Explorer 300-500-700-727, Fleet Broadband, Swift Broadband
PPPoE set-up

Subject:
This document describes the PPPoE function in the Thrane & Thrane BGAN & BGAN-X products, how to use it with MS Windows XP dialup connection and which service names that are supported.

Priority:

- **LOW**: For information purposes only – no direct action needed!

Action:

PPPoE (PPP over Ethernet) is supported by many devices such as routers etc. This document provides examples of how to use the PPPoE implementation in the Thrane & Thrane BGAN(-X) terminals with a PC running Microsoft Windows XP operating system.

The PPPoE implementation can be used by 3rd party applications, for instance to start a Streaming connection in Bridge Mode. Previously this could only be done manually by the use of the Thrane & Thrane IP handset or from the built-in web MMI of the BGAN(-X) terminal.

The PPPoE feature is introduced in following products and by the software releases shown in Table 1 below:

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOFTWARE RELEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAILOR 250</td>
<td>Version 1.09</td>
</tr>
<tr>
<td>SAILOR 500</td>
<td>Version 1.09</td>
</tr>
<tr>
<td>EXPLORER 300</td>
<td>Version 3.00</td>
</tr>
<tr>
<td>EXPLORER 500</td>
<td>Version 3.00</td>
</tr>
<tr>
<td>EXPLORER 700</td>
<td>Version 3.02</td>
</tr>
<tr>
<td>EXPLORER 727</td>
<td>Version 1.09</td>
</tr>
</tbody>
</table>

Table 1: PPPoE software releases
The PPPoE feature is factory default set as “Disabled” and therefore must be “Enabled” before the feature can be used. The change of this setting is done in the built-in web MMI of the BGAN(-X) terminal. See picture 1 below.

![Picture 1: PPPoE web MMI](image)

After the change of PPPoE setting the BGAN terminal have to be rebooted before the setting takes effect.

To use the PPPoE feature with MS Windows XP start by creating a new network connection from the Network Connections window and follow the steps below to do this:

![Step 1: New Connection Wizard](image)

![Step 2: Select connect to the Internet](image)
Step 3: Set up the connection manually

Step 5: Write a Name for the Connection

Step 7: Internet Account Information

Step 4: Connect using PPPoE

Step 6: Select Connection Availability

Step 8: Finish Connection Wizard
Upon completion of the connection wizard the Connect window will appear. See picture 2 below:

![Connect window](image)

**Picture 2: Connect window**

The Username and Password:
Username and Password is provided by the airtime provider (DP).
No further configuration is needed to make a Standard Data connection to the Internet.

**Description of some more advanced features and possibilities with the PPPoE dial up connection feature.**

Open the dial up connection window and select the Properties button access the BGAN PPPoE Properties window, picture 4:

![PPPoE Properties](image)

**Picture 4: PPPoE Properties**
Here the input names and options for the PPPoE connection can be inputted. It can be used to issue AT commands stating for instance which APN that the user wants to use for the connection, which QoS is needed etc.

See examples of the supported service name commands in table 2 below:

<table>
<thead>
<tr>
<th>Service Names</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Blank)</td>
<td>Initiates a Primary Standard Data PDP Context (DEFAULT!)</td>
</tr>
<tr>
<td>XBB:BACKGROUND</td>
<td>Initiates a Primary Standard Data PDP Context (Same as blank!)</td>
</tr>
<tr>
<td>XBB:STREAM32K</td>
<td>Initiates a Primary Streaming 32 PDP Context</td>
</tr>
<tr>
<td>XBB:STREAM64K</td>
<td>Initiates a Primary Streaming 64 PDP Context</td>
</tr>
<tr>
<td>XBB:STREAM128K</td>
<td>Initiates a Primary Streaming 128 PDP Context</td>
</tr>
<tr>
<td>XBB:STREAM256K</td>
<td>Initiates a Primary Streaming 256 PDP Context</td>
</tr>
<tr>
<td>XBB:&lt;AT String&gt;</td>
<td>This allows the PPPoE clients to enter a full AT context activation string.</td>
</tr>
<tr>
<td></td>
<td>IE:</td>
</tr>
<tr>
<td></td>
<td>XBB:AT+CGDCONT=1,ip,&quot;bgan.inmarsat.com&quot;;+CGEQREQ=1,1,64,64,6</td>
</tr>
<tr>
<td></td>
<td>4,64,2,0,&quot;0E0&quot;,&quot;0E0&quot;,3,0,0</td>
</tr>
</tbody>
</table>

Table 2: Supported Service Names

If more than one BGAN(-X) terminal is present on the same LAN, then the specific BGAN(-X) terminal can be addressed using a PPPoE AC-Name tag specifying the serial number of the BGAN(-X) terminal.

Syntax: TT<Serial Number>\n
For Windows XP this can be input in front of the Service Name.
E.g.: TT07440325\xBB:STREAM128K

The above example will send the command XBB:STREAM128K to the BGAN terminal with serial number: 07440325
For other PPPoE clients the PPPoE AC-Name tag might be specified another way.

NOTE: The supported AT commands are +CGDCONT, +CGDSCONT, +CGEQMIN, +CGTFT and +CGEQREQ.

The most common used data connections and their service name strings are shown below:

Picture 5: Standard Data

Picture 6: Streaming 32K
The service names in picture 5 to 9 will initiate data connections with different QoS. The service name in picture 10 will force the registration of the data connection to a specific APN, which is different from the default APN on the SIM card. (In this case: BGAN-USA.INMARSAT.COM).

NOTE: In this first PPPoE release PAP authentication is supported. Though, CHAP support is in the software roadmap for the BGAN(-X) products.
Description of the supported AT commands:

- AT+CGDCONT
- AT+CGESEQ
- AT+CGEQMIN
- AT+CGTFT
- AT+CGDCS

**AT+CGDCONT**
AT+CGDCONT is used to specify the Context parameters, such as which APN the context have to use. This can be used to specify a specific APN different from the one on the SIM card.

Syntax:
AT+CGDCONT=<cid>,<protocol>,<APN> where

- <cid> is the Context Identifier (1 – 11)
- <Protocol> is the transport protocol (IP or PPP)
- <APN> is the Access Point Node
- <PDP Addr> is the static IP address from APN (NOT USED!)

E.g.:
AT+CGDCONT=1,ip,"bgan.inmarsat.com"

**AT+CGESEQ**
AT+CGESEQ is the requested Quality of Service (QoS). This is used to specify the QoS for the connection. With this command it is possible to start a Streaming context.

Syntax:
AT+CGESEQ=<cid>,<Traffic Class>,<Max bitrate UL>,<Max bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>

Where:

- <cid> is the Context Identifier (1 – 11)
- <Traffic Class> is the traffic class (1 – Streaming, 3 – Background)
- <Max bitrate UL> is the maximum bit rate up link (0, 32, 64, 128, 256)
- <Max bitrate DL> is the maximum bit rate down link (0, 32, 64, 128, 256)
- <Guaranteed bitrate UL> is the guaranteed bit rate up link (0, 32, 64, 128, 256)
- <Guaranteed bitrate DL> is the guaranteed bit rate down link (0, 32, 64, 128, 256)

E.g.:
AT+CGESEQ=1,1,64,64,64,64

**AT+CGEQMIN**
AT+CGEQMIN is the requested minimum acceptable Quality of Service (QoS). If the requested Quality of Service can not be offered by the Core Network, the data connection will not be established, not even with a lower QoS.

Syntax:
AT+CGEQMIN=<cid>,<Traffic Class>,<Max bitrate UL>,<Max bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>

Where:

- <cid> is the Context Identifier (1 – 11)
- <Traffic Class> is the traffic class (1 – Streaming, 3 – Background)
- <Max bitrate UL> is the maximum bit rate up link (0, 32, 64, 128, 256)
- <Max bitrate DL> is the maximum bit rate down link (0, 32, 64, 128, 256)
- <Guaranteed bitrate UL> is the guaranteed bit rate up link (0, 32, 64, 128, 256)
- <Guaranteed bitrate DL> is the guaranteed bit rate down link (0, 32, 64, 128, 256)

E.g.:
AT+CGEQMIN=1,1,64,64,64,64
**AT+CGTFT**

AT+CGTFT is the Traffic Flow Template (TFT). This command is needed if a secondary PDP context has to be opened. The TFT specifies the IP traffic for the specific PDP context.

**Syntax:**

\[
\text{AT+CGTFT=\langle cid\rangle,\langle packet filter identifier\rangle,\langle evaluation precedence index\rangle,\langle source address and subnet mask\rangle,\langle protocol number\rangle,\langle destination port range\rangle,\langle source port range\rangle}
\]

*Note that Source and Destination are relative the core network. This means that Destination is your terminal.*

Where:

- `<cid>` is the Context Identifier (1 – 11)
- `<packet filter identifier>` is the packet filter identifier (1 – 8)
- `<evaluation precedence index>` This filter’s Evaluation Precedence Index (0-255)
- `<source addr & subnet>` is (0.0.0.0.0.0.0-255.255.255.255.255.255.255.255)
- `<protocol number>` is the protocol number (0-255)
- `<destination port range>` is Destination Port From.To (0.0-65535.65535)
- `<source port range>` is Source Port From.To (0.0-65535.65535)

**E.g.**

\[
\text{AT+CGTFT=1,1,0,87.48.134.251.255.255.255.0,6,20.21,1024.65535}
\]

**AT+CGDSCONT**

AT+CGDSCONT is used to specify the relation between a Secondary Contexts and a Primary Context. The cid of the Secondary Context must be different from the cid of the Primary Context. The QoS of the Secondary Context must be set using the AT+CGEQREQ command explained above.

**Syntax:**

\[
\text{AT+CGDSCONT=\langle cid\rangle,\langle p\_cid\rangle}
\]

Where:

- `<cid>` is the cid for the Secondary Context
- `<p\_cid>` is the Primary Context at which the Secondary is related to.

**E.g.**

\[
\text{AT+CGDSCONT=1,11}
\]

This last section of the document shows the commands needed in order to establish a Primary Standard Data Context with a Secondary Streaming 256K Context, where all UDP traffic goes through the Streaming 256K Data connection and all other traffic goes through the Standard Data connection.

\[
\begin{align*}
\text{AT+CGDCONT=1,ip,bgan.inmarsat.com} & \quad \text{: Specify APN} \\
\text{AT+CGEQREQ=1,3} & \quad \text{: cid 1 = Standard data} \\
\text{AT+CGTFT=11,1,0,,17} & \quad \text{: UDP TFT filter for cid 11} \\
\text{AT+CGEQREQ=11,1256,256,256,256} & \quad \text{: cid 11 = Streaming 256K QoS} \\
\text{AT+CGEQMIN=11,1,256,256,256,256} & \quad \text{: Specify min. acceptable QoS to Streaming 256K} \\
\text{AT+CGDSCONT=11,1} & \quad \text{: Open Secondary cid 11 on Primary cid 1}
\end{align*}
\]

If you have any technical questions to the PPPoE feature please refer to your local Thrane & Thrane distributor, who can assist you with the configuration.

Thrane & Thrane

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