nevion

eMerge 25/100G series (EM3)

Software-defined media fabric

eMerge 25/100G 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 25/100G switch offers full line rate switching capacity. The switches are perfect for building spine/leaf topologies, and can be used as both 10/25G leafs and 100G spines, but can also be used as part of a WAN infrastructure.

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 6.4 Tbs)
- 1/10/25/40/100G interface support
- 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 25/100G 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 8K flows, 16K actions, 52K MAC addresses and 1K meters.

High reliability

eMerge 10GE 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 4.5K wildcard 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		EM3-100G-32C	EM3-25G-48Y8C	EM3-10G-48X8C	EM3-25G-24Y4C
Size (H×W×D)		4.36 x 44.0 x 48.0 cm (1.73 x 17.5 x 18.9 in.)	4.4 x 44.2 x 42.25 cm (1.73 x 17.5 x 18.9 in.)	4.4 x 44.2 x 42.25 cm (1.73 x 17.5 x 18.9 in.)	4.36 x 44.0 x 48.0 cm (1.73 x 17.5 x 18.9 in.)
Weight		9.2KG	9.2KG	9.2KG	9.2KG
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		
SFP+ Ports		-	-	48	-
SFP28 Ports		-	48	-	24
QSFP28 Ports		32	8	8	4
QSFP+ Ports		-	-	-	-
Latency		700ns			
CPU		Dual core/ARM A53			
Memory		2 GB			
Flash		8 GB (eMMC)			
Packet Buffer Memory		36 MB			
Power supply	AC	Operating Voltage: 100 ~ 240V; 50/60H Maximum Voltage : 90 ~ 264V; 47~63Hz			
	DC	Operating Voltage : -36 ~ -72V			
	HVDC	Operating Voltage : 190 ~ 300V			
Hot-swap Power Supplies		2 (1+1 redundant)			
Airflow Option		Front-Rear			
Hot-swappable Fans		4 pluggable fans			
Typical Power Draw		184W	140W	140W	140W
Max Power Draw		224W	160W	160W	160W
MTBF(Hour)		>158045	>162213	>162213	>198000
MTBF(Year)		>18.0	>18.5	>18.5	>22.6

Environment Specifications

Description	Specification
Operating Temperature	0 to 45 ºC
Storage Temperature	-40 to 70 ºC
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.

Service specifications

Features	EM3-100G-32C	EM3-25G-48Y8C	EM3-10G-48X8C	EM3-25G-24Y4C
Switch capability	6.4 Tbps	4 Tbps	2.56 Tbps	2 Tbps
Throughput	3571 Mpps	2976 Mpps	1905 Mpps	1488 Mpps
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
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)

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
EM3-100G-32C-2AC	eMerge 3gen 100G SDN switch. Standard 19'' rack mountable. 32 * 100G QSFP28 switch ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.
EM-25G-48Y8C-2AC	eMerge 3gen 25G SDN switch. Standard 19'' rack mountable. 48 * 25G SFP28 switch ports (optical transceiver not included. 8 * 100G QSFP28 switch ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.
EM-10G-48X8C-2AC	eMerge 3gen 10G SDN switch. Standard 19'' rack mountable. 48 * 25G SFP+ switch ports (optical transceiver not included. 8 * 100G QSFP28 switch ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.
EM-25G-24Y4C-2AC	eMerge 3gen 25G SDN switch. Standard 19'' rack mountable. 24 * 25G SFP28 switch ports (optical transceiver not included). 4 * 100G QSFP28 switch ports (optical transceiver not included). Front-to-rear airflow. Dual AC power supplies. Hybrid software pre-installed.
EM3-FANTRAY	eMerge 3gen spare fan tray. For EM3-100G-32C-2AC, EM3-25G-48Y8C-2AC, EM3-10G-48X8C-2AC, EM3-25G-24Y4C-2AC.
EM3-PWR-AC-550W	eMerge 3gen spare AC 550W power supply. For EM3-100G-32C-2AC, EM3-25G-48Y8C-2AC, EM3-10G-48X8C-2AC, EM3-25G-24Y4C-2AC.

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