

# Get the Facts about Cisco IP Fabric for Media

Find answers to the top industry and technical questions about Cisco media solutions

When leading media companies need networking solutions for the most demanding broadcast, production, and post-production architectures, they choose Cisco. In fact, many of the biggest names in media—NBC, Canal+, BBC and [many others](#)—rely on Cisco networks every day. Using Cisco IP Fabric and other groundbreaking Cisco media solutions, they're bringing more dynamic content to more people in more places than ever before.

Since we often work behind the scenes, however, people don't always realize just how involved Cisco is in this industry. Sometimes, that can lead to misunderstanding about the scope of our portfolio and the technical capabilities of our solutions. With that in mind, the following FAQ can help clear up some of those misconceptions.

## **Q** Does Cisco have a presence in media markets comparable to its involvement in the enterprise and data center markets?

**A** Absolutely. Cisco offers a [wide range of solutions](#) to manage content workflows at various stages in the media delivery chain—from preproduction to post-production, digital contribution to large-scale content distribution.

We work closely with independent software vendors (ISVs), system integrators (SIs) and other industry media partners and customers to understand their IP networking requirements for digital content processing and delivery. For years, when industry leaders have sought to push the boundaries of what's possible in broadcast, production, and distribution, they've looked to Cisco for innovation.

Cisco has also played a role in helping the industry successfully transition from legacy models to digital media and IP. We're the world's first networking vendor to offer training and [certification](#) for broadcast engineers. We've been actively participating in and contributing to media industry associations such as the Society of

Motion Picture and Television Engineers (SMPTE), the Advanced Media Workflow Association (AMWA), the Video Services Forum (VSF), the Alliance for IP Media Solutions (AIMS), and others.

## **Q** Do media workflows have unusual technical requirements on networking platforms, such as deep buffers?

**A** Not at all. Most media workflows are real-time, so the most important transport requirements are reliability and low latency (areas in which Cisco media solutions excel). There are, however, some media sources, such as those implemented in software as virtual appliances, that may send traffic in bursts. Even in these cases, Cisco Nexus® network switches have enough buffer capacity to absorb those bursts without adding latency. The fabric required for this workflow must also support extensive multicast. Many media companies find that Nexus platforms using a shared egress buffer architecture are perfectly suited to these scenarios. We also offer deep buffer capabilities in certain Cisco Nexus switch models for use cases that require them (which is not typical).

**Q** **How well does Cisco’s implementation of Precision Time Protocol (PTP) scale compared to other networking vendors?**

**A** PTP scalability is one of those numbers that sometimes gets misconstrued in technology marketing. It’s important to keep in mind that most vendor claims are based on the theoretical scale a platform can support. As the vendor powering the world’s largest and most demanding networks—media, financial and otherwise—Cisco deals in real-world performance. The PTP scale metrics we [publish](#) have been validated by connecting the latest endpoints/slaves and measuring PTP performance over time. This is the only way to accurately qualify PTP—connecting slaves behind each individual switch port—not simulating multiple slaves behind the same port, as other vendors do.

Cisco Nexus fixed-platform solutions currently support 64 PTP-enabled interfaces, with a roadmap to increase to 144. In Cisco Nexus® 9500 Series switches, we offload PTP to the line card to enable a scalable PTP implementation. Currently, we support 500 slaves. In future releases, we plan to push PTP scale even further, increasing to 1,152.

**Q** **Does Cisco’s IP Fabric for media solution provide open APIs for third-party controllers?**

**A** Absolutely. Cisco is committed to helping media companies easily integrate their own solutions and manage Cisco networking fabrics as they choose. In fact, our IP Fabric for media solution is among the most effective in the marketplace at enabling open APIs for third-party controllers.

Cisco media solutions support APIs at every layer: switching layer, management layer through the Cisco Data Center Network Manager (DCNM), flow-stitching hop-by-hop, and so on. In the Cisco IP Fabric for media solution, each switch runs the Non-Blocking Multicast (NBM) process, which enables reliable, flexible video forwarding over IP. Media organizations can use NBM in two modes, passive or active, depending on their needs.

In passive mode, NBM exposes APIs, which any third-party controller can use to program flows on each switch. The controller selects granular ingress and egress interfaces for each flow, thus enabling end-to-end flow-stitching in the fabric entirely via APIs.

NBM can also operate in active mode, where it dynamically controls bandwidth management in the IP fabric. Even then though, it exposes complete bandwidth reservation for multicast flows via APIs. It also sends multicast flows out of a designated egress port for devices that don’t support IGMP via APIs. Media companies retain the freedom to build and control their environments in the way that makes the most sense for their business.

**Q** **Does Cisco Data Center Network Manager (DCNM) place limitations on the ability to set up and scale flows in Cisco IP Fabric for media?**

**A** Not at all. In the current solution, Cisco DCNM does not orchestrate flows, operating in monitoring mode only with regard to flow setup. In some early-stage and pilot versions of the solution, DCNM did play the role of flow orchestrator, but due to

scalability concerns, the architecture was updated in 2017. Today, in NBM active mode, the NBM process running on the switch handles the entire end-to-end flow setup. Or, in NBM passive mode, the Broadcast Controller stitches the flows end to end.

While DCNM is not involved in orchestrating the active flow path, it still plays a valuable role in visualizing it. Once the flow is set up, the NBM process on the switch draws on streaming telemetry to send the route status to DCNM. DCNM then uses this information to create a flow path visualization. In this way, Cisco IP Fabric for media provides an extremely fast solution, while offering the benefits of real-time end-to-end multicast flow visualization.

**Q** **Is the backplane performance of Cisco media solutions limited by blocking modular chassis?**

**A** No, media companies deploying the Cisco IP Fabric for media solution typically do not use blocking chassis. Most use the platform Cisco recommends: the Cisco Nexus 9500-R Series, a non-blocking modular chassis platform based on the Broadcom Jericho line of ASICs. The R-Series uses fabric modules which use cell-based forwarding to forward traffic between ingress and egress line cards. This provides a non-blocking architecture for both multicast and unicast traffic, with full-performance access to the backplane. Additionally, all Nexus platforms recommended for media solutions are non-blocking in nature.

**Q** **Does Cisco NX-OS Software support real-time notifications?**

**A** Yes, absolutely. We give media companies multiple ways to stream health information out of Cisco switches, both from [Cisco NX-OS Software](#) as well as through the hardware layer (ASIC). In fact, the Cisco IP Fabric for media solution uses the same streaming telemetry that Cisco Nexus platforms use to generate event-based notifications. These notifications can be sent directly to third-party controllers or DCNM as well, which, in turn, generates real-time Advanced Message Queuing Protocol (AMQP) notifications that can be sent to third-party controllers. We also give customers the ability to [program](#) the system to send information based on event triggers that meet specified criteria. With these capabilities, media companies have the power to manage and automate their environments as they choose.

**Q** **How many multicast routes (mroutes) can the Cisco IP Fabric for media solution support?**

**A** Many tens of thousands—as many as needed in almost every scenario. Once again, this is a case where some vendors like to publish scalability figures based on theoretical ASIC capability. As a pioneer and global leader in multicast technology, the mroute figures Cisco publishes are always validated with QA testing in real-world environments.

The ASICs Cisco uses support over one million routes, but like any metric of theoretical capacity, real-world scale is limited by software and testing. For generic multicast deployments, we have validated scale of 128,000 mroutes. When deploying Cisco IP Fabric for media, we have validated support for 32,000

mroutes and, depending on industry requirements, the scale can be further increased.



### **Is Cisco NX-OS Software open and programmable?**



Yes. Cisco is committed to empowering media companies to manage and automate their environments as they choose. As such, Cisco NX-OS Software provides a modular, open, and highly programmable network operating system. Cisco NX-OS Software's open APIs give organizations maximum flexibility to rapidly automate and orchestrate their networks. (To learn more about Cisco NX-OS Software programmability, refer to this [guide](#) or join the [Cisco DevNet](#) developer network).

*For more details about Cisco IP Fabric for media and other Cisco media solutions, visit the [Media and Entertainment Solutions](#) page.*