EMSCoN™

General Description

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Anvil Technologies
EMSCoN™

Anvil Technologies is an integrated solutions provider specializing in solutions for Emergency Management (EM). Anvil's recently announced EMSCoN™ (Emergency Management Satellite Communications Network) solution is a high-quality, reliable, two-way satellite (Broadband) communications facility. EMSCoN's Broadband capability allows real-time, audio-visual applications and advanced multimedia, to be shared between remote incident sites and headquarters, or sites anywhere globally.

As a solution integrator, Anvil has worked with Telesat Canada to provide an end-to-end tested solution to meet the special needs of EM teams. Recognizing that EM teams need stable and dependable communications bandwidth to enable video streaming, voice communications and data exchange from critical incidents at remote sites to headquarters or other sites, Anvil has assembled a solution that supports these needs in a cost-effective manner yet does not sacrifice the bandwidth to other users on a shared service.

As soon as an EMSCoN™ link is established, usually in less than five minutes, encrypted video from each of the remotely deployed EMSCoN™ cameras, voice and data will be transmitted to a secure web portal housed at the department's EOC or other designated receiving station(s). Authorized remote users will be able to view, converse and exchange data from any location over a fully secured VPN (Virtual Private Network) by connecting to the EOC web host. Authorized remote users will also be able to control the PTZ (pan, tilt and zoom) functions of each camera.

When mated to Anvil's RECoN™ (Roaming Emergency Communications Network) EMSCoN™ provides fully secured video, voice and data connectivity between personnel in the field, On-Scene Command, the EOC and beyond.

The Anvil EM Satellite Communications Solution

Anvil has formulated EMSCoN™ as a new service that will allow EM teams to have point-to-multi-point two-way satellite IP connection between a teleport (i.e. a satellite communications centre capable of switching voice, image and data transmissions to and from any location) and the EM team's remote sites (incident sites, remote offices or EOCs, etc.), where the EM team has fully dedicated bandwidth at their disposal. Simultaneous voice and video conferencing, mission-critical video streaming and live data access to sites such as NOAA or Police data bases are well served by EMSCoN™.

EM team networks needs - regional and/or global - are met with secure, dedicated bandwidth virtually anywhere in the world for high-security communications. Dedicated modem assignments coupled with customers' own encryption schemes assure privacy.

While a .95m dish will work for certain situations, for maximum reliability and performance across Canada and the USA, EMSCoN™ 1.2m dishes are offered as standard with a duplex bandwidth of 512kbps (double the current normal uplink performance) – see Attachment A for the Coverage Area.

Transportable Platform

Manufactured by C-Com Satellite Systems, the standard EMSCoN™ solution mounts easily on top of vehicles (mobile Command Posts, RVs, SUVs, Vans, Trailers or any other commercial vehicle) or transportable platform and with the simple click of a button, the dish automatically deploys and locks on to the selected satellite.

Anvil also offers the Hyperlink Sat-Trak VR5 1.2m low-profile (12 inch stow height) dish for mobile situations where overall height of the vehicle needs to be minimized. The Hyperlink is Canadian built and has been tested in all Canadian climatic extremes. Maintenance free and rugged, it is constructed from aluminum and stainless steel for ultra cold weather, down to -55 C degrees (ancillary thermal protection systems are available for more extreme operating environments). It deploys in 2.5 minutes and is self-leveling. It includes a GPS.

For the ultimate in portable satellite systems, Anvil offers the “back packable” Norsat® GLOBETrekker™. It features built-in intelligence to enable an operator to establish a reliable broadband link (up to 4Mbps) – anywhere in the world - especially in remote, harsh and hostile conditions.

The Norsat® GLOBETrekker™ represents the next generation of portable satellite systems. It is fully automated with both non-technical and ‘power users’ in mind. The Norsat® GLOBETrekker™ simplifies transport

by helicopters, light aircraft, boat and even small vehicles. No bulky transit cases are required. It is 70% more compact than comparable solutions; is totally self-contained in shock protected backpacks and can be easily redeployed.

The Norsat® GLOBETrekker™ is ideally suited for users who need to initiate broadband communications on short notice or on a temporary basis. It also represents a good fit for users who are highly mobile:

- Special Forces
- C3 Tactical
- Special Police
- Search and Rescue
- First Responders (Fire, Police, Ambulance)
- Journalists
- Disaster Recovery / Business Continuity Managers
- Mobile Border Checkpoints
- Construction, Mining, Oil & Gas
- VIP Travel
- Accident Investigation Units
- Scientific and Research Expeditions

Anvil's EMSCoN™ supports the iDirect platform of Series 3000 and 5000 routers, a "single box" solution that includes a satellite modem, IP router, TCP acceleration over satellite, and QoS/prioritization (Quality of Service) in an easy to deploy, reliable design. Optimized for remote internet access, the iDirect series 3000 is an ideal solution for small to medium enterprise customers with basic remote networking needs. Developed specifically to support the business critical applications of enterprise customers, the Series 5000 combines a flexible networking platform with the highest TCP/IP throughput in the industry – 18 Mbps downstream, and 4.2 Mbps upstream.

This high bandwidth capacity for both iDirect Series routers, combined with iDirect's network flexibility, and QoS allows the series 5000 to go beyond traditional satellite networking, and operate as an extension of your landline network. iDirect is scaleable and its support for traffic prioritization through QoS is critical for VoIP.

Shared Service Versus Dedicated Service

In order to provide a cost-effective Airtime Service Plan, Carriers (or Service Providers) often will offer a “Shared Service Plan” that effectively means that you the subscriber shares access with other subscribers. The maximum data rate and the contention ratio (sharing factor) specify largely the performance of a shared satellite service. While highly contented services work fine for light usage (SOHO environment), heavy users need a service with a “low contention” ratio.

Virtually all consumer and small business priced satellite links are shared because the satellite’s communications operating capacity (bandwidth) must be established for peak capacity but most sites are not transmitting at full speed at all times. For this reason optimal commercial advantage can be taken of the satellite’s full communications capacity. As the cost to the Carrier is basically fixed, many network Carriers add more customers to their networks than can be supported by the available bandwidth, trying to maximize short-term profit. Additionally, many systems are sold through resellers or other intermediaries, obscuring the level of oversubscription on networks.

The same concept of "overselling" is used in many networks -- terrestrial ISP networks with more dialup subscribers than modems, based on the observation that most users are not dialed in all of the time -- and the public switched telephone network (PSTN) itself, which does not have the capacity to serve every phone subscriber making calls simultaneously. If all of a satellite network's users want to transfer large amounts of data simultaneously, performance will suffer.

In addition to the “over contention” ratio, there are several other factors which affect shared Internet systems. Monthly bit rate rental is specified, for example, as 512k down / 64k up shared 20:1. This means that when you are downloading a file the speed may be up to 512k bit/s. With 30:1 sharing you will find that for much of the time the available bit rate is lower - as other people will be using the capacity at the same time. In shared arrangements there are often monthly download and upload limits (measured in G bytes per month) per customer, so that one user cannot block everyone else. Shared services can also result in “overage fees” when exceeding throughput limitations. During peak hours, speed may drop by as much as 50%. And then there’s the FAP!

Some Carriers employ a system known as the "Fair Access Policy" (or better known simply as the "FAP") to regulate the upload/download capabilities of their subscribers. Unfortunately, the bottom line is that this policy can at times hinder subscribers’ access speeds. Based on an analysis of usage data, Carriers have established usage threshold well above the maximum typical usage rates. When a subscriber exhibits patterns of system usage which exceed that threshold for an extended period of time, the FAP may temporarily limit that subscriber’s throughput to ensure the integrity of the system for all other subscribers. Carriers’ policies describe the restrictions in various ways but essentially say “variables that affect this number include but are not limited to: speed of download or upload, duration of download or upload, and the plan’s Recovery Rate”.

Typically, the restrictions will be lifted within 8-12 hours of the original application of the FAP if the customer’s usage in this period stays below the FAP threshold. For example,

a subscriber may experience FAP if the cumulative requested downloads in a relatively short time period (1-4 hours) exceeds their Carrier's plan download threshold.

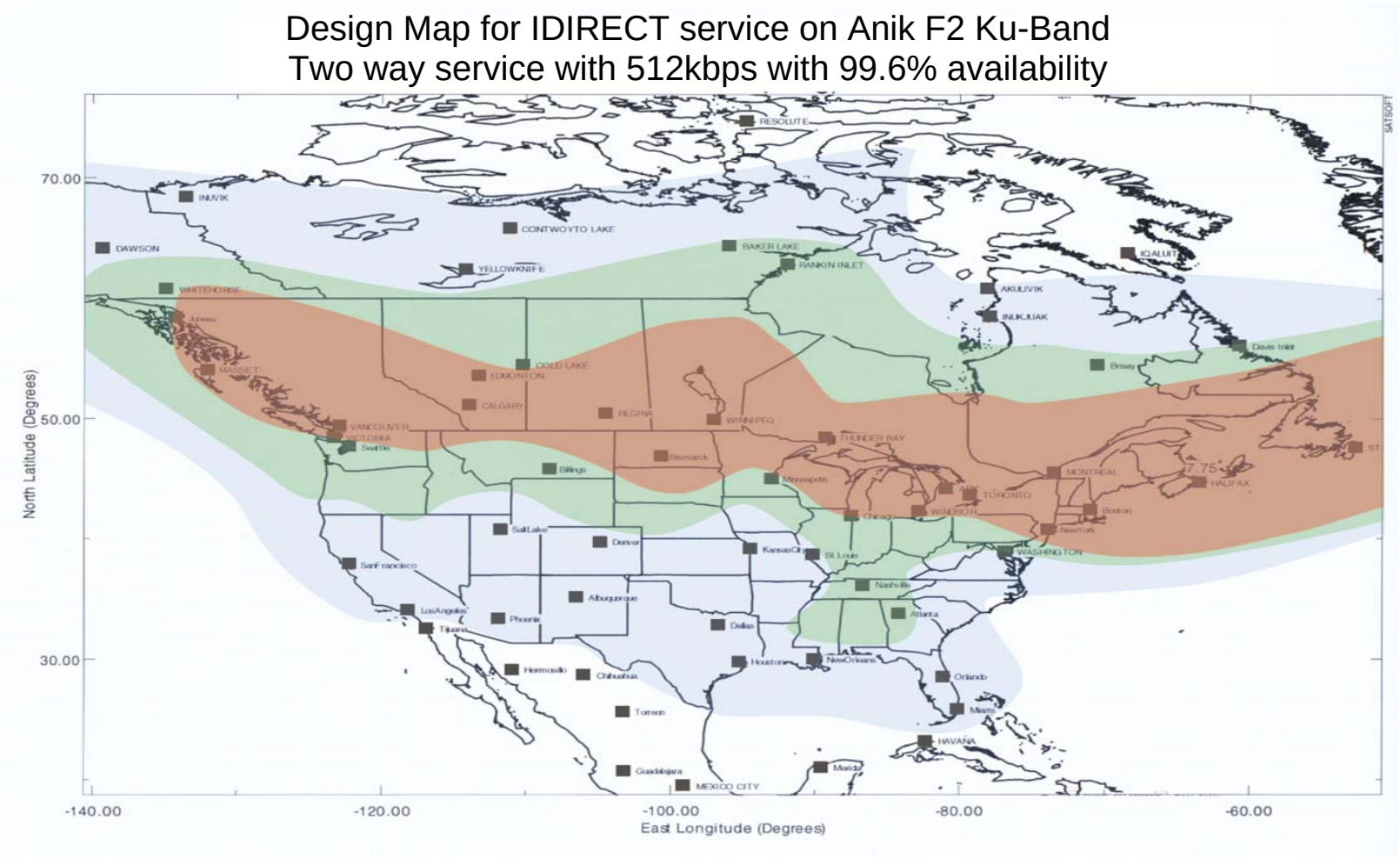
This can be a problem for EM teams especially if they intend to utilize video streaming or VoIP (Voice over Internet Protocol) to enhance their capabilities. For services like VoIP, which require 20kbit/s each way all the time the call is in progress, or video surveillance applications which require even more, then Dedicated Service Plans are appropriate. In addition, while most Carriers do not block VPN connections, they do exempt them from support, configuration or troubleshooting help.

Anvil's EMSCoN™ deploys rapidly in virtually any conditions and provides cost-effective, secure and reliable video, voice and data communications between authorised users in the field, at base or anywhere in the world. Coupled with Anvil's RECoN™, first responder teams can communicate information of any type amongst themselves or with those at a distance. Unhindered communications facilitate informed decisions, rapid actions, effective operations and loss mitigation.

Telesat Canada

With thirty-five years' experience, Telesat is one of the early pioneers in satellite communications and systems management. Based in Ottawa, Canada, the company operates a fleet of satellites for the provision of broadcast distribution and telecommunications services, and is a highly respected consultant and partner in satellite ventures around the world. Telesat has offices throughout Canada, in the United States and in Brazil.

Design Map for IDIRECT service on Anik F2 Ku-Band
Two way service with 512kbps with 99.6% availability



Inside Red line: 0.95m antenna with 4W SSPA
Inside Green line: 1.2m antenna with 4W SSPA
Inside Blue line: 1.8m antenna with 4W SSPA