

Three circular icons in a light blue color are arranged vertically on the left side of the page. The top icon contains a white silhouette of a lightbulb. The middle icon contains a white silhouette of a ship. The bottom icon contains a white silhouette of an airplane.

Using the PacStar 3500 over BGAN

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1 Overview

The PacStar 3500 is a rugged, deployable network communications terminal that creates the communications capabilities of a small office, anywhere in the world. Utilizing BGAN broadband satellite and secure VPN technology, the PacStar 3500 mobile satellite office meets the needs of an individual or a small team for voice and data connectivity. The PacStar 3500 can be used as a stand-alone unit, with voice and data services supplied by third party providers. The PacStar 3500 can also be supplemented by a variety of user-supplied devices to ensure seamless integration and total connectivity. The PacStar 3500 can be easily connected to BGAN IP services.

The PacStar 3500 is an all-in-one unit: BGAN satellite terminal, modular phone and ruggedised laptop with Ethernet and analog phone ports, DC/AC power with battery and cigarette lighter adapters, a military-certified firewall, VPN capability, and a shock-resistant, portable case.

The PacStar 3500 has been tested over Inmarsat BGAN IP. Standard IP data transmission offers high bandwidth in both directions and can provide simultaneous voice and data. Streaming IP data transmission provides guaranteed bandwidth at 34kbps, 64 kbps, 128 kbps, or 256 kbps (depending on the terminal). The maximum transmission speed is 492 Kbps send and receive.

2 Products

The PacStar 3500 Mobile Satellite Office offers:

- Thrane & Thrane broadband satellite terminal/modem*
- Ruggedised laptop with magnesium alloy housing, spill-resistant, removable hard-drive, wireless 802.11, MIL-STD-810F for vibration, humidity and temperature, 30" drop-tested.
- Modular phone with lighted keypad.
- Military-certified firewall and VPN. NAT/PAT support with deep packet inspection (FIPS 140-2, Common Criteria EAL-4).
- 2 10/100 Ethernet ports.
- 2 analog phone ports (with STU/STE compatibility).
- Integrated VoIP adapter.
- Accepts 12 V DC, 110 V AC, and 240 V AC power.
- DC/AC battery and cigarette lighter adapters.

- Airline carry-on-sized, portable, shock-resistant chassis with pull-out handle and ball-bearing wheels
 - Compact design. Size of the unit is 22 in. x 14 in. x 9 in. (55 cm x 35 cm x 23 cm), weight is 36 lbs (16 kg) with laptop.
 - Padlock-ready high-impact case.
 - Detailed Setup/User guide.
- * Note: The PacStar 3500 will work with any of the terminals in the BGAN family, but has been streamlined for the EXPLORER 500.

3 Typical users

- Police Forces.
- First Responders.
- Emergency Responders.
- Homeland Security.
- Continuity of Operations (COOP).
- National Guard.
- Military.
- Oil & Gas Pipeline and Exploration.
- Mining, Utility, Forestry and Construction.

4 Key features

The PacStar 3500 Mobile Satellite Office offers the following main features over the BGAN network:

- High-quality, industry-standard VoIP (Voice over IP) communications. Use BGAN standard IP data.
- Data transfer over the public Internet, and military and private networks. Use BGAN standard IP or streaming IP data.
- Secure VPN connectivity – Military-certified firewall.
- Integrated VoIP adapter.
- Internet, text message and email access.
- Enables GIS mapping, video conferencing, surveillance and ability to access hosted applications.

5 Benefits to BGAN users

The PacStar 3500 Mobile Satellite Office offers the following main benefits:

- The ability to conduct high-quality voice and data communications over the BGAN network from remote and difficult environments.
- Secure VPN encrypted voice and data traffic.
- Rugged enough to operate in the most demanding environments.
- Simple enough for non-technical users to operate with ease.

- All-in-one unit: BGAN satellite terminal, modular phone and ruggedised laptop, with Ethernet and analog phone ports, DC/AC power with battery and cigarette lighter adapters, military-certified firewall, VPN, shock-resistant, portable case, and detailed setup/user guide.

6 Connectivity options

The following connectivity options are available on the PacStar 3500:

- Analog phone/facsimile calls over the satellite service directly to the public phone system. This is available when there is a connection to the satellite.
- Internet access through the BGAN satellite service. This is available when there is a connection to the satellite **and** there is a connection to the Internet through the BGAN laptop software.
- VPN access. This is available when there is a connection to the satellite, **and** there is a connection to the Internet through the BGAN laptop software, **and** there is a connection to a PacStar 5500 or a PacStar-supported VoIP infrastructure. This provides the following options:
 - VoIP phone/facsimile calls to extensions on a PacStar 5500 and to the public phone system through the PacStar 5500. This uses the Spherically PBX on the PacStar 5500. This provides industry-standard, VoIP communications.
 - Application connectivity to a PacStar 5500.
 - LAN access through a PacStar 5500.
- VoIP phone/facsimile access to the public phone system. This is available when there is a connection to the satellite, **and** there is a connection to the Internet through the BGAN laptop software, **and** you have the PacStar 3500's optional Red Gap VoIP service. This provides industry-standard, VoIP communications.

7 Setup

This section describes how to set up BGAN for use with the PacStar 3500 mobile satellite office.

7.1 Before you begin

Each PacStar 3500 comes with a pre-paid SIM card for BGAN satellite service. Each SIM card is in the satellite modem. The amount of satellite access time on each SIM card depends on which PacStar 3500 package you purchased.

Once a PacStar 3500 owner has used 80% of the satellite time on the SIM card, the PacStar 3500 owner gets an email stating that they must contact PacStar technical support to renew the time on the SIM card.

BGAN satellite service provides you with the following:

- International analog phone service. A circuit-switched (dialed) connection for voice and facsimile. As part of this service, you receive two international phone numbers. These are the international phone numbers which a person would dial to place a call to an analog phone connected directly to the satellite modem. Sample phone numbers:
 - Voice: 870 772 241 324 (Standard Voice).
 - Facsimile: 870 782 242 840 (3.1 kHz Audio).

- Internet access through an IP connection to the Internet. The following connections are available:
 - Standard IP data connection. Several users can share the data connection at the same time. This kind of connection is ideal for email, file transfer, and Internet and intranet access. The cost reflects the amount of data sent and received.
 - 128 Streaming IP data connection. This is an exclusive, high-priority connection, ensuring seamless transfer of data. This connection is best for time-critical applications like live video. The cost reflects the length of time that the connection is open.

7.2 Setting up the BGAN satellite service

To connect to the Internet through the BGAN satellite service, take the following three groups of steps.

Step 1: Connect the satellite modem to the satellite

- a. Lift up the laptop tray and take out the satellite modem.
- b. Plug the power cable in the three-in-one satellite modem cable into the DC IN port on the satellite modem and the SATELLITE POWER port on the console.
- c. Plug the data cable of the three-in-one satellite modem cable into the LAN port on the satellite modem and the SATELLITE WAN port on the console.
- d. Press the power button on the satellite modem's panel.
- e. Make sure that the modem's battery is charged, because the modem must operate on battery power for the first few minutes.
- f. Use the satellite modem's pointing sound to adjust the satellite modem to get the best reception.
- g. When the satellite modem's pointing sound is beeping rapidly, press **OK**.
- h. When the satellite modem's display shows READY, go to the next step.

Step 2: Power on the PacStar 3500 and the laptop

- a. Set the INPUT SELECT switch.
 - If you are connecting to an AC power source, set the INPUT SELECT switch to AC.
 - If you are connecting from a vehicle battery, powerpoint, or cigarette lighter (12 V DC power), set the INPUT SELECT switch to DC.
- b. Connect to a DC or an AC power source.
- c. Wait two minutes.
- d. Plug the power cable coming from the DC OUT 19 V DC port below the laptop tray into the power port on the back of the laptop.
- e. Plug the Cat 5 cable into DATA PORT 3 below the laptop tray.
- f. Plug the cable from DATA PORT 3 into the Ethernet port on the rear of the laptop.
- g. Lift the display on the laptop, and press and release the laptop's power button.

Step 3: Connect the PacStar 3500 to the satellite and the Internet

- a. Once you see DATA ACTIVE in the satellite modem's display, double-click the BGAN LaunchPad icon on the desktop of the laptop.
- b. Click **Search for BGAN terminal**. Wait at least 15 seconds.

- c. If the **No BGAN terminal found** dialog appears, it may be that insufficient time was allowed to pass.
- d. In this case, select EXPLORER 500 and click **Connect manually**.
- e. After you connect to a BGAN terminal through the satellite, click the **Data** tab in the BGAN LaunchPad software.
- f. Choose an IP connection speed in the BGAN LaunchPad software to connect to the Internet and to automatically connect to your PacStar 5500 and its PBX.
- g. To make sure that you have Internet access, start a browser and try to browse a web site.

8 Using the PacStar 3500 after setup

After connecting to the BGAN satellite service and the Internet, the following options are available, depending on your PacStar 3500 package:

- Making and receiving VoIP calls through a PacStar 5500 PBX (over the Internet). See page 5 for details.
- Making and receiving analog calls (over the satellite, not the Internet). See page 5 for details.
- Using the laptop to access LAN services on a PacStar 5500 (over the Internet). See page 6 for details.
- Using the laptop to access the Internet (over the Internet). See page 6 for details.
- Making and receiving VoIP calls through Red Gap-hosted PBX services (over the Internet). See page 6 for details.

8.1 Making and receiving VoIP calls through your PacStar 5500 PBX (over the Internet)

After connecting to the Internet through the BGAN satellite service (**Step 1** through **Step 3** above), you can make and get VoIP phone calls through the PBX on your PacStar 5500.

- a. Make sure that your phone is set to tone dial, not pulse dial.
- b. Plug the analog phone into the ANALOG PHONE 1 or ANALOG PHONE 2 port on the PacStar 3500 console.
- c. Make a VoIP call to any extension on the PacStar 5500, or any public phone number if the PBX on the PacStar 5500 is connected to the public phone system.
- d. When the call is over, make sure that you hang up the call.
- e. When you have finished, click **Disconnect 128 Streaming** in the BGAN LaunchPad software.
- f. When you are done using the satellite connection, press and hold for three seconds the power button on the display of the satellite modem.

8.2 Making and receiving analog calls (over the satellite, not the Internet)

After connecting to the BGAN satellite, you can make and get analog phone calls through the satellite's direct connection to the public phone system. Although you have an Internet connection if you went through **Step 2** and **Step 3** above, you do not need an Internet connection to make analog calls, since analog calls require only the satellite's direct connection to the public phone system, which you obtained in **Step 1**.

- a. Plug the analog phone into the satellite modem's PHONE port.
- b. Make sure that your analog phone is set to tone dial, not pulse dial.
- c. Dial **00 <country code> <public phone number, minus leading zero>** followed by the pound key (#). Any analog call directly the satellite modem is an international call.

- d. When the call is over, make sure that you hang up the call.
- e. When you have finished using the satellite connection, press and hold for three seconds the power button on the display of the satellite modem.

8.3 Using the laptop to access LAN services on your PacStar 5500 (over the Internet)

After connecting to the Internet through the BGAN satellite (**Step 1** through **Step 3** above) you can access LAN file services on your PacStar 5500.

- a. Connect to your PacStar 5500 to access LAN file services. (After you connect your PacStar 3500 to the Internet through the BGAN satellite, your PacStar 3500 and your PacStar 5500 together automatically establish a VPN tunnel.)
Example: In Windows Explorer, type the IP address of the Windows server on the PacStar 5500 and press **Enter**.
Windows server IP address example: 172.17.0.50
- b. If you are using the satellite connection, when you have finished, click **Disconnect 128 Streaming** or **Disconnect Standard** in the BGAN LaunchPad software, depending on your connection.
- c. To power off the satellite modem, press and hold for three seconds the power button on the display of the satellite modem.

8.4 Using the laptop to access the Internet (over the Internet)

After connecting to the Internet through the BGAN satellite (**Step 1** through **Step 3** above), you can access the Internet by using the laptop.

8.5 Making and receiving VoIP calls through Red Gap-hosted PBX services (over the Internet)

After connecting to the Internet through the BGAN satellite service (**Step 1** through **Step 3** above), you can make and get VoIP phone calls through Red Gap-hosted PBX services (if you have the optional Red Gap package).

- a. Make sure that your phone is set to tone dial, not pulse dial.
- b. Plug the analog phone into the ANALOG PHONE 1 or ANALOG PHONE 2 port on the PacStar 3500 console.

Note: When you connect to the Internet, the PacStar 3500 automatically connects to Red Gap-hosted PBX services.
- c. Make a VoIP call to any number in the public phone system.
- d. When the call is over, make sure that you hang up the call.
- e. When you have finished using the satellite, click **Disconnect 128 Streaming** in the BGAN LaunchPad software.
- f. When you have finished using the satellite connection, press and hold for three seconds the power button on the display of the satellite modem.

9 Technical Summary

The PacStar 3500 technical features are summarized below.

Feature	Supported by the PacStar 3500
BGAN LaunchPad	Yes
Analog and VoIP phone service	Yes
VoIP/analog phone adapter	Yes
Internet access	Yes
Full Internet access during a VoIP phone call	Yes
Analog phone	Yes
Military-approved firewall with VPN: <ul style="list-style-type: none">• Military-certified security and encryption• Up to 10 IPSec VPN tunnels with DES, 3DES and AES 256-bit encryption• VoIP-optimized	Yes
Semi-rugged laptop: <ul style="list-style-type: none">• MIL-STD-810F vibration, humidity and temperature• 30" drop test-certified	Yes
Wireless 802.11g	Yes
Ethernet, LAN, USB, RJ45 ports	Yes

10 Further details and support

10.1 Inmarsat contact

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10.2 PacStar contact

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