Washington State Deploys Network to Transform Education

The K-20 Education Network utilizes Cisco networking and collaboration solutions to enable videoconferencing to connect 1.5 million students statewide.

Challenge

In the mid 1990s, key Washington state legislators and local education leaders were noticing a transformation in education statewide. With advancements in technology and wide, mainstream adoption of the Internet, branch school campuses and education centers were emerging, and the state saw distance learning opportunities beginning to grow.

In 1996, to address the changing face of education, the Washington State Legislature passed a bill calling for the creation of the K-20 Education Network. The goal of the newly-formed K-20 Education Network was to deploy a single, reliable, cost-effective broadband network to connect all public K-12 school districts, community colleges, universities and libraries across the state of Washington, offering students with greater access to courses, resources, programs and degrees.

“The biggest challenge for K-20 was that we were attempting to design and deploy a high-speed broadband network during a time when the majority of computer users in Washington and around the country were still connecting to the Internet by dial-up modem,” said Tom Carroll, systems manager for the K-20 Education Network. “We needed an information technology infrastructure capable of breaking down the digital divide to ensure network quality, interoperability and efficiency, not just in urban areas of the state, but also in rural communities where, in some cases, dial-up wasn’t even available yet.”

In deploying the network, administrators wanted to ensure geographically-dispersed schools, students and faculty would have optimum Internet access and interactive videoconferencing to promote distance learning and establish collaboration across the broad education community statewide.

Solution

After assessing different innovative technologies capable of growing with the initiative, K-20 Education Network administrators deployed Cisco routers at regional aggregation sites throughout the state of Washington in Seattle, Spokane, Tacoma, Yakima, Vancouver and Pullman. The routers serve as the core of K-20’s broadband network, increasing the power, performance and security of the network and optimizing branch campus services throughout the state.

In complying with the state legislation by designing one, single network for nearly 500 schools, universities and libraries within the state to use, the K-20 Education Network deployed Cisco’s Multiservice Provisioning Platforms (MSPP). The MSPPs serve as optical switches for the network, making it possible to provide reliable Internet access to students, faculty and administrators, in both rural and urban areas of the state, over one network. The MSPPs also enable efficient Ethernet, bandwidth aggregation, data storage extensions and highly flexible transport services.
With the core network up and running, K-20 adopted two Cisco TelePresence MSE 8000 Series multipoint control units (MCU) capable of providing high-quality, high-capacity voice and videoconferencing. The TelePresence units are the foundation for delivering K-20’s large-scale, web-based collaboration and enable students, faculty and administrators in one region of the state to connect, learn, teach and share virtually, through real-time, face-to-face video interaction, with students, faculty and administrators in another region of the state.

“The ease-of-use, scalability and performance of Cisco’s technologies, as well as the company’s professional and knowledgeable engineering and support teams have made Cisco an ideal partner in helping us to deploy the K-20 Education Network,” said Carroll. “Cisco is constantly thinking ahead of the curve with their architecture, which in turn, helps us plan for and expand K-20’s network capabilities and bandwidth to better accommodate the growing number of students, faculty and administrators on our system.”

Results

By deploying Cisco solutions, the K-20 Education Network is able to connect 99.8 percent of the classrooms, schools, community colleges, universities and libraries in 476 locations around the state of Washington, including 295 public K-12 school districts. Today more than 1.5 million students have access to the Internet and voice and videoconferencing services.

As an unprecedented, high-speed, high-capacity network, the technology enables high school students to take courses through partnerships with the University of Washington, Central Washington University, Washington State University, and Wenatchee Valley College, earning college credits through courses delivered over the K-20 Education Network. In some rural regions of the state, including in Bridgeport, the network has made it possible for high schoolers to access training programs that have increased the number of students meeting reading standards by over 50 percent.

With the help of Cisco TelePresence, students are able to embark on virtual field trips to museums, educational institutions and organizations without ever leaving the classroom. State university hospitals have also utilized Cisco TelePresence. With twenty telemedicine sites throughout Washington, medical students and professors can reduce travel time and costs by attending virtual medical classes and training sessions over high-quality, high-definition (HD), face-to-face videoconferencing.

As the K-20 Education Network continues to grow, with data traffic increasing 5,000 percent on the network over the past ten years, the efficiency and flexibility of Cisco solutions have enabled network administrators to expand bandwidth to better accommodate students, faculty and administrations using the network statewide.