Radyne's SkyWire Gateway SNG

White Paper

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RADYNE

SkyWire – SNG Mobile Manager
On Demand Live Video &
Always-On Communications and IP Data

Introduction

The goals of this document include the following:

- Provide a brief overview of Bandwidth on Demand as it relates to the news gathering community.
- Identify how the SkyWire platform can be used with an SNG, mobile or fly-away fleet of news gathering products.
- Discuss On-Demand Video capability and always-on communications and data capability using SkyWire as the basis for communications ground equipment.
- Provide an example of SkyWire networking capability for news gathering in the field.
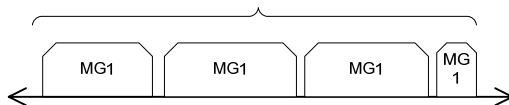
Overview of the Problem

The "Ultimate Goal" of any network is to seamlessly connect all of your communications assets easily and across many different applications. Broadcasters are no exception. You are looking for a simple way to connect headquarters, affiliates and mobile assets across the entire network. We want the ability to communicate by phone, enable large file transfers, get access to the internet, data and of course access to live video feeds from any location to any location. Much of this infrastructure already exists between broadcaster headquarters and affiliate stations. What is missing is the all important connection and communication to the mobile assets in a simple / seamless environment.

Satellite communications is one of the primary physical connections to the mobile environment. Satcom is robust, tested, available and accessible virtually everywhere. However, satellite communications is not necessarily easy to coordinate; it is limited in capacity and certainly not inexpensive. These pitfall elements of satellite communications are in many ways inter-related. If capacity were unlimited and inexpensive there would be no reason to coordinate satellite communications. A mobile asset could simply nail-up large circuits and uplink video, data etc. at will. Satellite capacity IS limited and it does not look like it will be inexpensive any time soon. The "holly grail" is the ability to have your mobile assets effectively and efficiently utilize your satellite capacity in a simple manner.

Currently most systems have no BW Sharing: Requires cooridination of Video Channels and Comms Channels
Result: Wasted BW and difficult to manage

Ex: Multiple Carriers 15Mbps total BW required

| MG1 | MG1 | MG1 | MG1 |

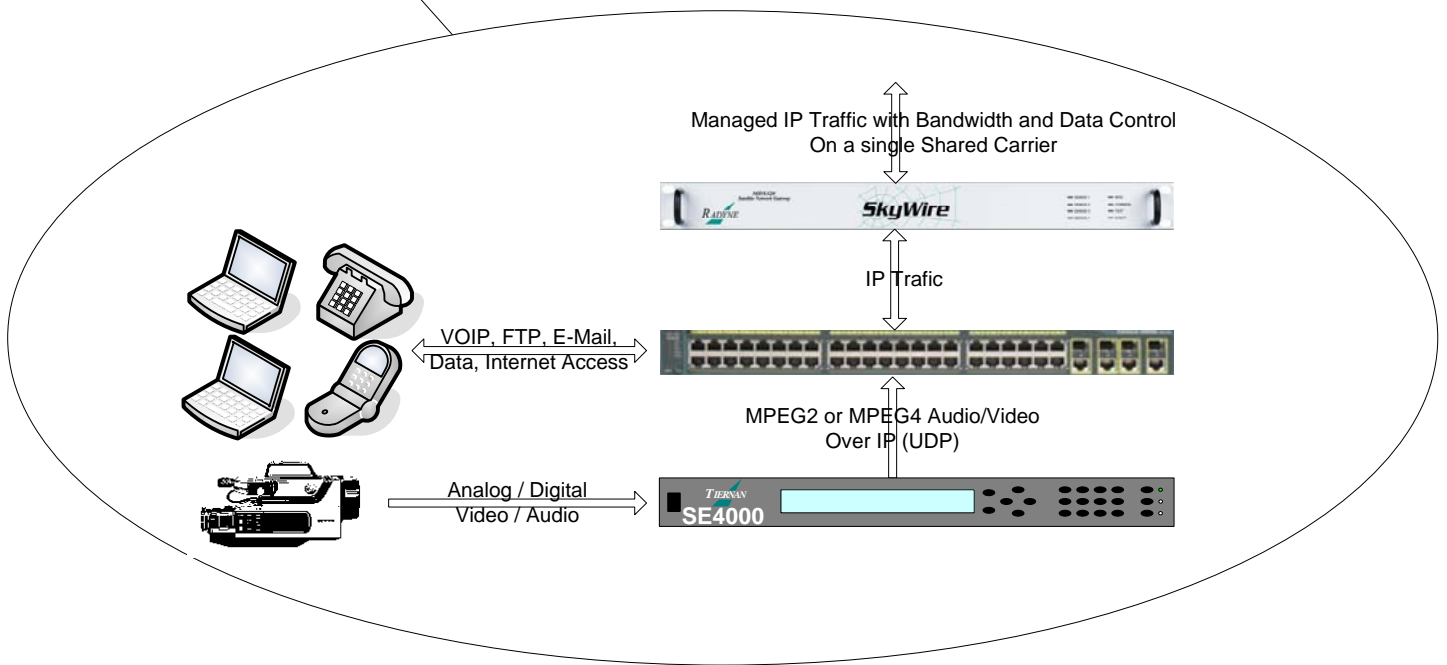With SkyWire:
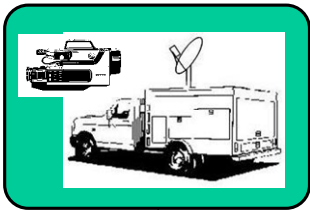All Mobile Assets Share a Common BW Pool

Ex: Single 9.5Mb Carrier

| MG1 |

The Solution We Want

Broadcasters are looking for a simple, reliable solution that will enable multiple applications to exist on a single connected network. We want video, data and communications without complicated coordination of satellite bandwidth, aggravating cell phone calls and mobile operator intervention and assistance. We want to set-up the mobile site, push a button and have full communication and control of the mobile asset:
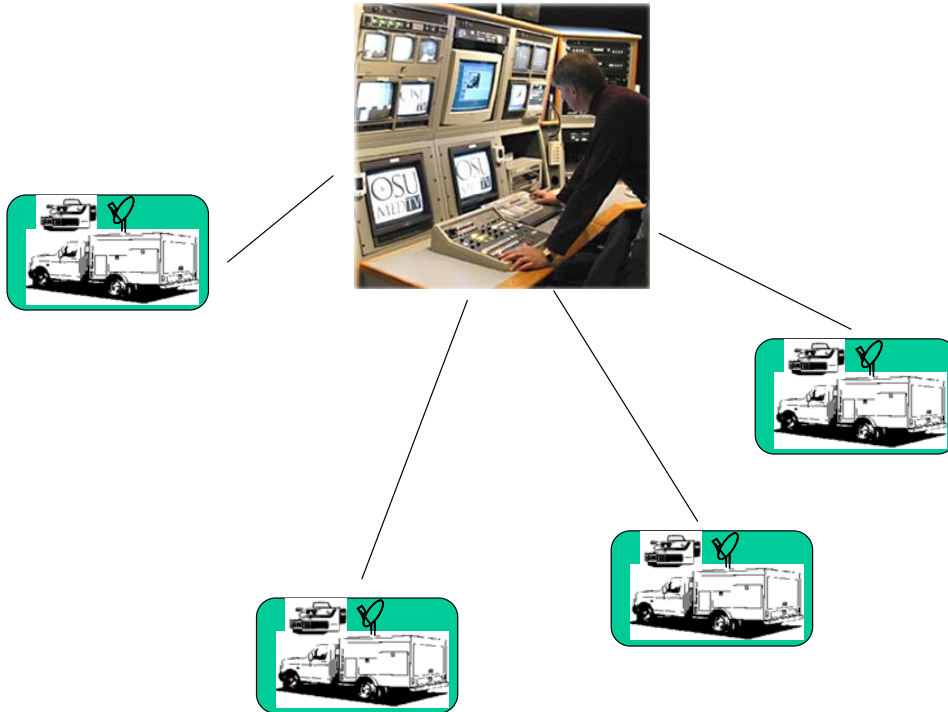
- Live Video Feeds
- Contribution and Distribution File and Video Management
- Telephone Communications
- Internet & E-Mail Access
- Access to Company Intranet

Managed IP Traffic with Bandwidth and Data Control
On a single Shared Carrier

IP Trafic

VOIP, FTP, E-Mail,
Data, Internet Access

MPEG2 or MPEG4 Audio/Video
Over IP (UDP)

Analog / Digital
Video / Audio

Note: Always on voice, data and IP access are in service whenever the mobile operator has satellite communications. Video over IP is On-Demand and allocated by the network operations center either on an as needed basis or by way of scheduler.

SkyWire Solution Today

Radyne has extended the newsroom local area network (LAN) to the mobile environment. Your mobile newsrooms now can seamlessly incorporate voice, file transfers, data, and live on-the-air video shots as if they were managed in the studio. All of this is done through SkyWire's shared carrier TDMA technology.

The SkyWire-Mobile Manager integrates into existing IP based architectures. Live video can be provided via MPEG-2 or MPEG-4 compression. Numerous IP applications are now available to your field reporters such as e-mail, FTP uploads, VPN services, VOIP and more. The Radyne SkyWire system has redefined the way Satellite bandwidth is managed. This is a new approach to the mobile newsroom. The combination of Tiernan best in class real time compression equipment with the revolutionary SkyWire satellite communications system provides for more efficient news gathering operations.

Radyne's revolutionary new SkyWire MDX420 combines the throughput and robustness of a single channel per carrier (SCPC) system with the bandwidth savings of a time division multiple access (TDMA) system. SkyWire exploits the benefits of each to provide the ultimate in satellite network performance. SkyWire is the first TDMA broadband satellite system to eliminate the need for high stability references or an expensive central hub with complicated NMS software. With SkyWire's revolutionary single hop bandwidth-on-demand capability, the network responds to changes in traffic flow in 1/2 the time of other TDMA systems. The small efficient burst sizes and ultra low overhead allows SkyWire to provide unprecedented bandwidth efficiency and increased network throughput.

SkyWire's TDMA architecture offers 93% throughput efficiency – clearly the best TDMA efficiency in the market. Better efficiency translates into more bits used on video, data and audio and less on wasted air time. SkyWire's short TDMA frames structure and distributed bandwidth allocation algorithm provides fast TDMA reconfigurations and fast system response, perfect for VOIP and Video over IP. SkyWire's Ethernet interface connects directly with IP enabled video and audio

equipment without fear of protocol limitations or compatibility issues. SkyWire's mesh architecture provides single hop satellite connectivity between mobile newsrooms, head office or affiliate stations, allowing collaboration and information transfers between all users you deem necessary.

Other benefits include:

- No expensive central TDMA network controller for BW allocation
- No expensive GPS or clocking required
- No expensive network operator training required
- No single point of failure
- Carrier Class Layer 2 IP device
- QoS Capability, DifServ and CIR
- Near SCPC response times
- Hubless network operation
- Easy to add and remove new sites to existing shared bandwidth
- SkyWire prevents network obsolescence because your network can be upgraded to a star, mesh or Hybrid topology easily on a site by site basis.

Radyne Corporation offers a complete suite of compression and transmission products for the mobile newsroom. Combining the capability of Radyne, Tiernan, and Xicom. Best in class encoders, IRDs, modulators, and amplifiers.

Please visit our web site at www.radn.com to find out more about our products and SNG Mobile Manager.