SONY

nevion

Nevion eMerge

SDN media fabric for broadcast and telecoms

March 2025

What is eMerge?

The Nevion eMerge SDN (software defined network) media fabric is a portfolio of high-capacity IP switches carefully engineered to fulfil specific broadcast requirements for both LAN and WAN networks, and pre-integrated with Nevion's VideoIPath media orchestration platform.

The switches' advanced features, such as flexible programming of NAT rules, give unprecedented control of media flows in the network. eMerge offers a cost-effective way to deploy IP based media networks, and can be used both at the core and edge of the network. Deploying eMerge requires minimal configuration and control is fully automated from the Nevion VideoIPath system.

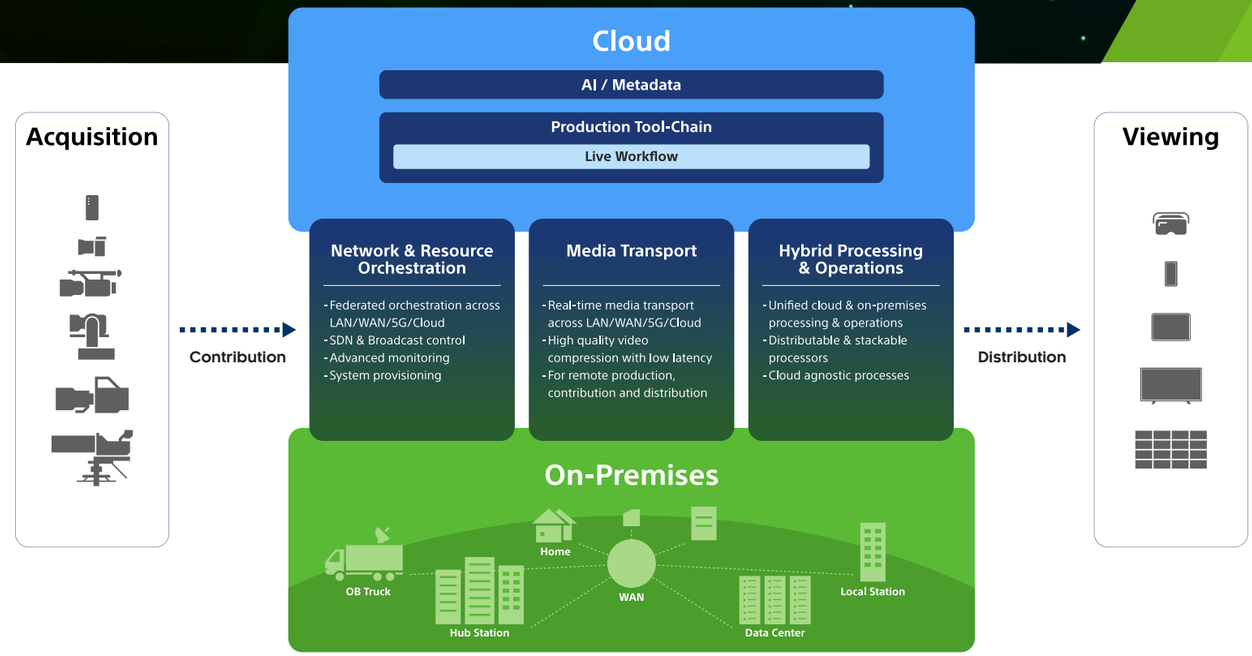
Live Production is changing

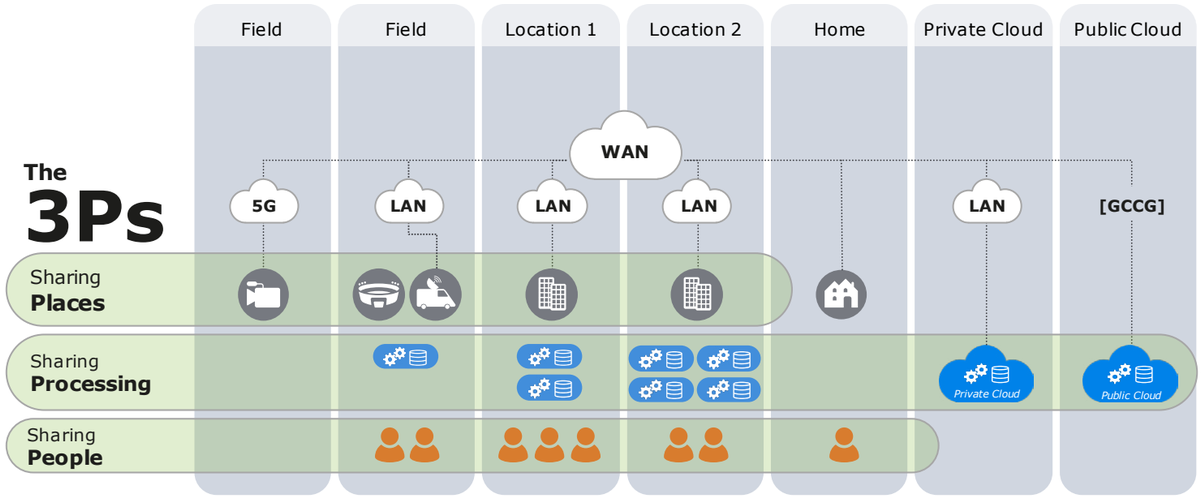
The future is distributed production

Content production is moving progressively towards a distributed model whereby workflows can tap into production resources almost anywhere on the ground and in the cloud. These production resources can be characterized by “the 3Ps”:

- **Places,** such as studios, control rooms, OB production trucks, live venues.
- **Processing,** in other words all the tools that can manipulate media signals, including mixers, record and playback, video and audio processing.
- **People,** i.e. the production staff – The most important resource in a production.

Technology now allows all of these to contribute to the production regardless of their location.





This is transforming the logistics and economics of production, enabling multiple models for production, which can best suit medium/long term business needs and short-term production requirements.

NETWORKED LIVE

Networked Live is an ecosystem of solutions, products, services and partners that combines hybrid on-premises and cloud processing with network connectivity to transform the logistics and economics of high-quality mission critical live production.

Networked Live is based on 3 main pillars, supported by Sony’s and Nevion’s experience and expertise.

- **Network and Resource Orchestration**, including network orchestration, broadcast control, advance monitoring.
- **Media Transport**, i.e. the reliable real-time transport of video, audio and data over LAN, WAN, 5G and GCCG (ground-to-cloud-cloud-to-ground).
- **Hybrid Processing and Operations**, in short on-premises and cloud video and audio processing.

The eMerge SDN media fabric is a key component of the Media Transport pillar of Networked Live.

Where is Nevion eMerge used?

Nevion eMerge can be used for a variety of solutions and applications, including in the facilities, in outside broadcast trucks, backbone networks and at the edge of a network or as a boundary between networks. eMerge focuses on features and control capability for broadcast applications but is fully standards based and able to interoperate with other IP switches and routers.

Facilities and OB-trucks (LAN)

Previously facilities and OB trucks required one or more central SDI matrices to switch signals and connect different production resources. eMerge serves the same purpose for IP based facilities and OB trucks with the added flexibility that IP brings in terms of format support and flexible routing.

Backbone (WAN)

IP gives unprecedented flexibility to transport broadcast signals over longer distances and eMerge is frequently used to build media networks between remote locations, e.g. from sports venues to central production facilities. The platform offers interfacing and monitoring capabilities commonly required in WAN networks.

There is often a need to interface with an existing WAN network, and in this case eMerge can be deployed as a border gateway at the edge of the network.

Media edge (LAN and WAN)

From a security point of view, it is important to establish a boundary between internal and external networks and eMerge supports this with unidirectional forwarding of streams to prevent any return traffic (data or control). Another typical requirement is to handoff media streams to third-party networks using NAT to facilitate the use of different addressing schemes.

Why Nevion eMerge?

Designing and building an IP media network, whether for an OB truck or an entire broadcast production facility, can be complex and time consuming, with many factors to take into consideration, including capacity, flexibility, control, timing etc.

Often broadcasters and media companies simply have neither the time nor the resources to conduct a thorough evaluation of COTS switches and want a media fabric that just works out of the box.

eMerge is designed to make it fast and easy to create small/medium sized media LANs or WANs. Combined with an advanced feature set for broadcast applications it also serves as the “swiss army knife” that makes networks work.

Benefits

Designed for broadcast applications

eMerge is specifically engineered for the requirements of broadcast applications. This saves both time and money when looking to select suitable switches. This is especially valuable for small/medium sized projects where time and budget are constrained.

Pre-integrated SDN control with VideoIPath

eMerge can be deployed with only minimal configuration effort and at no additional development or integration cost. The combination of VideoIPath and eMerge provides the most comprehensive SDN controlled media fabric on the market today and can be deployed quickly at an attractive price point.

Combines SDN with normal switching

eMerge is highly programmable and provides unprecedented control of media flows. This can be combined with normal switching for in-band mangement and other data transport needs across the same IP fabric.

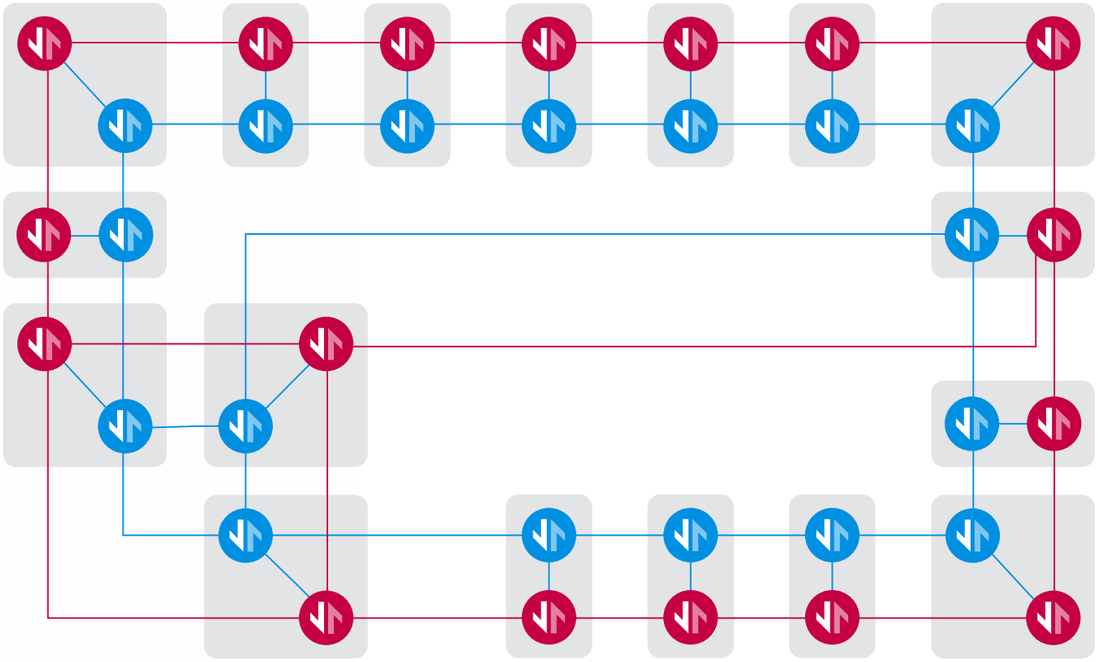
Fully interoperable with other COTS switches

eMerge is also fully interoperable with other COTS IP switches on the market, which means that customers can opt to expand with other products. It also allows eMerge to be deployed as specialized NAT switches at the edge of an existing network.

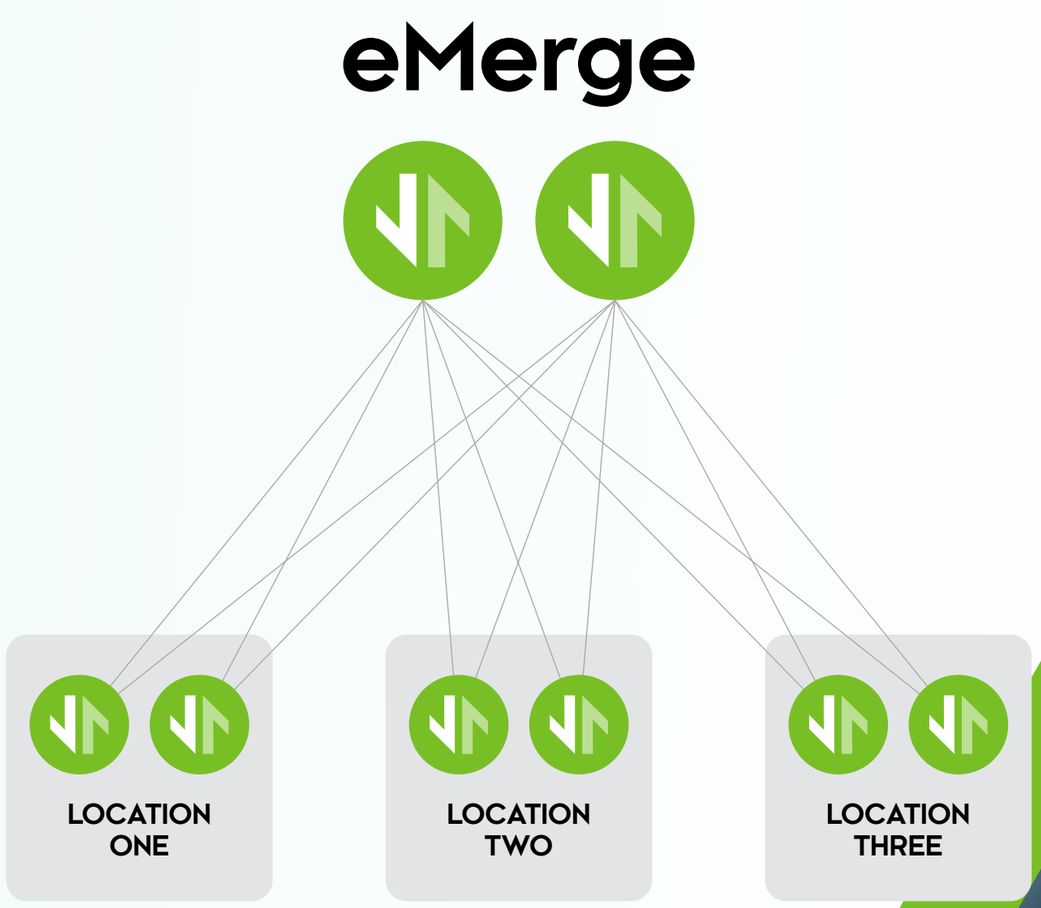
Features and functionality

The Nevion eMerge portfolio consists of 100G and 400G high-capacity core switches, 10/25G video access and 1G audio/data access switches. The switches offer full line rate switching capacity and are perfect for building spine/leaf LAN media fabrics, but can also be used as part of a media WAN.

eMerge may be used to build a complete leaf/spine network for IP facilities and OB trucks. The SDN media fabric may be designed either as a single purple network or as a dual red/blue network.



eMerge may also be used to build a WAN network on top of an optical infrastructure and offers full flexibility with regards to network topology (in combination with VideoIPath).



Overview

Key features

- High-performance line-rate switching capacity (up to 6.4 Tbs)
- 1G/10G/25G/40G/100G/400G 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-capacity switches

EM4-400G-32D

High capacity core switch with 32 x 400G ports:

- Total of 25.6 Tb/s switching capacity
- 32 x 400G QSFP112 interfaces 1 RU
- All interfaces splitable in 4 x 100G (128 x 100G)
- Reboot time less than 120s
- Power approx 350W

This can be used, for example, as a spine switch in a spine/leaf network or as a large monolothic router.

EM4-100G-64C

High capacity core switch with 64 x 100G ports

- 12.8 Tb/s forwarding capacity
- 64 x 100G QSFP28 interfaces 2 RU
- 16 x interfaces, splitable in 4 x 25G
- Reboot time less than 120s

This can be used, for example, as a spine switch in a spine/leaf network.

EM3-100G-32C

High capacity core switch with 32 x 100G ports:

- 6.4 Tb/s forwarding capacity
- 32 x 40/100G QSFP28 (16 splitable in 4 x 10/25G)
- 16 x 40/100G (splitable in 4 x 10/25G)

This can be used, for example, as a spine switch in a spine/leaf network.

EM3-25G-48Y8C

Video access switch with 48 x 25G and 8 x 100G interfaces:

- 4 Tb/s forwarding capacity
- 48 x 10/25G SFP28
- 8 x 40/100G QSFP28 (splitable in 4 x 10/25G)

This is typically used as a leaf switch in a spine/leaf network.

EM3-10G-48X8C

Video access switch with 48 x 10G and 8 x 100G interfaces:

- 2.56 Tb/s forwarding capacity
- 48 x 10G SFP+
- 8 x 40/100G QSFP28 (splitable in 4 x 10/25G)
- This is a cost-effective alternative to EM3-25G-48Y8C if only 10G is required

This is typically used as a leaf switch in a spine/leaf network.

EM3-25G-24Y4C

Video access switch with 24 x 25G and 4 x 100G interfaces:

- 2 Tb/s forwarding capacity
- 24 x 10/25G SFP28
- 4 x 40/100G QSFP28 (splitable in 4 x 10/25G)

This is typically used as a leaf switch in a spine/leaf network.

Low-bitrate access switches

EM-GE2-48T4X

Audio access switch with 48 x 1G and 4 x 10G interfaces:

- 176 Gb/s forwarding capacity
- 48 x 1G Base-T
- 4 x 10G SFP+

This switch comes with RJ45 access ports, and is typically used as a leaf switch in a spine/leaf network.

EM-GE2-48S4X

Audio access switch with 48 x 1G and 4 x 10G interfaces:

- 176 Gb/s forwarding capacity
- 48 x 1G SFP
- 4 x 10G SFP+

This switch comes with SFP access ports and is typically used as a leaf switch in a spine/leaf network.

EM2-10G-24X2C

Audio/video access switch with 24 x 10G and 2 x 100G interfaces:

- 440 Gb/s forwarding capacity
- 24 x 10G SFP+
- 2 x 40/100G QSFP28

This switch is a low-cost option for smaller video installations (e.g. flightcase).

eMerge network OS

The eMerge network OS provides a wide range of features for building a high-performing SDN media fabric. The switches' advance features, such as flexible programming of NAT rules, give unprecedented control of media flows in the network.

Key software features includes:

- Hybrid switching – combine the power of SDN with normal switching/routing
- SDN for media flows using Openflow
- OSPF routing for data/control traffic
- VLAN and QinQ support
- Rewrite layer 2-4 fields
- High-capacity multicast NAT
- Per flow monitoring/policing
- PTP boundary and transparent clock
- Ethernet OAM

Remote Management

eMerge offers an industry standard CLI for remote management of the switches and an intuitive web interface that provides access to the most common status and configuration. TACACS+ integration is possible for additional security in mission critical installations.

API Integration

eMerge offers programmatic access to all functions via an RPC API, which may be used to automate configuration across the entire estate. In addition, VideoIPath uses the Openflow protocol for fast switching of flows through the IP based fabric, which makes the eMerge SDN media fabric highly secure as only authorized flows are forwarded through the fabric from approved senders to destinations.

Services

Sony and Nevion provide an extensive portfolio of services before, during and after product or project delivery.

Specifically relating to eMerge, Nevion's services include:

- **Management IP address configuration**
- **Firmware upgrade and configuration** of hybrid mode
- **OpenFlow controller configuration**
- **Interface and ports configuration** to OpenFlow mode (to enable VIP integration)
- **PTP configuration**
- **Optional SNMP configuration** and syslog forwarding

And much more...

Professional Services

Consultancy and Training Services

Design Services | Project Management | Workshops | Training

Delivery Services

Installation, Configuration and Integration | 3rd Party Integration | Go-Live Support | Testing and Troubleshooting

Customization Services

Customized Configuration Tools | Customized Event Logic | Customized Monitoring Dashboards | System Optimization | Automated Testing and Reporting

Customer Care

Support Services

Premium Support | 3rd Party Support | Advanced Replacement | Operational and Monitoring Services | 24/7 Developer Access

For a full overview of the support offered by Nevion, visit

nevion.com/services

SONY

nevion

Nevion is a Sony Group Company

pro.sony/
networked-live

nevion.com