

# Open Networking Made Simple for Media Creation and Post-Production

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## Scale Production Network Faster and Save Costs with IP Infusion OcNOS

Media production and content creation companies face a significant increase in data volume as they streamline production workflows, encompassing pre- and post-production tasks alongside real-time content management. The digital revolution, characterized by the adoption of file-based workflows and non-linear editing (NLE) systems, presents both opportunities and challenges. Rapid provisioning and reallocation of technology infrastructure are often impeded by disparate application-specific technologies. To optimize computing resources, these companies are consolidating IT infrastructures and refining storage management processes, aiming to simplify operations and reduce costs through more efficient technology deployment.

In this dynamic landscape, a high-speed switched networking infrastructure becomes the linchpin, facilitating reliable, efficient, and scalable connectivity across diverse endpoint systems. However, reliance on legacy networking solutions from vendors like Arista and Cisco can constrain flexibility, scalability, and cost-effectiveness, potentially hindering the full production power of media infrastructure. Embracing open networking solutions becomes paramount, empowering media organizations to break free from vendor constraints, select optimal hardware and software components, and tailor networks for performance and cost efficiency.

# Challenges and Technological Demands

## Increasing Data Volumes and Workflow Complexity

The media industry is experiencing an unprecedented surge in data volumes, driven by the evolution of imaging standards from HD to 2K, 4K, and beyond, coupled with the rise of 3D technology. From raw video capture to post-production workflows, file sizes are growing exponentially, reaching petabyte scale. Additionally, global collaboration, asset localization, and transcoding further intensify data management challenges.

## High-Performance Computing and Scalable Storage

Modern media production environments demand high-performance computing, scalable storage, and a fast, reliable networking infrastructure. Traditional, loosely coupled architectures with isolated workstations and ad-hoc content management are no longer sufficient. Instead, media companies are turning to integrated solutions that leverage commodity servers, centralized storage, file caching accelerators, and high-speed switching to streamline workflows and ensure efficient data transfer.

## Adoption of HPC Clusters

The surge in data volume and complexity has fueled the adoption of high-performance computing (HPC) clusters in media production. Democratizing access to HPC clusters has become a cost-effective option for media organizations of all sizes. By leveraging parallel computing with thousands of cores, centralized storage, and high-speed networking, these HPC clusters empower media companies to create realistic, high-resolution VFX and animation while reducing production costs and accelerating time to market.

## Evolving Networking in Digital Media: From Fiber Channel to 100GbE

Cloud-based video and media data centers are emerging to meet the needs of smaller studios. Smaller studios can now outsource to the cloud to compete with larger ones and level the playing field. Cloud-based video and media data centers are replacing expensive proprietary systems with affordable, open-platform technologies to allow smaller studios to create high-quality content faster and cheaper. For example, instead of costly isolated Fiber Channel networks for storage, studios are adopting converged Ethernet technology, offering speeds from 10Gb to 100Gb.



To meet the evolving demands, cloud-based video and media data centers are deploying HPC-like clusters, which require:

- **Centralized storage:** File-based systems with caching or parallelization, using multiple 10, 25 or 100GbE Ethernet interfaces.
- **Rendering applications:** High-performance 10, 25 or 100GbE Ethernet switching interfaces to connect to application servers, with 100 or 400GbE aggregation interconnects.
- **Fast data movement:** Low-latency, sub-microsecond networks for remote rendering, VDI/PCoIP, or real-time editing. This requires high-speed Ethernet switches with lossless transport.
- **Concurrent transcoding:** Significant parallel server processing, sometimes exceeding 10Gbps. Studios are adopting 25Gb Ethernet for economical scalability.
- **24/7 uptime:** Studios are moving to modern data centers with high-availability networking architecture, using automation tools for reliability and faster provisioning.

Feature	Description	Benefits
Robust Routing and Traffic Management		
Advanced Routing Protocols (BGP, OSPF, ISIS)	Enable flexible and reliable routing solutions.	Efficient routing of large media files, high availability, and optimized network performance and resources sharing.
Rapid Failover (BFD, VRRP)	Provides quick failover for uninterrupted operation.	
EVPN for VxLAN with IRB	Ensures secure logical/virtual network for multiple tenants	
Equal-Cost Multipath (ECMP)	Balances traffic loads for optimal performance.	
Superior Multicast and QoS Features		
PIM and IGMP	Enables effective multicast traffic management for efficient content distribution.	Smooth multimedia content delivery and prioritization of critical traffic.
PFC with QoS for RoCEv2	Ensures lossless and uninterrupted media delivery even during high-demand periods.	
Simplified Management and Automation		
sFlow, NETCONF, OpenConfig YANG data models	Provides advanced monitoring and configuration tools.	Easier network management, simple integration with 3rd party tools, and improved operational efficiency.
DHCP server/client support and gNMI telemetry streaming	Facilitates IP address management and real-time monitoring.	

Table 1. IP Infusion OcNOS Features for Media Production Environments

# Open Networking for Media Production with IP Infusion OcNOS

IP Infusion excels in open networking, delivering scalable solutions tailored for the high demands of media production. The company’s innovative approach, featuring the robust OcNOS network operating system, empowers media studios to efficiently manage massive data streams and transfer large files at high speeds. By providing a streamlined approach to network procurement and management, IP Infusion offers a cohesive solution that includes NOS, white-box switches and routers, optics, and support services. This results in accelerated time to market and optimized network builds, addressing the unique challenges of modern media production.

- **Modern Performance, Load Balancing, and Management:** OcNOS offers a comprehensive data center feature stack, including non-blocking wire rate L2/L3, VLAN and Link Aggregation for high-performance media transfer, L2/L3 MLAG and xSTP for high availability and uninterrupted workflows, and Data Center Bridging (DCB) for flawless operation of data-intensive applications.
- **Simple Perpetual Licensing:** OcNOS simplifies media production network management with a perpetual licensing model, eliminating recurring fees and ensuring predictable budgeting for fluctuating workloads common in NLE environments. OcNOS comes in three SKUs, enabling data center operators to optimally plan budget spending for NOS.

OcNOS DC SKUs	OcNOS DC MGMT	OcNOS DC IP BASE	OcNOS DC PLUS
Layer 2 / Layer 3	•	•	•
VxLAN w EVPN		•	•
Priority Flow Control (PFC)		•	•
Streaming Telemetry			•

Table 2. IP Infusion OcNOS DC SKUs

- **Futureproof Network Capacity and Reduce TCO:** By leveraging white-box switches and routers, media studios have a wider variety of interoperable hardware platforms and can optimize network architectures for better performance, scalability, and cost. In addition, IP Infusion extends the open networking philosophy with a wide range of 3rd party qualified optical transceivers, enabling its end users to work with preferred optics suppliers. This approach facilitates faster innovation cycles and ensures reduced lead times, is crucial for adapting to the digital revolution and integrating high-performance computing (HPC) clusters seamlessly.
- **Non-Intrusive Deployment:** OcNOS streamlines network deployments, minimizing disruption to your current workflows. It seamlessly integrates with most modern networking protocols, eliminating the need for extensive reconfiguration. Furthermore, OcNOS features an industry-standard CLI, familiar to most network engineers. This familiar interface allows for quick setup and configuration, minimizing downtime and leveraging existing skill sets for efficient network management.
- **Procurement and Support Simplicity:** IP Infusion offers a one-stop shop for your media production network needs. This includes not only the OcNOS software, white-box hardware, and optics options, but also comprehensive support services. This streamlined approach simplifies procurement, reduces complexity, and ensures you have a single point of contact for all your network requirements.

Vendor	Model	ASIC	Service Capacity	Form Factor	Port Configuration	Buffer
Celestica	DS1000	TD3-X2	128Gbps	1 RU	48x 1G RJ45, 8x 10G SFP+ Management/Leaf Switch	4 MB
UfiSpace	S6301-56ST	TD3-X2	128Gbps	1 RU	48x 1G RJ45, 8x 10G SFP+ Management/Leaf Switch	4 MB
Edgecore	AS5835-54X	TD3-X5	1.08Tbps	1 RU	48x 10G SFP+, 6x100G QSFP28 Management/Leaf Switch	32 MB
UfiSpace	S8901-54XC	TD3-X5	2Tbps	1RU	48x 25G SFP28, 6x100G QSFP28 Leaf Switch	32 MB
Edgecore	AS7326-56X	TD3-X5	2Tbps	1 RU	48x 25G SFP28, 8x100G QSFP28 Leaf Switch	32 MB
Celestica	DX030	TD3-X7	3.2Tbps	1 RU	32x 100G QSFP28 Leaf/Spine Switch	32 MB
Edgecore	AS7726-32X	TD3-X7	3.2Tbps	1 RU	32x 100G QSFP28 Leaf/Spine Switch	32 MB
UfiSpace	S9110-32X	TD3-X7	3.2Tbps	1 RU	32x 100G QSFP28 Leaf/Spine Switch	32 MB
Edgecore	AS7712-32X	TH	3.2Tbps	1 RU	32x 100G QSFP28 Spine Switch	16 MB
Edgecore	AS7816-64X	TH2	6.4Tbps	2 RU	64x 100G QSFP28 Spine Switch	42MB
Edgecore	AS9716-32D	TH3	12.8Tbps	1 RU	32x 400G QSFP-DD Spine Switch	64 MB

Table 2. IP Infusion OcNOS DC Qualified Open Switches

# Conclusion

IP Infusion provides cloud-based video and media data centers for media production companies with a comprehensive open networking solution that addresses the critical challenges of scalability, performance, security, and management. By leveraging the robust features of OcNOS and the flexibility of white-box hardware, studios can streamline their workflows, enhance productivity, and reduce operational costs. Embrace IP Infusion's innovative networking solutions to revolutionize your media production processes and achieve sustained success in the industry. Contact IP Infusion today to learn more about how their solutions can benefit your media production environment.

## Contact Us Today

Contact IP Infusion today to learn more about how their solutions can benefit your media production environment. You can reach us by phone at +1-877-699-3267 or by email at [ipisales@ipinfusion.com](mailto:ipisales@ipinfusion.com).

## ABOUT IP INFUSION

IP Infusion is a leading provider of open network software and solutions for carriers, service providers and data center operators. Our solutions enable network operators to disaggregate their networks to accelerate innovation, streamline operations, and reduce Total Cost of Ownership (TCO). Network OEMs may also disaggregate network devices to expedite time to market, offer comprehensive services, and achieve carrier grade robustness. IP Infusion network software platforms have a proven track record in carrier-grade open networking with over 500 customers and over 10,000 deployments. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at <http://www.ipinfusion.com>

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