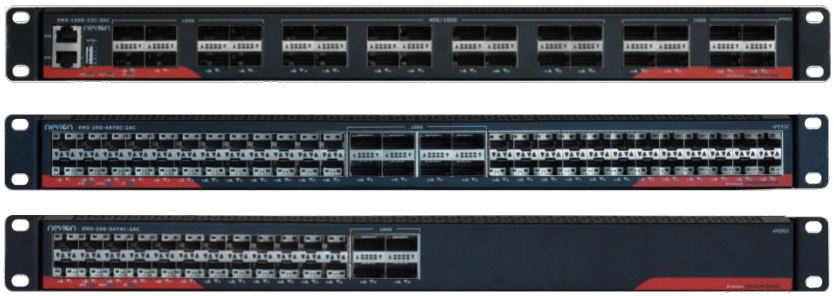
datasheet



eMerge 100/400G series (EM4)

Software-defined media fabric

eMerge 100/400G is a series of next-generation high-capacity switches for broadcast applications, specifically designed to build software-defined media fabrics and provide advanced NAT capability.

Each eMerge 100/400G switch offers full line rate switching capacity. The switches are perfect to work as spine's in spine-leaf architectures or as high-capacity aggregation switches. The EM4 400G switch allows to split in 4x100/25G on each of 32 interfaces allowing very high density in 1RU.

The switches may be SDN controlled from Nevion's VideoIPath control system. This includes flexible programming of NAT rules, which gives unprecedented control of media flows in the network.

Applications:

- Building SDN media fabrics for IP facility and OB vans
- Backbone switches for media WANs
- Handoff media streams to third-party networks using NAT
- Unidirectional forwarding of streams (media firewall)

Key features:

- High-performance line-rate switching capacity (up to 25.6 Tbs)
- High density (up to 128x 100G in 1RU with)
- Variaty of interface speed modes
- Advanced high-capacity NAT support (layer 2-4)
- Fully SDN programmable using Openflow 1.4
- Redundant power-supplies and field replaceable fans
- PTP boundary and transparent clock

High-performance

eMerge EM4 100/400G series switches are designed based on a Carrier Grade high-performance chip which meets the requirements for a software-defined media fabric (in both WAN and LAN applications).

Energy saving

Intelligent FAN adjustment and real-time power consumption monitoring technology are provided for the cost of maintenance redundancy and help to build a green and energy saving data center.

Customizable profiles

The eMerge switches are based on custom silicon with high degree of programmability that is ideally suited for SDN controlled media fabrics. The platform can support programming up to 14K flows, 4,5K groups and 1K meters.

High reliability

eMerge is powered by Hot-swappable power modules which supports AC/DC 1+1 redundancy. Fans support N+1 redundancy. Real-time environment monitoring technology to detect the chipset temperature, status of fan and power, etc.

Software defined networking

Support OpenFlow specification 1.3.x/1.4.x. Support up to 14K match flows with complete match field and stats. Support L2 to L4 complete matching fields. Support per flow multiple actions.

Hybrid software

eMerge supports both SDN and normal pipeline processing. This may be used to combine SDN control of media traffic with normal switching of data services such as in-band management and control signals. The switch software is based on the open and widely deployed OpenVSwitch (OVS).

Management

Support varied management interfaces, include console port / in-band network ports / out-of-band network port / USB port. Support SNMP v2c/v3, industry-standard CLI, web management, SSH and SFTP connectivity. Support for SSL to secure external communication.

System Specifications

Items		EM4-400G-32D	EM4-100G-64C
Size (HxWxD)		4.36 x 44.0 x 48.0 cm (1.73 x 17.5 x 18.9 in.)	8.7 x 44.2 x 59.9 cm (3.4 x 17.4 x 23.6 in.)
Weight		11.8 kg	15.4 kg
RS-232 Serial Ports		1 RJ-45 port located at the left side of front panel	1 RJ-45 port located at the left side of Rear panel
Management Ports		1 RJ-45 out-of-band management port located at the left side of front panel	1 RJ-45 out-of-band management port located at the left side of Rear panel
USB Ports		1 Type-A USB port located at the left side of front panel	1 Type-A USB port located at the left side of Rear panel
100G QSFP28 Ports		-	64
400G QSFP112 Ports		32	-
Latency		700ns	
CPU		Dual core/ARM A53	
Memory		2 GB	
Flash		8 GB (eMMC)	
Packet Buffer Memory		64 MB	
Reboot time		Below 120s	
Power supply	AC	Operating Voltage: 100 ~ 240V; 50/60H Maximum Voltage : 90 ~ 264V; 47~63Hz	
Hot-swap Power Supplies		2 (1+1 redundant)	
Airflow Option		Front-Rear	
Hot-swappable Fans		4 pluggable fans	
Typical Power Draw		350W	469W
Max Power Draw		410W	644W
MTBF(Hour)		>50000	89714.26
MTBF(Year)		>5.71	10.24

Environment specifications

Description	Specification
Operating Temperature	0 to 40 °C
Storage Temperature	-40 to 70 °C
Relative Humidity	0 to 95% (non-condensing)

The switches may be installed in ETSI EN 300 019-1-3 V2.3.2 Class 3.1 environment.

Interface split modes specifications

EM4-400G-32D-2AC (all interfaces can be split)			
QSFP112 400G (DR4)	No split	Other supported speeds: 200G/100G/40G (DR4)	
	Split	2 x 200G (DR2)	Other supported speeds: 100G/50G DR2
		2 x 100G (DR2)	Other supported speeds: 50G DR2
		2x 50G (DR2)	No other supported speed modes
		4x 100G (DR1)	Other supported speeds: 50G(DR1)/25G/10G
		4x 50G (DR1)	Other supported speeds: 25/10G
		4x 25G	Other supported speeds: 10G
		4x 10G	No other supported speed modes
EM4-100G-64C-2AC (all interfaces can work at 40G, eth-0-25 - 40 can be split)			
100G	No split	Other supported speeds: 40G	
	Split	4x 25G	Other supported speeds: 10G
		4x 10G	No other supported speed modes

Service specifications

Features	EM4-400G-32D	EM4-100G-64C
Switch capability	25.6 Tbps	12.8 Tbps
Throughput	19.05 Gbps	9.52 Gbps
Forward mode	Support store-forward mode and cut-through mode	
Ethernet features	Support full duplex, half duplex, and auto-negotiation duplex Support auto-negotiation port speed Support Jumbo Frame	
VLAN features	Support 4094 VLANs Support VLAN access mode: Access /Trunk/Hybrid Support Default VLAN	
MAC Address Table	Support static MAC address Support dynamic MAC address learning and aging Support black hole MAC address Support MAC Flapping detect	

Link aggregation	Support Static Link aggregation, static active-standby mode, static active-active mode Support Dynamic Link aggregation (LACP) Support Static load balancing (SLB) Support dynamic load balancing (DLB)
Reliability features	Support Software class process monitoring(Sysmon) Support Hardware Watch Dog Support G.8032 Support CFM
ARP features	Support static ARP Support dynamic ARP leaning and aging Support Gratuitous ARP Support basic ARP-Proxy
IPv4 forwarding	Support IPv4 static routes Support uRPF check Support OSPFv2 Support ICMP redirect, Support ICMP unreachable message Support ECMP Support for IGMP snooping (v1,v2,v3)
QOS features	Support traffic classification based on COS/DSCP (simple classification) Support traffic classification based on ACL (complex classification) Support queue scheduling based on traffic classification Support Remark the priority fields(COS/DSCP) of the packet Support flow redirection Support flow mirror Support traffic policing Support traffic shaping Support traffic statistics Support SP(Strict Priority) scheduling Support WDRR (Weighted Deficit Round Robin) scheduling Support SP + WDRR mixed scheduling Support TD(Tail Drop) Support WRED (Weighted Random Early Detection)
Security features	Support SSH Support Radius Support TACAS+ Support AAA Support COPP Support ARP Limit Support access control list(ACL) Support traffic classification based on source and destination IP / source and destination MAC / source and destination layer for protocol number / VLAN ID Support ACL active based on Time-Range Support Prevent DDOS attack Support ACL filtering Telnet/SSH login

	Support block abnormal users Support Link-Flapping detection Support AES256/SHA256 salted algorithm
Configuration and maintenance	Support DHCP Relay Support DHCP Client Support RMON Support sFlow Support IP SLA Support IPFIX Support NTP Support port Errdisable state detection and recovery Support hardware loopback (internal/external) Support to configure system time Support to configure time zone
Debugging features	Support to Debug based on modules Support CPU/memory usage display and alarm Support Device temperature/PSU/FAN/status display and alarm Support user operation logs Support Management of logs, alarms, and debugging information Support detailed diagnostic-information collection Support reboot information logging Support network diagnostics (ping/traceroute) Support mirror: support use port/VLAN/CPU as mirror source Support use port/port group/VLAN/CPU as mirror destination Support to CPU/From CPU packets statistics
Management features	Support in-band and out-of-band management ports Support privileged user priority and privileged commands Support Network management based on SNMPv1/v2c/v3 Support Public and private MIB Support Configuration and management based on WEB UI Support Configuration and management based on RPC-API Support restore factory default configuration Support manual/schedule reboot Support upgrade with the local image file/remote TFTP server Support online upgrade Uboot
File system	Support file system to manage the files and directories Support upload/download files via FTP/TFTP Support transmit files via Xmodem
Hybrid Mode	Support Openflow1.0 /1.2/1.3/1.4 Support Flow/Group/Meter Table/Queue
Hybrid Extend	Support L2GRE/NVGRE/VXLAN Tunnel Support VPWS/VPLS/SPME/FLEX MPLS Tunnel Support selective QINQ Support V4/V6 packet transform Support Flow UDF Match Support PTP-E2ETC

MPLS-TP OAM	Support Section OAM(MEP) Support LSP OAM(MEP/MIP) Support PW OAM(MEP) Support Continuity Check，Connectivity Verification Support Loopback discovery/MIP/RMEP Support two-way DM Support LM based on CCM
G8131	Support Single level protect switching (revertive/non-revertive) Support Single level protect switching (revertive/non-revertive) Support Double level protect switching (revertive/non-revertive)
Openflow match	Ingress_Port Layer2-Header - Eth_dst Layer2-Header - Eth_src Layer2-Header - Eth_type Layer2-Header - Vlan_id Layer2-Header - Vlan_pcp Layer3-Header-IPv4 - Ip_dscp Layer3-Header-IPv4 - Ip_ecn Layer3-Header-IPv4 - Ip_protocol Layer3-Header-IPv4 - Ip_src Layer3-Header-IPv4 - Ip_dst Layer4-Header-IPv4 - Tcp_src Layer4-Header-IPv4 - Tcp_dst Layer4-Header-IPv4 - Udp_src Layer4-Header-IPv4 - Udp_dst Layer4-Header-IPv4 - Sctp_src Layer4-Header-IPv4 - Sctp_dst Icmp_IPv4 - ICMPv4_type Icmp_IPv4 - ICMPv4_code ARP - ARP_op ARP - ARP_spa ARP - ARP_tpa Mpls_label Layer3/L4-Header-IPv6 - IPv6_src Layer3/L4-Header-IPv6 - IPv6_dst Layer3/L4-Header-IPv6 - IPv6_label Layer3/L4-Header-IPv6 - ICMPv6_type Layer3/L4-Header-IPv6 - ICMPv6_code Layer3/L4-Header-IPv6 - Tcp6_src Layer3/L4-Header-IPv6 - Tcp6_dst Layer3/L4-Header-IPv6 - Udp6_src Layer3/L4-Header-IPv6 - Udp6_dst Tunnel_id Oam_session(extend) Udf_id/udf string(extend) Mpls_label_num(extend)

	Mpls_label0(extend) Mpls_label1(extend) Mpls_label2(extend)
Openflow action	Output Set-Queue Drop Group Push VLAN header Pop VLAN header Push MPLS header Pop MPLS header Set MPLS TTL Set IP TTL Decrement IP TTL Set-Field - Eth_dst Set-Field - Eth_src Set-Field - Vlan_id Set-Field - Vlan_pcp Set-Field - Ip_dscp Set-Field - Ip_ecn Set-Field - Ip_src Set-Field - Ip_dst Set-Field - Tcp_src Set-Field - Tcp_dst Set-Field - Udp_src Set-Field - Udp_dst Set-Field - Sctp_src Set-Field - Sctp_dst Set-Field - ICMPv4_type Set-Field - ICMPv4_code Set-Field - ARP_op Set-Field - ARP_spa Set-Field - ARP_tpa Set-Field - ARP_sha Set-Field - ARP_tha Set-Field - IPv6_src Set-Field - IPv6_dst Set-Field - IPv6_Flabel Set-Field - ICMPv6_type Set-Field - ICMPv6_code Set-Field - Mpls_label Set-Field - Mpls_tc Set-Field - Tunnel_id Push_L2(Extend) Pop_L2(Extend) Pop_all_mpls(Extend) Set-Field - oam_inlabel(Extend)

	Set-Field - oam_poplabel(Extend) Strip_Header(Extend)
PTP Support	PTP Support according to IEEE 1588-2008 PTP T-GM, T-BC Support for PTP BC (Boundary Clock) with default and ST2059-2 profiles Support for PTP E2E TC (Transparent Clock) in OpenFlow layer

Safety and Compliance

Description	Specification
Safety Certifications	Ready to UL to UL 60950, Third Edition Ready to CE Marking Ready to NEBS level 3
Electromagnetic Emissions Certifications	Ready to FCC Part 15 Class A Ready to CE
Warranty	Limited warranty

Ordering information

Product Name	Description
EM4-400G-32D-2AC	eMerge4 400G SDN switch. 19" rack mountable. 32 x 400G QSFP112 ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.
EM4-100G-64C-2AC	eMerge4 100G SDN switch. 19" rack mountable. 64 x 100G QSFP28 ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.

CONTACT INFORMATION

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