

Three circular icons in a light blue color, arranged vertically on the left side of the page. The top icon is a lightbulb, the middle one is a ship, and the bottom one is an airplane.

Using uniHub™ for DUN over BGAN

Legacy Dial-up and Serial over IP

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1 Overview

Many remote devices such as data logger or utility meters have the ability to store information and communicate with a central data management system that performs data collection, configuration and diagnostic functions. The most common mean of communication for these devices is circuit-switched telephony data call. This is sufficient and practical for environment where traditional telephony service is readily available. When these devices are installed in far-flung remote locations, then communication become challenging and very expensive.

As many circuit-switched based networks are being phased out and replaced with IP based network, these installations will be rendered obsolete unless undergoing a complete system redesign. This system redesign effort involves modification of central data management system software as well as replacement of all the installed remote devices that are IP capable.

On-Go has developed a solution that allows the existing infrastructure to remain the same while providing all the benefit of packet based IP communication backbone. On-Go's solution is based on its uniHub™ product.

On-Go uniHub provides transparent communication and networking connectivity between Dial-up network and BGAN Standard IP regardless of your underlying network. On-Go uniHub™ technology lets any data device such as data loggers, fax machines, credit card terminal, ATM machines, utility meters, scanners, GPS receivers, printer, and digital cameras ... seamlessly communicate over Inmarsat BGAN/Fleet Broadband network from anywhere in the world.

This means that you can make standard data calls, send faxes, and transactional services over the standard IP service on BGAN. Each unit has its own phone number so it doesn't matter where your BGAN terminal is located it is always reachable on a normal phone number via fax or voice.

2 Product Range

The uniHub solution is made up of the following:

UCH250 – This is an interface unit located at the customer premises that provides Ethernet (RJ45), Serial (DB9), USB (host), Subscriber Loop Interface (RJ11) and a PCCard slot for flexible device interface and intelligent application processing.

Backend Services – Depending on the application, different backend services are required typically OnGo gateway that converge Dial up to IP.

3 Typical Users

- O&G
- Utilities
- Temporary Site Communications.
- Disaster Recovery, Emergency Responder.
- Maritime.
- Aviation.
- Energy Production and Distribution.
- Finance – ATM users, POS transactions.

4 Key Features

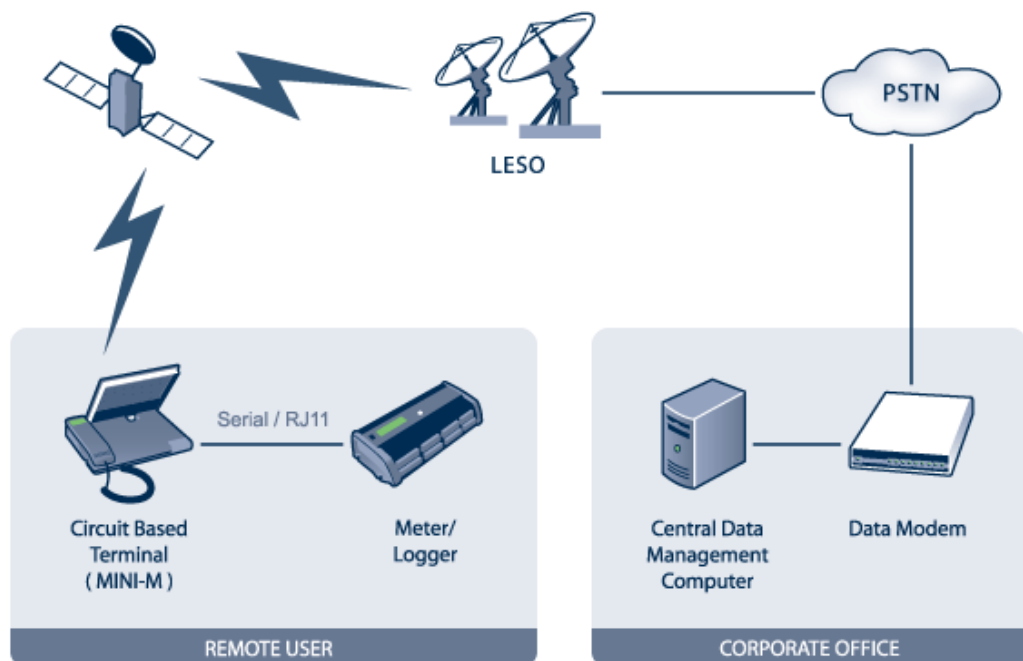
On-Go uniHub takes advantage of the IP-based BGAN network, and efficiently convert any Dialup networking solution over BGAN IP and back to CS network. Some of the applications it supports are:

Analog Data – supports devices that are designed for Circuit Switched network such as credit card terminals, automatic teller machines and utility meters.

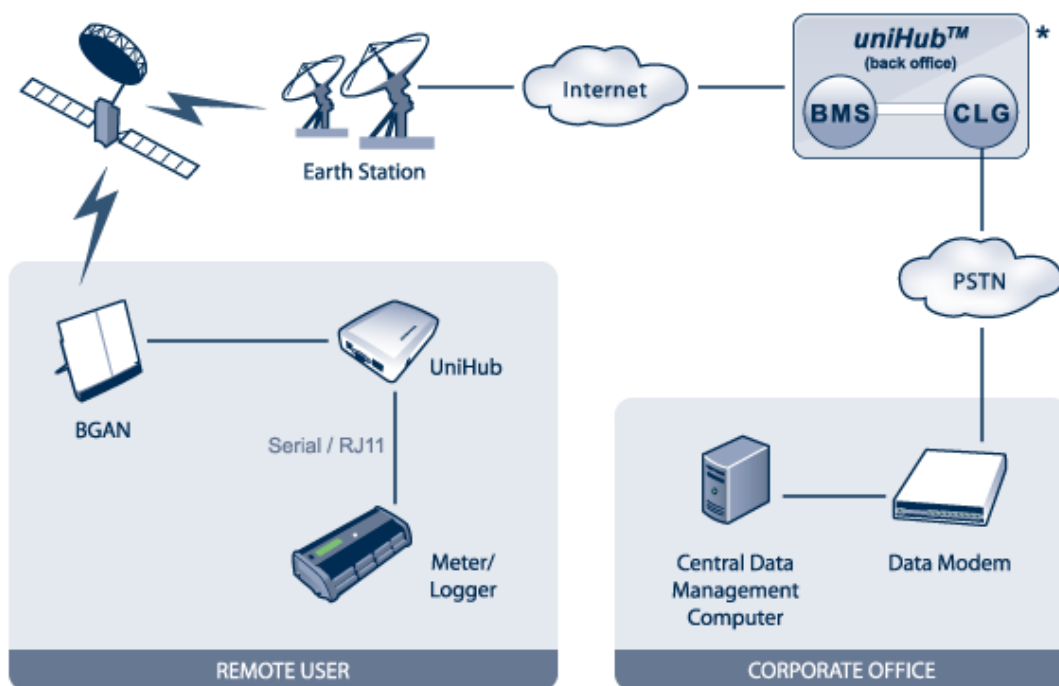
Store and forward fax service – Sending and receiving standard Fax call over IP. If receiving fax is offline, the fax is stored at the back office OnGo Gateway and forwarded when the fax comes online over bgan or fleet broadband standard IP, on a timeout the fax is converted to email and sent to an address of choice. Ideal for BGAN users constantly on the move. This service can achieve more than an 80% cost saving in airtime charges

5 Network Setup

The following diagram depicts the traditional circuit based connection method. In this scenario, the Central Data Management Computer calls the Inmarsat Mini-M (87x) phone number to gain access to the meter/data logger.



The following diagram depicts the On-Go approach with IP based network. The central data management computer now dials up the On-Go server. Each ON-GO UNIHUB has a unique phone number. By calling the unique phone number, the system will mapped it to the specific device and create the end-to-end connectivity. The benefit is that the data rate can be higher, and the cost is based on number of bytes being sent over IP network, not the connection time, so the data access is more economical.



* BMS = Business Management Server CLG = Call Logic Gateway

6 Benefits to BGAN users

On-Go's uniHub technology offers tremendous cost benefit to those customers with large remote equipment install base when transitioning from circuit based network to IP based underlying network.

- The deployed equipment does not have to be changed
- The central data management system do not have to be changed
- Communication mean is the same
- Cost saving in the recurring communication cost

In addition, On-Go solution is easier to manage than IP based solution for remote data connectivity:

1. Most remote terminals have dynamically-assigned IP addresses, that means it is difficult for central management system to keep track of the terminal address. Either special STATIC IP addresses have to be allocated for the remote terminal or dynamic name resolution has to be used. With On-Go uniHub solution, it is a simple plug-and-play hook up without messing with the IP address or name server.
2. If multiple data devices are connected to the same network terminal, then different IP port has to be assigned since all data devices attached to the same network terminal would appeared to have the same IP address, so the only way to differentiate them is the use of

IP port number. This adds more complexity to the central management software to track not only the address but the port number.

Note: With On-Go solution, each device has its own specific data phone number. You can connect as many data devices as needed to the same network terminal without having to worry about the IP port number.

In summary, On-Go Direct Data Connection architecture provides an easy migration path from circuit based satellite connection to packet based satellite connection without the expensive software/process change at the central data management center as well as delivering cost saving to the data access.

7 Setup and Configuration

7.1 Equipment Needed

Typical example:

- UniHub
- BGAN terminal
- Devices, such as DATA logger or utility meter.

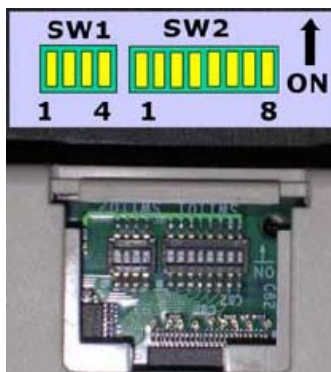
7.2 Setup Step-by-Step

UniHub comes with several interface ports; the device simply needs to be connected to the appropriate uniHub comes with several interface ports; the device simply need to be connected to the appropriate port and the uniHub configured using a web based interface.

You can connect devices via

- USB
- Ethernet
- Serial
- RJ11

You will need to configure the DIP switch on the side of the uniHub to use it with BGAN. The uniHub has a dedicated profile for BGAN. DIP switches are located on the bottom of the board that can be accessed without opening the enclosure. There are two group of switches, one has four (SW1) and the other has eight switches (SW2).



POSITION 1: USE DEFAULT CONFIGURATION (This is useful when the configuration is changed and user can no longer access the UCH web server); ignore the rest of SW2 setting

POSITION 2: USE STORED CONFIGURATION (This is useful when POSITION 3-8 are to be ignored)

POSITION 3-8: Use pre-built configuration.

Once the uniHub has been configured, it is simply a plug and play device. As there is no Graphical interface, the BGAN devices must be configured to obtain a data connection automatically.

7.3 Configuration using HNS 9201

For the HNS you will need to make changes to the DIP switch on the uniHub and set the terminal up in Automatic Activation mode.

For HNS set the switches as follows.

3	4	5	6	7	8
ON	ON	OFF	ON	OFF	ON

The UCH uses the Automatic Context Activation (ACA) feature of the HNS 9201 to activate a PDP context after the terminal is pointed and registered with the BGAN Network.

UCH cannot manually configure the Hughes 9201 to establish a PDP context. To set up the Hughes 9201 to establish a PDP context automatically, simply change the UCH IP address as follows:

- a. Click on **Terminal > Automatic Connection Mode**.
- b. Uncheck **Automatically Open a Data Connection in the terminal**
- c. Click on **OK**.
- d. Click on **Terminal > Auto Start Mode**.
- e. Uncheck **Automatically register**.
- f. Click on **OK**.

For more details, see the "HNS 9201 Getting Started Guide".

- Note:** If you have a fixed BGAN installation, you can choose to register the terminal automatically when it receives power. To do this, in BGAN LaunchPad, click **Terminal > Auto-Start Mode**. Choose to automatically register by checking the appropriate box. Click on **OK**
- g. Once you have pointed the terminal, press and hold the audio button for 3 seconds to register the terminal.
 - h. It is recommended that the UCH set to a static IP address between **192.168.128.201** to **192.168.128.209**. Once the UCH is ready to send fax over the BGAN IP network, it will automatically open a background IP data connection.

The data connection is established when the first (right most) signal strength light goes solid Green. Simply plug in the uniHub to establish a connection.

7.4 Configuration using Thrane & Thrane 300/500/700

You will need to set the DIP switch using the following settings.

3	4	5	6	7	8
ON	ON	ON	OFF	OFF	OFF

The EXPLORER 300/500/700 can be set up using the LCD display. When the terminal is pointed, press **OK** to accept the signal strength.



The display will go into the following 3 stages: **SEARCHING**, **REGISTERING** and **READY**.



Connect the Ethernet cable to the terminal. The LCD will change from **READY** to **DATA**. The terminal is now ready to accept data from UCH to send over the BGAN IP network.

Note: The EXPLORER terminals can work with the UCH in both ROUTER and MODEM modes.

Note: The UCH should set to DHCP mode.

7.5 Configuration using SABRE 1

You will need to set the DIP switch using the following settings.

3	4	5	6	7	8
ON	ON	ON	OFF	OFF	OFF

Setting up the terminal as follows.

- a. Connect the SABRE I to your PC.
- b. Open LaunchPad, and select **Terminal > Ethernet Configuration**.
- c. Change the mode of operation to **Router Mode**.
- d. Click on **Apply**. The terminal will reboot.
- e. After reboot, using the **Enter** button on the terminal, register the terminal.
- f. Once registered the terminal will activate a data connection.

Note: The UniHub must be in DHCP mode for this configuration.

8 Technical Summary

Processor	180MHz ARM9 CPU
Field Programmable Storage	8 MB FLASH
Storage	64 MB SDRAM
Display	Eight LEDs
Ethernet	RJ45 (10/100Mbps)
PCMCIA Slot	Standard
Serial Port	DTE interface (DB9) (up to 115kbps)
Telephony Device Interface	RJ11 Central Office Emulation (Loop current, Ringer)
USB Host	USB spec 2.0 Full/Slow speed device (Type A connector)
Physical Dimension	17.5cm x 9cm x 3cm
Weight	1.2 lb with battery, 0.5 lb without battery
Power source	External 12V-28V DC power source

9 Further details and support

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