Wire-speed Encryption

The Arista 100G DWDM line card has built-in 100G wire-speed encryption on every port. Standards-based IEEE 802.1AE (MAC Security standard, hereafter referred to as MACsec) capabilities provide line-rate frame encryption and authentication for traffic transported across DWDM. This optional functionality removes the need for additional intermediate devices and provides encryption which ensures confidentiality as well as provides anti-replay protection and therefore confidence in the integrity of encrypted traffic.

MACsec uses a long-term key to derive session keys used for encryption utilizing the MACsec Key Agreement Protocol per IEEE 802.1X-2010. Long term keys can either be statically defined or derived via RADIUS server(s)*. Data is encrypted using the 128 bit or 256-bit* GCM-AES-XPB block cipher suite.

MACsec encryption is a licensed feature and requires a license file to enable the encryption feature. License information is included in the ordering information section of this document.

Feature-rich, simple, high performance solution for Metro and Long Haul applications

The Arista 100G DWDM solution integrates feature rich and high performance layer 2 and layer 3 switching with Coherent DWDM interfaces into a single high-density line card. It reduces complexity and at the same time delivers a cost effective and highly scalable solution with encryption and wire-speed performance for Data Center Interconnects in metro and long haul environments.

Arista DWDM solution can be used in conjunction with passive Optical Mux/DMux devices and in-line amplifiers to support additional bandwidth and extended reaches. With an un-amplified reach of up to 80kms, it is ideal for Metro applications transporting up to 9.6Tbps traffic when used with passive multiplexers, and without requiring in-line amplification (Figure 1). With an Optical Signal to Noise ratio (OSNR) of 11.6dB, it can be used effectively for point to point long-haul applications up to 3,000kms with in-line amplifiers (Figure 2) and multiplexers.

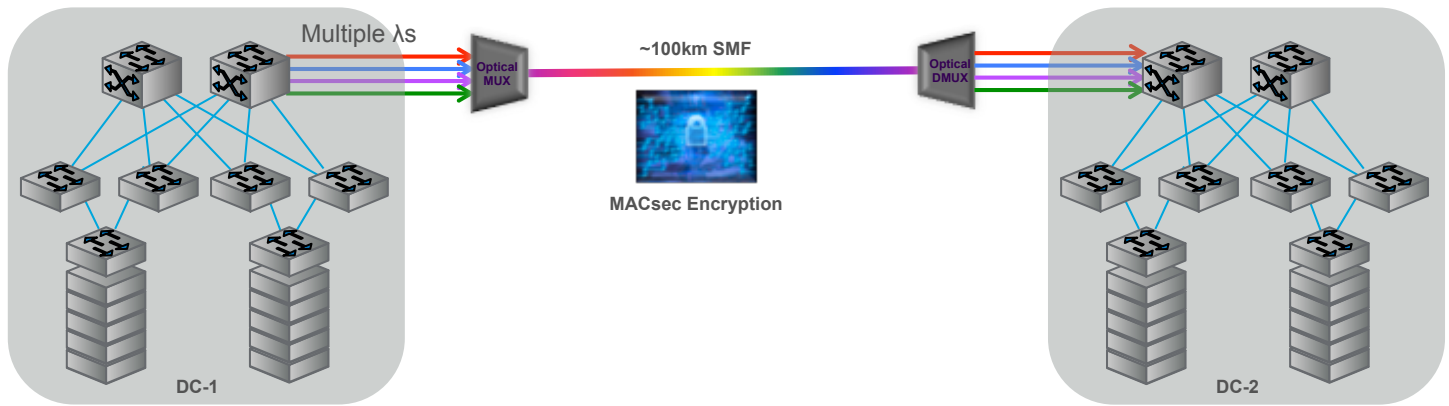


Figure 1: Datacenter Interconnect point-to-point high bandwidth metro application

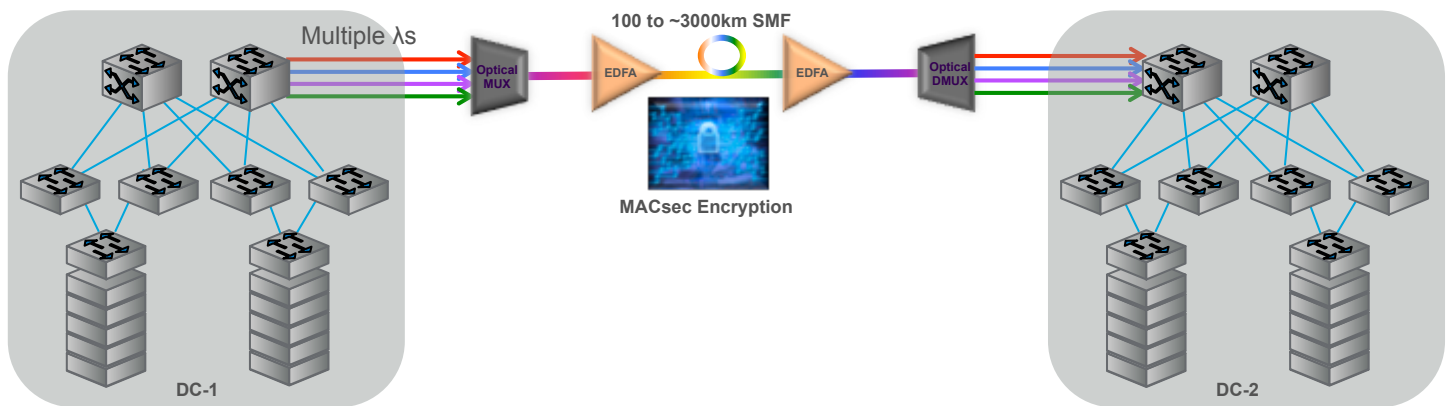


Figure 2: Datacenter Interconnect point-to-point high bandwidth Long-Haul application

*Not currently supported in EOS
EDFA: Erbium-doped fiber amplifier

Line Card Specifications

The Arista 100G DWDM line card delivers 600G of bandwidth with 6 ports of Analog Coherent CFP2. Each 100G port has integrated DP-QPSK modulation, coherent detection and soft decision forward error-correction (SD-FEC) to deliver robust Optical signal to noise ratio (OSNR) and Chromatic dispersion (CD) tolerance performance to meet the requirements of metro and long haul networks.

The Arista 100G DWDM line card delivers up to 900 Million packets per second of forwarding with a distributed virtual output queue and lossless fabric architecture that eliminates head-of-line blocking and provides fairness across all ports. Each line card contains up to 9GB of packet memory for approximately 40msec of traffic buffer per ingress port and virtually eliminating packet drops in congestion scenarios. Line cards connect to all fabric modules in a non-blocking full mesh.

Linecard Module	7500E-6CFPX
Interface	CFPX-100G-DWDM
Max 100G Ports	6
Packet Buffer	9GB
Weight	17.0 lbs (7.7 kg)
Typical Power (Max Power)	800W (870W)
Physical Dimensions (WxHxD)	17.5" x 1.75" x 23" (44.5 x 4.5 x 58.4 cm)
Chassis Support	DCS-7508 and DCS-7504
Data Rate/port	100Gbps
Modulation	DP-QPSK
Forward Error Correction (FEC)	SD-FEC
Pre-FEC Bit Error Rate (BER)	2.2 E-02
OSNR Sensitivity	11.6 dB
CD Tolerance	55,000 ps/nm
Polarization Mode Dispersion (PMD) Tolerance (peak)	100 ps

Analog Coherent CFP2 Specifications

The Arista 100G DWDM Line-card utilizes industry standard Analog Coherent CFP2 (ACO-CFP2) pluggable optics to achieve high density. Pluggable optics enable field replacement and easy trouble shooting which minimize network downtime.

Arista Coherent CFP2 transceivers offer full digital optical monitoring and can be tuned to any wavelength in the ITU-T defined C-band grid. They also support Flex-grid for improved spectral efficiency.

Optics Module	CFPX-100G-DWDM
Channel Range (Tunable)	191.2 to 195.9 THz
Channel Grid	100GHz, 50GHz, Flex Grid*
Physical Dimensions (WxHxD)	41.5 x 12.4 x 107.5 mm
Connector Type	Duplex LC Straight
Weight	0.25 lbs (115 gms)
Max power consumption	15 W
Tx Optical output power (Avg)	0 to +2 dBm
Tx Optical output power tuning range	10 dB
Shuttered output power	- 30 dBm
Rx Optical input power	-23 to 0 dBm

Environmental Characteristics

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-40 to 70°C (-40 to 158°F)
Relative Humidity	5 to 90%
Operating Altitude	0 to 10,000 ft, (0-3,000m)

Standards Compliance

EMI	FCC Part 15 Class A, ICES-003 Class A, VCCI Class A
Safety	Safety IEC/UL/CSA/EN 60950 CE, UL, cTUVus, TUV Mark
Other	ROHS compliant



7500E Series 6 port 100GbE Tunable Coherent DWDM line card

Arista 50GHz Channel Numbers and Wavelengths (50GHz ITU grid)

Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)
1	191.2	1567.95	33	192.8	1554.94	65	194.4	1542.14
2	191.25	1567.54	34	192.85	1554.53	66	194.45	1541.74
3	191.3	1567.13	35	192.9	1554.13	67	194.5	1541.35
4	191.35	1566.72	36	192.95	1553.73	68	194.55	1540.95
5	191.4	1566.31	37	193.0	1553.33	69	194.6	1540.55
6	191.45	1565.90	38	193.05	1552.92	70	194.65	1540.16
7	191.5	1565.49	39	193.1	1552.52	71	194.7	1539.76
8	191.55	1565.08	40	193.15	1552.12	72	194.75	1539.37
9	191.6	1564.68	41	193.2	1551.72	73	194.8	1538.97
10	191.65	1564.27	42	193.25	1551.32	74	194.85	1538.58
11	191.7	1563.86	43	193.3	1550.92	75	194.9	1538.18
12	191.75	1563.45	44	193.35	1550.51	76	194.95	1537.79
13	191.8	1563.04	45	193.4	1550.11	77	195.0	1537.39
14	191.85	1562.64	46	193.45	1549.71	78	195.05	1537.00
15	191.9	1562.23	47	193.5	1549.31	79	195.1	1536.61
16	191.95	1561.82	48	193.55	1548.91	80	195.15	1536.21
17	192.0	1561.42	49	193.6	1548.51	81	195.2	1535.82
18	192.05	1561.01	50	193.65	1548.11	82	195.25	1535.43
19	192.1	1560.60	51	193.7	1547.71	83	195.3	1535.03
20	192.15	1560.20	52	193.75	1547.31	84	195.35	1534.64
21	192.2	1559.79	53	193.8	1546.91	85	195.4	1534.25
22	192.25	1559.39	54	193.85	1546.52	86	195.45	1533.86
23	192.3	1558.98	55	193.9	1546.12	87	195.5	1533.46
24	192.35	1558.58	56	193.95	1545.72	88	195.55	1533.07
25	192.4	1558.17	57	194.0	1545.32	89	195.6	1532.68
26	192.45	1557.77	58	194.05	1544.92	90	195.65	1532.29
27	192.5	1557.36	59	194.1	1544.52	91	195.7	1531.90
28	192.55	1556.96	60	194.15	1544.13	92	195.75	1531.50
29	192.6	1556.55	61	194.2	1543.73	93	195.8	1531.11
30	192.65	1556.15	62	194.25	1543.33	94	195.85	1530.72
31	192.7	1555.74	63	194.3	1542.93	95	195.9	1530.33
32	192.75	1555.34	64	194.35	1542.54	96	195.95	1529.94

Arista 100GHz Channel Numbers and Wavelengths (100GHz ITU grid)

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1	191.2	1567.95	17	192.8	1554.94	33	194.4	1542.14
2	191.3	1567.13	18	192.9	1554.13	34	194.5	1541.35
3	191.4	1566.31	19	193.0	1553.33	35	194.6	1540.55
4	191.5	1565.49	20	193.1	1552.52	36	194.7	1539.76
5	191.6	1564.68	21	193.2	1551.72	37	194.8	1538.97
6	191.7	1563.86	22	193.3	1550.92	38	194.9	1538.18
7	191.8	1563.04	23	193.4	1550.11	39	195.0	1537.39
8	191.9	1562.23	24	193.5	1549.31	40	195.1	1536.61
9	192.0	1561.42	25	193.6	1548.51	41	195.2	1535.82
10	192.1	1560.60	26	193.7	1547.71	42	195.3	1535.03
11	192.2	1559.79	27	193.8	1546.91	43	195.4	1534.25
12	192.3	1558.98	28	193.9	1546.12	44	195.5	1533.46
13	192.4	1558.17	29	194.0	1545.32	45	195.6	1532.68
14	192.5	1557.36	30	194.1	1544.52	46	195.7	1531.90
15	192.6	1556.55	31	194.2	1543.73	47	195.8	1531.11
16	192.7	1555.74	32	194.3	1542.93	48	195.9	1530.33

Ordering Information

Product Number	Product Description
DCS-7500E-6CFPX-LC	6 port 100GbE DWDM Coherent CFP2 wire-speed line card with MACsec encryption for 7500E Series
LIC-MOD-MACSEC	License to enable MACsec encryption on MACsec capable Linecard
CFPX-100G-DWDM	100G Coherent Tunable CFP2, Analog interface, DP-QPSK modulation

Warranty

The Arista 100G DWDM Line card for 7500E Series switches and Arista Optical transceivers come with a one-year limited hardware warranty, which covers parts, repair, or replacement with a 10 business day turn-around after the unit is received.

Service and Support

Support services including next business day and 4-hour advance hardware replacement are available. For service depot locations, please see: <http://www.arista.com/en/service>

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