**About The State of Arkansas**

Although Arkansas is not a wealthy state, it is among national leaders in the use of technology to support education. Education Week ranked Arkansas second in the nation in its use of technology. The Arkansas Department of Information Systems (DIS), a state agency, is the information technology solutions provider for the state. DIS is responsible for voice, data and video networking as well as technical consulting to the public entities that serve state residents.

**Situation**

The rural nature of Arkansas created a communications challenge for state departments to cost effectively support education and other crucial services for its dispersed population. In the early 1990s state universities initiated video distance learning programs to help professionals maintain certifications without having to leave their communities. Officials quickly recognized an exciting opportunity to enhance education for university, K–12 and non-traditional students and professionals. DIS was asked to take on a central coordinating role in creating a reliable consolidated network with the bandwidth to transmit interactive classes to benefit students and other audiences.

**Solution**

Arkansas was one of the first states to recognize the potential of video networking. AT&T assisted Arkansas in connecting rural professionals with higher educational resources in the early 1990s via a dedicated bandwidth interactive videoconferencing network using H.320 protocol. Most recently AT&T helped the state upgrade to a H.323 Internet protocol network that easily and cost-effectively provides outstanding education and communications opportunities for schools, healthcare facilities, and state agencies.

**Rural Arkansas Leads the Way with Video Networking**

Building a statewide video network is demanding under any circumstance, but the rural nature of Arkansas and a lack of financial resources—the state is the 10th poorest in the U.S.—created unique challenges for Arkansas officials. “We have to be very cautious about what we do,” said Max Kolstad, DIS Manager for Video Services. “As a rural state with minimal staff, we have to focus on effectiveness and efficiency. In Arkansas we are interdependent. We needed a centralized network to overcome the effects of time, distance, and geography.”

AT&T assisted DIS in building a video network that was an immediate success in the Arkansas higher education community. Thanks to the network, professionals who formerly had to travel hours to university towns to receive continuing education were able to receive training close to home. With less travel now required, it became more likely that these precious professional resources would be able to enhance their skills and knowledge while remaining in the communities where they were needed most.

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<tr>
<th>State of Arkansas Facts</th>
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<tr>
<td><strong>Business Needs</strong></td>
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<td>Interactive video network to support the core application of distance learning, but robust enough to handle multiple applications</td>
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<td><strong>Networking Solution</strong></td>
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<td>Centralized video IP Network connects schools, universities and other state agencies</td>
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<td><strong>Business Value</strong></td>
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<td>Reliable, cost-effective solution distributes educational resources equitably throughout the state and allows for new applications to be easily supported</td>
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<td><strong>Industry Focus</strong></td>
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<td>Government</td>
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<td><strong>Size</strong></td>
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<td>2.6 million residents</td>
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Seeing the network’s success for higher education, public K–12 schools quickly identified ways to use the network to share resources. Using the interactive video network, students in districts with few language teachers could now learn the language of their choice.

Centralization Makes the Difference
K–12 students are the largest users of the state’s video network. The majority of the state’s secondary as well as two- and four-year colleges and universities are on the network. This network has approximately 500 endpoints.

Education is the anchor tenant that allows interactive video to maximize its economy of scale. “Without that core customer, we wouldn’t be able to provide a centralized network, and without a centralized network, we wouldn’t have attracted new customers like the Department of Corrections,” Kolstad said. “All of a sudden there is the ability to use interactive video from any university to any prison that decides to get connected to the video network. The dimension of how much education you can provide to a prison expands exponentially, because we have one centralized network.”

“It is critical in my mind to have one coordination point, making it easier for the people to utilize the applications,” he continued. Several states have pockets of interactive video without a central point of operations. “In that case it’s very difficult to go between video networks just to do simple things. We can focus nearly 90 percent of our time on the application and only 10 percent on how to make it work. I think in other situations it’s pretty much the opposite—they spend 90 percent of their time figuring out how to communicate with the world and 10 percent on the application.”

Arkansas further simplifies its network management by using the same vendor to service the network endpoints and handle the bridging and scheduling. Though the state considered the endpoint sales and service contract separate from the bridging and scheduling contract, Arkansas awarded both to AT&T. “We were very fortunate,” Kolstad said. “We had a great deal of institutional knowledge and history with AT&T. When you actually have the same group that is installing the system and handling maintenance, there’s coherence in installation, timing, and communications strategy for new users. In the absence of that I don’t think the migration would have gone as smoothly as it did.”

An added advantage is the fact that the centralized network is easy to administer. While a similar state of comparable size has assigned nine full-time professionals to support its network, Arkansas needs only two full-time professionals.

Making the Leap to IP
After years of providing an average of 8,000 to 10,000 hours of videoconferencing each month, the state got an opportunity to expand and upgrade its network. The Arkansas legislature allocated approximately $11 million in response to a 2003 state Supreme Court ruling requiring schools to provide equitable resources for all students in kindergarten through grade 12. Small school districts that could not afford to offer foreign languages, special education, or advanced courses in math and other fields could be forced to combine with larger districts so that all students had access to educational resources.

“AT&T has the resources to develop innovations that enable users to get the most from videoconferencing. The State of Arkansas doesn’t have that kind of leverage, so we get a big R & D benefit that doesn’t add to the state’s network cost.”

– Max Kolstad, Arkansas Department of Information Systems Manager of Video Services

Distance learning via video was the Arkansas Department of Education’s answer to the Supreme Court decision. “One of the ways to make sure that everyone has adequate and equitable access is interactive video,” Kolstad said. Students in Arkansas gain access to the classes they need in several ways. Schools are able to share teachers between districts, and there are several content providers across the state. The Arkansas Department of Education Distance Learning Center, Arkansas School for the Math, Sciences, and Arts, and several education cooperatives have distance learning services to ensure students are receiving the classes they need. In addition to receiving the necessary credits needed to graduate high school, some students are able to receive college credit while still in high school.

The funds allocated by the legislature enabled Arkansas to upgrade to an Internet Protocol (IP) network and further extend the network to hard-to-serve areas to ensure that every Arkansas student had access to the state’s educational resources. The new network was flexible enough to accommodate the new locations as well as existing endpoints that had not yet been converted to IP. The network is now providing around 19,000 hours of videoconferencing each month.

The trust that developed between Arkansas and its account team led the state to make the move to an IP-based network. The result is a flexible, scalable solution that provides bandwidth on demand to support the most demanding applications. The migration went smoothly, and users of the new network immediately saw the application advantages of IP. The ability to conduct point-to-point conferences without using a bridge is a convenience, Kolstad said. In addition, costs became more predictable, since the IP network enabled the state to charge users a flat fee rather than a usage-based fee.
The R & D Advantage
The continuing usefulness of the Arkansas network depends heavily on its ability to anticipate the needs of its customers. "AT&T has the resources to develop innovations that enable users to get the most from videoconferencing," Kolstad said. "The State of Arkansas doesn't have that kind of leverage, so we get a big R & D benefit that doesn't add to the state's network cost. I think that's one of the reasons the network works as well as it does."

The state also benefits because some of the services Arkansas outsourced are eligible for E-Rate funding. E-rate is a discount provided by the federal government and funded by telecommunications providers that helps to supply need-based schools and libraries with telecommunications services. "It became very clear the advantages we were getting from outsourcing, including the professionalism and the understanding of telecommunications," Kolstad said.

"We showed early on that we could communicate not only intrastate, but interstate," he said. "We demonstrated that by going through multiple networks we could actually establish a high degree of interactivity. That proved to a lot of people how much they could do with the network."

Arkansas officials believe they have built a network that is flexible enough to meet the state's needs today and far into the future. "It all goes back into how the network was designed," Kolstad said. "It's made it very effective, very efficient, and very manageable."

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