GT M CPL Applet user guide

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1 Scope

This document describers the control panel applet which configures the network driver..

2 Glossary and Acronyms

Term	Description
NDIS	Network Device Interface Specification
NIC	Network Interface Card
OS	Operating System

3 Overview

The software package of device drivers for a device using flip flop (legacy modem and Ndis Network driver) are as follows:

The drivers, all kernel mode, comprise a serial driver, a smart card driver stack of 2 drivers, and a network/legacy modem driver stack of 4 drivers.

The serial driver runs the two interfaces, Application 1 and Debug, and the network driver runs the data channel, and presents standard COM ports to the OS.

The smart card driver runs the smart card interface, and interfaces with the system smart card service.

The network/legacy modem drivers present an Ethernet interface to the OS, with support of DHCP and ARP, and a modem interface, supporting a Unimodem device via the systems modem.sys.

4 Installation

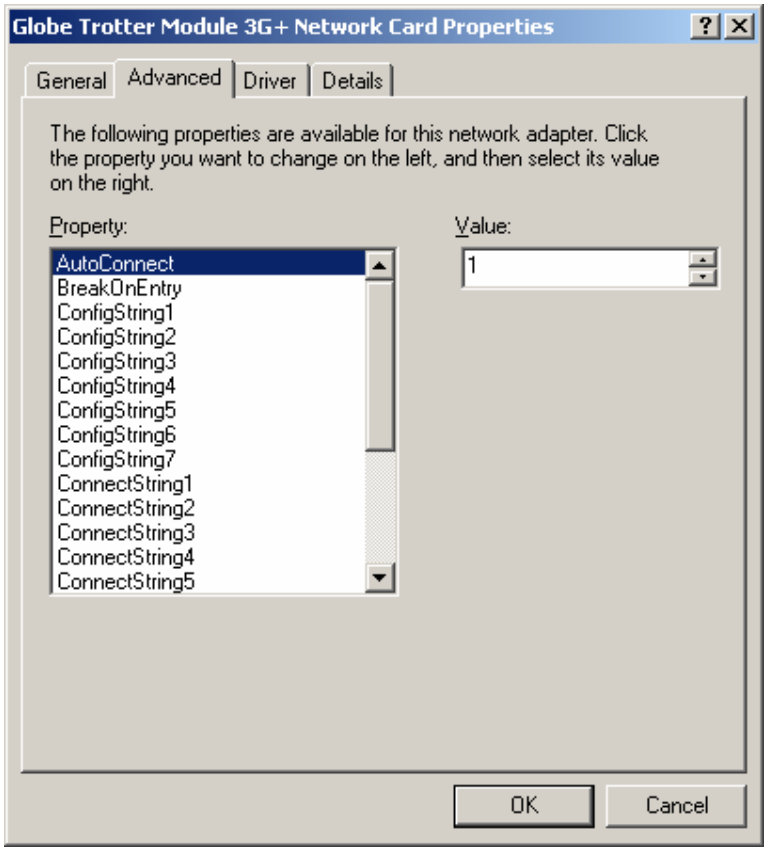
Run the install executable.

The files get copied to the following locations:
Drivers -> windows\System32\drivers
Inf files -> windows\inf
Cpl file-> windows\system32

When the PC detects new hardware will install the drivers automatically.

Configure the network part of the device to use DHCP.

5 The Device manager view



In device manager, right click the Globe Trotter Module 3G+ Network Card icon and select properties.

The advanced tab, shown above, gives access to various configuration parameters. The config and connect strings and the User name, Password and Phone Number strings are also available through a control panel applet described in the next section.

To control the behaviour of the auto-connection feature of the device, set the value of AutoConnect to 0 and click OK.

6 Configuration

The device will create two COM ports available for user mode applications to use. The Application and Diagnostics Channels.

Any software that manages SMS data can be configured to use the Application Channel.

If an application needs to use a modem to make a connection to the network, it can be configured to use the modem component. If not, the network component will be used for connecting to the network. This can be done automatically, setting AutoConnnect to 1, or can be done manually through the control panel applet. See the following section for details on setting the network component.

7 Legacy Modem and flip flopping

By design, the driver set supports two modes of IP connectivity to the network.

1) By using the Network driver
2) By using the Modem driver

These two drivers sit on top of a flip flop bus driver, which gives exclusive access to either device. The flip flop driver itself sits atop the data channel on the device.

By default, the Network driver has control, but, as son as the modem port is opened, the network driver releases control of the underlying data channel.

It should be noted that when the modem port is closed, the Network driver does not reopen the underlying data channel.

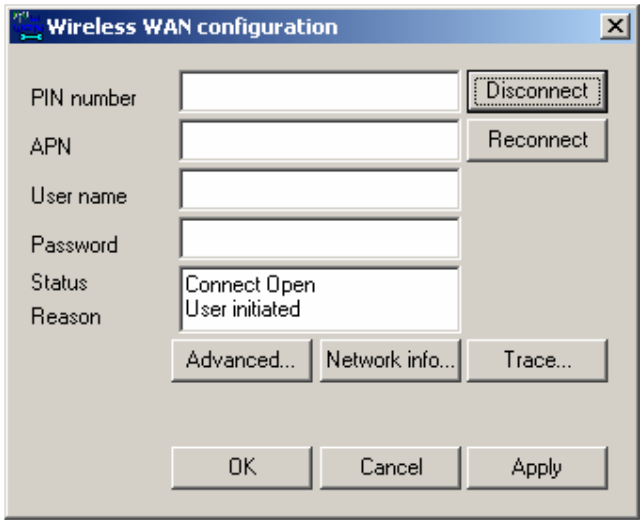
Because the legacy modem is a fully functional modem, it supports RAS dial up networking.

8 The Control panel applet

Run the applet with the following icon in the control panel.


Icon1.ico

The following screen will appear with the controls disabled, or enabled when the device is running:



Buttons and their meanings:

Disconnect:
This disconnects the device from the network, if currently connected, and puts the device into a state ready to accept AT commands.

Reconnect:
Causes the device to reconnect to the network using its current connection data.
If the data has been modified and sent to the device by clicking Apply, then this new data become the data used to make the connection.

Advanced:
This displays a dialog showing all the AT configuration and connection commands, the IP addresses to use and the phone number to use.

Network Info:
Displays a dialog allowing querying of various network information.

Trace:

Displays a dialog showing connection progress, and current activity.

Apply:
Any changes made to the connection data, configuration data, phone, APN, user or password get sent to the driver for use in the next connection. This is a permanent change, and the driver will use this new data for subsequent connections.
The driver will not actually use this new data until the Reconnect button is clicked.

OK:
Does the same as Apply, but also closes the dialog box.

Cancel:
Closes the dialog box.

9 Network Component Configuration

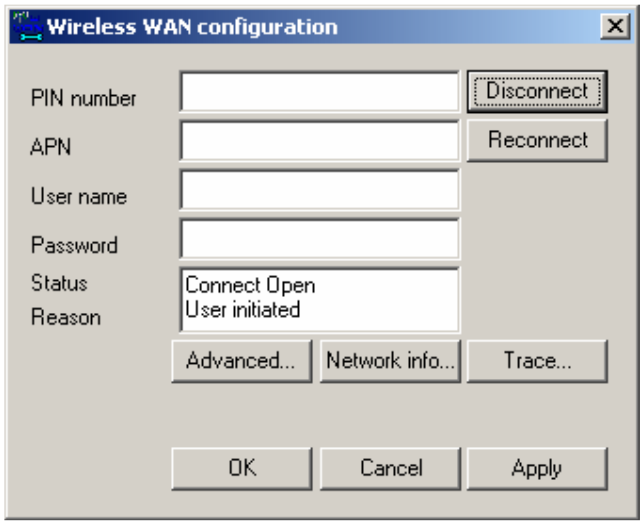
The Network component can be configured to connect automatically, or not, to the network. In both cases, certain data may be needed to make the connection.

The Network component needs to be set to use DHCP. Network Conections-Wirless Connection x-Proporties-TCPIP-Proporties sets how the IP stack gets its IP address. Set it to get everything automatically.

9.1 Simple Network configuration

The first time the device runs it will be running un-configured, and may not connect to the network, in which case you will need to give it certain connection data: Run the control panel applet and click Disconnect.

When Disconnect is clicked, the device goes to Connect Open state.



A PIN number, an APN, a User name and Password can all be entered in this window.

The APN must be written as: xxxxx.xxxx.xx for example:

INTERNET.MYPROVIDER.MYCOUNTRY

Click Apply, then Reconnect. The device will connect to the network with this new data.

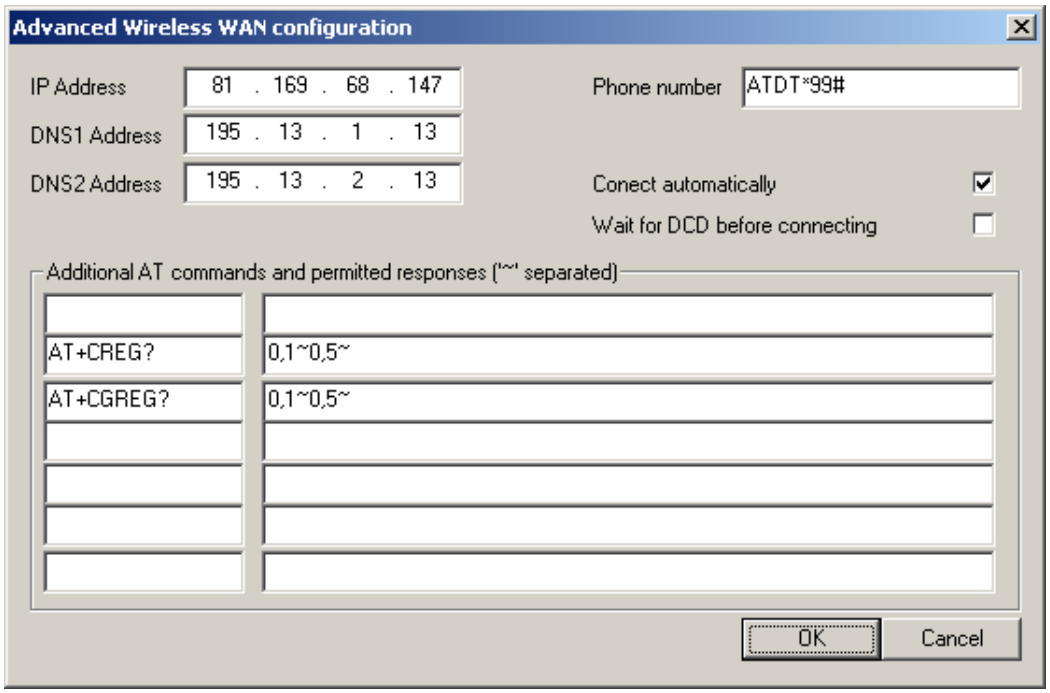
The Status/Reason window should show:

Connect Open->Connect Authenticated->Connected.

At this stage, if you have an icon in the system tray for this network connection, the red cross disappear, and the system show the device as active.

9.2 Advanced Network configuration

Click Advanced, from the Control Panel Applet to get to the Advanced network configuration.



It displays the Client IP address, the 2 DNS addresses, phone number.
It also displays the AT commands in a more advanced way.

Setting/changing of the IP addresses and phone number should require no explanation. And, generally, should not be needed as these values are got automatically form the network. However, if a particular network pre-assigns these values enter them here.

When connecting to a network the driver can send AT commands to configure, or wait for a certain state of, the device. So called AT Connection Commands.

Each AT Connection Command is run until the expected result is obtained, before proceeding to the next AT Connection Command.

By default, the network driver is installed with two AT connection commands. AT_CREG and AT+CGREG?. These check for association with the network before continuing with other AT commands.

The format of the commands is:

AT Command^Response1~Response2~Response*n*~

The first part of the command, up to the '^' is displayed in the left hand window, the responses, after the '^' are displayed in the right hand window.

So, for the default AT+CREG? Connection Command, AT+CREG? is shown in the left hand window, and the responses 0,1 and 0,5 are displayed in the right hand window.

The Response*n* is not the whole response, in this example, '+CREG;0,1' is the whole response, but, the logic of the driver allows for the partial entry of a response. The logic being, if Response1 is in *any* part of the response, it is considered OK to proceed to the next AT Connection Command.

The phone number dialled is set by default to ATDT*99#. This can be changed on this page.

9.2.1 Autoconnect

This controls whether the network driver connects automatically to the network or not.

9.2.2 WaitForDCDgoing1

If this is set, the network driver does not connect until the DCD line on the device goes high. What this means is that all the AT configuration, and dialling can be done through the Application 1 channel. As soon as a successful dial, the network driver takes over and does the IP configuration with the card.

This is useful for legacy applications.

9.3 Setting Connection parameters

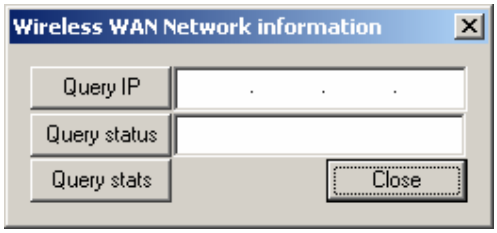
To make a change to any of the connection parameters, edit the data in the relevant window and click Apply.

To make a change and close the window make the necessary change and click OK.

To close the window discarding all changes made click Cancel.

When changes are made and applied or OK'd, they become permanent changes which will be used by the driver on all occasions. That is with the exception of checking on the Connect automatically check box, which does not make a permanent change to the registry.

10 Network info window



This buttons do the following:
Query IP: Displays the current IP address in the window.

Query Status will display Reason, Status in the form 0,0. The numbers having a meaning:
Reason:

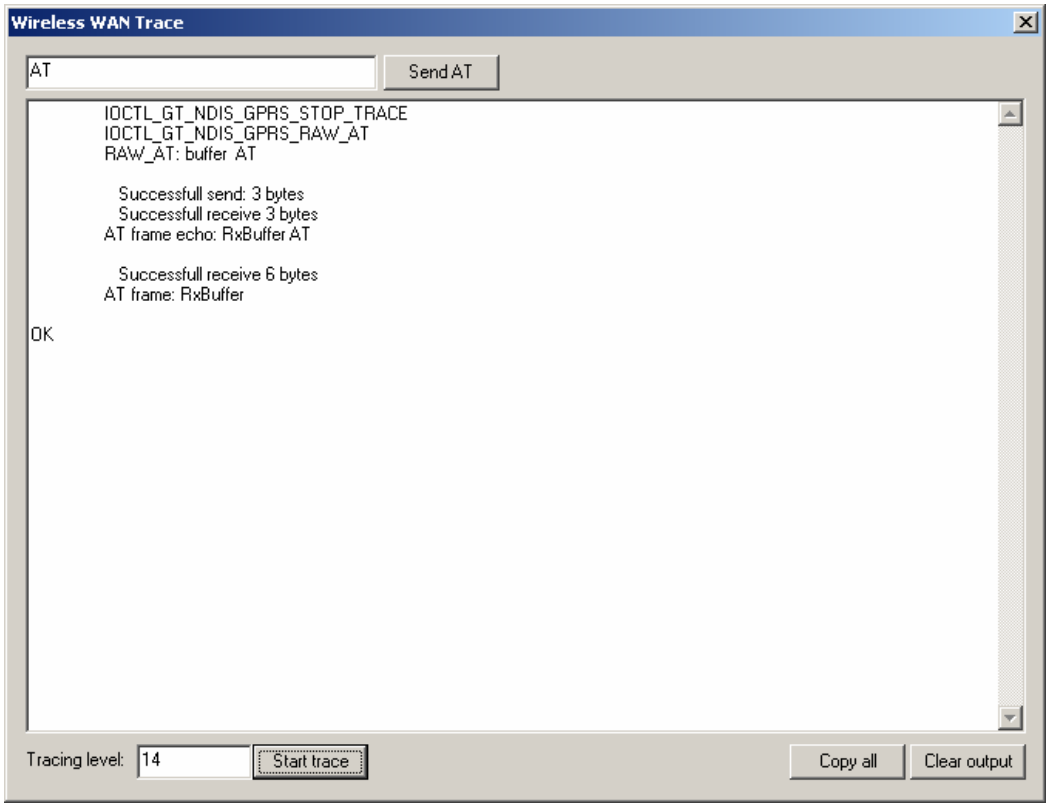
UNKNOWN	0
USER INITIATED	1
CARRIER LOST	2
LCP FAILED	3
PAP FAILED	4
IPCP FAILED	5
NO CARRIER	6

Status:

DISCONNECTED	0
CONNECTED	1
CONNECT OPEN	2
CONNECT DEVICE	3
CONNECT AUTHENTICATING	4
CONNECT AUTHENTICATED	5
DISCONNECTING	6
ERROR	7
UNKNOWN	8

Query Stats displays a dialog containing the Ethernet statistics such as frames received, frames transmitted.

11 Trace window



This window displays the connection progress, and data. The depth of information displayed is configurable via the edit window. Valid values for this are 1,2,4,8,16,32. And, any addition of those values. It defaults to 16, which is a very light level of tracing. To use the tool diagnostically, set the value to 14.

The trace information at is deepest displays all errors, information and program flow information.

To stop the trace click Stop Trace. To start it, click Start Trace.

Copy all:
Copies the contents of the trace window to the clipboard. Useful if you are having trouble connecting. Technical support could advise additional AT commands to make the connection.

Clear output:
Clears the screen of all output.

Send AT:
At commands can be entered in this window, such as AT, ATi, AT+CREG? and so on. The response appears in the trace window. The device only accepts AT commands when disconnected from the network, so to use this feature, click Disconnect.

12 OS Errors of note

KB 817571: An operation was attempted on something that is not a socket.