

Paradise Valley Unified School District

Paradise Valley connects with Logicalis to build the largest district-wide wireless network in the nation for a school district.

The Paradise Valley Unified School District offers a premiere education to students in kindergarten through grade 12 with 31 elementary schools (free, full-day kindergarten through grade six); eight middle schools (grades seven and eight); and six high schools (grades nine through 12). The district offers a variety of education choice programs, including K-12 International Baccalaureate, Core Knowledge®, S.T.E.M.G2 (Science, Technology, Engineering, Mathematics and Global Geography), Digital Learning Center, fine arts, career & technical education, before- after-school programs, sports and extracurricular activities for all ages. The district is located in 98-square miles of northeast Phoenix and a portion of north Scottsdale. With 33,500 students, we are the seventh-largest school district in the state of Arizona.

The Paradise Valley School District (PVUSD) faced the challenge of economically and flexibly connecting a 47 campus district. The buildings are spread over 98-square miles of rolling terrain and need to connect back to the District's Administration Center. Each of the campuses download Giga-bites of data back to the District Administration Center for critical record keeping information for the 34,000 student district population daily. With Excess Utilities going away in Fiscal Year 2008/2009 and the future uncertainty of Federal E-rate funding, PVUSD decided it was time to build out their own private WAN infrastructure. The question and challenge facing Paradise Valley USD was how to accomplish this major feat.

PVUSD had been paying for T-1 connections between all the campuses. The lines were expensive and cumbersome but were required to handle the voice, video and data traffic created by a district teaching students in Kindergarten through 12th grade. The district, situated in the fast growing area of northeast metropolitan Phoenix and the southern edges of North Scottsdale, was pushing the limits of the T-1's bandwidth and reliability.

Innovation by Design

Logicalis developed a design with the district and other vendors to develop a network enabled for Internet Protocol Television (IPTV), Voice over IP (VoIP), and eLearning applications connected through secure wireless connections.

The implementation used Ceragon FibeAir™ links to the campuses with 1 Gig-E Ethernet connections to the high schools, 100Mbps Full Duplex to the middle and elementary campuses, and a GigaMax 1.25 Gbps link to the Distribution Center.

The bandwidths of each link were determined after evaluating the data needs of each campus type. With the districts move to IP video distribution as well as IP telephony it was determined IP traffic was the priority and standard for the district.

The majority of the campus links were mounted directly to the existing campus structure. The links were strategically placed to ensure un-interrupted connects between the links using Line of Site (LoS) studies. The District Administration Center (DAC) required the erection of a 100ft monopole along with a 65ft monopole at Desert Shadows Middle School that replaced an existing light pole. Logicalis worked with the District to ensure community buy-in and approval of the added wireless monopoles. As an AZ Licensed General Contractor, Logicalis handled the entire zoning process with the City of Phoenix, Federal FCC licensing and foundation and construction requirements of the project.

The links operate primarily at 18GHz and 23GHz frequency spectrums transmitting data from the Cisco network systems pre-existing within the district campuses. The network is designed for 99.999% reliability with continuous operational monitoring done by both the district and Logicalis via Intermapper software.

The District is now leveraging their existing Cisco network and the new campus-to-campus wireless connection to integrate a VoIP system using Cisco IP Phones in classrooms, administrative offices and everywhere in-between. Because the voice traffic is routed over the data network, inter-campus calls come at no additional cost, providing the early and long-term return on investment (ROI). The District campuses also enjoy wireless mobility via Cisco 802.11B/G Wireless LAN (WLAN) with an 802.11N deployment in process.

“ Our students and teachers will enjoy an improved educational experience. ”

Jeff Billings, Paradise Valley Unified School District