iDirect Solutions for Broadcasters: Making Field Applications Bandwidth Efficient

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Advancing a Connected World

iDIRECT

For broadcasters, a critical component in gathering information from the field is the SNG truck or the remote field installation. Getting information between the central site and remotes is limited to the video returned and cellular connectivity for voice and data. Besides being slow and unreliable – and often not available at all – the high cost for these connections can be prohibitive.

The Limitations of SCPC

Having field deployments that look and feel like being at headquarters has long been the Holy Grail for broadcasters. In the past, disparate solutions have been applied to each application supported, resulting in a multitude of expensive, difficult to manage methods for connecting a remote site to headquarters.

More recently, SCPC satellite connections have been used to provide connectivity for the remote field systems. While an improvement over multiple disparate systems, they are still very expensive and inflexible. SCPC, by its very nature, requires that a specific carrier be allocated to each particular remote system. However this bandwidth isn't flexible. As applications come and go, the bandwidth remains fixed, resulting either in wasted bandwidth if it's not being used, or too little bandwidth if there's a lot of activity at that remote.

Broadcasters pay for this dedicated access no matter if they're capturing live news, or the truck is out of service in the shop.

The Advantages of Deterministic TDMA

There's a more efficient method – today's satellite systems can accommodate a much more flexible and cost-efficient use of bandwidth, and support all IP communications in the field, including data, voice and video.

iDirect's Deterministic – TDMA (Time Division Multiple Access) (D-TDMA) is a sophisticated IP data transmission scheme that delivers greater bandwidth efficiencies and responsiveness by managing a pool of satellite bandwidth across multiple remote locations. The bandwidth demands at each remote satellite router are constantly monitored by the system and satellite bandwidth is automatically allocated *based on the actual need at each remote*.

The system has an integrated set of Ethernet ports that function as an IP router. Using IP as a transport mechanism is critical. With its advanced routing capabilities, the system can prioritize applications appropriately to ensure that the most critical information receives the required bandwidth across the network, while low priority applications are buffered and wait for network resources. This guarantees that a live video feed or voice applications take priority over web surfing, for instance.

What's more, since a dynamic bandwidth allocation system consumes few resources when there is no demand, literally dozens of remotes can be up and running simultaneously on a single satellite carrier. Only when a remote indicates a need for connectivity will resources be assigned. This results in a large, intelligent, always-on network that shares the expensive satellite bandwidth across many remotes.

The manageability of the network from the central site is greatly improved as well, since operations staff can communicate with any remote at any time. This centralized operations group can access all equipment at the remote for configuration changes, software upgrades or system monitoring anytime, all the time.

Bringing the HQ Experience to the Field

With an IP-based infrastructure extended to SNG trucks or remote field sites, a number of key applications can be easily supported, including:

- VoIP
- Internet Access
- HQ Intranet Access
- Voice-based (Hoot and Holler) Systems
- Operations Control / Management Systems
- Store and Forward Video
- Real Time Streaming Video

While the primary goal of this integration is to bring the experience of a headquarters office environment to the field, it must be done in a controlled manner to ensure reliability and security.

VoIP is a major application at remote sites. Typically the iDirect system can be cost justified based on this application alone. Today, most voice traffic from the remote is provided via cell phones. In some areas with weak signals, connectivity is a big hurdle. In areas with good signals, the cost of multiple users each using their phones can result in thousands of dollars in cell phone bills. Some users have implemented VoIP systems that interface to traditional cordless phones issued to members of the team. The calls are clear, reliable and save the broadcaster a considerable amount of money.

Broadcast systems also frequently rely on Hoot and Holler systems during video production. Today many of these systems are IP-based and are plugged directly into the iDirect system.

Data applications can also be integrated into the remote system. Usually traditional Internet web surfing and email are handled using best effort services, since they're normally not considered as critical as voice and data. These applications integrate easily behind the D-TDMA satellite system.

Naturally, when it comes to access to headquarters networking, security is critical. The iDirect system can be configured with sophisticated encryption algorithms to protect the information flowing across the satellite.

Transforming the Way News is Collected

iDirect supports a spread spectrum capability enabling dynamic antenna systems to track satellites as vehicles are on the move – trucks have full access to their applications anytime, anyplace. RV-based remote systems, for instance, allow reporters to contribute to stories literally while traveling between locations.

By adding IP-based real-time video compression, this system can also support the transport of high quality video to a central site while the vehicle is moving. This is an exciting, new enhancement making a big difference in the ways news and other remotes are viewed.

Low profile, mobile antennas represent a major change to the way news will be collected in the near future. These antennas can easily be attached to a low cost, smaller vehicle, even a small SUV. The antenna integrates the LNB and BUC – the only external equipment required are the satellite router (about the size of a laptop PC) and the camera / video encoder.

Although a system like this will not replace the SNG truck of today, they provide a great supplemental video collection system that is less expensive, more nimble and able to be deployed very quickly. These vehicles can be built for less than $100,000, making them increasingly available in the small to mid-tier cities that previously could not afford their own SNG vehicle.

Putting it All Together

Today's IP-based satellite systems offer a reliable, cost effective and easily-managed solution for the SNG environment. When deploying such solutions, implementing the following key features will result in optimal system performance:

- **QoS** – Quality of Service mechanisms that allow applications to be properly prioritized
- **Dynamic bandwidth allocation** – Bandwidth must be allocated and de-allocated quickly so that applications can have access to the network when they need it. Demand must be assessed multiple times every second to make this effective.
- **Voice features** – The ability to recognize voice and manage it so that the system does not add undue latency (or worse, jitter), even when there are data and video applications running simultaneously is critical. If these aren't managed properly, people will quickly resort to using their cell phones.
- **Frame segmentation** – An absolute must when video, voice and data applications are mixed.
- **Spread spectrum** – enables ultra-small dynamic antenna systems to track satellites as vehicles are on the move.

Conclusion

iDirect provides the industry's most advanced IP-based satellite technology to help broadcasters close the gap between the field and headquarters.

The iDirect Intelligent Platform integrates advanced features into a portfolio of hubs, routers and network management software to address the growing complexities of SNG applications, allowing broadcasters to craft the most flexible, efficient bandwidth levels to match their needs and support all IP communications in the field.

Because the system is able to rapidly allocate data wherever it's needed, broadcasters can more easily support evolving real time video applications that are transforming the way news is collected and distributed. As a result, iDirect technology continues to be rapidly adopted worldwide —trusted to support critical IP applications—making satellite communications a more reliable way to get and stay connected.

For more information, contact iDirect at www.idirect.net.