



A case study of

Large scale, self provisioned real-time video transport

The Issue

Among the various video transport services available to customers The Switch offers local on-demand connectivity, which has become a great success due to the company's on-demand service model and easy, customer-controlled provisioning. The service was previously used by various media companies to connect internally between different geographical sites and also to connect externally with companies offering complementary services, such as post-production houses. The success of The Switch's metro service gave rise to the next logical step – to interconnect the isolated, local metro services and roll this out to more cities all over the country.

The implementation of the first-generation service was simple and straightforward. A centrally located large video router connected all customer sites, and provisioning was simply conducted in the single video router.

This made the service simple to operate and non-blocking. The video connections were customer provisioned with zero involvement of personnel from The Switch. The first mile connections to the customer were metro video connections, based on HD-SDI or SD-SDI. Switching to and from The Switch locations in each market was the responsibility of the customer, however, if necessary, could also be manually connected by The Switch's 24/7/365 Network Operations Center.

The customer paid a monthly reoccurring fee for unlimited connections between customer ports in the same city node. Long-haul transmissions, via The Switch's Inter-City on Demand (ICOD) service, were offered on a per-minute scale, based on quality of transmission with no booking fees and no minimums.

When making intercity connections and scaling the number of cities to more than 50, the model with a central switch breaks down, as such a network would consume a large amount of long-distance capacity and would introduce unnecessary delays for local connections.

To combat this, The Switch sought to implement a new architecture, shifting from a simple local star topology to a meshed, high-capacity network design, thereby placing new and challenging requirements on the technical platform.

In the new network, local switches would continue to be included in the base

THE COMPANY

The Switch is an U.S. based media operator offering local metro and long distance video transport services in major cities across the U.S., the United Kingdom, and Canada, to broadcast networks, production houses and major sports leagues.



charge and intercity, long-haul connections charged in granular one-minute increments. Most importantly, the newer, more complex network needed to preserve the simple, customer controlled service model.

Since most of the video transport services The Switch offers are of uncompressed nature (1.5 Gbps HD-SDI or 270 Mbps SD-SDI), the connectivity between cities needed to have high bandwidth. In the metro, star-topology network, bandwidth was not a problem; connectivity consisted of the video router backplane inside The Switch facility.

The high intercity bandwidth demands of the new network mandated a transmission platform that could take advantage of the low costs involved, and DWDM-based services. The new network also needed to provide a cost-effective alternative to uncompressed HD in the form of JPEG2000 video encoding.

Faced with a growing volume of high-bandwidth connections, there was a need for a network platform that could:

- Leverage geography and leased wavelengths to create a distributed-mesh transmission topology
- Provision on-demand (sub-second activation), high-bandwidth connections
- Strictly guarantee the bandwidth (and delay/jitter) for demanding video services
- Monitor the connection to verify that The Switch had fulfilled the Service Level Agreements (SLAs) with the customer
- Perform all these services with zero involvement from The Switch's personnel



“Net Insight provides the industry’s most established and widely-deployed modular platform for transport of broadcast quality linear video and high speed Ethernet services. Their feature set is one of the keys to The Switch’s Five Nine’s service offering.”

The Solution

In search of swift, automated provisioning of multi-gigabit services and support of its on-demand business model, The Switch selected Net Insight’s Nimbra media transport platform, which is designed to transport advanced video services over a large-scale telecom infrastructure. Net Insight has focused on simplifying operations for efficient telecom and media companies that do not have large departments of network engineers.

The Nimbra platform is an integrated, switched network platform, incorporating transmission, media adapter, multiplexer and encode/decode functionality in a one-box solution. A Nimbra network accepts native video signals or IP-based video and routes these signals through a large, meshed network to one or more egress points, thus supporting both unicast and multicast services.

The Nimbra platform software, NimOS, incorporates an advanced integrated control plane with network-wide routing, signaling for service set up, plug-and-play auto configuration and redundancy, all accessible centrally via SNMP for easy access from Net Insight’s service-centric network management system, Nimbra Vision, or from third party booking/provisioning systems. The Switch uses Net Insight’s NimOS and the company’s Nimbra Vision open provisioning API functionality to offer its customer self-provisioning service.

The Switch’s customer portal SwitchIT and service provisioning are conducted through ScheduALL’s ScheduLINK management system, which accesses the rich provisioning functionality of the Nimbra NimOS via the Nimbra Vision Northbound provisioning interface API. The Northbound interface has been developed by Net Insight to simplify third party software integration, making it easy for developers to integrate their systems with the Nimbra media transport platform.

The Nimbra’s built-in monitoring system, which is divided into service layer and transport layer performance monitoring with history data, offers The Switch a superb tool to:

- Verify that The Switch delivers the SLAs agreed with the customer.
- For troubleshooting to find and identify problems in the services offered, the customers’ service interfaces and over the high-capacity DWDM connections.

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The information is centrally presented in the Nimbra Vision with both real-time information and historical monitoring data. This combined with comprehensive logging of customer initiated requests by ScheduALL, addresses several pain-points and allows The Switch to rapidly resolve potential service issues.

The Results

The Switch’s new-generation network has been operational since 2011 and serves the majority of leading media companies in the U.S. The Switch network also handles much of the major league sports in the U.S. and is continuously expanding to new customer and new geographical sites. Each customer has a tailored customer portal where, within seconds, they can book and schedule coast-to-coast and international connections without the need to contact The Switch customer support services or technical personal. The network is currently the largest network carrying JPEG2000 compressed services.

The business model allows the customer to pre-book services, ensuring and reserving availability of the service resources while new connections can be added instantaneously as needed. From request to activation, the connection set up time for a coast-to-coast 1.485 Gbps HD connection is a few minutes. The revolutionary combination of technology and business models offers the media market a completely new way of working with production and distribution, immediately satisfying a need for connectivity.

Recently The Switch implemented a service called Five Nines. This service in effect extends The Switch’s network within the local nodes, using the Net Insight platform, to major sports venues and rightsholders allowing The Switch to provide 99.999% availability door-to-door, hitless 1+1 services.

Building on the success of its deployed network, The Switch also provides high-speed, self-provisioned Ethernet services with the same guaranteed bandwidth and dynamic, customer provisioned, approach as is currently available for video services using the Net Insight platform.

