



# Using Essential Viewing over BGAN

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## 1 Overview

The Essential Viewing TVI encoder systems provide high quality, low latency video over a range of wireless and wired IP networks. The system is available in a number of variants, including both commercial and mil-spec enclosures.

When combined with Inmarsat's BGAN service the Essential Viewing TVI video encoder allows users to remotely view high quality, low latency video and audio from almost anywhere on the planet to anywhere on the planet.

The system has been designed to provide a scalable enterprise-wide video system. With in-built user and encoder authentication, AES encryption and VPN capabilities the system has also been designed with security at the core of the system.

The encoding and video distribution technology within the system has been designed to work seamlessly together to provide an exceptional user experience. A unique patent-protected quality of service metric operates between the viewing application and the encoder, ensuring that data passed through the communications channel never exceeds the channel bandwidth. As the channel is never saturated this allows the system to deliver the video in real time without the inherent latency delivered by MPEG-based systems.

By connecting an analogue camera to the TVI video encoder, and connecting the TVI video encoder to a BGAN terminal, the system delivers a high quality IP stream over the BGAN network.

## 2 Applications

The Essential Viewing TVI video encoder systems are deployed in a number of markets and application areas.

One of the main deployments of the solution is to provide both covert and overt surveillance applications for law enforcement, government or military customers. Due to the high quality, low latency nature of the video, remote control of cameras is possible in real time allowing subject tracking and identification.

Many organisations have valuable or critical infrastructure in remote locations around the globe. The Essential Viewing TVI video encoder system allows this critical infrastructure to be remotely viewed in real-time day or night without having to rely on fixed infrastructure communications to deliver this capability.

Another key application is the use of the system to distribute video in real-time from remote locations to central points and then for onwards distribution. By its nature real time video requires a significant amount of data. However due to the nature of the TVI video solution the system can deliver a high quality video stream at lower bandwidths than conventional MPEG-based products. This key feature is essential when you want to improve the user experience of viewing the video whilst limiting the data used within the system.

The ability to deliver high quality video, audio and data over the Inmarsat BGAN network from almost any location in the world, whether from a vehicle, a ship or an aeroplane, opens up new applications that would not be possible without the TVI video encoder.

### 3 Key Features

The Essential Viewing TVI video encoder has a number of key features:

- High quality, low latency video using lower bandwidth than standards-based MPEG encoders
- Remote telemetry control of camera in real-time
- Two way audio channel
- High Resolution still image download facility
- Transparent data channel allowing additional data to be passed to and from remote locations
- Built in Encryption and VPN capability.

### 4 Benefits to BGAN Users

The Essential Viewing TVI Encoder provides a number of benefits to BGAN users over conventional video codec systems. These include:-

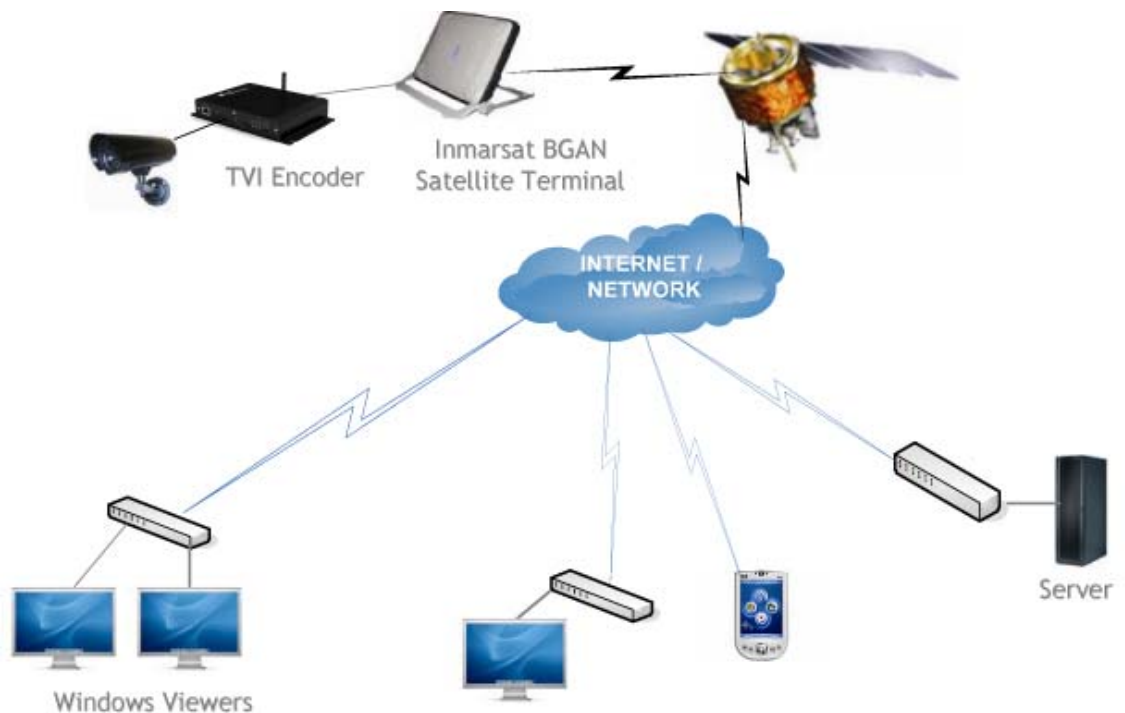
- Deliver real-time video from almost any location globally
- Higher quality video compared to MPEG type solutions at comparable bandwidths
- Single video stream back to central point which can be relayed to other users in real-time
- Remote telemetry control of camera systems
- Easy configuration and rapid deployment capability
- Small form factor units (less than 750 grams)
- Ability to deploy large scale systems - multiple encoders can be viewed by a single person; or multiple people can view the same video stream simultaneously.

### 5 Setting Up

This section describes setting up BGAN for use with the Essential Viewing TVI encoder system and also provides an example of a typical configuration when using TVI with a BGAN terminal.

The Essential Viewing TVI system has been designed to allow various deployments; from a single video encoder up to large scale deployments with numerous video encoders and a large number of viewers of the video streams.

A typical BGAN architecture is shown below.



The central point in the Essential Viewing TVI video encoder system is a central server. Essential Viewing provide the server application which requires to run on a server with minimum spec of 2GHz Processor, Windows Server 2003 or Linux preferred, 512mb RAM, Sun Java JRE 1.5.0 or later. The key factor within this server application is that it must have a fixed IP address.

Once the central server is configured and operational, the TVI video encoders can be easily deployed. The encoders can be configured before deployment by running through a set-up wizard application provided on a USB keypen. Once this set-up wizard is completed, simply put the keypen into the encoder and power up the unit. 30 seconds later the unit is configured ready for deployment.

Simply connect the analogue camera into the encoder unit and then connect the TVI encoder to the BGAN terminal using an Ethernet cable. Once the BGAN terminal has been configured and is operational the TVI video encoder will connect to the TVI Server and authenticate itself and once completed the system is ready for viewing.

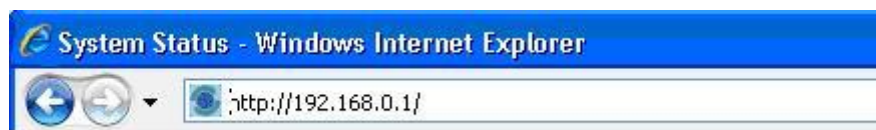
The TVI video encoder will only transmit video when a viewer selects a particular TVI encoder to view. Once selected the TVI encoder will start streaming video back to the server and on to the viewer.

## 5.1 Setting up for the Thrane & Thrane EXPLORER BGAN terminals

Note: To be able to reach the terminal every time it is recommended that you use either static IP addresses or a mechanism like dynamic DNS. Consult your service provider.

A Standard IP service should be initiated from the BGAN terminal (although you can choose a desired streaming class if you wish) and can be configured from either the EXPLORER's built-in web server (via a laptop's web browser) or using the LCD MMI.

- a. Open your internet web browser and type the following IP address in the address bar:  
192.168.0.1



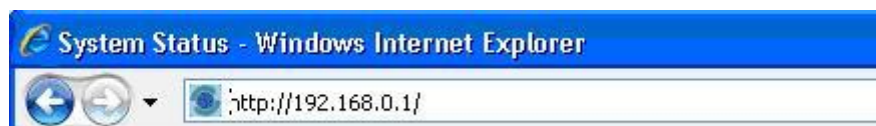
- b. Click on Settings and then LAN. Now you should see the web server interface.
- c. From the LAN configuration page scroll to the bottom and make sure that **Automatic Activation** option is **Enabled** and **Standard** is selected under Primary Profile.
- d. If the unit is going to be an unmanned installation in a fixed location you will want to bypass antenna pointing. Click on **Settings** from the navigation bar on the left and click **No** next to **Antenna pointing required on startup**.
- e. Now every time the terminal is restarted it will automatically register with the network and establish a Standard IP data connection.

## 5.2 Setting up for the Thrane & Thrane EXPLORER 110

Note: To be able to reach the terminal every time it is recommended that you use either static IP addresses or a mechanism like dynamic DNS. Consult your service provider.

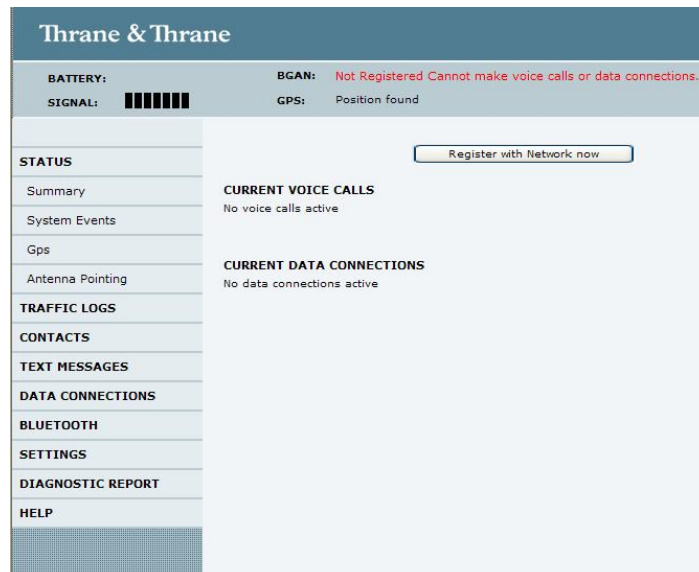
A Standard IP service should be initiated from the BGAN terminal and needs to be configured from the EXPLORER 110's built-in web server (via a PC's web browser).

- a. Open your internet web browser and type the following IP address in the address bar:  
**192.168.0.1**

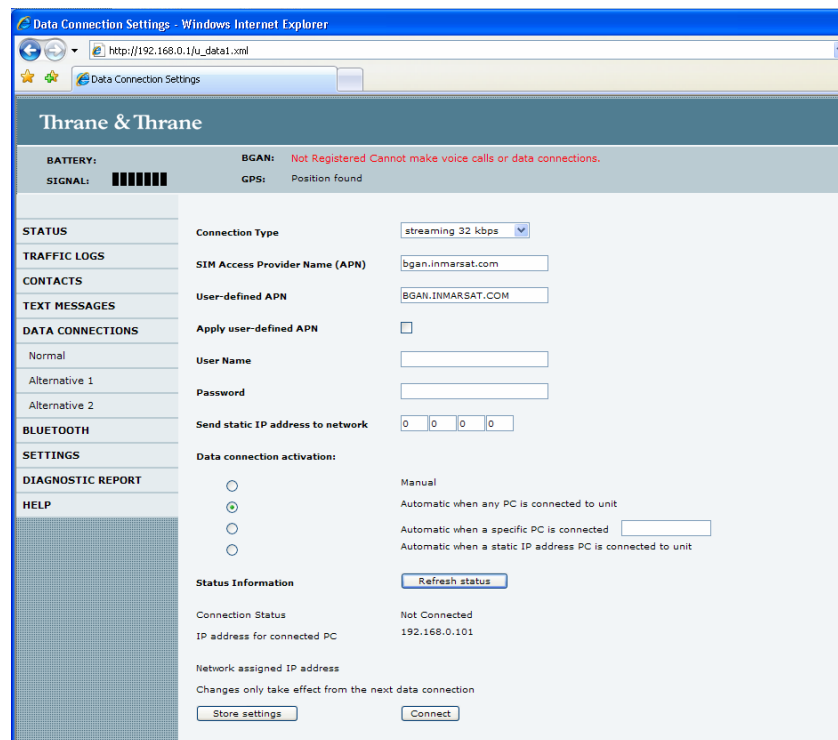


Now you should see the web server interface.

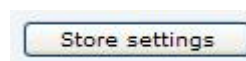
- b. The screenshot below shows the settings required as configured via the EXPLORER 110's web server interface. Please consult your EXPLORER 110 manual for more detailed information.



- c. Next, click on **Data connections** on the left hand menu. The following screen displays:



- d. Change the connection type by clicking the drop down box and select **'Standard IP'**.
- e. Make sure your Data Connection Activation is set to **'Automatic when any PC is connected to the Unit'**.
- f. Before you exit the web interface make sure you click **'Store Settings'**.



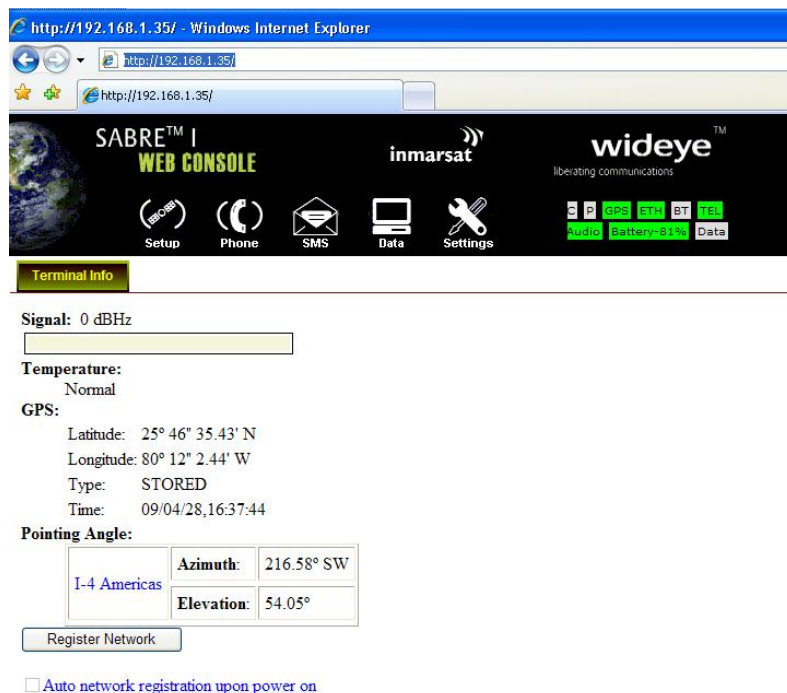
- g. If the terminal is going to be used in a fixed unmanned location you will want to register on the network automatically. To do this click on the settings menu and disable antenna pointing.
- h. Store settings. Now every time you restart the terminal it will register on the network and start a data connection automatically.

### 5.3 Setting up the Wideye SABRE BGAN terminal

Note: To be able to reach the terminal every time it is recommended that you use either static IP addresses or a mechanism like dynamic DNS. Consult your service provider.

A Standard IP service should be initiated from the BGAN terminal and needs to be configured from the Wideye™ Sabre I's built-in web server (via a PC's web browser).

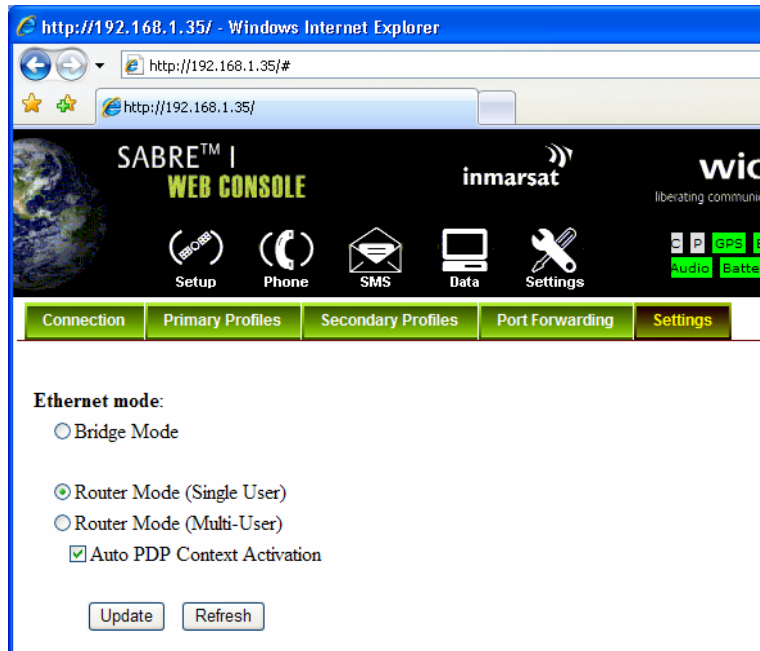
- a. Open your internet web browser and type the following IP address in the address bar:  
**192.168.1.35**
- b. Type in the User Name: **sabre1**, and the password **wideye**. The following screen displays.



- c. Click on the **Data** Icon
- d. Click on **Primary Profiles**
- e. Select the connection Type as **Standard IP**
- f. Check mark **Set as default**
- g. Click on Update **Settings**
- h. Click on the **Settings** Tab

- i. Select **Router Mode (Single User)**
- j. Check the box for **Auto PDP context Activation**. This opens a Streaming connection automatically after you register with the network.

Your configuration should look like this:



- k. If the terminal is going to be used in a fixed unmanned location you will want to register on the network automatically. To do this click on the settings menu and disable antenna pointing.
- l. Restart the terminal
- m. Save settings. Now every time you restart the terminal it will register on the network and start a data connection automatically.

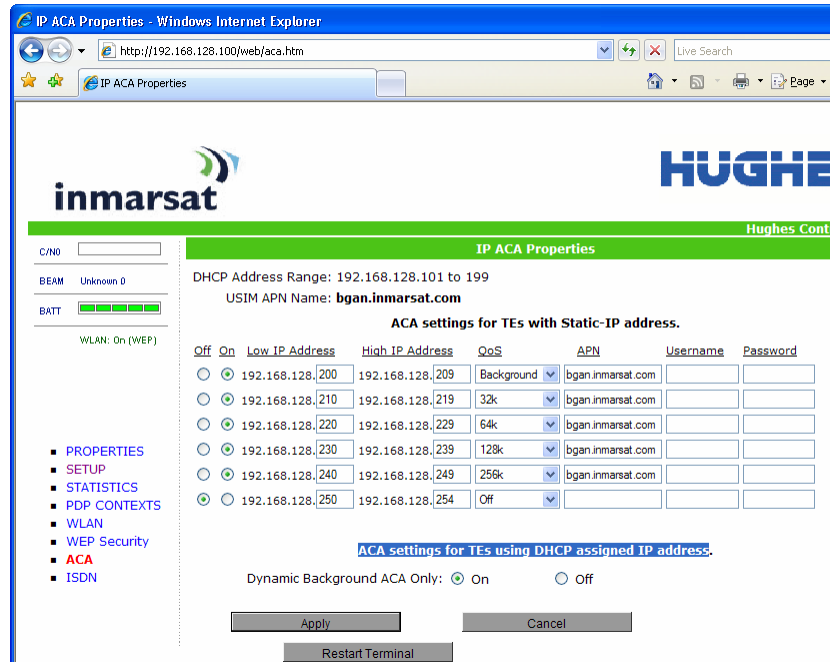
#### 5.4 Setting up the Hughes 9201 BGAN terminal

Note: To be able to reach the terminal every time it is recommended that you use either static IP addresses or a mechanism like dynamic DNS. Consult your service provider.

A Standard IP service should be initiated from the BGAN terminal and needs to be configured from the Hughes 9201's built-in web server (via a PC's web browser).

- a. Open your internet web browser and type the following IP address in the address bar: **192.168.128.100**. The following screen displays:
- b. Click on **ACA** on the menu on the left.

- c. Make sure that on the section “**ACA Settings for TEs with Static-IP address**” the first radio button is **on** for the Standard IP.
- d. Click **Apply**
- e. Click on **Restart Terminal**. The following screen displays:



- f. Configure the TVI encoder with the Static IP address in order to open the Standard connection automatically after registration. To do this:
  1. Enter **192.168.128.201** as the unit IP address
  2. Enter **255.255.255.0** as the mask
  3. Enter **192.168.128.100** as the gateway.
- g. Register the terminal by pressing the Audio button until the signal strength lights go off.
- h. On the codec try your IP call to the studio.
- i. The terminal will automatically recognize the Static IP and request the Standard IP service automatically.

## 6 Hints and Tips

### 6.1 Bandwidth Management

The Essential Viewing TVI Encoder provides flexibility in the bandwidth that you use to view the remote video.

- The system allows you to select the maximum bandwidth used and the frame rate used to view the video stream.
- To view the video with the best feel for motion, you can set the frame rate higher.
- To achieve more clarity in the video stream, simply reduce the frame rate.

## 6.2 Archiving

To provide a solution for long term storage of high quality video footage and metadata, Essential Viewing has integrated our video encoder system with the Timespace DVR unit; which is used extensively in transportation, local authorities and law enforcement deployments.

This integrated solution provides the facility to remotely access the video either as a live video feed or to access the archived footage recorded on the DVR.

## 7 Technical Summary

<b><u>Physical Hardware</u></b>	<b><u>Size</u></b> L165 x W 130 x D 35mm, Weight 700g	<b><u>Operating Temperature</u></b> -32° to +60°, non-condensing	<b><u>Input Voltage</u></b> 9V-36V DC	<b><u>Power Consumption</u></b> 7W max* 5.5W nominal <1.5W standby <1.5W sleep
<b><u>Hardware Features</u></b>	<b><u>Audio</u></b> Stereo Audio In / Out	<b><u>Camera Input</u></b> 1 x BNC composite input	<b><u>Video Input Format</u></b> PAL / NTSC / SECAM	<b><u>Alarm Input</u></b> Triggers at 5V
<b><u>Front Panel Connectors</u></b>	<b><u>USB</u></b> For configuration and connection to serial based devices	<b><u>RJ45</u></b> Ethernet connector for network lines / BGAN	<b><u>SIM</u></b> Lockable SIM carrier	<b><u>LEDs</u></b> Provide status information
<b><u>Rear Panel Connectors</u></b>	<b><u>Video Input</u></b> Standard BNC, accepts PAL, NTSC and SECAM sources  <b><u>Audio</u></b> Provides two way audio	<b><u>R232</u></b> For control of cameras or other devices  <b><u>Power</u></b> Also supports battery operation	<b><u>RF Aerial</u></b> Used with internal GPRS / 3G / HSDPA module	<b><u>RS422 / Trigger</u></b> For control of cameras or other devices. Trigger input provides wake up from sleep mode or alarm reporting.
<b><u>Communications</u></b>	<b><u>Satellite / Internet</u></b> 10/100 RJ45 Ethernet for Inmarsat GAN / BGAN / Fleet Routers, ADSL and Networks	<b><u>GPRS / 3G / HSDPA</u></b> Via built in module	<b><u>PTZ Connectivity</u></b> Camera can be controlled via R232 or RS485	<b><u>Bandwidths Supported</u></b> 9Kbps to 1Mbps
<b><u>Software</u></b>	<b><u>Viewers</u></b> Windows PC and Windows Mobile 5/6	<b><u>Frame Sizes</u></b> From 128 x 96 up to 352 x 288 (CIF) at frame rates of 0.1 to 25fps (PAL)	<b><u>Encryption</u></b> AES 256 plus support for IP Sec VPN	<b><u>High Resolution Image Retrieval</u></b> Enhanced definition via high quality JPEG

\*without modem operational

## 8 Further Details and Support

### **Inmarsat Contact**

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