



Project reference

Fort Drum

Customer

U.S. Army, Fort Drum,
New York

Integrator

SIGCOM

Technology

Video/Audio over Fiber

Market

Government

Challenge

Networking video and audio over a 167 square mile fiber plant

Solution

Optelecom 9000 Series
Optelecom 9152D Video
Multiplexer Optelecom
DPX-200 Audio Multiplexer

Fort Drum Army Base uses Video over Fiber Technology for Observation and Training

At Fort Drum, New York, the U.S. Army operates a training center dedicated to simulating military conflicts for U.S. troops in urban areas. Units such as the 10th Mountain Division use the Military Operations in Urbanized Terrain (MOUT) Site to simulate urban battlefield tactics complete with smoke effects, smells of war, mobile targets, explosions, and other battlefield effects. Fort Drum's application required bringing video/audio content from the MOUT site's many cameras back to a central command center over distances up to 40 Km.

Network Challenge

The U.S. Army and their team managing MOUT decided to work with SIGCOM, a systems integration company specializing in video, security, data, and telecommunications projects. It was SIGCOM's responsibility to install and support much of the project including an elaborate fiber optic cabling infrastructure supporting the audio, video, control systems, and the recording solutions capturing the video content from each exercise.

There were a number of challenges they faced:

Video/Audio Connectivity - their first need involved finding a way of moving video and audio content from different sources around a campus of over 167 square miles. From their central command site senior personnel needed to observe the live video/audio feeds for both observation and command/control.

Large Amounts of Information - secondly, how could Fort Drum bring back more than 200 cameras and not completely fill up all of their network resources? Something had to be done to maximize the use of their fiber.

Safer Working Conditions - finally, and perhaps most importantly, Fort Drum and SIGCOM needed to balance creating a safe work environment with the need to monitor and maintain the system in case of fiber breaks or equipment failure. This constant monitoring requirement presented hazardous conditions to anyone on the site particularly when training exercises were going on.



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Network Diagram

Model 9152D equipment transports eight channels of composite video up to 40 Km over one single-mode optical fiber with a 10 MHz bandwidth. The Model DPX-200 units add two-channel high-fidelity (20 kHz bandwidth) stereo sound capability to each video channel.

Network Solution

The first challenge for Fort Drum and SIGCOM was handled by the decision to use fiber cable as the backbone of their network. Using mixtures of multimode and singlemode fiber they were able to create a series of unbroken, contiguous communication links over distances up to 40 Km.

By selecting TKH Security Solutions USA as their vendor for video/audio transmission equipment, Fort Drum, with the help of SIGCOM, maximized the use of their fiber by multiplexing large amounts of information on a single strand. Using the Optelecom 9000 Series, they were able to multiplex up to eight (8) video channels and sixteen (16) audio channels over a single fiber.

This ability to multiplex was the key to maximizing the use of Fort Drum's existing fiber infrastructure; by moving multiple channels over a single link, large portions of their fiber plant went unused making it available for future applications.

The Optelecom 9000 Series also made it possible to support Fort Hood's requirement

for maximizing safety. Using their Network Management Software (NMS), Fort Hood had the ability to perform complete system diagnostic routines from the safety of their central command center. The NMS shows the operator the power level of each optical carrier as well as the operating characteristics of all cards in the system, enabling him to trace a fault to a specific camera, fiber segment, or other component.

The high quality of TKH Security Solutions USA's equipment was only part of why SIGCOM made this supplier recommendation. Prior experience with TKH Security Solutions USA as their vendor on a number of similar applications was also a factor. Derek Nelsen, Senior Engineer of SIGCOM, writes, "In addition to the technical capabilities of the Optelecom gear from TKH Security Solutions USA, I feel comfortable with its proven performance and quality."

