

## CASE STUDY

# High-speed Network Connect and Inspire Utah Schools and Clinics



### At a Glance

**Customer:**  
Utah Education and  
Telehealth Network

**Industry:**  
Education & Healthcare

**Challenge:**  
Connect school districts, state-run  
colleges and clinics with a resource-  
sharing network providing education  
and healthcare across the state

**Solution:**  
CenturyLink GeoMax DWDM  
networking technology creates  
robust fiber-based network for  
expanding UETN



The Utah Education and Telehealth Network (UETN) is a great idea that keeps growing. Originally conceived as an analog system for interactive video conferencing, it has evolved to a high-speed network connecting public and higher education from the smallest school to the largest university. The Network now includes applied technology colleges, libraries and healthcare clinics.

Education remains the organization's largest initiative with 41 school districts and dozens of charter schools. If UETN were a single school district it would rank just behind New York and Los Angeles serving more than 630,000 public school students. UETN also serves more than 200,000 students in college and more than 60,000 faculty and staff from kindergarten teachers to college professors.

It empowers educators to extend the classroom well beyond the four walls of the school. With UETN, students can take for-credit college courses via teleconferencing, access a Learning Management System and do research with a digital library that includes journal articles, photos, graphics, maps and video.

"The ability to connect to resources online is essential for students today because they live in a digital world," said Michael Hakkarinen, UETN instructional technology trainer. "They live in a digital environment and they thrive in that environment. We need to teach with today's technology for tomorrow's jobs."

## Challenge

### Providing broadband to a geographically diverse state

While most of Utah's population lives around Salt Lake City, Ogden and Provo, most of Utah's land is rugged and rural. It includes iconic but isolated beauty like Rainbow Bridge and Monument Valley.

The state's smaller communities are spread among three different areas: the Rocky Mountains that carve up the state through its various ranges, the high brush and canyon area of the Colorado Plateau in the south and east, and the Basin and Ridge Region that contains both the Great Salt Lake and one of the driest deserts in the United States including the Bonneville Salt Flats. About 12 percent of Utah citizens live in these rural areas. That's about 360,000 people among Utah's nearly 3 million residents.

"There are people who live in the very far reaches of the state," said Dr. Ray Timothy, UETN executive director. "That's why internet connectivity and distance learning components we provide are so critical to our rural schools, clinics and colleges."

Connecting these isolated areas started when television engineers actually hauled bulky transmitting gear on horseback to mountain peaks in Utah more than five decades ago. The effort later resulted in an extensive television translator network that pioneered the way for early closed-circuit TV for education.

CenturyLink and its predecessors have long partnered with the Network to bring greater bandwidth to education. Twenty years ago US West (now CenturyLink) established fiber-optic circuits between UEN (the Utah Education Network, the UETN's predecessor) at the University of Utah and Utah State University in Logan. That paved the way for similar broadband across the state. UETN's public/private partnership supports education and the Utah economy.

"We're like the anchor tenant in a shopping center that creates stability and growth," says CEO and Executive Director Ray Timothy. "Our long-term contracts foster economic development. Broadband contracts for education provide an incentive to telecom providers to build infrastructure that also spurs commerce and extends communities."

Utah lawmakers appreciate that collaboration. In 2014 they merged UEN with UTN, the Utah Telehealth Network. Education and telehealth staffers now work side-by-side at the Eccles Broadcast Center in Salt Lake City.

"At any one time, there's probably close to a million people in the state of Utah using our network in one form or another," said James Stewart, UETN technical services director.

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**"The teachers have capabilities they never had before. They used to curtail certain activities, such as sharing videos, because they didn't have enough bandwidth. Now they don't even think about bandwidth. They can do whatever they want to because they have a customized network."**

**James Stewart, UETN Technical Services Director**

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## Solution

### Dedicated, high-bandwidth fiber network

UETN built their network on the CenturyLink GeoMax networking platform running over dedicated fiber optic cabling. GeoMax uses Dense Wavelength Division Multiplexing (DWDM) technology to vastly expand the available bandwidth and flexibility of fiber cabling.

The GeoMax technology creates multiple circuits that run independently of each other over the same fiber infrastructure while ensuring security and high speed. GeoMax is a dedicated network set up on a custom basis so bandwidth can be allocated as needed. By leasing such bandwidth, UETN also qualifies for federal E-rate, an FCC program that provides substantial discounts to public education and rural healthcare.

## Results

### Connected schools, happy teachers

UETN has connected more than 1,400 sites across the state, many via the GeoMax solution. The statewide system improves bandwidth required for the differing needs of instruction and administration while improving connections to the state and municipalities. The 10 Gbps backbone supports streaming video and live conferencing. It can meet the big data needs of research universities and link classrooms across the state and anywhere in the world.

“The teachers have capabilities they never had before,” Stewart said. “They used to curtail certain activities, such as sharing videos, because they didn’t have enough bandwidth. Now they don’t even think about bandwidth. They can do whatever they want to because they have a customized network.”

Stewart also noted that even the cafeteria personnel found the network improved their lives by making it easier to transfer compliance data on the government-sponsored food program as well as to order supplies and manage inventory.

“It is a sobering thought that without the network, not only would you not be able to get the educational material, but you wouldn’t be able to serve school lunches,” Stewart said.

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“Working with CenturyLink has allowed us to customize our network.”

James Stewart, UETN Technical Services Director

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## Future Plans

### More connections, more people, more bandwidth

With a core network now spanning a geographically diverse state, more institutions are joining and long-term planning becomes critical to UETN’s future. For instance rural healthcare clinics will join the network to transfer massive imaging files to specialists in Salt Lake City and other dense urban areas—improving the quality of care and timeliness of services provided.

As usage increases, UETN and CenturyLink are planning for future requirements. Research universities already require 100-gigabit bandwidth. Together UETN and CenturyLink are exploring ways to use GeoMax’s flexibility to make the most of increased demand.

“GeoMax has been great for us,” Stewart said. “We’re able to sit down with CenturyLink engineers and figure out what our needs really are. Working with CenturyLink has allowed us to customize our network.”

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