

Pac-12 Networks — a sports-oriented digital cable and satellite television network owned by the Pac-12 Conference — needed to centralize production capability, so it used Zayo's various fiber-based, low-latency, high-bandwidth network infrastructure solutions.

Pac-12 Networks Connectivity Powered by Zayo and Ciena Network Infrastructure Solutions

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Introduction

Connectivity is important for any organization, but for Pac-12 Networks, low-latency, high-bandwidth, and reliable network connectivity unlocks the ability to produce high-quality content while realizing substantial cost savings. Pac-12 Networks, the media arm of the Pac-12 Conference, is an American sports-oriented cable and satellite television network. Its studio and production facility, which is located in San Francisco, California, is connected to numerous sports venues using Zayo DIA, Wavelength, and Dark Fiber solutions.

The need for highly reliable connectivity to remote sports venues was just one of the driving factors that led Pac-12 Networks to partner with Zayo. The low-latency, high-bandwidth connectivity that enabled Pac-12 Networks to produce real-time, high-end sports content in the remote production facility, culminated in tremendous savings by eliminating the need for onsite production and satellite truck rolls. Today, the Pac-12 Networks produces 850 live events throughout the course of a year, many via the remote production model.

Pac-12 Networks had several goals for its infrastructure. The company wanted to be able to spin up connectivity to new venues quickly, gain flexibility to leverage whatever connectivity options are available in challenging locations, and simplify management of the WAN, while still having fine-grained, customizable network access controls. Pac-12 Networks used Zayo's Wavelength services to quickly establish the connectivity with SLAs, which can be scaled up and down based on the production needs.

SOLUTION SNAPSHOT

ORGANIZATION:

Pac-12 Networks is an American sports-oriented digital cable and satellite television network owned by the Pac-12 Conference. The network's studio and production facilities are headquartered in San Francisco, California. In addition to the national channel, it operates a group of six regional sports channels focusing on different schools within the conference under the Pac-12 Networks brand.

ORGANIZATIONAL CHALLENGES:

Produce high-quality live sports television at a reasonable and efficient cost by moving beyond the traditional model of doing all production work in a truck onsite and then transmitting programs over satellite.

CONNECTIVITY SOLUTION:

The Pac-12 Networks utilizes Zayo's DIA network as its primary ISP at its corporate headquarters, Zayo's Dark Fiber Network, and Zayo's Wavelength Network to broadcast 24-hour coverage of Pac-12-sanctioned sporting events.

BUSINESS BENEFITS:

Multimillion-dollar aggregate savings resulting from remote production of sporting events, enabled by reliable, low-latency, high-bandwidth connectivity from Zayo's network. Furthermore:

- » Margin and profitability increased
- » 85–95% automated scheduling from primarily manual scheduling
- » Partnership with shared goals

Challenges of Remote Venue Connectivity

Connectivity for Pac-12 Networks is more than getting a direct internet connection (DIA) to its headquarters in San Francisco. Pac-12 Networks broadcasts 24-hour coverage that includes a wide range and quantity of live events from all 12 universities that participate in the conference, including more than 30 football games, more than 100 men's basketball games, Pac-12 Championship events, and hundreds of other live college sports events as well as original and studio content. In addition to the national channel, Pac-12 Networks also operates a group of six regional sports channels focusing on different schools within the conference under the Pac-12 Networks brand. "Some of this connectivity is needed for 24 x 7 x 365, but for a once-a-year event, we need to spin up and spin down connectivity in a way that's cost effective, efficient, and very reliable," explained Ryan Currier, SVP of Engineering & Products for Pac-12 Networks.

The challenge was to find a partner that could provide connectivity solutions to remote venues on a 24 x 7 basis as well as to sports events, which required temporary network connectivity in a short time frame with high reliability. A mix of connectivity types, some of which may not have the enterprise-grade SLAs to ensure reliable, latency-sensitive, and flexible connectivity meant that Pac-12 Networks was looking for an alternative solution.

Implementation

Pac-12 Networks started building the distributed production network around 2012, but the network to transport the large quantity of video traffic from different sports locations to the centralized production facility took several years to evolve. The first few years were primarily based on a traditional truck satellite local production model. As Pac-12 Networks built out a reliable transport network over a period of time, more venues were connected using Zayo Wavelength and Dark Fiber solutions. "In the early days, we started with smaller productions that had fewer cameras, but now, we are doing college basketball games using distributed production methodologies," Currier explains. "So a lot of that has been very dependent on providers like Zayo who've been able to continue to deliver that level of connectivity at a reasonable price point."

According to Currier, "Pac-12 Networks really was one of the pioneers in the concept of doing remote production of live sporting events, where the presence onsite in the venue is relatively minimal." There are camera operators, audio folks, and so forth at the venue but the camera feeds are sent in real time over IP to the remote broadcast facility in San Francisco, where other functions of the production are then performed. This model required reliable and fast connectivity that can be quickly configured. Pac-12 Networks partnered with Zayo because the company has been a major provider of connectivity infrastructure both to Pac-12 campuses and to Pac-12 Networks' San Francisco facility.

In addition to permanent connectivity to several sports venues, Pac-12 Networks also needed Zayo infrastructure to bring up ad hoc connectivity in a cost-effective and efficient way for once-a-year events. Pac-12 Networks needed a connectivity solution that can easily scale and provide low latency and a high level of reliability, hence Zayo was the logical choice. "Honestly, the constraints at this point are based on physical space in our facility in terms of control rooms, etc., more than connectivity," says Currier.

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— Ryan Currier, SVP of Engineering & Products, Pac-12 Networks

To build the connectivity infrastructure for Pac-12 Networks, Zayo used several of its solutions including DIA, Wavelength, and Dark Fiber. Zayo's DIA network is used as the primary ISP at Pac-12 Networks corporate headquarters. The DIA network is engineered to deliver the reliability, security, and performance of a fiber-based network. It provides Pac-12 Networks with a superior IP experience with faster installation time, traffic bursting capabilities, and operational simplicity. The Zayo network's scalable and customizable bandwidth solution has helped Pac-12 easily add more sports venues and bandwidth seamlessly to its network. Dark Fiber solutions offer Pac-12 complete control of the fiber with full path transparency and an ability to create diversity to maximize uptime and minimize latency. Since no components are shared with other Zayo customers, Pac-12 has end-to-end protection with a 100% dedicated network. Zayo's Dark Fiber Network is used to broadcast the Men's and Women's basketball conference championships in Las Vegas, which is a once-a-year event and requires high-reliability, low-latency connectivity for a high-quality production.

Further, Zayo's Wavelength solution provides high-speed, dedicated, private, and secure connectivity with low and predictable latency to multiple remote sports venues by leveraging its vast network of global points of presence (POPs) and on-net datacenters in North American locations. Zayo's dedicated high-bandwidth Wavelength connects Pac-12 Networks to remote locations on a fiber network. Transport of the bandwidth-intensive video content from the sports venues is sent over the fastest, most direct, and most predictable long haul and metro network connections. Wavelength enables Pac-12 Networks to easily add bandwidth, up to 400G, on a dedicated circuit with Zayo's full range of Wavelengths offerings. Zayo's Wavelength Network powered by Ciena is used to broadcast 24-hour coverage of Pac-12-sanctioned sporting events, including Olympic sports and broadcasts of archived sports telecasts via satellite and cable networks.

Challenges

After the Pac-12 Networks launched in 2012, one of the biggest challenges that the founding production and engineering teams undertook was to pioneer a remote production model for live sporting event broadcasts. The technologies, broadcast partners, vendors, and other parties involved in live sports broadcasts didn't yet have experience with this model; at that time, the live sports production industry was oriented around onsite production trucks and satellite delivery. So the Pac-12 had to engineer a solution in partnership with many folks across the industry. Over a course of time, a lot of vendors have come along and now the distributed production model has taken deep root in the sports broadcast industry. The Pac-12 was already operating in this mode, but for many other live production entities, the pandemic has accelerated this trend.

Another challenge was how to reach a large quantity of on-campus sports venues, which were not necessarily initially built with the level of connectivity infrastructure required for this endeavor. In addition, the Pac-12 team had to partner with key IT staff on campus given that the live sporting event telecasts share the same university network space where other compute and bandwidth-intensive data flows.

Benefits

Sporting events that use remote and distributed production methods versus onsite production methods (pulling up a truck with a crew onsite and doing everything over satellite) cost significantly less to produce.

Pac-12 Networks telecasts hundreds of events every year, many of which have elements of production remotely implemented at its San Francisco facility. This culminates into a multimillion-dollar savings when compared with producing all of those events using traditional means. Although most of the savings come from reduced numbers of onsite staff, as well as for satellite truck and local production costs, the high-speed fiber connectivity is the key enabler for the remote and distributed production.

Pac-12 Networks spends approximately \$500,000 per year for Zayo's leased high-bandwidth and low-latency connection. "Connectivity is just sort of one piece of this overall puzzle, but it's a critical one," says Currier. "Without it, we can't make the overall puzzle happen. We still have to invest in other elements to bring this to life."

Zayo's network infrastructure unlocks several opportunities for Pac-12 Networks, such as creating great exposure for student-athletes on the campus, bringing any sporting events to life quickly, and making infrastructure scalable and future-proof for additional fan experiences down the line.

Methodology

The project and company information contained in this paper was obtained from multiple sources, including information supplied by Zayo, questions posed by IDC directly to Pac-12 Networks employees, and Pac-12 corporate documents.

About the Analyst



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Ajeet Das is Research Director for IDC's Telecom Infrastructure research program, and he is part of IDC's broader Network Infrastructure research practice. In this role, he serves as IDC's expert on carrier networks and the ongoing transition among communications service providers to build cloud-native/next-gen network infrastructure solutions on their path toward becoming digital service providers. Key research themes include Telco Cloud, 5G and the Multi-access Edge Cloud (MEC).

MESSAGE FROM THE SPONSOR

Zayo and Ciena provide a suite of solutions that enables the reliable network connectivity needed to produce high-quality, live content. Zayo's Direct Internet Access (DIA) solution brings the reliability, security, flexibility, and performance of a fiber-based network to customers quickly and cost-effectively. Dark Fiber solutions from Zayo give customers complete control of their fiber with full path transparency with maximal uptime and minimal latency. The Zayo Wavelength Network powered by Ciena provides high-speed, dedicated, private, secure connectivity with low and predictable latency and the ability to add up to 400G bandwidth for reliable coverage.

[Learn more](#) about how Zayo's solution suite can provide you with the high-performing connectivity your business needs.



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