



Zoo Expands Distance Learning Program with Advanced Technology

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Cleveland Metroparks Zoo Uses Cisco Wireless Mesh Technology to Create Mobile Video Studio

The Cleveland Metroparks Zoo has always prided itself on its distance learning program as a way to share its many exhibits from all over the world, including threatened and endangered species. The zoo recently worked with Cisco® Premier Certified Partner Total Systems Integration (TSI) to expand the program's capabilities beyond the confining walls of the Zoo's two video studios. By utilizing Cisco advanced technology, the Zoo's learning center can bring the video studio to many areas within the 168-acre park and broadcast in vivid detail, overlooking an animal habitat.

The solution, which utilizes Cisco Wireless Mesh Networking technology, has other zoos around the country taking notice and comparing their own distance learning programs to what Cleveland Metroparks Zoo has accomplished. The Cisco solution, designed and deployed by TSI, is enabling students in schools across the United States and throughout the world to learn about the Zoo's animals up close and in a very personal way.

The distance learning program at Cleveland Metroparks Zoo has typically been at the forefront of video technology, but its broadcast capabilities have been limited to two specific studio locations within the Zoo.

"We really wanted the flexibility to broadcast from different areas of the Zoo," says Cathy Ryan, education specialist and distance learning coordinator for Cleveland Metroparks Zoo. "Children learning about elephants do not want to watch someone standing there talking about an elephant; they want to see the elephant! But you cannot bring an elephant into a video studio." Ryan wanted a way to bring the video studio to the elephant.

TSI has provided videoconferencing equipment to the Zoo for many years, and the company wanted to make the video studio mobile so that Ryan and the learning staff could easily move the studio to different areas of the Zoo. The challenge was to find a solution that would provide comprehensive outdoor coverage and work with the indoor video network provided by TSI. The solution needed to provide wireless video capability throughout the entire Zoo, indoors or outside, from the amphibian lab to the elephant's yard to food preparation areas.

TSI chose a Cisco Wireless Mesh Networking Solution for Cleveland Metroparks Zoo. This advanced technology eliminates the need for a wireless hotspot to be connected to its own wired LAN. Instead, wireless access points in a mesh network discover each other automatically and choose the best path for maximizing system capacity and minimizing latency. If a link is degraded, the access point determines whether a better path exists and reroutes traffic to it. Based on new wireless routing protocols, a Cisco Wireless Mesh Networking Solution makes it easier and more cost-effective to extend the reach of a wireless network. It easily connects to an existing indoor wired or wireless network, allowing users to roam from one area to the other without reconnecting.

"Utilizing mesh access points is a really effective way to expand coverage from a network backbone because you don't need to connect the access point directly to the network," explains Bob Lynch, director of sales and marketing for TSI. "For the Zoo, a Cisco Wireless Mesh Networking Solution means outdoor coverage would be provided by attaching the mesh network access points to an external fixture that already has power, such as a light pole.

"That access point then becomes part of the same outdoor network, which becomes part of the indoor network," says Lynch. "Each mesh access point connects to the next access point or root access point, and it's all easily managed under one central system."

For the Zoo, TSI first conducted a site survey to determine where RF (radio frequency) coverage was needed. The company has specialized software it uses to determine this coverage. A total of 19 access points were deployed, including six Cisco Aironet® 1500 Series lightweight outdoor mesh access points. The team next determined how to connect to the backbone of the existing network, and installed fiber optics and Cisco switches where needed. To provide a mobile video studio, the TSI team designed and constructed a rolling cart to hold the video equipment and the necessary networking equipment. Internet connectivity is provided by one community, a non-profit organization that provides broadband network access to educational, government, research, arts, cultural, non-profit and healthcare organizations.

Internet connectivity is provided by OneCommunity, a non-profit organization that provides direct broadband network access to schools, libraries and senior centers for virtual field trips. The OneCommunity ultra-broadband network is well suited for video streaming in distance learning applications.

"The ultimate test was going to be if Cathy and her team could broadcast video from anywhere within the Zoo, indoors or outside, and have the people on the receiving end enjoying a good quality video conference," says Lynch.

The project was a success. Children on the receiving end of the video could not only see elephants, they could see everything from the elephant's Zoo habitat down to their wrinkles.

The TSI and Cisco solution that provides video studio mobility for Cleveland Metroparks Zoo's distance learning program has expanded the program beyond what it could achieve from its former studio locations. It has also put the program at the forefront of video and wireless technology.

"What is so exciting about our new capabilities is that it gives the schools participating in our program exactly what they want: to enable students to see the animals," says Ryan. "Moving outside the walls of a classroom is what distance learning is all about." Today, instead of an animal keeper standing in front of a white board in the video studio, the keepers are broadcasting from directly in front of an animal habitat. They can show how diets are prepared and how animals are fed. An amphibian keeper at the Zoo prepared a program on how Golden frogs are being infected by a fungus, and Ryan wheeled the video equipment right into the Zoo's RainForest complex. The video broadcasted everything from exhibited amphibians, to feeding tiny fronts, culturing crickets in a breeding box.

Ryan says the new Distance Learning capabilities have sparked a huge interest with the Zoo's animal keepers, as it allows them to share their knowledge and their passion for what they do with students all over the nation.

"I am very excited about the recent addition of a wireless videoconferencing network at Cleveland Metroparks Zoo," says Zoo Director Steve Taylor. "It is a tool that we can utilize to assist us in our mission to improve the future for wildlife. This new system will not only increase the distance learning opportunities for our Conservation Education programs for elementary, secondary and college level classes, but also videoconferencing opportunities for our veterinarians, researchers and administrative staff with their counterparts or other organizations."

The Cisco Wireless Mesh Networking solution has Cathy Ryan and the Zoo staff thinking about more ways to use the technology. For instance, the Zoo has a state-of-the-art animal hospital, the Sarah Allison Steffee Center for Zoological Medicine. The hospital offers an educational learning lab that school groups can visit on site. With the new mobile video technology, the hospital can bring that educational component to classrooms across the nation. It can also broadcast from a variety of areas. For instance, Ryan describes how a surgical procedure can be shared with other veterinarians and veterinary students. She

is already putting plans in place so that veterinary medicine students at nearby universities can watch surgical procedures.

And TSI's Lynch points out that the Zoo is not limited to using its Cisco Wireless Mesh Network just for video.

"Once the wireless infrastructure is in place, the Zoo can go beyond videoconferencing," he says. "It can use the network to track the location of equipment or supplies by attaching RFID (radio frequency identification) tags and utilizing the Location Tracking feature of the Cisco system. If they want to, they could even track Zoo visitors. For instance, families with small children could have the children tracked should they run off."

It is this kind of thinking that drives utilizing technology innovation for business transformation. With Cisco advanced technology and a committed partner in TSI, Cleveland Metroparks Zoo has broken down the barriers of classroom learning, and opened up new ways to share its resources with the world.

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