



Guangdong Microwave May 2006

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The Company

Guangdong was the first province in China to be opened to foreign investors and today is the most developed province in the country. The Guangdong Province Radio, Film and Television Bureau is the functional administration which supervises the radio, film and TV industries on behalf of the Guangdong Provincial Government. It is responsible for transmission of television and radio programs throughout the province.

The Goal

The Guangdong Province Radio, Film and Television Bureau needed a solution that would ensure continuous, reliable transmission of programs to all TV subscribers and the entire radio audience, in rural areas throughout the province as well as in urban areas. Because Guangdong Province is very mountainous, a secure, reliable and governable microwave network is the best choice for transmitting digital TV and radio programs to all subscribers. The Technical Center of Guangdong Radio, Film and Television Bureau (hereinafter abbreviated as GDMW) is responsible for transmission of TV and radio programs over the microwave network.

GDMW initiated a province-wide project to build the biggest digital TV microwave contribution and distribution (C&D) system in China. GDMW wished to leverage its investment and boost revenues by offering data transmission services over its microwave network as well.

The Challenge

GDMW needed to quickly establish a robust, reliable and cost-effective DTV transmission platform that performs MPEG-2 encoding, aggregation, grooming of 24 TV programs and 24 audio programs at the headend, for digital distribution to 45 remote sites. From these sites, programs would be transmitted to subscribers as analog. In addition, local content would be contributed from major remote sites and received at the main headend for redistribution.

Ongoing management of the huge amount of equipment that would be installed at 45 remote mountain sites throughout Guangdong Province represented a major challenge, due to the large distances, poor infrastructure and rough terrain. Similarly, a highly reliable local support organization had to be developed to handle all questions and problems promptly and efficiently.

During the start-up phase, installation, integration and, in particular, extensive training of local staff throughout the system's operating area was a challenging and critical task, requiring a supplier with extensive resources and a high level of dedication. Continuing education for operators and support personnel would be necessary as well.

The Solution

GDMW's new Scopus C&D system went live for its test run in October 2005 and passed the official primary check and acceptance in March 2006. The system is distributing 24 DTV programs and 24 digital audio programs through three DS3 channels to all 45 remote sites.

All programs are sourced from TV stations and Radio stations in SDI and AES/EBU format. The programs are divided into three groups in the main GDMW headend. For each group, N +1 redundancy is provided for encoders and 1+1 redundancy for multiplexers.

Proven, reliable E-1200 encoders feature Scopus' highly effective parallel encoding, applying state-of-the-art compression techniques to SDI video sources for high quality video with excellent buffering control.

Stable, proven RTM-3300 multiplexers eliminate the need for ASI matrices between encoders and multiplexers by leveraging their port redundancy functionality. The embedded DS3 output interface feature reduces system complexity and enhances system reliability.



The headend system also includes a contributed channel processing sub-system. Fourteen IRD-2600s receive contributed streams from remote sites. IVG-7000 intelligent video gateway processors then aggregate and groom selected channels from the contributed transport streams, using GbE ports to transmit the content to the TV station.

At each remote site, three IRD-2600 units with embedded DS3 input and ASI outputs receive the transport streams distributed by the SDH network via microwave. An additional twenty-one IRD-2600 are cascaded using ASI loop-through with the IRD-2600s that received the content to decode 24 programs for local terrestrial broadcast.

An E-1200 encoder with DS3 outputs is installed in each remote site that contributes a single local channel, while two E-1200 encoders as well as a RTM-3300 are installed in remote sites that contribute two channels to the main headend. An additional E-1200 encoder, RTM-3300 with DS3 outputs and IRD-2600 with DS3 input and ASI outputs is used in other remote sites for saving DS3 channels.

Remote network management is accomplished by the Scopus NMS-4030 Network Management System. The NMS enables an operator at a central location to configure, control and monitor headend equipment as well as equipment located at all remote sites. Management is accomplished via six microwave network E1 circuits.

Mr. Liang Dachu, Director of Technical Center, said, "Scopus performed admirably throughout all the stages of implementing this large project. The quality of Scopus products is reflected in the superior system performance. We are very satisfied with their terrific work."