



Organization

Air Force Reserve Command

Industry

Government

VBrick Products

- **VBrick Dual Channel Media Encoders**
- **EtherneTV**
- **Video On-Demand Servers**
- **VBrick WM Encoder**

Applications

TV Broadcasts, Live and On-Demand Video Broadcasts

Air Force Reserve Command

Design and Implementation of a Video Distribution System

The Air Force Reserve Command (AFRC) is a major command (MAJCOM) of the U.S. Air Force headquartered in Robins AFB, Georgia. With 12 base operations, the AFRC is responsible for providing combat-ready units for active duty to augment the regular component of the Air Force for any national security mission.

The Challenge

The AFRC was evaluating solutions to reduce their total yearly cable communications spending. Through traditional cable service hook-ups at a variety of locations throughout the bases, the AFRC was expensing more than a half million dollars a year in cable access charges.

Additionally, a multi-cast signal was also desired to ensure the user community would have access to Video-on-Demand (VOD) programs, commander broadcasts, as well as their location's local channels and news.

The Solution

An EtherneTV system designed to deliver live and stored video

The VBrick solution met and exceeded all the requirements from AFRC. The basic design begins with the reception of video from the local bases' video satellite headend. The system receives standard NTSC video from a number of sources for various application requirements. Examples of video sources are a satellite video headend, local cable television provider headend, DVD, VCR, video camera, or any other item producing a standard NTSC video output.

VBrick's solution includes a minimum of 6 channels of encoded content for each of the 12 bases in the AFRC. Each video channel interfaces with a Windows® Media encoder for conversion to a Windows Media video stream.

The encoded video stream is presented to a GFE provided multi-cast enabled switch for transport on the base network. At the core of the video distribution system is the Portal Server. The Portal Server is part of the Media Control Suite and is the management platform for managing all video streams, encoders, and video-on-demand servers.

The Portal Server provides a simple interface to easily locate live and on-demand media assets as well as a calendar-based Scheduler and a dedicated Network Video Recorder platform. It employs an easy-to-use GUI interface and includes a software development kit (SDK) for customized titles, organizational logo's, and administrative messages.

The system design included integration of VBrick Windows Media Encoders to receive a video signal from the satellite headend equipment. The encoder provides an IP-based video stream to the IP multi-cast enabled network for connection to a Portal Server/Media Control Server, VOD Server or directly to the end user. The Portal Server provides the individual users with a viewing guide and system administrator's control of the video network. The VOD server provides stored video distribution as enabled by the system administrators. The video-on-demand servers are capable of 125Mbps of streaming throughput and provide unicast and multi-cast capability with the ability to schedule multi-cast sessions. Set Top Boxes (STB) deployed at user locations decode the Windows Media video stream and present a standard video signal to local television.

The VBrick technology provides several key system requirements for supporting mission critical applications:

Ubiquitous Access

Captures and delivers video from any source to any client

Reliability

Uninterrupted access 7 x 24 x 365

Network Citizenship

Optimized, non-intrusive performance across multiple network topologies.

Real Time Performance

High quality, full motion, full screen video

Live and Stored Video

Provides a simplified and unified user and network administration environment to access and manage both live and stored video.

Operational Control

Real-time and pre-scheduling administrative tools to manage video operations and events.

Secured Access

Protects live and stored video assets and manages access privileges across a growing population of users.

User Simplicity

Intuitive, browser-tools to simplify the search, selection, and viewing of Live and Stored video assets by a wide range of users.

The Solution, continued

Each base design included an equipment cabinet where components were installed and connected to a patch panel to provide cable management and ease of integration with the base level network. Once each system was assembled, pre-configurations of the system were performed based on specific information. All system configurations and IP addressing schemes were fully documented and provided prior to shipment.

A test lab video network was used to perform complete system operational tests after system configuration was completed. All tests performed were also documented and provided to the end user for each system. Configuration management data was provided for each system prior to shipment.

The Benefits

AFRC realized multiple benefits from the VBrick installation. Most significant was a return-on-investment within 6 months, supported by an 85% drop in annual cable signal access costs. This achievement was directly due to the reduction of the number of cable drops needed to provide service to all locations.

In addition, the AFRC is able to customize the amount of bandwidth utilized by the channels (to provide better resolution or less depending on the bandwidth available) regardless of how many individuals are watching the signal. This is a benefit of multi-casting as opposed to unicasting that eats up the bandwidth based on the number of users).

Video functionality was greatly increased with the additional features currently being used for training, TV for set-top boxes as well as to the desktop, base event broadcasts, and other user generated content that is stored and distributed through the video on-demand server.

EtherneTV Media Distribution System

