

# A progressive approach to IP routing

How to simplify the move from SDI to an IP backbone



# Introduction

IP adoption across the broadcast industry is well underway as we embrace a massive wave of enterprise innovation. Offering greater flexibility, scalability and agility, IP opens up the possibility of powerful software-defined and distributed workflows to meet ever-growing demands for content and changing viewer habits.

However, managing the transition to IP and determining the right time to do so is no easy feat. As broadcast providers, we need solutions that allow us to invest in the future, but that do not force us to change the way we work as we adapt to this new backbone.

In this paper, we explore the realities of IP routing, how to tackle the challenges it presents and suggest strategies that allow you to choose your own path to IP whilst still making use of your SDI equipment and avoid operational changes.

## Contents

The move to IP is inevitable .....	4
Overcoming IP complexity.....	5
A progressive transition to IP adoption .....	7
Introducing MediaInfra Strada .....	8
Your expert IP partner .....	8

# The move to IP is inevitable

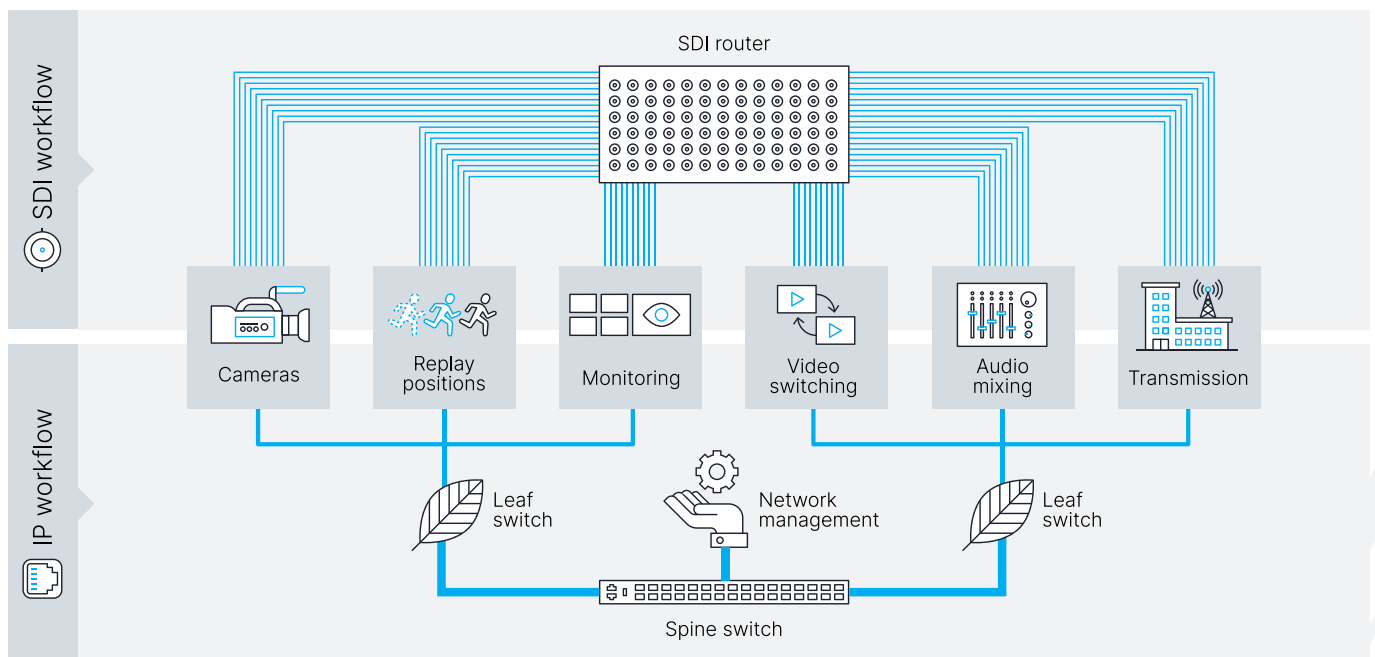
Reliable, consistent and secure, SDI infrastructure has served the broadcast industry well for decades. Nevertheless, in this era of constant change where the viewer is king, SDI is proving to be a potential barrier to agility and business growth.



## Scalability

Scalability is critical for today's broadcast operations and those of us solely reliant on SDI may be disadvantaged going forward. SDI router systems, limited by their chassis capacity, must become physically large and cumbersome to meet expansion needs. Unable to scale efficiently, we are forced to overprovision or risk a major forklift upgrade down the road. However, even when overprovisioning a solution, there are still limits to the maximum system size achievable within a single router frame.

IP routing on the other hand is inherently flexible and scalable, allowing facilities to expand to meet ever-growing content demands with ease. IP supports multiple signals per cable, a bi-directional connection as well as delivering higher bandwidth - reducing facility space and improving agility. If the maximum capacity of a switch is reached, the IP Fabric can be scaled horizontally with the inclusion of additional switches or line cards. As the size of the system grows, switches can also be repurposed. For example, a switch utilised for the Spine today could be used as a Leaf in the future as demands change.





## Format friendly

Driven by new viewing habits, we must now support a mix of formats across multiple platforms. Traditional SDI routers only support a limited number of broadcast formats, which means it makes it more complicated to meet new business needs as they emerge.

Alternatively, IP doesn't care about formats. Completely agnostic, it supports SD, HD, Full HD, UHD-4K and more, enabling broadcasters to serve evolving platforms and easily deliver new formats in the future.

## Powerful new workflows

To support virtualization and remote workflows, we should adopt IP. It's impossible to build a single converged network with SDI routers. Separate Fabrics are required for timing reference, distribution, audio, intercom, KVM, media asset management and control networks.

IP routing brings the efficiencies of a standardized infrastructure end-to-end. It provides the ability to abstract complexity away from the technology solution and opens up the limitless possibilities of software-defined workflows.

## Reduced support for aging SDI

Some SDI routing solutions, which have been the mainstay of broadcast facilities for years, are now approaching end-of-life and will no longer be supported by industry vendors. This makes it difficult for us to weigh up available options and many feel cornered into considering IP solutions, whether they feel are ready or not.



# Overcoming IP complexity

Having considered the inherent benefits of IP routing and the inevitability of our industry trajectory, why is it that many of us remain reluctant to move away from SDI?

Whilst IP has been successfully adopted across enterprise markets, for us in the broadcast industry it is still perceived as an emerging technology with unknowns and specific pitfalls to overcome. Just as the transition from analogue to SDI took over a decade, building a new IP Fabric is undoubtedly going to take time and effort, with each organisation facing its own unique budget pressures and practical challenges along the way.

## Countering commercial concerns

As broadcasters we are understandably cautious about abandoning a trusted technology built to last for years and an investment model that is proven and predictable in terms of costs and delivery in favor of IP, which can be seen as less reliable than SDI, more expensive and harder to control.

Whilst new IP infrastructure may require significant initial capex investment, IP systems leverage commercial off-the-shelf (COTS) solutions proven across many other industries, which enable us to take advantage of the economies of scale and technology advancements these offer, such as increased bandwidth switches and port speeds. This makes controlling the costs of the transition to IP easier to predict and manage - with scalability to handle growing stream counts and flexibility to choose formats to support in the future.



## Managing & controlling complexity

The promise of agility is what makes IP such an attractive proposition. However, the dynamic nature of IP brings inherent complexity to the broadcast environment.

In the move from analogue to SDI, working practices essentially remained the same for users and have subsequently remained so for years. However, the transition to IP infrastructure requires new skills and greater re-engineering effort to configure and manage than conventional SDI routing. It can also bring disruption as systems are deployed, upgraded and rebooted.

Managing increasingly complex workflows, integrating technologies and coming to grips with networking tools can prove a headache for technical leads who are used to troubleshooting SDI. And when symptoms may be very remote from the cause (for example a flickering display may be due to a PTP, control or latency issue which is unrelated to the device or cable driving the display), troubleshooting and fixing issues can take the stress to another level.

The challenge is therefore to shield operators and engineers from this added complexity and provide a seamless and familiar working environment with minimal system downtime. Using the latest intelligent control and orchestration solutions, operators should face no additional complexity, or indeed be aware whether they are controlling SDI or IP routes. Presenting IP senders and receivers in the same way as SDI sources and destinations – using the same configurations, logic and categorization – will help operators and engineers accept and adopt the new technology much faster.

## Open standards & interoperability

As broadcasters we have confidence in SDI to deliver the output quality we demand. As an industry we are less assured by emerging IP standards, which are still regarded as immature, posing a risk to multivendor interoperability and delivery of service.

There is now huge momentum to resolve these issues. Industry bodies such as SMPTE, AIMS, AMWA and IEEE are working hard to engage both users and vendors to address open standards and drive initiatives such as SMPTE ST2110. Whilst there remains significant work to be done to create best of breed solutions, particularly in regard to audio standards and efficient control and management layers, we are moving in the right direction to deliver true interoperability across IP environments and minimise complexity.

## Ensuring security against cyberattack

Traditional SDI routing systems are typically deployed on closed networks with security policy based on limited physical access. As the demand for remote production grows and IP fabric is deployed within and between distributed sites, security has become a major concern for production facilities who are increasingly aware of cyberattack threats to content, service delivery and brand reputation.

Within an IP environment we may be faced with a greater attack surface, but just as IP systems leverage COTS solutions from other industries, so too can we now benefit from incorporating sophisticated enterprise intelligent security toolsets and processes to meet the expectations we as broadcast and media companies expect.

# A progressive transition to IP adoption

The move to IP can be daunting. Those of us who prefer to keep traditional SDI infrastructures do so with unease, fearing that our decision will not take us to where we need to go in a year or two. On the other hand, those of us who choose to deploy an IP-based infrastructure do so are aware of the pain that may await us when configuring, troubleshooting and paying for cutting-edge systems.



Despite these pain points, IP will become the backbone of the broadcast industry. IP routing will facilitate flexibility, scalability and agility and prove to be more convenient and cheaper over time. It won't happen overnight and in reality, SDI will continue to play a vital role in broadcast systems for many years to come.

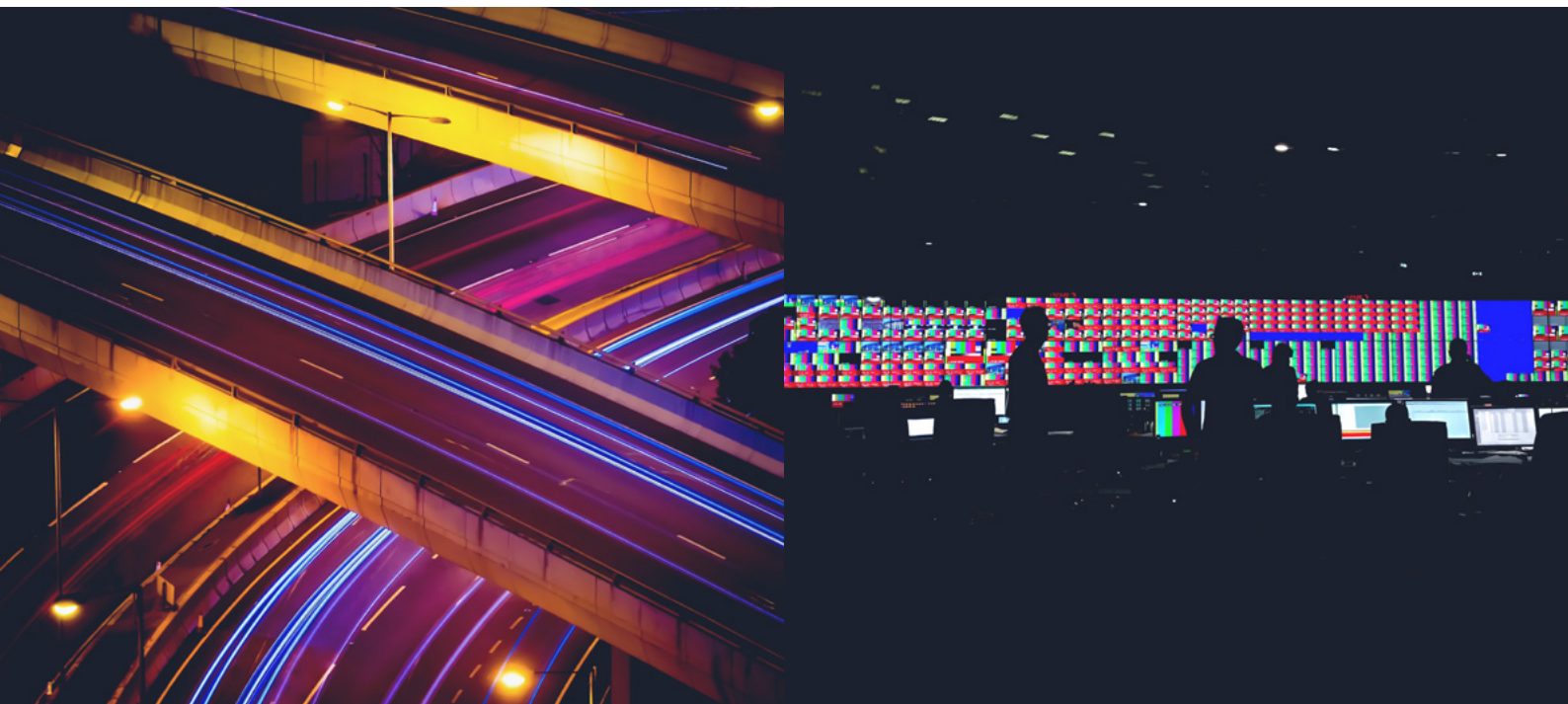
So, let's consider the progressive strategies we can employ today to adapt to IP at a pace that works for your business:

- **Expand existing SDI systems with IP devices:** Take an incremental approach by adding IP devices when expanding existing SDI systems. Vendor solutions that provide processing via SDI I/O, SDI and IP workflows can run in parallel, allowing us to focus on specific workflows in IP and mitigate the risks of deployment.
- **Build an IP island in an existing site:** Add IP gateways to connect existing SDI routing infrastructure with new IP islands of technology. This approach allows IP native devices to be directly connected to IP Fabric and for the complete system to be managed safely in a sandbox environment, serving business needs and the opportunity to learn and grow. Make sure to choose IP gateways that can be repurposed as your infrastructure matures.

- **Create a complete IP site:** Dive straight in with all devices connected to IP Fabric, either directly or via gateways. Systems can either be blocking or non-blocking between areas within a campus and may require firewalls and format conversion. Resources and streams can be dedicated to a single functional area where needed, managed from the control system.
- **Create a network of connected sites / remote production:** Focus on specific sites and remote production facilities. Here a mixture of Broadcast and non-Broadcast traffic may need to share the same connection, sharing centralised or distributed resources is possible, with a single monitoring and control solution across sites.

Today, the industry needs vendors to provide solutions that fit customer requirements whatever IP strategy they adopt. The key is to simplify complexity and maximise usability; to understand legacy and future infrastructure. With SDI remaining the center of gravity for many broadcasters, we must accommodate mixed environments and provide the reliability, familiarity and ease of use consistent with SDI – with all the benefits of IP.





## Introducing MediaInfra Strada

EVS' MediaInfra Strada® is a compact, highly scalable plug and play routing solution designed to give you all the advantages of a real IP environment using your existing SDI sources and destinations.

With the same functionality as an SDI router, but with much on offer including Cerebrum's powerful unified control and monitoring, MediaInfra Strada comes as a complete turnkey system. It's incredibly easy to install - just drop-in as a direct replacement for your SDI router - so you don't have to be an IP expert to deploy and use it.

MediaInfra Strada provides you with the right mix to match your current path towards an IP facility, at whatever pace you feel you need to move.

→ Learn more

## Your expert IP partner

As a leader in live video technology, EVS helps broadcasters and media companies around the world create compelling live storytelling in the most reliable, efficient and creative way.

Through our pioneering work in IP, we provide native SDI and pure IP routing solutions tailored to fit any infrastructure scenario - from SDI, hybrid to bespoke designs for large scale IP facilities. With a growing number of successful installations of IP solutions in the market today, we're trusted to make it easier for our customers to deliver today and prepare for what's to come with confidence.

Contact us today to find out how EVS can help you start to reap the benefits of IP in your broadcast operations.

→ Contact us



© 2021 EVS Broadcast Equipment, all rights reserved.

→ [evs.com](https://www.evs.com)

