

Out of the Cold

ADEC brings advanced learning to K-20 schools via Internet2 in even the remotest reaches of Alaska



Industry: Education and Research

Company:

Alaska Distance Education Consortium (ADEC)

Challenge:

Deploy network that enables distance education and collaboration across Alaskan villages and towns

Selection Criteria:

High reliability, flexibility, strong security, rich feature set

Network Solution:

AK-20 national high-speed broadband network with Juniper Networks M7i multiservice edge routers at the core

Results:

- Bring advanced learning to students by connecting K-20 schools, libraries, and museums across the vast state of Alaska to each other and to Internet2.
- Students will have access to high-speed broadband and advanced multimedia services that will facilitate distance learning and cultural exchange.
- Explore solutions to the “last mile” problem in Alaska with a unique partnership between private and public entities.

“We’ll support any service that our users want. We’re designing the network from the top down, in anticipation of a broad variety of uses. We have to be ready for almost anything.”

Craig Collar,
ADEC

Alaska Distance Education Network Will Bring Advanced Learning to Remote Villages through Connections with Internet2

Imagine being a fifth-grader in a remote Alaskan village doing field work to help scientists in the Lower 48 understand the impact of global warming. Or being a student in a classroom on the Southeast Alaskan coast working on a project with another student a thousand miles away near the Arctic Circle. The Alaska Distance Education Consortium (ADEC) is helping to make these scenarios—and many more—a reality.

Distance education brings advanced learning to students no matter where they are. In Alaska, the distance learning opportunities are almost as vast as the state itself—ranging from teacher mentoring to shared curriculum across classrooms nationally and internationally to exploring the rich cultural environment and arts of the state itself. Distance learning breaks down barriers for Alaska, a state that’s more than twice as large as Texas—more than 586,000 square miles with only 12,200 miles of roads. Many Alaskans live in villages and towns only accessible by air or boat.

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The Solution

To facilitate distance education, ADEC is deploying the AK-20 Network, which will connect Alaskan educational and research institutions to Internet2, higher education's national high-speed broadband network. K-20 schools, libraries, museums, supplemental education service providers, tribal organizations, government agencies, hospitals, health facilities, and other specialized educational institutions, such as the Alaska Challenger Center, the Alaska SeaLife Center, and the Alaska Native Heritage Center, will be eligible to connect to AK-20 and to Internet2. More than 500 schools, 100 libraries, a dozen museums and a half-dozen institutions of higher learning are eligible to participate in AK-20.

The network will offer IPv4 and IPv6 connectivity as well as IP multicast for services like video, and quality of service as needed. ADEC is building out points of presence in Anchorage, Juneau, and Fairbanks, with the Fairbanks POP connecting directly to the Pacific Northwest Internet2 gigaPOP. From there, the network connects to the Internet2 Abilene Network, the advanced backbone that supports the development and deployment of new applications.

The Benefits

Craig Collar, manager of network engineering at University of Alaska and the technical lead for ADEC, and his team chose Juniper Networks M7i multiservice edge routers for the core of the AK-20 network. Collar cited the rich feature set of the M7i routers, coupled with high reliability, flexibility, and strong security, as the reasons to choose Juniper.

M-series multiservice routers are deployed in the world's largest networks, delivering advanced IP/MPLS edge routing services at scale. The multiservice routers use a hardware-based approach combined with the highly scalable, secure, and reliable JUNOS™ software, which enables service providers and large enterprises to enable multiple services on a single IP/MPLS platform. M-series edge routers support Layer 2 and Layer 3 services as well as rich Ethernet services. Services supported include a broad array of VPNs, network-based

security, real-time voice and video, bandwidth on demand, rich multicast of premium content, IPv6 services, and granular accounting.

“Overall, the Juniper platforms are very reliable,” Collar says. “They have a rich policy language that allows us to control the routing and forwarding of packets in a very granular way.” The broad service offering and flexibility of the M7i routers is critical, according to Collar. “We'll support any service that our users want. We're designing the network from the top down, in anticipation of a broad variety of uses. We have to be ready for almost anything,” he says.

AK-20 is being created through a unique partnership between public and private entities. ADEC and the AK-20 network are sponsored by University of Alaska, a full Internet2 member, through an Internet2 program called Sponsored Education Group Participant Program, or SEGP, which gives educational and research institutions the benefits of Internet2 without having to make the financial commitments of a full member.

Educational institutions will connect to AK-20 through their Internet service provider of choice. Because of the difficulty of providing local connectivity in the vast geography of Alaska, ADEC is working with Alaskan telecom providers and ISPs to encourage the use of broadband and to provide the local loop connectivity to the AK-20 members. In this unique arrangement, the local ISPs will provide the first line of support to the educational institution, and ADEC will be the central administrative contact for all Internet2 and SEGP issues.

ADEC also hopes to use AK-20 to highlight the overall lack of high-speed connectivity to communities throughout the state and to promote the development of new access technologies suitable for the Alaskan environment. Today, satellite remains the major means of bandwidth distribution to rural communities, but satellite circuits are expensive. The AK-20 network will demonstrate the value of inter- and intra-state connectivity for education, health care, and research, and will focus attention on the need these rural communities have for high speed connectivity.

