HARRIS

Intelligent Connectivity Solutions

NetVX™

Application Note

Video Over IP

NetVX™

Situation

A television station group owner wants to distribute Standard Definition (SD) and High Definition (HD) video between sites and is considering all of the alternatives. Recent advances in video compression technology and bandwidth scalability have created new possibilities. Now, it is not only possible to provide high quality video services over DS-3 and OC-3 connections, it is also practical to send video over Ethernet / IP. Implementing a successful solution calls for efficiency at the headend of the video network with design consideration for maximizing the "best effort" IP network.

Solution

NetVX was designed to support video transport over a wide variety of services. NetVX can support HD, SD, and Video over IP (VIP) encoding / decoding / multiplexing in a single network-agnostic system. The flexible and cost effective video transport over ATM, IP, DS-3, fiber (OC-3), Satellite, and Microwave enables broadcasters to efficiently maximize their repurposing of content. Now broadcasters can encode the video once and deliver it multiple times simultaneously over a wide variety of formats and transport mediums (e.g. TCP/IP, UDP, TDM, ASI, ATM, SMPTE-310). This functionality provides a solid foundation upon which video network operation centers can branch out to support the current demand for their video content and the variety of services their viewers desire.

Besides traditional methods, NetVX supports Video over IP (VIP) for broadcasters and video content owners. NetVX can encode Standard Definition or High Definition video or receive pre-encoded video via the Transport Stream module. Once a stream is created or received, it can be wrapped in IP with or without Forward Error Correction (FEC) and transmitted to remote locations point-to-point or multi-point over private or public facilities. Additionally, operators can transmit small streams, large streams, or a combination of streams uni-directionally or bi-directionally.

As part of an integrated high-speed networking platform, the GBE-C11 Gigabit Ethernet module supports hundreds of Megabits of video streams and the Pro MPEG Forum Forward Error Correction (FEC). This capability ensures the highest possible video quality at the lowest bandwidth rates, plus the wide variety of available decoders on the market can decode NetVX video over IP streams.

In addition to supporting Video over IP, the GBE-C11 Gigabit Ethernet module can also be used with private and leased lines to aggregate voice and data traffic efficiently. It is suitable to small, regional or large, geographically dispersed implementations. To ensure high quality video is given the highest priority, the GBE-C11 supports IEEE 802.1Q VLAN tagging and TOS marking.

NetVX can utilize IP over private Intranet or public Internet services to transport video and other station services. Television stations can launch Ethernet / IP network designs used for video studio to transmitter links (STLs), news video contribution, as well as the distribution of programming (live or file-based) using NetVX and video over IP. These stations can take advantage of unique branding at each market and off-air confidence monitoring backhauled from each site. Tunneling data services like remote control status, security, LAN, and telephone extensions is also possible to help reduce remote site operating expenses. The packet-based architecture of NetVX makes all of this complex functionality possible, yet simple.

A broadcaster can utilize both public and private network circuits, retaining complete control of channel allocation and providing the ability to monitor their facilities throughout the network. Paths can move multiple channels of video, audio, voice and data in both directions. Some channels are used for program streams, while others are effectively backhaul feeds for news,

and still others are used for monitoring. Using a simple quad split, technicians can confidently monitor a variety of points along the signal path, which aids in improved troubleshooting and reduced response time.

Remote equipment control via SNMP and browser-based interfaces make the NetVX monitoring and configuration changes quick and easy.

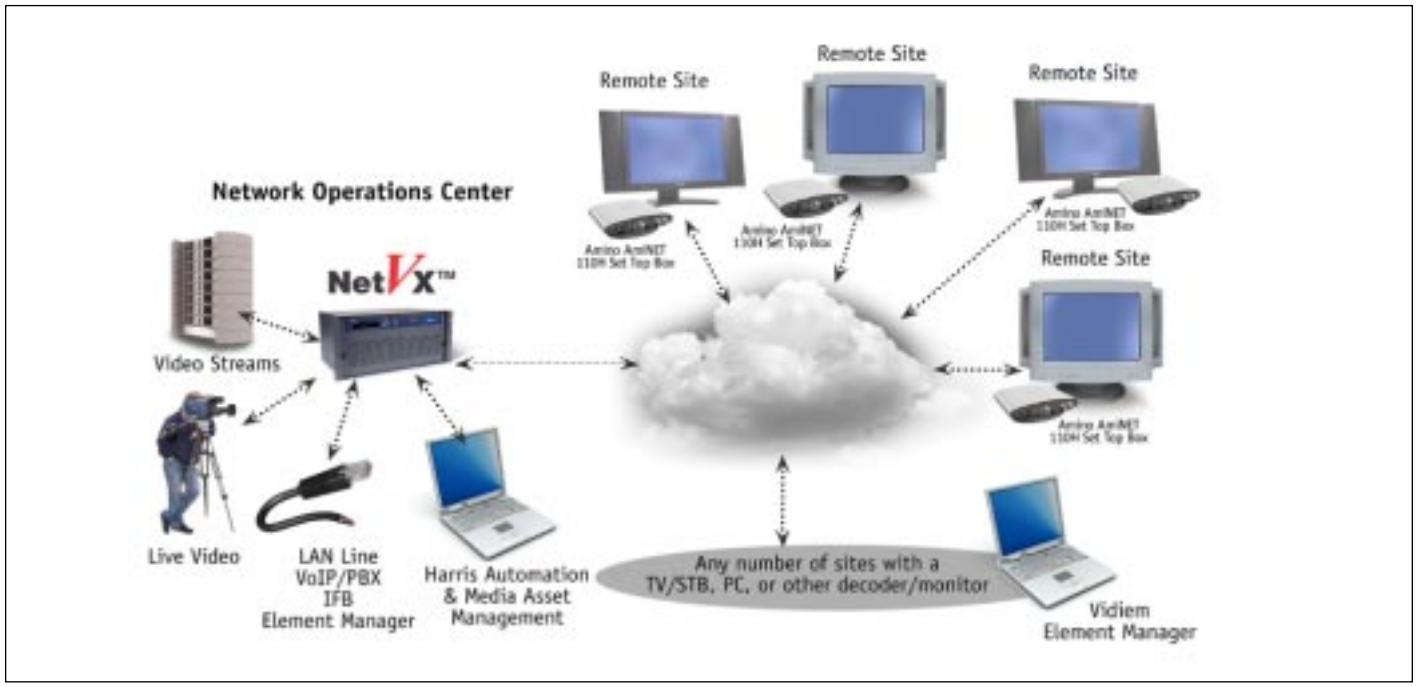
By design, NetVX Video over IP can interoperate with third party products that adhere to VIP standards. As an example of standards compliance, for direct to a consumer or service provider applications, a PC with appropriate client software or a consumer set-top box such as the Amino AmiNET 110H can decode NetVX MPEG-2 streams. The Amino AmiNET 110H Set Top Box has an Ethernet connection and is capable of tuning into and decoding the NetVX Video over IP signals. The Set Top Box has a number of outputs to drive various Video Displays and Surround Sound Audio. The Amino AmiNET 110H also has an optional remote control and wireless keyboard, providing access to an internal web browser, e-mail, and other web services.

For additional applications where multiple or split-screen operation is desired (e.g. 2, 4, 6 simultaneous viewing channels), one Amino AmiNET 110H Set Top Box will be required for each channel displayed.

A station can bring in a multiple program transport stream into NetVX via an ASI port. This same bouquet of video programs (usually from a network operator) can be sent from NetVX as video over IP flows over the local area network. In offices and other areas, low-cost set top box decoders or PC-based MPEG software decoders can allow non-broadcast operators to QC or monitor video programming for later use or editing. This enables operators to create an inexpensive in-house monitoring system including any or all video that is in a NetVX frame.

As Ethernet/IP becomes a universal service platform, NetVX can be utilized to support all kinds of VIP applications. Moreover, the platform supports Voice over IP, Internet access, wireless, Corporate VPN, and assorted file transfer applications. NetVX provides operators with the tools required to segregate traffic, assign priorities and control bandwidth to achieve higher communications efficiencies.

For more information or a demonstration, please contact your Harris salesperson. Harris has technical assistance available to facilitate your video network planning. Harris is prepared to help you benefit from a wide range of integrated digital technologies.



Equipment Used In This Type Of Project

NetVX, Harris Microwave Products, PSIP generator, ReCon Remote Control, Flexicoder, Datacasting, Playout Automation, Media Asset Management

For More Information

Latest NetVX Features Press Release
www.broadcast.harris.com

Specifications are subject to change. For a complete listing of the most current specifications, please visit our Website at ***www.broadcast.harris.com****.*

HARRIS

Broadcast Communications Division | 4393 Digital Way | Mason, OH USA 45040
phone: +1 513-459-3400 | email: netvx@harris.com | **www.broadcast.harris.com**

*assured**communications***™

Printed in USA on Recyclable Paper HMC 17365 PatentedPr ADV. 3251 3/06