Application Note 32

Using MAYAH Devices with BGAN

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1. General description

The Broadband Global Area Network (BGAN), is a global Satellite IP Network using portable terminals. The terminals are normally used to connect a laptop computer to broadband Internet in remote locations, although as long as line-of-sight to the satellite exists, the terminal can be used anywhere. The value of BGAN terminals is that unlike other satellite Internet services which require bulky & heavy satellite dishes to connect, a BGAN terminal is about the size of a laptop and thus can be carried easily. The network is provided by INMARSAT and uses three geostationary satellites called I4 to provide almost global coverage.

Mobile Terminals are Provided by Thrane & Thrane, Hughes Network Systems, Addvalue Communications and others.
MAYAH Communications supports the following terminals:

Manufacturer	Supported Models
Thrane & Thrane	Explorer 500,700
Addvalue Communications	Wideye Sabre 1,
	Wideye Sabre Ranger
Hughes Network Systems	9201, 9250, 9350

Table 1: Supported BGAN Terminals

The Services offered via BGAN are:

Phone – make phone calls
Standard IP – Internet access without QoS with up to 492kbps
Streaming IP – Internet access with QoS
Text – To send and receive text messages (SMS)

This document describes how to use the Streaming IP Service with MAYAH Communications' Devices. If you are interested in using the standard IP Service (this is not recommended for audio services, since it is not reliable for streaming purposes) just connect your MAYAH device to the Terminal as you would with your Laptop and refer to the manufacturers manual of your BGAN Terminal.

2. Technical description

BGAN has to be enabled on MAYAH devices by turning on **BGAN mode**. Once enabled, all connections using Ethernet or WLAN as interface will try to set up a Streaming IP BGAN access with the attached modem prior to establishing the media connection. The requested bandwidth is determined by the selected coding algorithm and its parameters.

Note: The bandwidth requested will be higher than the bandwidth of the selected coding algorithm.

The requested bandwidth is calculated by adding the overhead produced by IP encapsulation and used protocols (SIP, RTCP,…). The available bandwidths depend on the BGAN Terminal, your current location and the Inmarsat Service you are using. At the time this document was written (Feb.2010) the bandwidths offered by Inmarsat were 32, 64, 128 and 256 kbps. Additionally the X-Stream mode offers a speed between 384-450 kbps.
The bitrate of the BGAN channel that is effectively used, can be found in the status information after the connection was established.

Since the allocation and deallocation of a Streaming IP Satellite connection might take some seconds, the connection and disconnection processes will take longer than in normal operation.

What happens if the desired bandwidth can not be obtained?

This could happen for various reasons, like weak signal strength, subscription or terminal restrictions. If the requested bandwidth can not be obtained this will be indicated in the status info by a bandwidth of zero (see below). In case the Terminal is configured to have a default standard connection profile, this profile will be used instead. So the audio connection may be established even if the requested Quality of Service is not obtained.
So, if the status screen shows a bandwidth of zero during a call a call might still be possible, but is most probably not using the IP Streaming service and might therefore be unreliable.

2.1   Configuration

Most BGAN Terminals are also DHCP Servers, so MAYAH recommends enabling the DHCP function on your MAYAH device (CODEC->SETUP->INTERFACE->Ethernet->DHCP: client).

For most BGAN Terminals and subscriptions the following configuration options can be left empy, use them only if you know what you are doing.

2.1.1 PIN

A BGAN Terminal may be configured to request the user to enter a PIN number prior to logging into the sattelite network. This will be detected automatically by the MAYAH device and the configured PIN number will be supplied. If the Terminal does not require a PIN, the configured value will be ignored.

2.1.2 APN, username and password

BGAN Terminals use Access Point Names (APNs) to tell the provider which network access point shall be used. Usually the APN is stored on the SIM card and will be retrieved automatically during the login process. In case your provider has supplied a differing APN, username and password you can configure these manually (see below for instructions).

If no APN is configured the MAYAH device will retrieve the APN from the SIM card automatically and use it without username and password.

2.1.3 Enabling BGAN

To enable BGAN the BGAN Mode needs to be set to 'on'. This setting takes effect immediately and the MAYAH device will start searching for a known BGAN Terminal. Once such a Terminal is found it will be prepared for streaming connections.
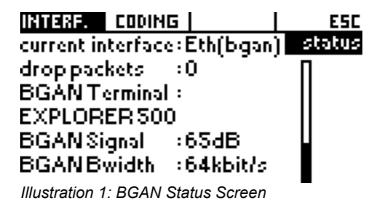
3. Using BGAN

Currently BGAN settings can be done via front panel, SNMP and telnet commands. To learn about SNMP and Telnet commands please refer to the Communication Reference Manual available at http://www.mayah.com.

3.1   Via front panel

The settings described in part 2.1 can be found in the SYSTEM menu under MISC. The entry is called BGAN.

The PIN, APN and password – if needed - should be entered prior to turning the BGAN Mode to 'on'.

The BGAN status can be found in the CODEC menu under STATUS and will look similar to this:

Illustration 1: BGAN Status Screen

4. Troubleshooting

4.1   "No BGAN Terminal found"

This message is displayed on the front panel and indicates a connection problem between the BGAN Terminal and the MAYAH device. Please check the following:

– BGAN Terminal should be listed in Table 1: Supported BGAN Terminals

– BGAN Terminal should be turned on

– BGAN Terminal and MAYAH device should be connected directly to each other via a **crossed** Ethernet cable **or** by using an Ethernet Switch/Hub and **uncrossed** cables

– DHCP should be enabled on the MAYAH device. Alternatively the IP settings may be entered manually, but must correspond to the BGAN Terminals settings (see manual of BGAN Terminal)