



Fuji Family Quick Install Manual

Version 8.0

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Version History

Date	Version	Author(s)	Revision(s)	Remarks
Dec 27, 2006	V01 – D1	D. Callaert		Initial version
Jul 14, 2006	V01 – D2	M. Tweepenninckx		Added extra functionality
Jul 20, 2006	V01 – F1	M. Tweepenninckx	D. Callaert	Revision
Jul 26, 2006	V02 – F1	R. Biesemans	D. Callaert	Made some minor corrections
Nov 24, 2006	V03 – D1	D. Callaert		Additional info for FujiEx added
Nov 27, 2006	V03 – D2	D. Callaert		Added LED timing diagrams
Nov 28, 2006	V03 – F1	D. Callaert	R. Biesemans	Revision
Nov 28, 2006	V03 – F2	D. Callaert		Updated LED timing info
Nov 28, 2006	V03 – F3	D. Callaert		Minor cosmetic changes
Dec 20, 2006	V04 – D1	J. Schrijvers		Added installation process for USB mass storage devices
Dec 27, 2006	V04 – F1	J. Schrijvers	D. Callaert	Changed LED timing information for EDGE and HSDPA calls
Feb 22, 2007	V05 – D1	J. Schrijvers		Updated driver installation and Dial-up connection. Vista support added
Feb 22, 2007	V05 – F1	J. Schrijvers		Revision
Mar 13, 2007	V06 – D1	J. Schrijvers		CEM support added 64-bit support added Manual driver installation added

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Creation Date: Mar 22, 2007

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Mar 13, 2007	V06 – F1	J. Schrijvers		Revision
Mar 19, 2007	V07 – F1	J. Schrijvers		RAS only and NDIS only configurations added
Mar 22, 2007	V08 – F1	J. Schrijvers		CEM screenshots updated

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1 INTRODUCTION

This manual describes basic installation and operation of the Fuji Family products, which will be called data card from this point onwards.

All explanations in this manual relate to the following versions of Windows :

- Windows 2000 – Service Pack 4
- Windows XP – Service Pack 2 – 32-bit and 64-bit
- Windows Vista – 32-bit and 64-bit

running on a HP nc6120 or a Sony Vaio VGN-S series laptop.

All screenshots shown in this document are by default taken on Windows XP.

When needed, i.e. when it's behaviour deviates significantly from Windows XP, screenshots taken on Windows Vista will be added.

No screenshots taken on Windows 2000 are supplied.

The Fuji family has three form factors :

- 
 • standard Cardbus (Extended Type II PCMCIA PC Card) form factor, referred to as Fuji-L in this manual.

- 
 • Cardbus form factor with butterfly antenna, referred to as Fuji-GT in this manual.

- 
 • ExpressCard/34 (34mm) form factor, referred to as Fuji-Ex in this manual.



In order to be able to use the Fuji-Ex in a laptop with a Cardbus interface, a Cardbus-ExpressCard/32 converter can be used. It is referred to as CEM in this manual.

2 DELIVERY INFORMATION AND REQUIREMENTS

2.1 Delivery Information

The delivery of the Fuji data card package is delivered in a plastic protection box.

2.2 Minimum system requirements

TBD

2.3 Service requirements

- Subscription to a UMTS/GPRS service provider
- (U)SIM ((UMTS) Subscription Identification Module)

2.4 Additional parameters

Additional information may be required from your service provider to activate the HSDPA/UMTS/EDGE/GPRS functionality of the data card such as:

- Access Point Name (APN)
- HSDPA and/or EDGE network availability

3 OVERVIEW

The following provides a brief high level overview of the data card's Hardware and Software.

3.1 Hardware

The Fuji-L and Fuji-GT data cards are 32-bit Cardbus cards which are hardware capable of GSM/GPRS/EDGE/UMTS/HSDPA(Cat.6 or Cat.8) calls.

The Fuji-Ex data card is a ExpressCard/34 card which is hardware capable of GSM/GPRS/EDGE/UMTS/HSDPA(Cat.6 or Cat.8) calls.

The package supports transmission speeds up to 384 kbps UL / 3.6 Mbps DL (Cat6) or 7.2 Mbps DL (Cat8).

In order to support HSDPA Cat.6, firmware version 1.x.x should be used.

In order to support HSDPA Cat.8, firmware version 2.x.x should be used.

3.2 Software

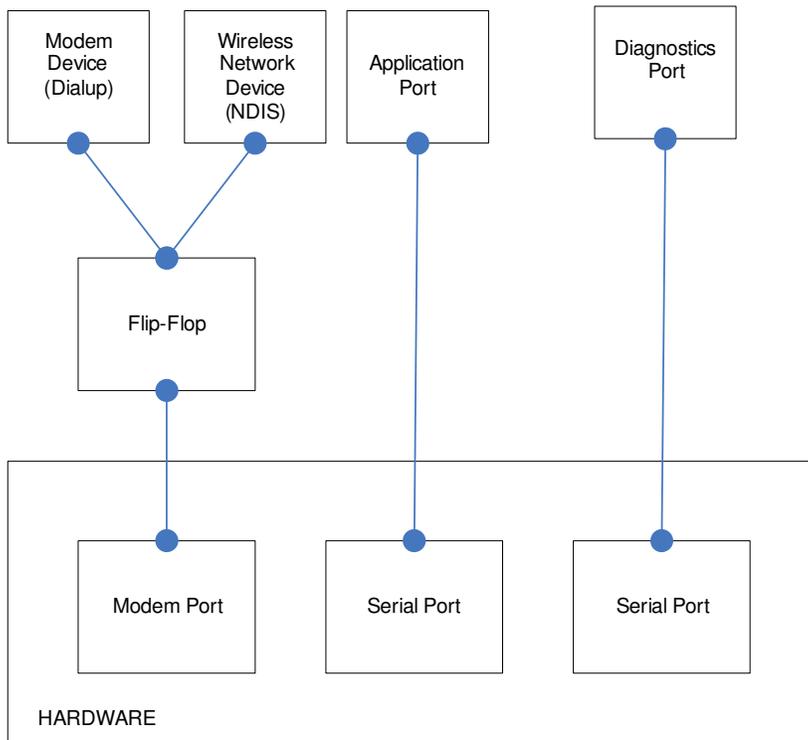
One of the possibilities is that you use the dial-up connection from Windows to make a PS call with the data card, or using a NDIS connection (which requires a separate application, not delivered with Windows)

Also, HyperTerminal can be used to setup the APN and PIN code.

This will be explained in more detail later in this manual.

4 DRIVERS

4.1 Driver Structure: *Flip-Flop Driver Principle*



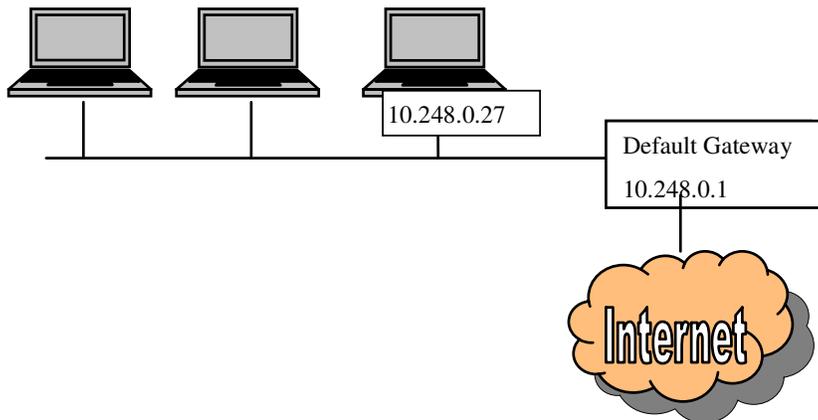
This product comes with both RAS and NDIS drivers. The main difference between NDIS and RAS drivers is in their connection setup. The RAS drivers setup a connection that uses a modem to dial-in to the Internet. The NDIS drivers setup a sort of Ethernet connection that uses a network interface card. But both of them still support the application interface, the diagnostics interface and the smart card reader interface. A Flip-Flop Driver bus makes it possible for the end user to switch easily to the RAS drivers or the NDIS drivers without changing settings on the card. However keep in mind that you can not communicate to the modem and the NDIS network interface at the same time!

It can be possible that a driver is configured for RAS or NDIS only. In this case, the Flip-Flop driver is disabled.

4.2 NDIS and RAS drivers

4.2.1 Introduction: Ethernet

An Ethernet adapter connects the host with the LAN network. Hosts in a local network can communicate directly with each other. But all traffic to a remote network is sent to the router, which is called the default gateway. The [default gateway](#) determines where to send a packet that is outside of a local subnet as determined by a network mask. Both the adapter and the default gateway have their own MAC address and get their own IP-address.



4.2.2 NDIS drivers

NDIS stands for Network Driver Interface Specification: it is a Windows specification which defines the communication between communication protocol programs (TCP/IP) and network device drivers. You can find more information regarding NDIS on: www.ndis.com

The NDIS driver emulates an 802.3 Ethernet adapter. So in this case it is meaningless to give the same address to the default gateway and the adapter itself. The adapter is not a true 802.3 adapter but rather a virtual one emulated by a driver. Options NDIS driver emulates DHCP server and ARP requests so it made sense to have a ‘virtual’ remote adapter at X.0.0.1, a default gateway and a DHCP server. That configuration also minimizes ARP cache since most packets are routed via “virtual” gateway so normally only one ARP request is needed.

4.2.3 Windows Dial-up/ RAS drivers

Windows Dial-up or RAS (Remote Access Service) drivers used the PPP (point-to-point) protocol. . In a point-to-point connection there can be no confusion: what the adapter sends is meant for the default gateway and vice-versa. So with this sort of connection the IP address will be the same as the default gateway:

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```

Standard Windows dial-up:
PPP adapter:
IP: 10.122.x.y
Subnet mask: 255.255.255.255
Default gateway: 10.122.x.y

```

4.3 Driver package contents

The driver package exists of the following types of files :

- **INF file** : information file. It contains all information required to install a device driver in Windows. For every device, such a INF file is required.
- **SYS file** : system file. It is the actual driver file. It provides the I/O interface for the device the driver is intended for.
- **CAT file** : security catalog file. A driver catalog file contains a cryptographic hash of each file in the driver package. Windows uses these hashes to verify that the package was not altered after it was published. To ensure that the catalog file is not altered, it should be digitally signed.
- **EXE file** : application. It is either the driver installer application or a service providing functionality during the devices use.
- **other files** : control panel extension, header file, MS Word documentation, Registry entries.

The driver package contains a 32-bit version and a 64-bit version.

A 32-bit operating system package exists for the following operating systems :

- Windows 2000
- Windows XP, 32-bit versions
- Windows Vista, 32-bit versions

A 64-bit operating system package exists for the following operating systems :

- Windows XP, 64-bit versions
- Windows Vista, 64-bit versions

A driver can be provided with the following configurations :

- RAS only : Modem Interface enabled – Network Card disabled – Flip-Flop Bus disabled
- NDIS only : Modem Interface disabled – Network Card enabled – Flip-Flop Bus disabled
- RAS and NDIS : Modem Interface enabled – Network Card enabled – Flip-Flop Bus enabled

Driver packages of drivers with these different configurations contain the same content. All device drivers are included.

The configurations as described above are defined in `gtmbus.inf`.

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So, when a device of a data product is disabled, it's driver is included in the package and it's driver can be installed, but it will not be loaded when the drivers of a data product get loaded.

4.3.1 32-bit operating system package

Filename	Type	Description / Device Name
GtDetectSc.exe	Application	service providing detach at standby/shutdown/hibernate
GtFlashSwitch.exe	Application	service switching between USB Mass Storage device and modem device
setup.exe	Application	driver installer (engineering version)
GtmNicApp.cpl	Control Panel extension	sample NDIS driver applet
GtNdisDeviceIo.h	H File	NDIS driver interface
GenericNDISDriver InterfaceDescriptionDoc.doc	Microsoft Word Document	NDIS driver interface description document
defdata.reg	Registration Entries	default NDIS related Registry entry settings
gtfubus.cat	Security Catalog	renames USB Host controller
gtmbus.cat	Security Catalog	GlobeTrotter HSDPA USB Bus
gtmff.cat	Security Catalog	GlobeTrotter HSDPA Flip-Flop Bus
gtmmdm.cat	Security Catalog	GlobeTrotter HSDPA Modem Interface
gtmndis.cat	Security Catalog	GlobeTrotter HSDPA Network Card
gtmsc.cat	Security Catalog	GlobeTrotter HSDPA Smart Card Interface
gtmser.cat	Security Catalog	GlobeTrotter HSDPA Application Interface & Diagnostics Interface
Autorun.inf	Setup Information	AutoRun setup
GtFubus.inf	Setup Information	renames USB Host controller
gtmbus.inf	Setup Information	GlobeTrotter HSDPA USB Bus
gtmff.inf	Setup Information	GlobeTrotter HSDPA Flip-Flop Bus
gtmmdm.inf	Setup Information	GlobeTrotter HSDPA Modem Interface
gtmndis.inf	Setup Information	GlobeTrotter HSDPA Network Card
gtmsc.inf	Setup Information	GlobeTrotter HSDPA Smart Card Interface
gtmser.inf	Setup Information	GlobeTrotter HSDPA Application Interface & Diagnostics Interface
gtffbus.sys	System file	GlobeTrotter HSDPA Flip-Flop Bus
Gtm50Irp.sys	System file	GlobeTrotter HSDPA Network Card (Windows 2000)
Gtm51Irp.sys	System file	GlobeTrotter HSDPA Network Card (Windows XP and Vista)
gtptser.sys	System file	GlobeTrotter HSDPA Flip-Flop Bus GlobeTrotter HSDPA Modem Interface

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		GlobeTrotter HSDPA Diagnostics Interface GlobeTrotter HSDPA Application Interface GlobeTrotter HSDPA Smart Card Interface
gtscer.sys	System file	GlobeTrotter HSDPA Smart Card Interface
gtuqbus2k.sys	System file	GlobeTrotter HSDPA USB Bus (Windows 2000)
gtuqbus.sys	System file	GlobeTrotter HSDPA USB Bus (Windows XP and Vista)

4.3.2 64-bit operating system package

Filename	Type	Description / Device Name
GtDetectSc.exe	Application	service providing detach at standby/shutdown/hibernate
GtFlashSwitch.exe	Application	service switching between USB Mass Storage device and modem device
setup_64.exe	Application	driver installer (engineering version)
GtmNicApp.cpl	Control Panel extension	sample NDIS driver applet
GtNdisDeviceIo.h	H File	NDIS driver interface
GenericNDISDriver InterfaceDescriptionDoc.doc	Microsoft Word Document	NDIS driver interface description document
defdata.reg	Registration Entries	default NDIS related Registry entry settings
Gtfubus_64.cat	Security Catalog	renames USB Host controller
gtmbus_64.cat	Security Catalog	GlobeTrotter HSDPA USB Bus
gtmff_64.cat	Security Catalog	GlobeTrotter HSDPA Flip-Flop Bus
gtmmdm_64.cat	Security Catalog	GlobeTrotter HSDPA Modem Interface
gtmndis_64.cat	Security Catalog	GlobeTrotter HSDPA Network Card
gtmsc_64.cat	Security Catalog	GlobeTrotter HSDPA Smart Card Interface
gtmser_64.cat	Security Catalog	GlobeTrotter HSDPA Application Interface & Diagnostics Interface
Autorun.inf	Setup Information	AutoRun setup
GtFubus_64.inf	Setup Information	renames USB Host controller
gtmbus_64.inf	Setup Information	GlobeTrotter HSDPA USB Bus
gtmff_64.inf	Setup Information	GlobeTrotter HSDPA Flip-Flop Bus
gtmmdm_64.inf	Setup Information	GlobeTrotter HSDPA Modem Interface
gtmndis_64.inf	Setup Information	GlobeTrotter HSDPA Network Card
gtmsc_64.inf	Setup Information	GlobeTrotter HSDPA Smart Card Interface
gtmser_64.inf	Setup Information	GlobeTrotter HSDPA Application Interface & Diagnostics Interface
gtffbus_A64.sys	System file	GlobeTrotter HSDPA Flip-Flop Bus
Gtm51Irp_A64.sys	System file	GlobeTrotter HSDPA Network Card

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gptser_A64.sys	System file	GlobeTrotter HSDPA Flip-Flop Bus GlobeTrotter HSDPA Modem Interface GlobeTrotter HSDPA Diagnostics Interface GlobeTrotter HSDPA Application Interface GlobeTrotter HSDPA Smart Card Interface
gtscer_A64.sys	System file	GlobeTrotter HSDPA Smart Card Interface
gtuqbus_A64.sys	System file	GlobeTrotter HSDPA USB Bus

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4.4 Driver Installation

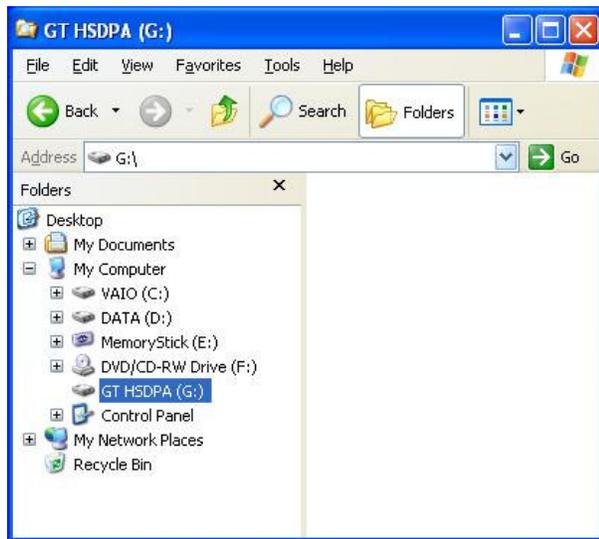
This chapter describes the installation of drivers delivered in a package as described in Chapter 4.3 . This package contains an engineering driver installer, setup.exe (or setup_64). Be aware that this installer is not meant for commercial use. Although it is designed for proper driver installation, it can contain some flaws.

The installation of drivers through a commercial driver installer, with or without a dashboard application incorporated, is not covered in this manual.

The first time a Fuji data card is inserted in a “clean” laptop, it can present itself to an end user in 3 different ways (depending on the customization of the data card product) :

1. It presents itself as a USB Mass Storage – flash disk device.

In Windows Explorer, a disk called “GT HSDPA (X:)”, is available. X holds the assigned drive letter.



This disk can contain all types of content.

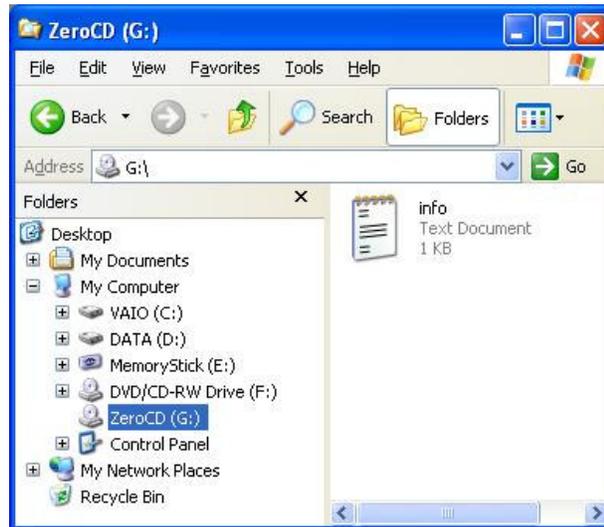
In case the disk contains a driver package as described in Chapter 4.3, it is best to copy it first to a location on the hard disk before starting the driver installation. Instructions for the driver installation are given in Chapter 4.4.1.

In case the disk contains a commercial driver installer, the installation has to be started by running the installer.

This configuration is possible on a Fuji-L and Fuji-GT.

2. It presents itself as a USB Mass Storage – CDROM device.

In Windows Explorer, a CDROM disk called “GT HSDPA (X:)” or “ZeroCD (X:)", is available. X holds the assigned drive letter.



This disk can contain all types of content.

In case the disk contains a driver package as described in Chapter 4.3, it is best to copy it first to a location on the hard disk before starting the driver installation. Instructions for the driver installation are given in Chapter 4.4.1.

In case the disk contains a commercial driver installer, the installer should start automatically after initial insertion on a system. The concept when applications, manuals and drivers are distributed and installed immediately when the data card is inserted for the first time is called Zero-CD. There is no need for CD installation or a bulky printed book. A data card with Zero-CD is a true Plug ‘n Play solution.

This configuration is possible on a Fuji-L, Fuji-GT and Fuji-Ex.

3. It presents itself as a network/modem device. A driver package, as described in Chapter 4.3, needs to be delivered separately and needs to be copied on the hard disk before the installation can start. Instructions for the driver installation are given in Chapter 4.4.1.

This configuration is possible on a Fuji-L, Fuji-GT and Fuji-Ex.

As described in Chapter 4.3, a driver can be configured with 3 configurations :

- RAS only : Modem Interface enabled – Network Card disabled – Flip-Flop Bus disabled
- NDIS only : Modem Interface disabled – Network Card enabled – Flip-Flop Bus disabled
- RAS and NDIS : Modem Interface enabled – Network Card enabled – Flip-Flop Bus enabled

Based on the configuration, variations in the installation procedure exist. These variations will be indicated in the next Chapters.

4.4.1 Driver installation procedure

Before starting the driver installation, the following preparations should be done :

- Make sure you have full administrator rights on your laptop in order to have a successful installation.
- All applications running should be closed.
- The complete driver package should be available on the hard disk.
- Have a Fuji data card ready.
- All drivers should be signed.
- In order to guarantee a successful installation, old Fuji (or other data card) drivers should be uninstalled first. Since the engineering installer does not have proper uninstall/upgrade/downgrade support, the most efficient way to uninstall the old drivers is by starting with a clean operating system image. In case you would anyhow choose to upgrade old Fuji drivers with new ones, follow the instructions in Chapter 4.4.2 . In case you would choose to downgrade the drivers, it is definitely advisable to start with a clean system.

As soon the steps above are fulfilled, the driver installation can be done automatically or manually.

4.4.1.1 Automatic installation

- Without the data card being inserted, run the driver installer setup.exe .
- Insert the data card in the laptop.
The installation of the drivers runs automatically. No user interaction is required.
Drivers for the following devices will be installed :
 - GlobeTrotter HSDPA (bus driver)
 - - GlobeTrotter HSDPA Flip-Flop Bus¹
 - GlobeTrotter HSDPA Network Card
 - GlobeTrotter HSDPA Modem Interface
 Or
 - GlobeTrotter HSDPA Network Card²
 Or

¹ RAS and NDIS configuration

² NDIS only configuration

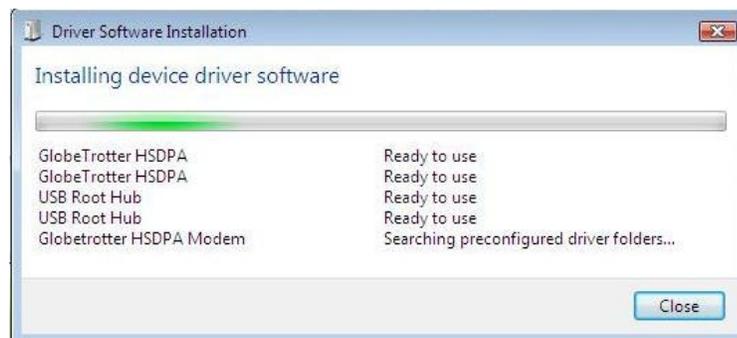
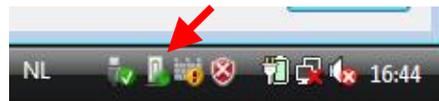
- GlobeTrotter HSDPA Modem Interface³
- GlobeTrotter HSDPA Diagnostics Interface
- GlobeTrotter HSDPA Application Interface
- GlobeTrotter HSDPA Smart Card Interface

In Windows XP, a “Found New Hardware” pop-up in the system tray appears for all devices.

Below is such a pop-up for the GlobeTrotter HSDPA Diagnostics Interface :



In Windows Vista, the progress of the driver installation can be followed by opening the “Driver Software Installation” window. This window can be opened by clicking the corresponding icon in the system tray.

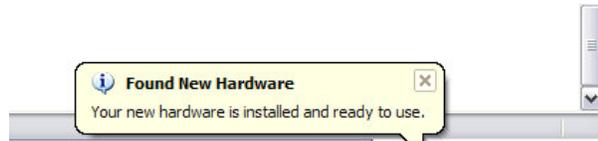


When using a Fuji-Ex together with a CEM on Windows 2000, you must first insert the CEM without Fuji-Ex. When all devices of the CEM have their drivers installed, the Fuji-Ex data card can be inserted in the CEM. A “Found New Hardware” pop-up appears for each device involved. When you would insert the CEM and Fuji-Ex together, the drivers will not be loaded properly and therefore the data card will be unusable afterwards.

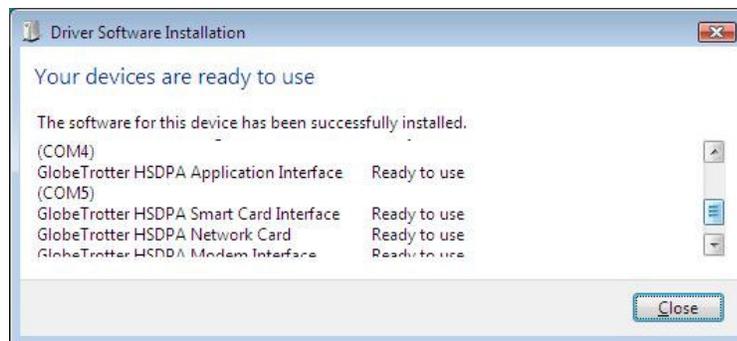
³ RAS only configuration

On Windows XP and Windows Vista however, the CEM can be inserted together with the Fuji-Ex.

- In Windows XP, when all devices have their driver installed, the following pop-up appears in the system tray :

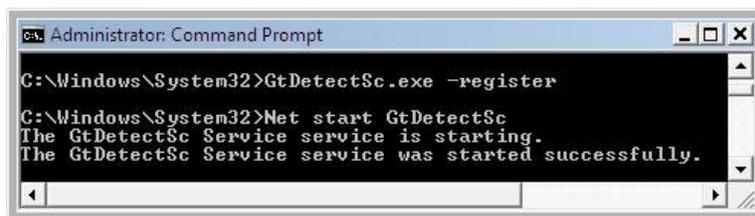


In Windows Vista, when all devices have their driver installed, the “Driver Software Installation” window indicates that all devices are ready to use.



4.4.1.2 Manual installation

- Service GtDetectSc.exe has to be installed :
 - Copy GtDetectSc.exe from the driver package location to C:\Windows\System32\
 - Open a DOS Command Prompt window and go to C:\Windows\System32\
 - Type : GtDetectSc.exe -register
 - Tpe : Net start GtDetectSc
 - When the service is installed, the following feedback is sent :



- Service GtFlashSwitch.exe has to be installed :
 - Copy GtFlashSwitch.exe from the driver package location to C:\Windows\System32\

- Open a DOS Command Prompt window and go to C:\Windows\System32\
- Type : GtFlashSwitch.exe –register
- Tpe : Net start GtFlashSwitch
- When the service is installed, the following feedback is sent :



```

Administrator: Command Prompt
C:\Windows\System32>GtFlashSwitch.exe -register
C:\Windows\System32>Net start GtFlashSwitch
The GtFlashSwitch Service service is starting.
The GtFlashSwitch Service service was started successfully.

```

- Insert the data card in the laptop.
- For the Fuji-GT, Fuji-L and Fuji-Ex with CEM, the drivers for the USB Host Controller will be installed automatically. These drivers are already available in the operating system driver package and are not part of Option’s data card’s driver package.

The following steps in the manual driver installation process are different between Windows XP and Windows Vista. Therefore a dedicated section for each version is given.

Windows XP :

- When the first Option device is detected, the following window appears :



Select “No, not this time”.

- Select “Install from a list or specific location (Advanced)” in the following window.

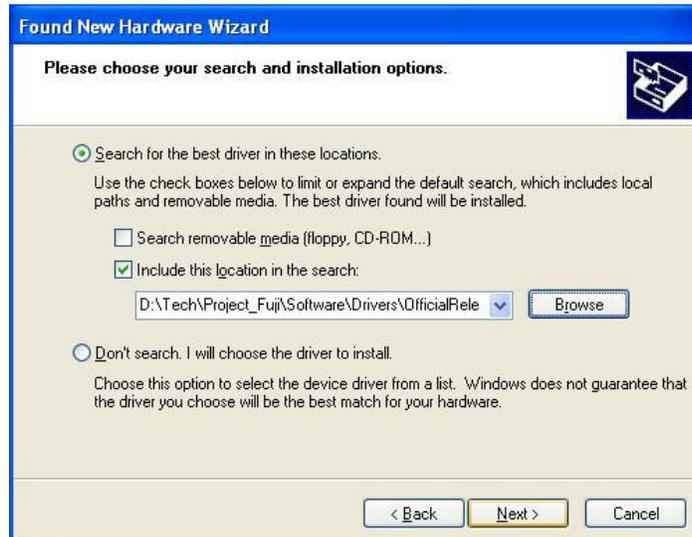
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- Point to the location where the driver package is located in the following window :



- When the device's driver is installed, the following window appears :

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Click Finish to finish the driver installation.

- The previous 4 steps will have to be executed for the following devices :

GlobeTrotter HSDPA (bus driver)

GlobeTrotter HSDPA Flip-Flop Bus⁴

GlobeTrotter HSDPA Network Card

GlobeTrotter HSDPA Modem Interface

Or

GlobeTrotter HSDPA Network Card⁵

Or

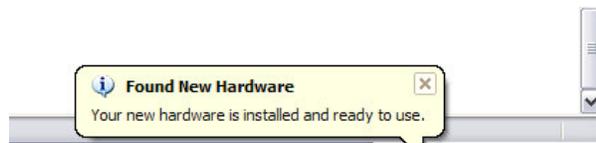
GlobeTrotter HSDPA Modem Interface⁶

GlobeTrotter HSDPA Diagnostics Interface

GlobeTrotter HSDPA Application Interface

GlobeTrotter HSDPA Smart Card Interface

- When all devices have their driver installed, the following pop-up appears in the system tray :



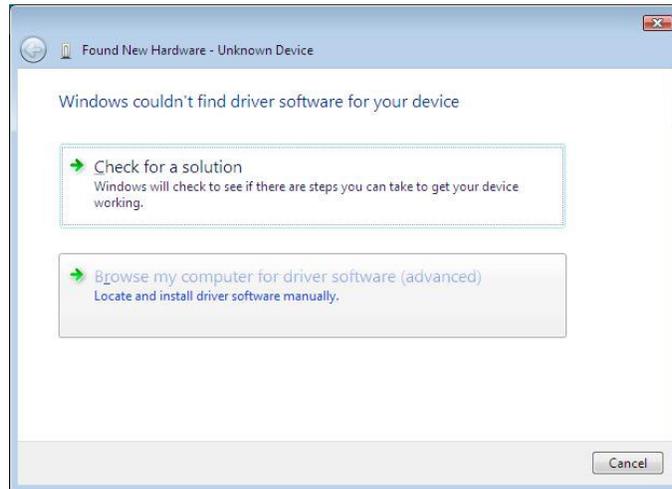
⁴ RAS and NDIS configuration

⁵ NDIS only configuration

⁶ RAS only configuration

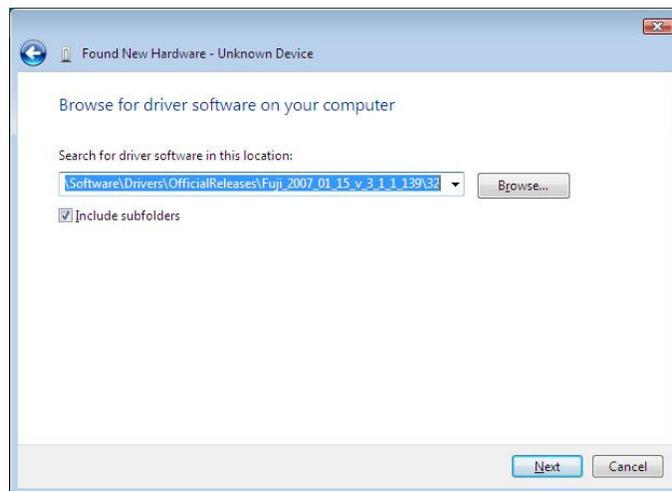
Windows Vista :

- When the first Option device is detected, the following window appears :



Select "Browse my computer for driver software (advanced)".

- Point to the location where the driver package is located in the following window :



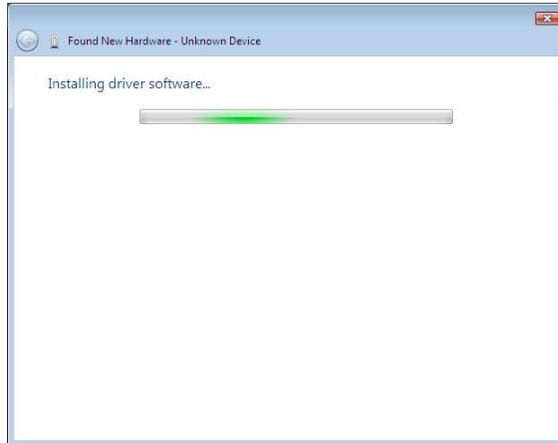
Click the "Next" button.

- While the driver is being installed, the following window appears :

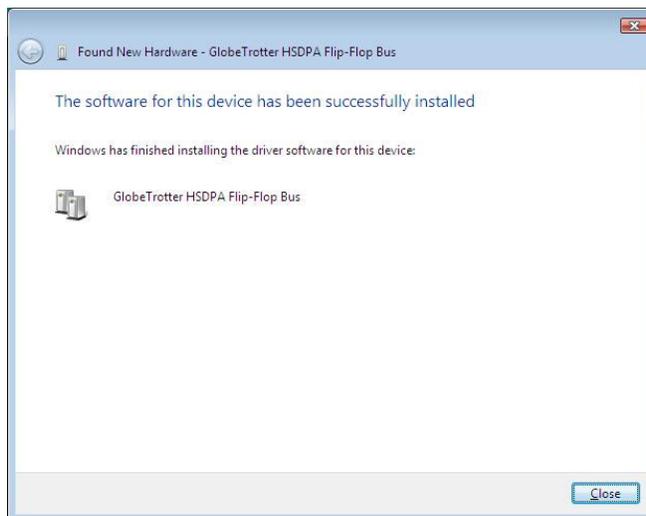
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- When the device's driver is installed, the following window appears :



- The previous 4 steps will have to be executed for the following devices :

GlobeTrotter HSDPA (bus driver)

GlobeTrotter HSDPA Flip-Flop Bus⁷

GlobeTrotter HSDPA Network Card

GlobeTrotter HSDPA Modem Interface

Or

GlobeTrotter HSDPA Network Card⁸

Or

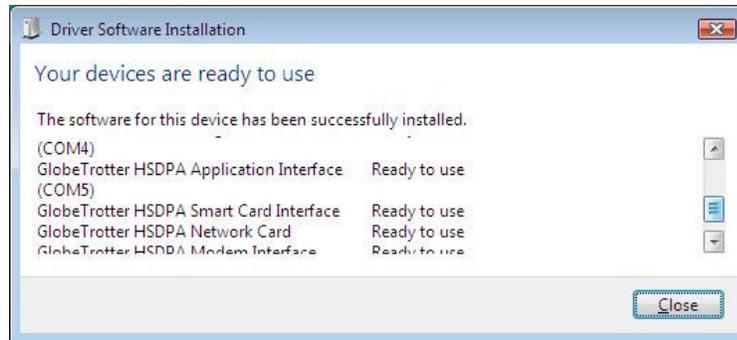
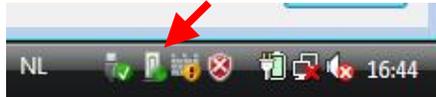
GlobeTrotter HSDPA Modem Interface⁹

⁷ RAS and NDIS configuration

⁸ NDIS only configuration

GlobeTrotter HSDPA Diagnostics Interface
 GlobeTrotter HSDPA Application Interface
 GlobeTrotter HSDPA Smart Card Interface

- When all devices have their driver installed, the “Driver Software Installation” window indicates that all devices are ready to use.
 This window can be opened by clicking the corresponding icon in the system tray.



4.4.1.3 Installation verification

In order to check whether the driver installation was successful, the following check has to be done :

- Locate the installed devices in Device Manager
 In order to open Device Manager : Start > Control Panel > System > select the Hardware tab > Device Manager. Choose to View Devices by connection.

The following Fuji devices should be present in the device tree :

GlobeTrotter HSDPA (bus driver)
 GlobeTrotter HSDPA Flip-Flop Bus¹⁰
 GlobeTrotter HSDPA Network Card
 GlobeTrotter HSDPA Modem Interface

Or

⁹ RAS only configuration

¹⁰ RAS and NDIS configuration

GlobeTrotter HSDPA Network Card¹¹

Or

GlobeTrotter HSDPA Modem Interface¹²

GlobeTrotter HSDPA Diagnostics Interface

GlobeTrotter HSDPA Application Interface

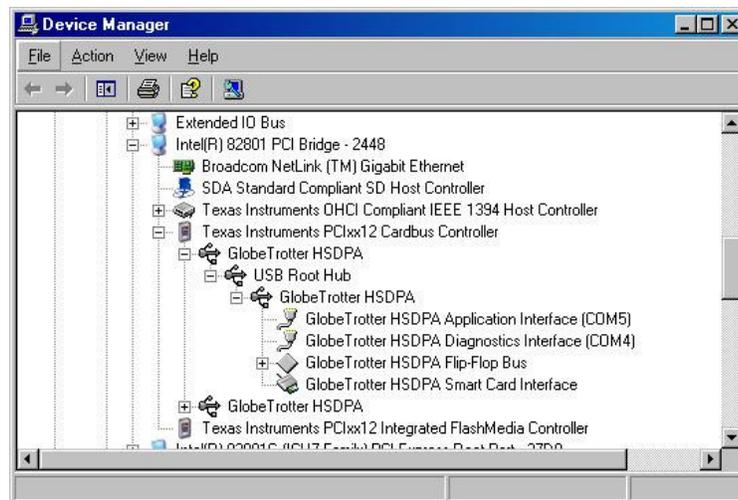
GlobeTrotter HSDPA Smart Card Interface

GlobeTrotter HSDPA Smart Card Interface

Based on the driver version or Fuji card being used, the Fuji devices will be visible under a different location in Device Manager.

- Fuji-GT and Fuji-L (HW before v1.4):

The Fuji devices are connected to a Root Hub of a USB Host Controller that is connected to a Cardbus Controller. This USB Host Controller resides on the Fuji data card.



The 2 USB Host Controller ports can have the following names :

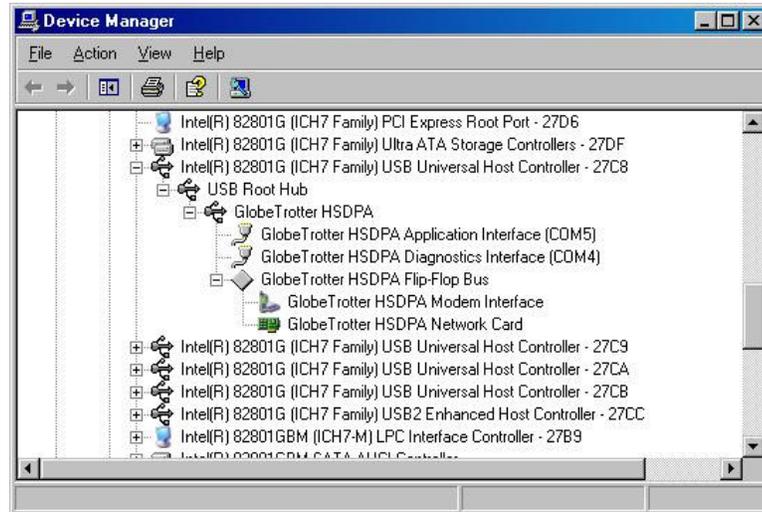
- “GlobeTrotter HSDPA”
- “NEC PCI to USB Open Host Controller”

- Fuji-Ex without CEM :

The Fuji devices are connected to a Root Hub of a USB Host Controller that is connected to the laptop’s PCI bus.

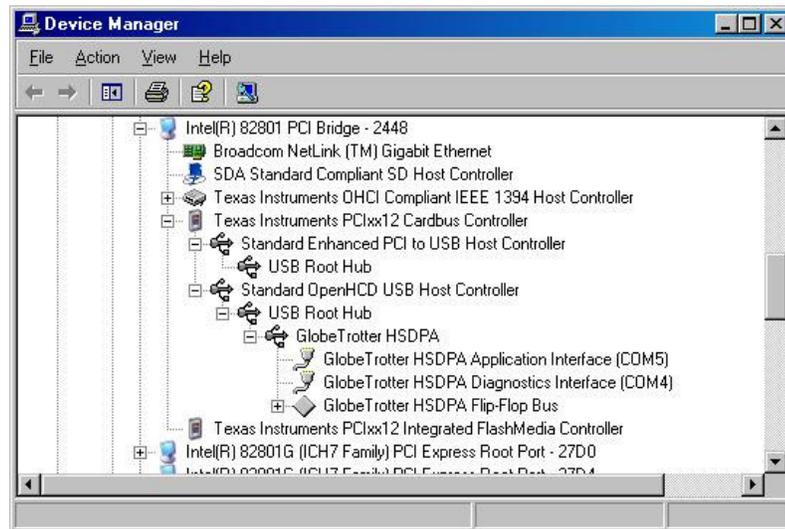
¹¹ NDIS only configuration

¹² RAS only configuration



- Fuji-Ex with CEM and Fuji-L (HW v1.4 or later):

The Fuji devices are connected to a Root Hub of a USB Host Controller that is connected to a Cardbus Controller. This USB Host Controller resides on the CEM or Fuji-L. This USB Host Controller is a different one than the one incorporated in the Fuji-GT.

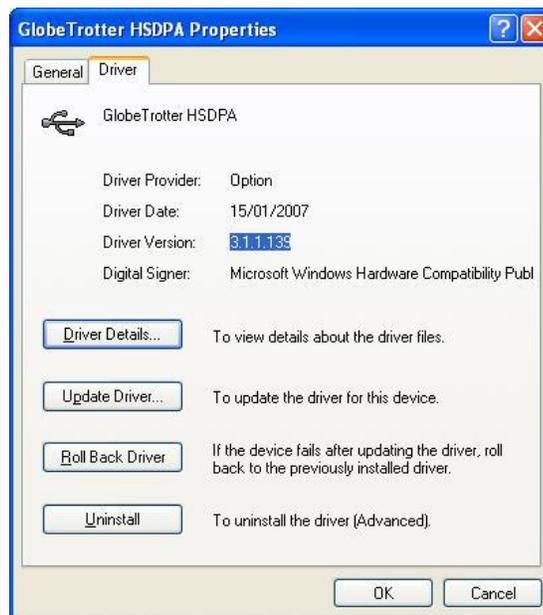


The 2 USB Host Controller ports can have the following names :

- “GlobeTrotter HSxPA” (Fuji-Ex with CEM) or “GlobeTrotter HSDPA” (Fuji-L)
- “Standard Enhanced PCI to USB Host Controller” and “Standard OpenHCD USB Host Controller”

It is possible that “Standard Enhanced PCI to USB Host Controller” and “Standard OpenHCD USB Host Controller” (USB Host Controller ports) are named “GlobeTrotter HSDPA”.

- It should be checked that all devices have the correct driver version installed. For each device, check the Driver Version in the device’s Driver Properties :
point to a device in the device tree in “Device Manager”
click Properties
select the Driver tab



the Driver Version field should hold the correct driver version

- When all the drivers are installed correctly, the data card is ready to be used. In case a device does not have the correct driver version installed, follow the procedure described in Chapter 4.4.2 .

4.4.2 Driver upgrading procedure

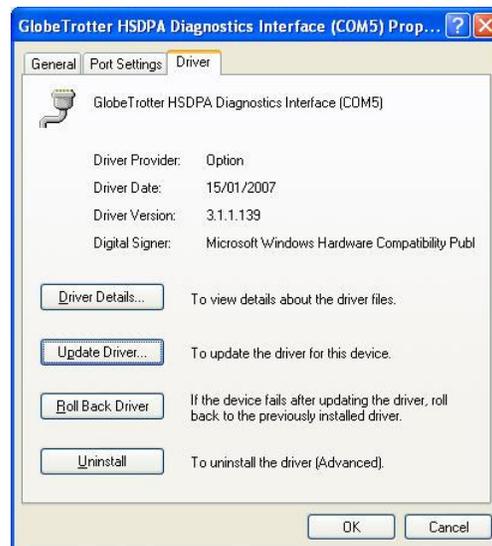
In case a user wants to install Fuji drivers on top of an older version, the following procedure has to be followed. It can be done automatically or manually.

4.4.2.1 Automatic driver upgrading

- While the data card is inserted in the laptop, run the driver installer setup.exe (of the new driver package). Afterwards, the drivers of all devices should be upgraded.
- It could happen that some devices do not have an upgraded driver. This can be checked through the “Device Manager” windows, as explained in Chapter 4.4.1.3 .
- In case a driver is not upgraded, it has to be done manually. See Chapter 4.4.2.1 for the steps to follow

4.4.2.2 Manual driver upgrading

- Through Device Manager, select “Update Driver...” in the Driver Properties window (see Chapter 4.4.1.3) for all data card devices.



- In the “Hardware Update Wizard” window, choose not to connect to Windows Update to search for software.



- In the “Hardware Update Wizard” window, choose to install the software automatically.

Windows XP :

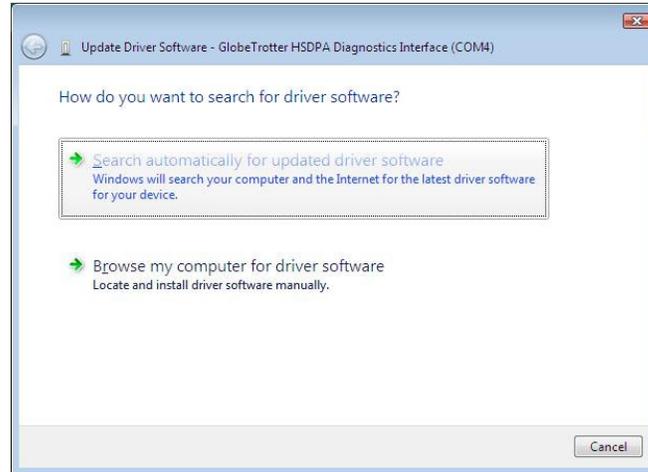


Windows Vista :

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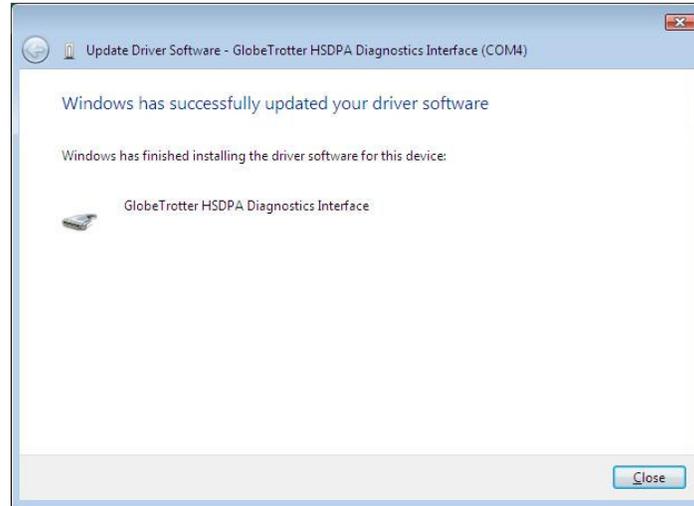
In case several versions of drivers are available on the system, you will have to select the proper one.

The (new) driver will be installed.

In Windows XP, Finish the wizard.



In Windows Vista, close the wizard.



Double check whether the driver version is correct now (see above).

4.5 Safely removing the data card from the PC

Every time you need to unplug the data card, you should safely remove it first from the Operating System. If you forget to safely remove your data card, problems may occur. The procedure is explained below:

- Single left mouse button click the Safely Remove Hardware icon in the system tray.
- This should give you a list of devices that can be Safely Removed. Select “Safely remove GlobeTrotter HSDPA” or “NEC PCI to USB Open Host Controller”.



In case you would use a Fuji-Ex together with a CEM, you should select “Safely remove Standard Enhanced PCI to USB Host Controller” or “Safely remove Standard OpenHCD USB Host Controller”.



In case you would use a Fuji-Ex without a CEM, it can happen that is no Safely Remove Hardware icon available. In that case, you can remove the data card without any problem.

- Press 'OK'. This will stop your data card safely and show you the following screenshot.



You can now safely remove your data card.

In case you would use a Fuji-Ex together with a CEM, you must remove the Fuji-Ex together with the CEM. In case you would only remove the Fuji-Ex and you would leave the CEM inserted, you will not be able to use the Fuji-Ex after it is re-inserted.

- When you insert the card a next time, it is fully operational.

5 CONFIGURATION AND OPERATION

5.1 General

Here is a short overview of the connection procedure which is stated in detail in the following sections.

The tools used for this are delivered with Windows or Option:

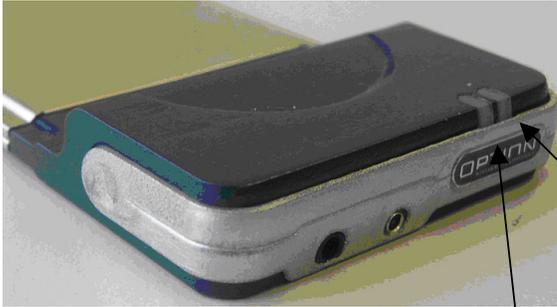
- HyperTerminal for AT commands (both for NDIS and RAS)
- Dial-up Networking connection for the PS data calls with RAS drivers
- Applet from Option for NDIS
- GlobeTrotter Connect software

5.2 Normal Usage

- Insert the data card. When inserting the data card, the card should be recognized automatically.
- Wait until the blue and red LED on the data card starts flashing; at this time, the card is recognized. The LED behaviour is explained in paragraph 5.4
- Start HyperTerminal and configure the connection (PIN code, APN, IP, DNS ...). How to work with HyperTerminal is explained in paragraph 5.5
- Wait for the data card to register to the network.
- Start the connection to the HSDPA/UMTS/EDGE/GPRS network. You can start a connection with Dial-up if you want to use the modem or the applet if you want to use NDIS. With GT Connect you can also enable a connection to the modem or to the NDIS network interface dependently from the version of the Software you are using.
- If the connection is successfully opened, you can open the application you want (e.g. ftp, http) and use the new opened connection.
- Once you have finished the application, you can close the connection

5.3 LED Positions

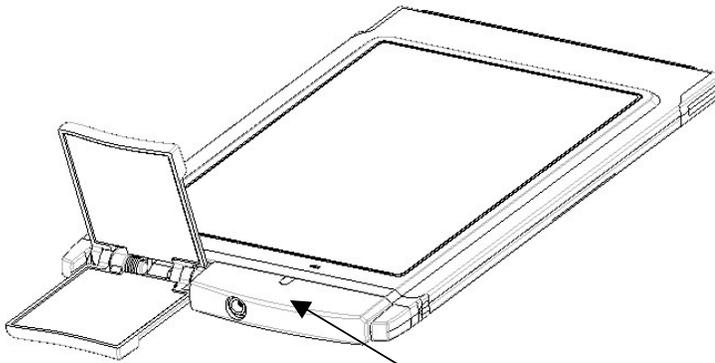
5.3.1 Fuji Lite



GPRS/EDGE LED
RED

UMTS/HSDPA LED
BLUE

5.3.2 Fuji-GT



Bicolor LED BLUE/RED:

UMTS/HSDPA LED: BLUE

GSM/GPRS/EDGE LED: RED

5.3.3 Fuji-Ex



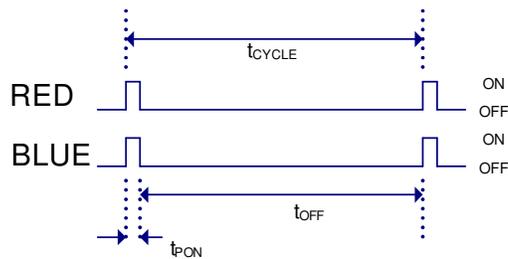
5.4 LED Sequences for 2G/3G LEDs

5.4.1 No Service / Searching

Red LED = Fast Single Blinking

Blue LED = Fast Single Blinking

In this case, both LEDs blink simultaneous

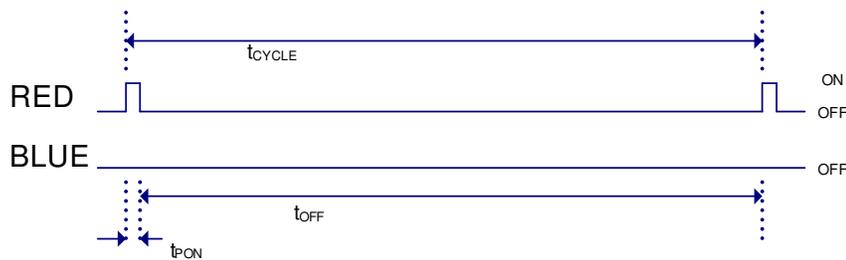


PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	1050 ms
t_{ON}	Pulse ON Time	50 ms
t_{OFF}	LED OFF Time	1000 ms

5.4.2 2G CS Only Service

Red LED = Slow Single Blinking

Blue LED = Off

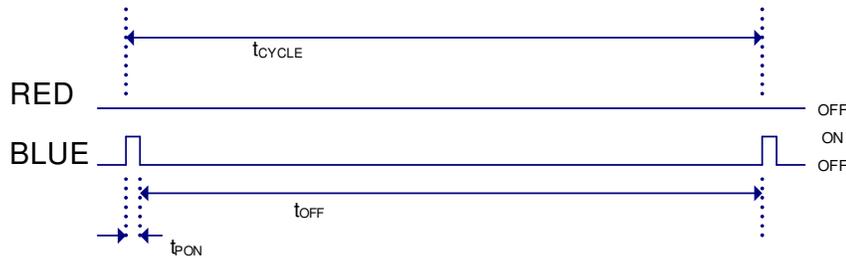


PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2250 ms
t_{ON}	Pulse ON Time	50 ms
t_{OFF}	LED OFF Time	2200 ms

5.4.3 3G CS Only Service

Red LED = Off

Blue LED = Slow Single Blinking

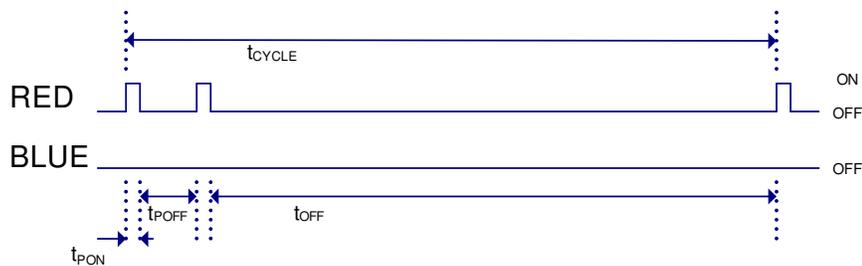


	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2250	ms
t_{PON}	Pulse ON Time	50	ms
t_{OFF}	LED OFF Time	2200	ms

5.4.4 2G CS & PS or 2G PS only Service (No EDGE)

Red LED = Slow Double Blinking

Blue LED = off

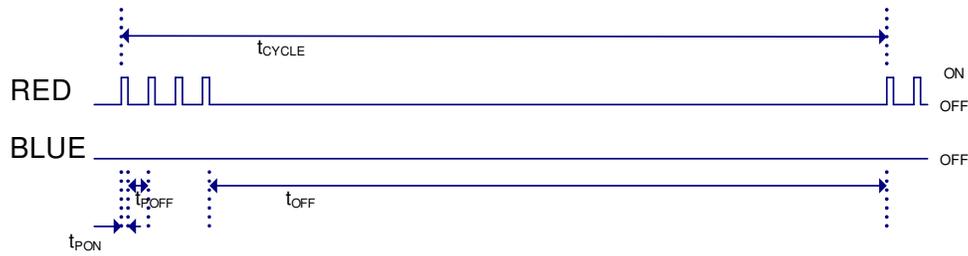


	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2300	ms
t_{PON}	Pulse ON Time	50	ms
t_{POFF}	Pulse OFF Time	200	ms
t_{OFF}	LED OFF Time	2000	ms

5.4.5 EDGE Service

Red LED = Slow "4 times Fast" Blinking

Blue LED = off

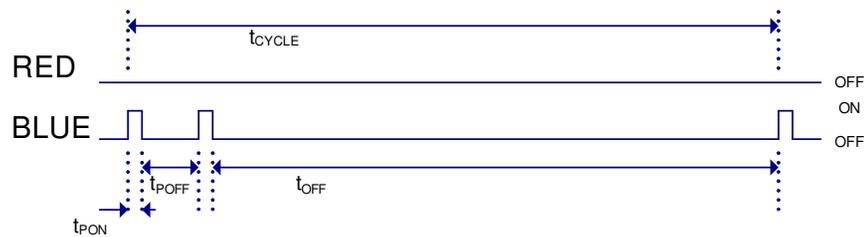


	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2825	ms
t_{PON}	Pulse ON Time	25	ms
t_{POFF}	Pulse OFF Time	75	ms
t_{OFF}	LED OFF Time	2500	ms

5.4.6 3G CS & PS or PS only Service

Red LED = off

Blue LED = Slow Double Blinking

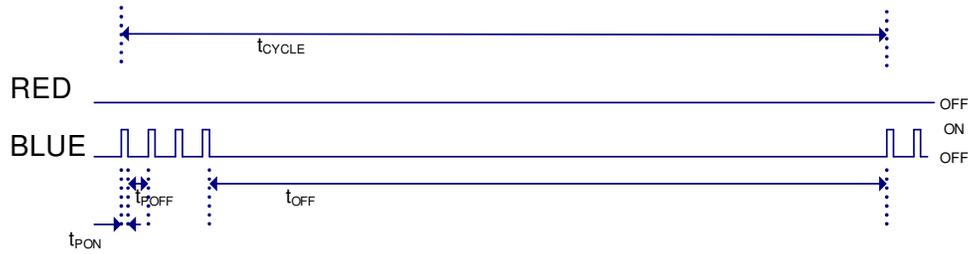


	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2300	ms
t_{PON}	Pulse ON Time	50	ms
t_{POFF}	Pulse OFF Time	200	ms
t_{OFF}	LED OFF Time	2000	ms

5.4.7 HSDPA Service

Red LED = off

Blue LED = Slow "4 times Fast" Blinking



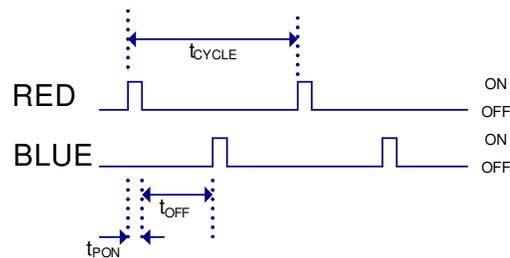
	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	2825	ms
t_{PON}	Pulse ON Time	25	ms
t_{POFF}	Pulse OFF Time	75	ms
t_{OFF}	LED OFF Time	2500	ms

5.4.8 Firmware recovery mode

In this case, both blue and red LEDs blink alternating (fast)

This situation can occur for ex. during the firmware upgrade process (start of the firmware upgrade process brings the device into recovery mode).

This LED sequence also can occur when the firmware switches to recovery mode because of a stack situation it cannot resolve.



	PARAMETER	AVERAGE	UNIT
t_{CYCLE}	LED Cycle Time	*	ms
t_{PON}	Pulse ON Time	*	ms
t_{OFF}	LED OFF Time	*	ms

* Timing of the leds cannot be specified as it depends on the clock speed in recovery mode.

Remarks:

- EDGE indication is shown when the UE is **registered** to the EDGE network (PS service)
- For networks until 3GPP release 5, the data card can only indicate HSDPA Service when a PDP context is activated and a HSDPA Radio Access Bearer is established.

Networks from 3GPP release 6 onwards can have a feature implemented that indicates whether a cell is HSDPA capable or not. If this is implemented, the data card can indicate HSDPA Service from the moment it is registered to the network and resides on a HSDPA capable cell.

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5.5 HyperTerminal

5.5.1 Starting HyperTerminal

- Go to Start → Programs → Accessories → Communications and click on the icon “HyperTerminal”. The first time you will have to enter a phone number and location.
- Afterwards the following window will appear. Enter a name for the connection and then press “OK”



- In the next window you will have to select the COM-port assigned to the Application interface or the modem you would like to use. Then press “OK”



- If you choose the modem, the next window will appear:



- Don't change any setting, just press "Cancel"
- Now you are able to send AT-commands to the data card

Note that Windows Vista does not have HyperTerminal installed by default.

A HyperTerminal application has to be run independently.

It is possible to run the HyperTerminal from Windows XP.

Copy the following files from a laptop with Windows XP installed :

- C:\Program Files\Windows NT\hypertrm.exe
- C:\WINDOWS\system32\hypertrm.dll

to a location on the hard disk of the Windows Vista laptop.

HyperTerminal will be launched by running hypertrm.exe .

5.5.2 Frequently used AT commands

All AT commands that can be used with the Fuji data card are explained in a separate document see ref [1].

- **Local echo on screen:** If you don't see the AT commands that you are typing, you have to enable the local echo with: `ate1`
- **Inserting PIN number:** If your 4 digit pin code (xxxx) is enabled on your SIM card, you have to enter it or the card will not be able to register to the network.

```
AT+CPIN="xxxx"
```

This should return: OK

otherwise you have entered the wrong pin code or the pin code was already entered

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- **Verifying acceptance of PIN code:** To check if the pin code is correctly entered you can ask for the PIN state:

```
AT+CPIN?
```

This should return: `+CPIN: SIM READY`

- **Define PDP Context:** You can enter the APN with the following AT command:

```
AT+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>
[,<pd1> [,...[,pdN]]]]]]]]]
```

Example: If only the APN has to be defined:

```
AT+CGDCONT=1,"IP","your_apn_here"
```

You can list your available PDP contexts:

```
AT+CGDCONT?
```

Returns:

```
+CGDCONT: 1,"IP","your_apn_here",,0,0
```

- **Preferred system/radio access technology:** This command changes the preferred system, GSM/WCDMA, the acquisition order and the service domain preference PS/CS.

```
AT_OPSYS?
```

Should return:

```
_OPSYS: 3,2
```

Default state is 3G preferred.

5.5.3 Normal HyperTerminal usage for the modem card

Every time you insert the card in the PC, you have to type in the PIN code with an AT command.

You only have to type in the APN once with an AT command (AT+CGDCONT) if you stick with one APN, because it is saved in the memory of the data card.

5.6 Dial-up connection

If you want to setup a connection with the modem (with RAS drivers) you can just set-up a Dial-up connection with Windows.

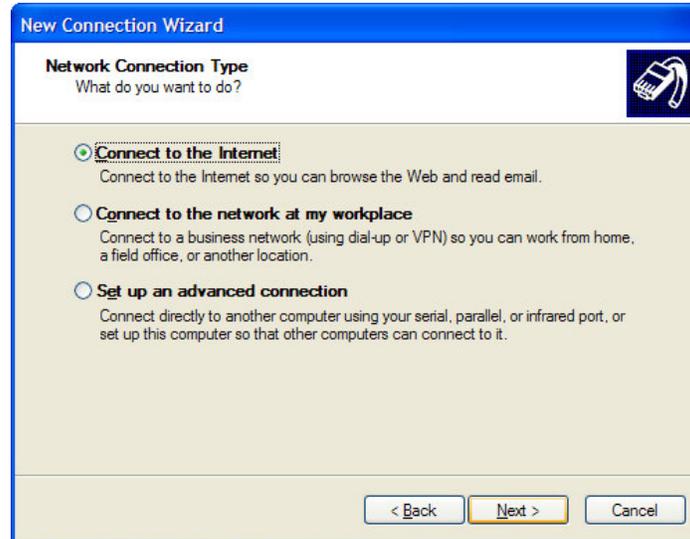
5.6.1 Setting up the dial-up connection for the first time

On Windows XP :

- Go to Start → Control Panel → Network Connections and click on the icon “New Connection Wizard”. The following screen will appear:



- Click the ‘next’ button.
- Choose “Connect to the Internet”, and click the NEXT button in the following window:



- Choose “Setup the connection manually” and click the NEXT button.



- Choose the “Connect using a dial-up modem”-option, and click the NEXT button.



- Select the correct modem (Modem - GlobeTrotter HSDPA Modem Interface) and click the NEXT button.



- You can type a name for the connection, which you will select the next time you need this dial-up connection, and click the 'next' button.



New Connection Wizard

Connection Name
What is the name of the service that provides your Internet connection?

Type the name of your ISP in the following box.

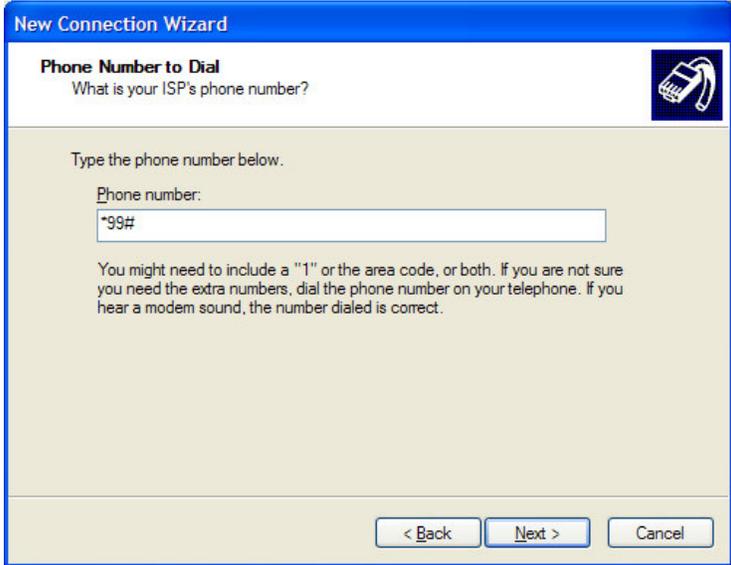
ISP Name

Data Card Test

The name you type here will be the name of the connection you are creating.

< Back Next > Cancel

- Type in the Phone number to dial, which is *99#, and click the 'next' button in the following window.



New Connection Wizard

Phone Number to Dial
What is your ISP's phone number?

Type the phone number below.

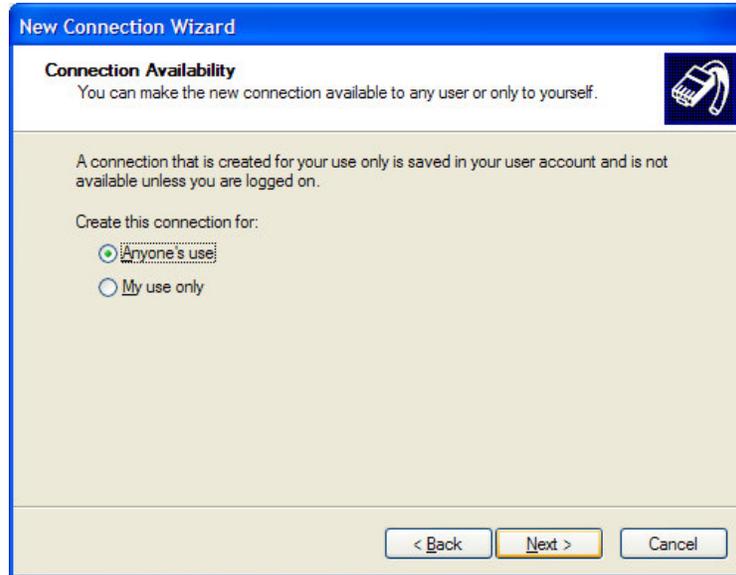
Phone number:

*99#

You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.

< Back Next > Cancel

- Choose the option you like, and then click the 'next' button.



- If your service provider requests you to enter username and password for setting up a PS data call connection, please enter it using the screen below

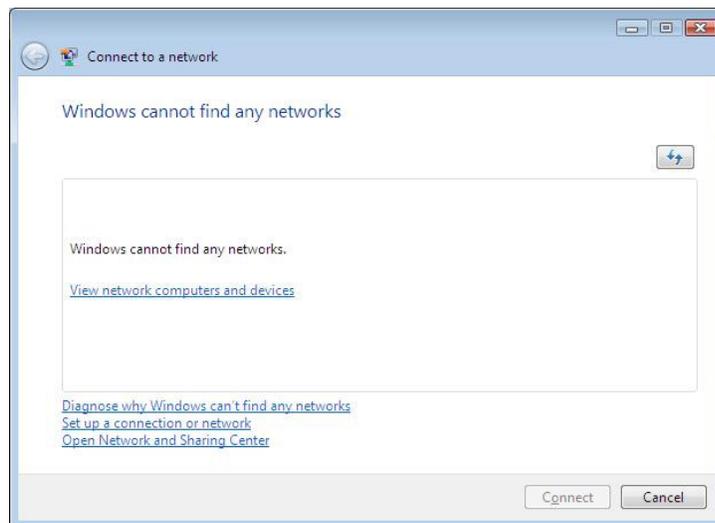


- The connection is set up and ready to use. Click the 'Finish' button to close the wizard window.

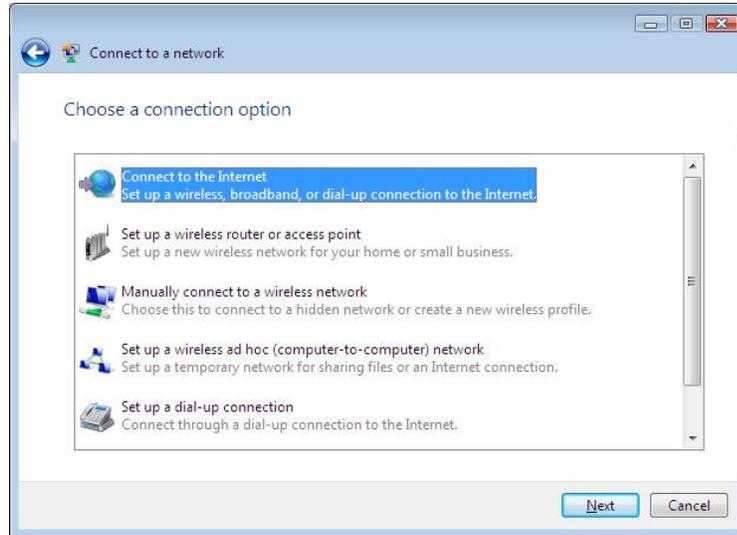


On Windows Vista :

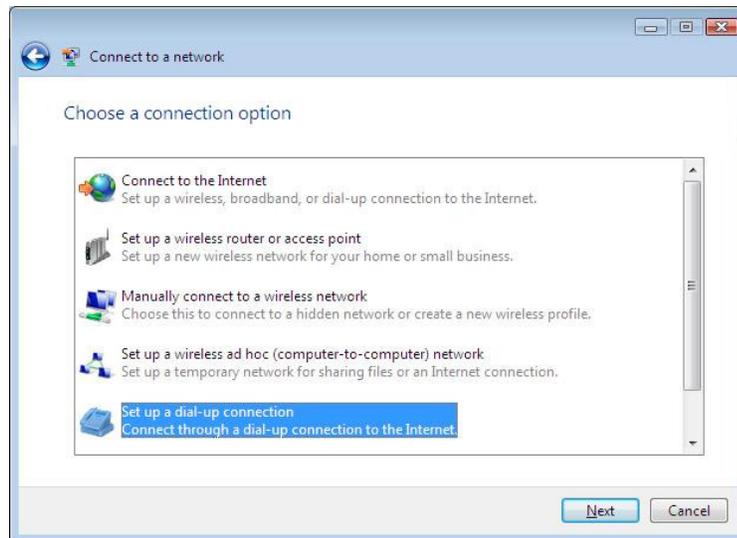
- Go to Start → Connect To
- Click on “Set up a connection or network” :



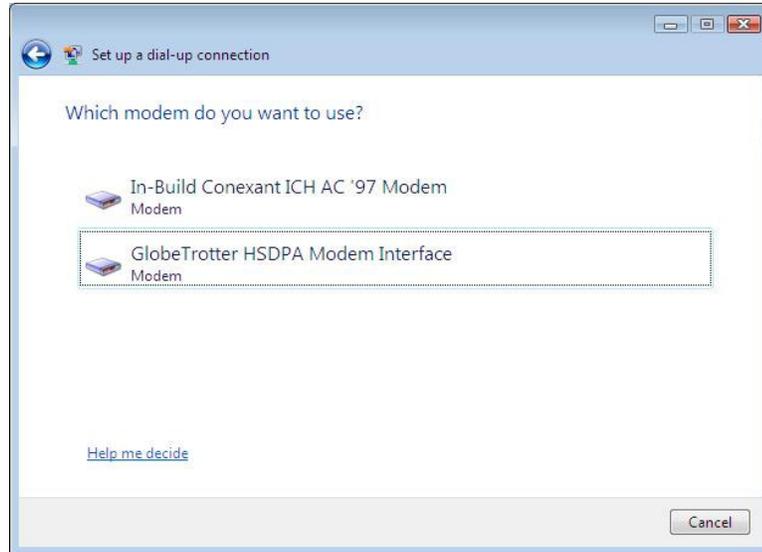
- Choose “Connect to the Internet”, and click the Next button in the following window :



- Choose “Set up a dial-up connection” and click the Next button in the following window :

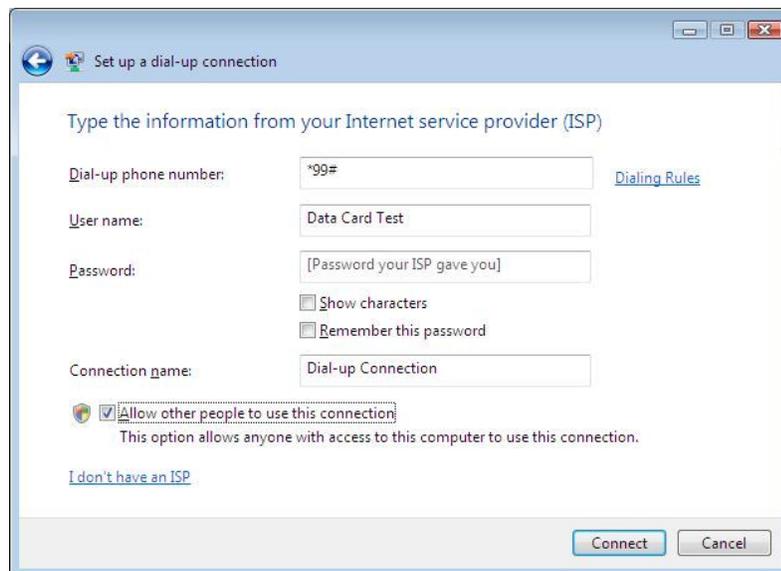


- Select the correct modem (GlobeTrotter HSDPA Modem Interface) in the following window :



- Fill in the following fields :
 - Dial-up phone number : *99#
 - User name : a user name for the connection
 - Password : if your service provider requests you to enter a password for setting up a PS data call connection, please enter it
 - Connection Name : a name for the connection, which you will select the next time you need this dial-up connection
 - “Allow other people to use this connection“ : choose appropriate

Click Connect. Make sure that your card is registered to the network in order to Connect successfully.

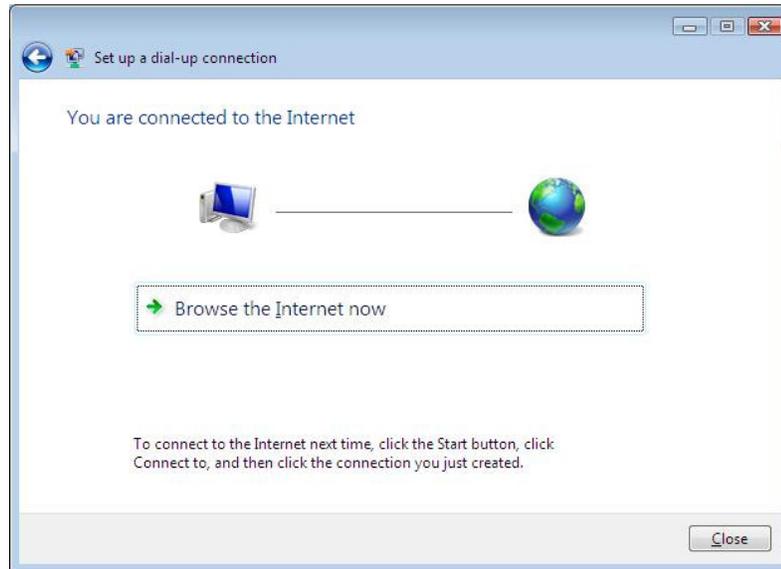


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- As soon as the connection was set up correctly, the following window appears :



5.6.2 PS Connect using the dial-up connection

Make sure your data card is registered to the network.

On Windows XP :

Go to Start → Connect to → “Your Connection name here” and select it. Click the Dial button. After a while, a connection to the internet is made.

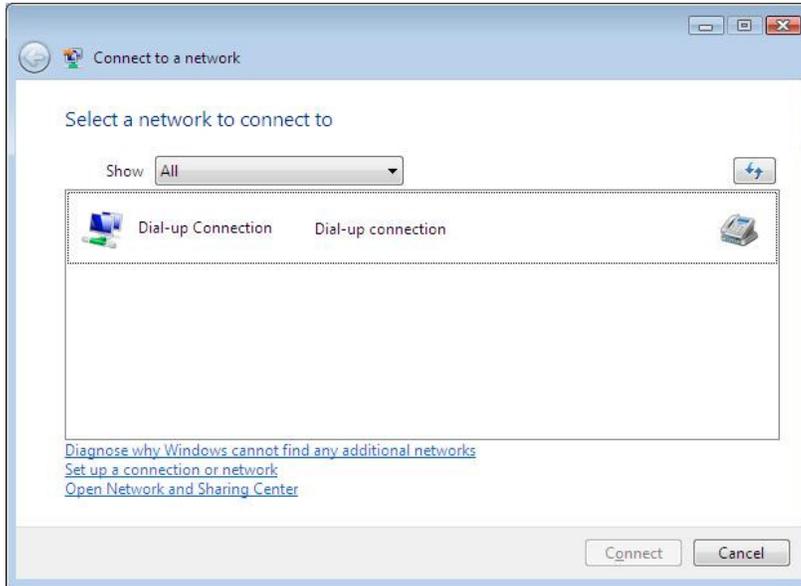
You will see the following icon appear in the system tray:



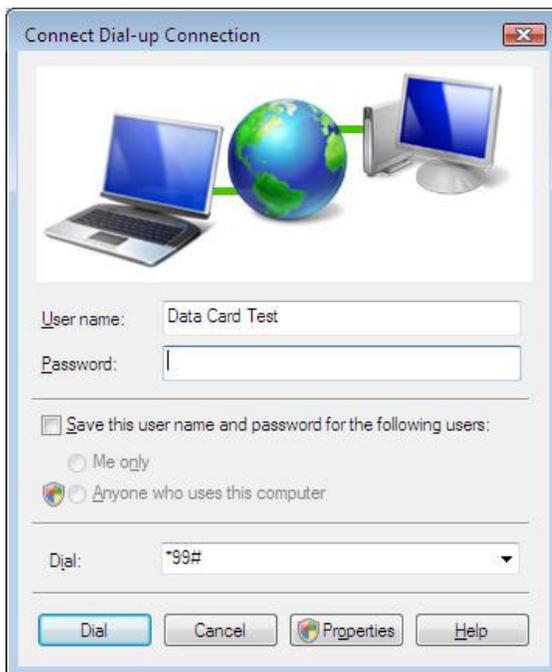
On Windows Vista :

Go to Start → Connect to

Select the proper connection and click the Connect button :

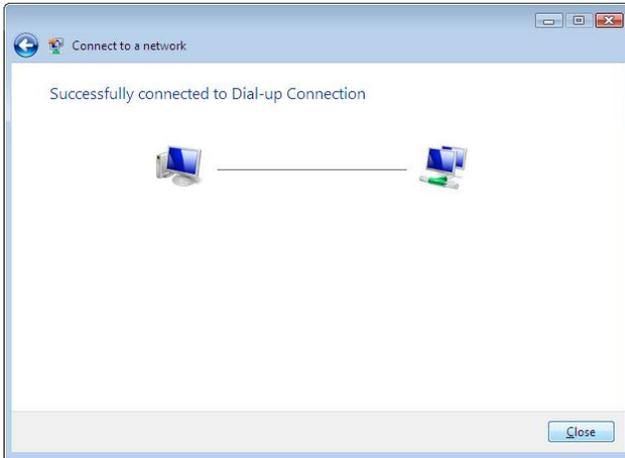


Type in password if required and click the Dial button :



After a while, a connection to the internet is made.

Click the Close button :



You will see the following icon appear in the system tray :



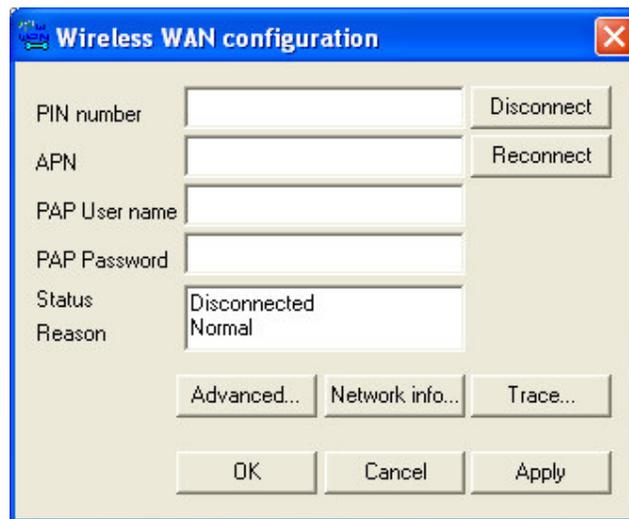
5.7 NDIS Connection

You can setup a NDIS connection using the applet that is delivered with the drivers but it is not meant for end users!

5.7.1 Setting up a NDIS connection

Go to the directory where you have saved the drivers. Double click on GtmNicApp.cpl.

The following window will appear:



- Enter the pin code and the APN (and the PAP username and password if necessary)
- Click on the “Apply” button
- Then press on “Reconnect”. The card will try to connect to the network. The status will change from “Connect Open” to “Connect Authenticated” to “Connected”
- A new connection icon will appear in the system tray:



- To disconnect, just press the “Disconnect” button

5.7.2 Using NDIS in your own application

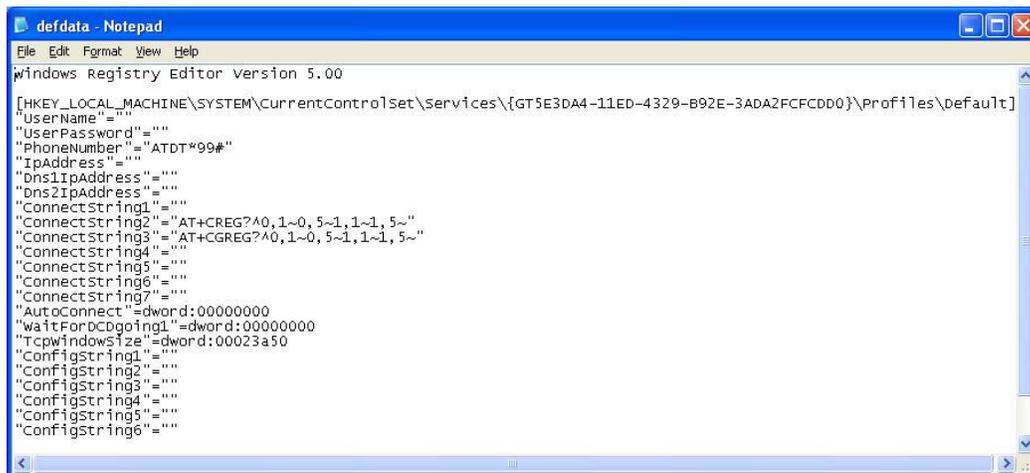
Defdata.reg is an example of how default data can be given to the NDIS driver, e.g. username, password etc at installation time. To be able to integrate the NDIS functionality in your own application, please also read GenericNDISDriverInterfaceDescriptionDoc.doc, which explains the

behaviour of the driver and the interface functions that you can call if you integrate the GtNdisDeviceIo.h header file to your application.

5.7.3 NDIS auto-connect functionality

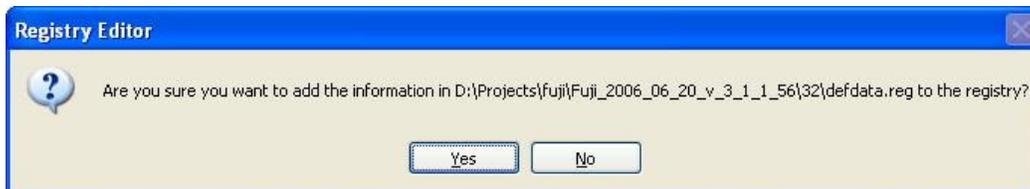
The main advantage of an NDIS connection is the auto-connect function. The connection can be setup during the boot process of your computer without any action of the user (if all the settings, pin code, apn ... are entered correctly by defdata.reg or by the applet). The auto-connect functionality is by default disabled. You can enable it in three ways:

- By the applet:
 - Click on the “Advanced” button in the main window of the applet.
 - The “Advanced Wireless WAN configuration”-window will popup. There you enable the auto connect function by selecting the “re-connect automatically” and “connect automatically” options.
- With defdata.reg:
 - Edit the defdata.reg
 - Change the value of the “AutoConnect” key into dword:00000001”



```
defdata - Notepad
File Edit Format View Help
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\{GT5E3DA4-11ED-4329-B92E-3ADA2FCFCDD0}\Profiles\Default]
"UserName"=""
"UserPassword"=""
"PhoneNumber"="ATDT*99#"
"IpAddress"=""
"Dns1IpAddress"=""
"Dns2IpAddress"=""
"ConnectString1"=""
"ConnectString2"="AT+CREG?A0,1~0,5~1,1~1,5~"
"ConnectString3"="AT+CGREG?A0,1~0,5~1,1~1,5~"
"ConnectString4"=""
"ConnectString5"=""
"ConnectString6"=""
"ConnectString7"=""
"AutoConnect"=dword:00000000
"WaitForDCDgoing1"=dword:00000000
"TcpWindowSize"=dword:00023a50
"ConfigString1"=""
"ConfigString2"=""
"ConfigString3"=""
"ConfigString4"=""
"ConfigString5"=""
"ConfigString6"=""
```

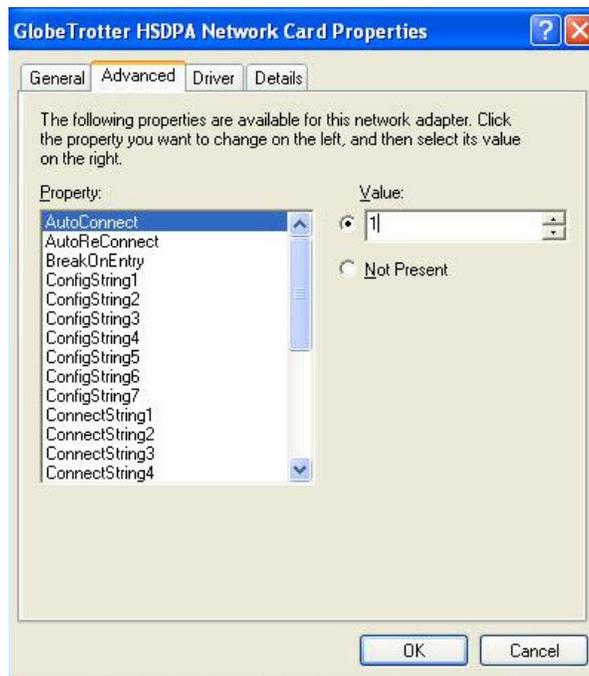
- Save the changes And double click on defdata.reg
- Click on “Yes” in the following registry window:



- If the changes are made, the following window will pop-Up



- The settings are changes after a reboot
- Within the device manager:
 - Open the Windows Device Manager from -> Start -> Control Panel -> System -> select the Hardware tab -> Device Manager.
 - Select “GlobeTrotter HSDPA Network Card” (in network adapters category)
 - Click on the right mouse button and select “Properties”
 - Choose the “Advanced” Tab



- Set the Auto-Connect function to 1
- Reboot your laptop

5.8 GT Connect Software

The GlobeTrotter Connect application is a small, easy to use tool to manage your connection to the Internet over 2G and 3G mobile networks.

5.8.1 System requirements

- Windows 2000, Windows XP
- 5Mb free hard disk space

5.8.2 Product Features

- Easy installation
- Simple intuitive user interface
- Compatible with most modern desktop and laptop PCs equipped with Microsoft OS.

5.8.3 Installing and setup up GT Connect

GT Connect does not require any installation. After you have installed the drivers, you can copy the GT Connect SW on you local disk.

As soon as you plug in a compatible communications device (Card, USB device...) GT Connect shows up in the systray.



You can open the GT Connect window by pressing on the GT connect icon.



If you have enabled the PIN code on your SIM card you will automatically be asked to type it in. If enabled you won't be able to use your data device until you have typed in the PIN code. This will happen every time you power up the device.



Once the PIN code is entered (or immediately if you have disabled the PIN code) the device will look for the network.

5.8.4 Working with GT Connect

The focus is on simplicity and most users will use it only in basic mode, showing a screen with just some network information and a Connect button. The main function is therefore simply to Connect/Disconnect



The status of the data card is displayed at the bottom of the window.

- Initialized: Card is recognized by the GT Connect software but it is not registered yet to a network.
- Registered To X: Data Card is registered to network X. Connect button is enabled.
- Connected: Data card is connected. The disconnect button is displayed.

You can also check the status by moving your mouse pointer over the GlobeTrotter Connect icon to get a quick status report showing the network name, technology being used and the signal quality.

You can also connect or disconnect, by clicking on the systray icon to show the menu and selecting the “Connect” or “Disconnect” option.

But there is also a more extended view where you can change some basic settings.



The Access Point Name (APN) defines your route to the network. Your network operator can supply the APN, (some networks will also provide a user name and password if required). Although in some advanced cases the user will want/need to change the APN, most users will never have to change this again.

By just clicking on 'Enabled' or 'Disabled' you can enable or disable the PIN code on your SIM. For security reasons you will have to provide the PIN code before you can disable the PIN code if you enable the PIN code you'll have to enter a new code.

Most of the time you should allow your data product to use the best technology available. Sometimes local conditions will make connecting to the Internet difficult and the default setting "UMTS Preferred" may not give optimum performance. In these circumstances you can experiment by forcing the data connection on to "UMTS Only" or "GPRS Only". Please remember to switch back the setting to "UMTS Preferred" when your location changes.

5.8.5 Limited Warranty

Customer accepts unconditionally, without any warranties, the License on the Software AS IS and without any further claims, demands or requests

OPTION SHALL NOT BE LIABLE TO THE CUSTOMER FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, RELIANCE OR SPECIAL DAMAGES

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Creation Date: Mar 22, 2007

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6 FAQ

- ***How can we run the new cards with NDIS?***
You can use the applet GtmNicApp.cpl that is delivered with the drivers or GT connect
- ***Is it possible to run the card without dashboard application?***
Yes, using the applet but you always need some kind of application. However the applet can run in the background: if you enable the automatic connection and you have filled in the correct settings, the data card will automatically connect to the network during the boot process.
- ***How can we control the card? With AT-commands?***
Yes, AT-commands can still be used on the application port when using the NDIS part of the drivers.
- ***Are AT-commands completely meaningless for a data card driven by NDIS (other protocol)***
No all the AT- commands that can be sent over the application port are valid. Only the AT commands that establish a connection (CSD or PS call) are not valid anymore.

References

Ref	Document