MetroCONNECT FCM9004 EDD Zero Touch Commissioning Application User Guide

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DISCLAIMER

MetroCONNECT FCM9004 EDD
Zero Touch Commissioning Application User Guide

Revision History

17/11/2012 XA Document Created

1 Introduction

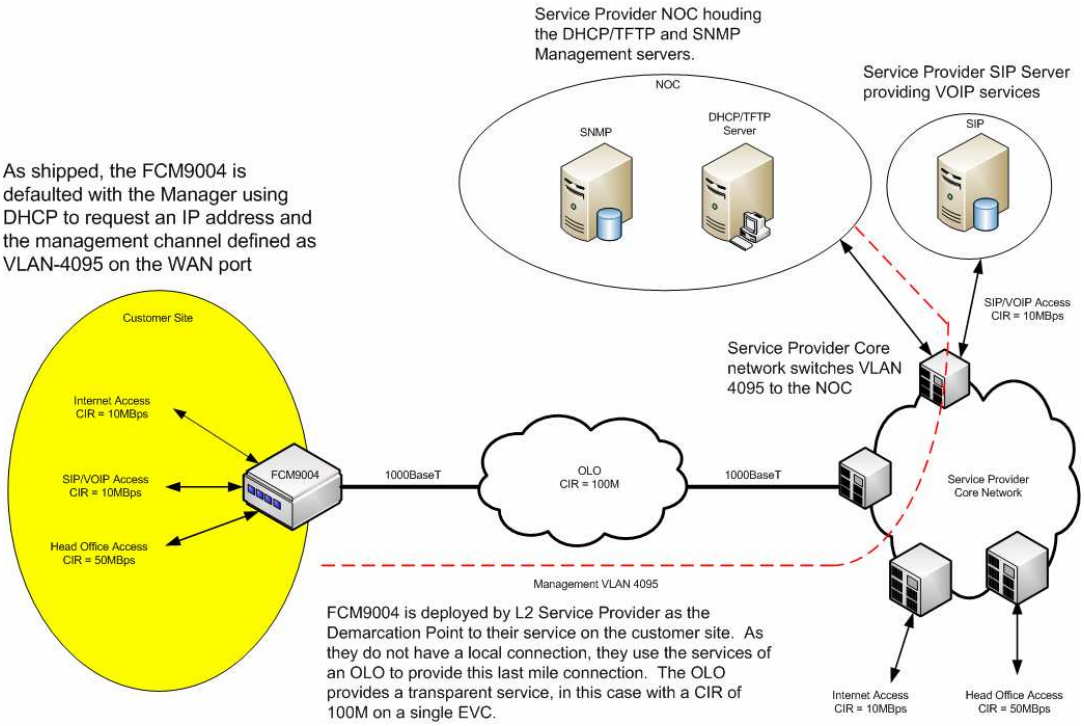
The fundamental aim of the MetroCONNECT EDD family is to offer Ethernet Service Providers a low cost approach to sophisticated Ethernet service demarcation. This not only requires a low cost EDD for deployment on the customer site, but also that all other "lifetime" costs are also minimised, from installation configuration and pre-commissioning SLA testing to in-service verification, operational procedures and maintenance.

Metrodata's ***ZTC application suite*** reduces the complexity of the installation task to the level where EDD units may simply be posted to the customer for installation themselves. Once connected, the EDD will automatically configure itself and provision the relevant services without further interaction from the customer or Ethernet Service Provider.

The ***ZTC application suite*** therefore has to perform two key tasks:

- Simplify the process whereby customer site specific configurations can be easily generated and managed – ***EDD Configurator*** (see section 3)
- Liase with the customer site EDD to assist in the Zero Touch Commissioning process – ***ZTC Application*** (see section 2)

An example deployment is shown below:



In the above example, following the customer order and service definitions a customer specific configuration file is produced using the ***EDD Configurator*** application offline. Once the Ethernet service has been provisioned, the EDD is despatched to the customer with the unit MAC address being recorded as the unique identifier. This MAC address is used to associate the despatched EDD with its individual configuration. When the customer receives the EDD, and connects it to the Ethernet service, the EDD will then perform its "Zero Touch" procedure, discovering its management connection from the ***ZTC Application***, loading its configuration, perform any required SLA testing and then commission itself into an operational state providing Ethernet services to the customer. During this process, the device will liase with DHCP and TFTP servers and issue SNMP traps to indicate progress through the ZTC process.

1.1 Overview of ZTC Process

On power up, if ZTC is enabled, the EDD will check to see if it already has a valid configuration loaded. If the EDD has a valid configuration, then it will boot up with this stored configuration. If the EDD has no valid configuration, then it will listen for valid ZTC transmissions generated by the ***ZTC application***.

1.1.1 ZTC transmission

Each ZTC transmission contains the following information:

- Product Id
- Software version number
- Provider Id
- TFTP server information
- SNMP manager information

The EDD management channel is identified from the ZTC transmissions that are received, allowing the auto configuration process to start.

This information received within the ZTC transmission allows each ZTC enabled EDD to determine whether to perform the auto configuration procedure or not.

1.1.2 DHCP

The EDD uses DHCP to acquire an IP address. DHCP is a broadcast protocol meaning that the EDD does not need to know the address of the DHCP server simply that it is available.

The DHCP server will issue a DHCP Offer, and supply the EDD with an IP address to use, along with the default gateway IP address and the IP address of the DHCP server itself.

1.1.3 TFTP

Once the TFTP server address has been acquired, either specifically or assumed from DHCP server address, the EDD will request the provisioning configuration file.
The format of the filename is as follows:

<*Unit Type*>_<*mac_address*>*.cfg* e.g. FCM9004_00C0810014FC.cfg

The configuration file will have been previously generated by the ***EDD Configurator*** application (reference section 3) and include the customer site specific provisioning information.

The acquired configuration file includes SNMP management details, and an enterprise specific trap will be issued once the configuration file has been successfully loaded, or else if it has NOT been possible to load a configuration file before timing out.

2 ZTC Application

The ***ZTC Application*** is a self contained executable that provides the following optional capabilities that are used during the ZTC process

TFTP server application
A TFTP server to allow device configuration files to be downloaded / uploaded.

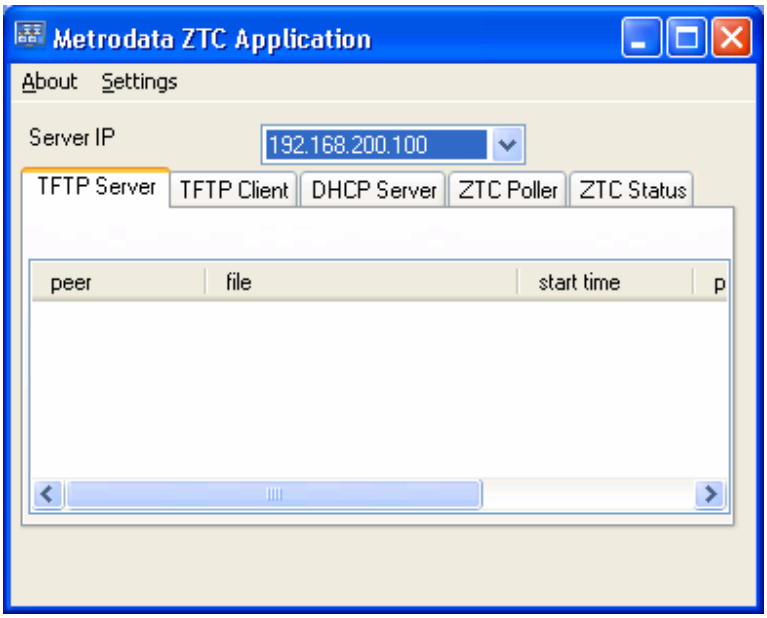
TFTP client application
A TFTP client to allow device configuration files to be downloaded / uploaded.

DHCP server application
A DHCP server to serve devices with IP address information.

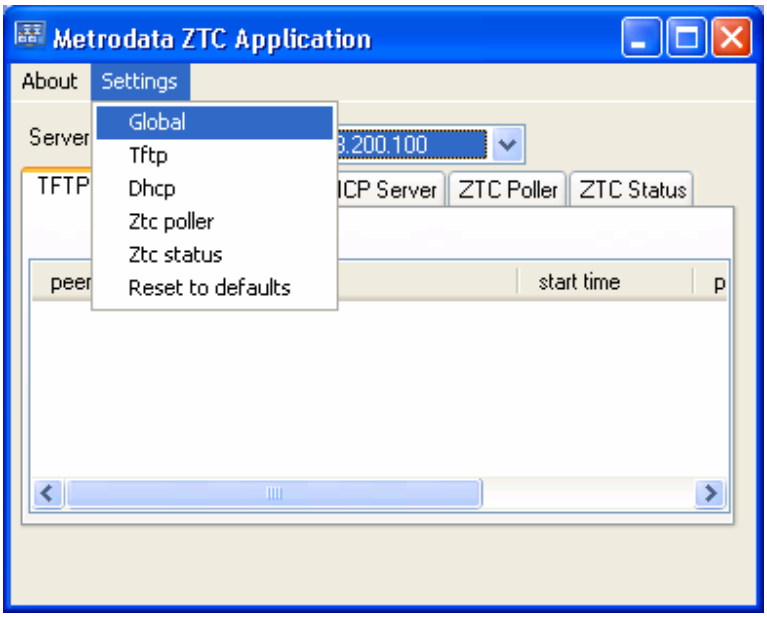
ZTC poller application
The ZTC poller application regularly sends ZTC transmissions.

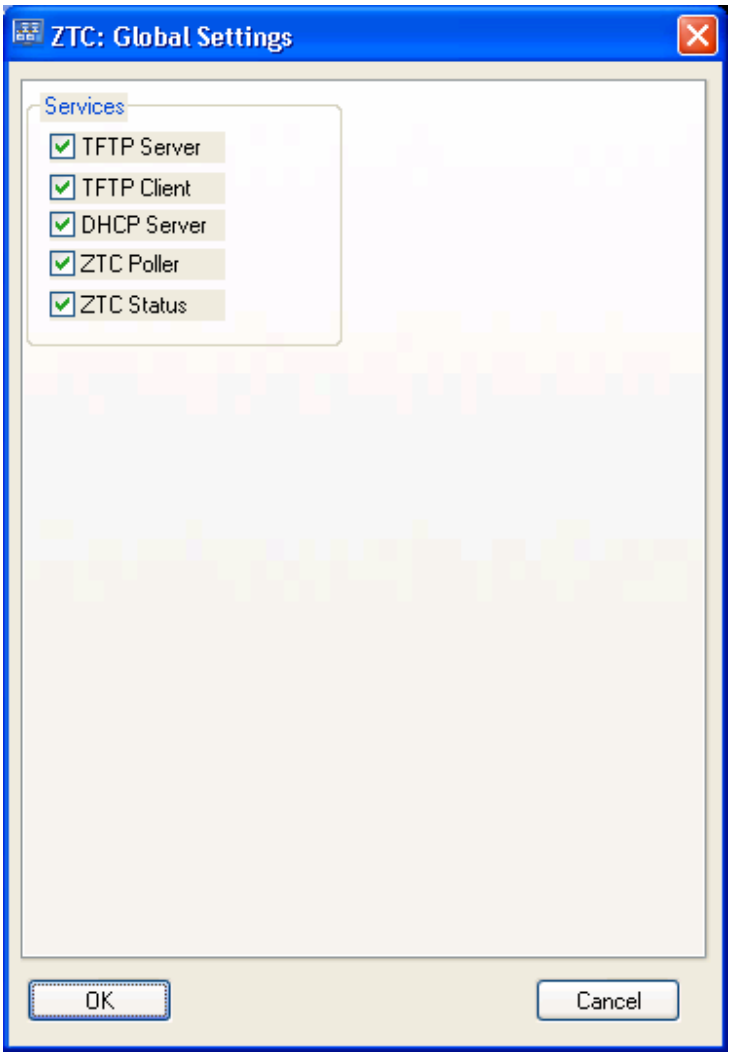
ZTC status application
The ZTC status application displays the ZTC status of all devices in the Inventory.

The ***ZTC Application*** is launched by clicking on the ZTC icon either via the Start menu or via the Desktop Shortcut.



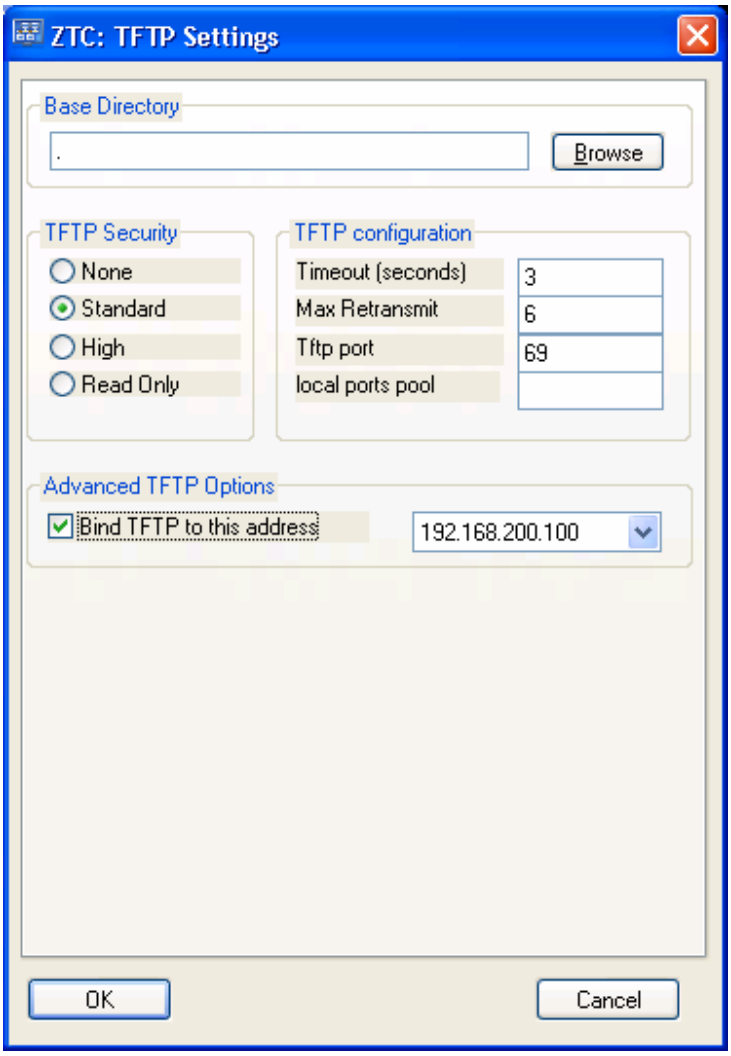
Each ZTC optional capability may be enabled / disabled using Settings/Global, for example some customers may prefer to use their own TFTP / DHCP servers.


Metrodata ZTC Application
About
Settings
Global
Tftp
Dhcp
Ztc poller
Ztc status
Reset to defaults
Server
ICP Server
ZTC Poller
ZTC Status
start time



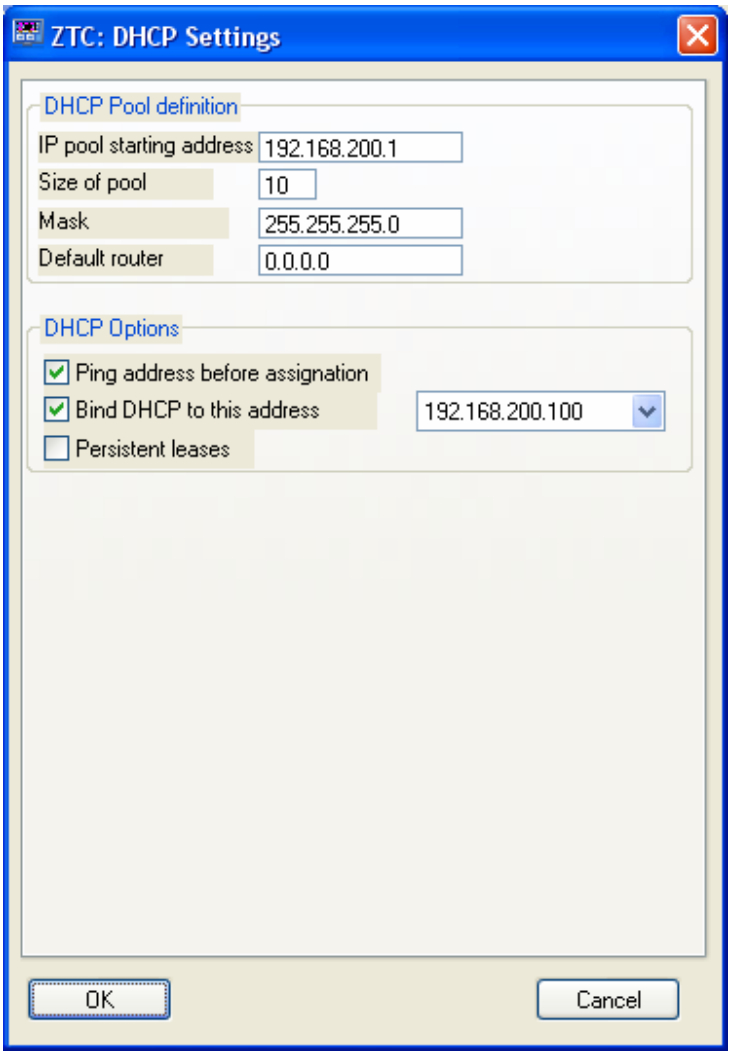
Note that changing these Global Settings will normally require the ZTC application to be restarted before the new settings take effect.

2.1 TFTP Settings



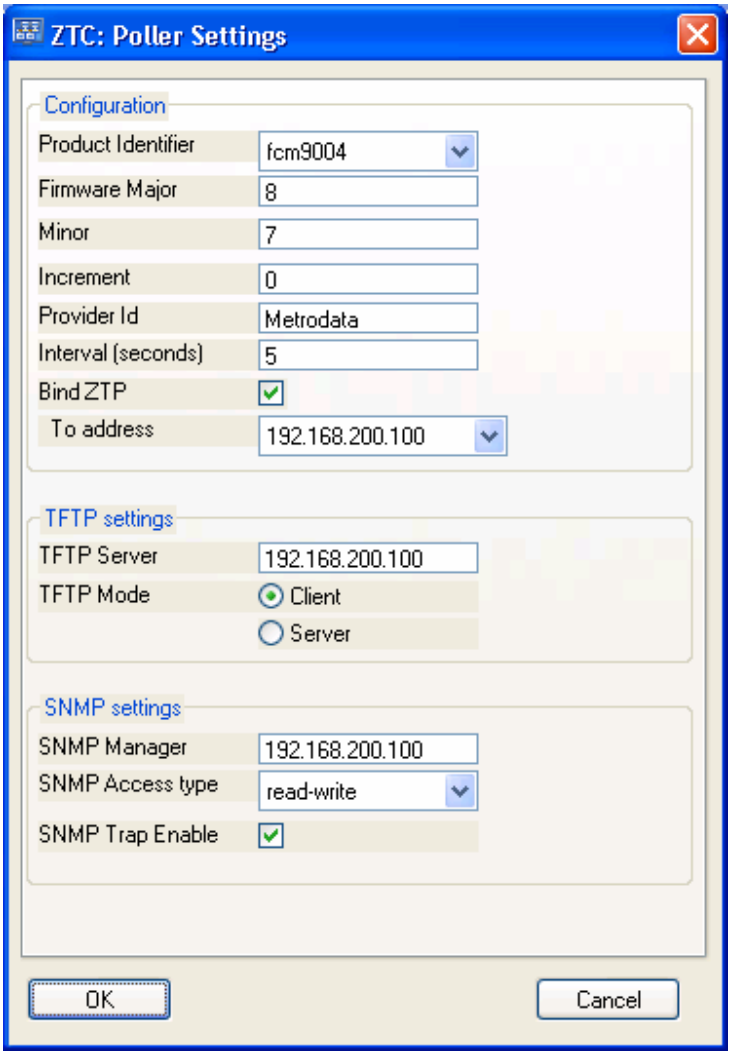
Note that changing TFTP Settings will normally require the ***ZTC application*** to be restarted before the new settings take effect.

2.2 DHCP Settings



Note that changing DHCP Settings will normally require the ***ZTC application*** to be restarted before the new settings take effect.

2.3 ZTC Poller Settings



The ZTC poller sends regular transmissions of these settings to ZTC enabled EDD devices at the selected interval. The ZTC transmission includes the following information:

- Product Identifier
- Software version
- Provider Id
- TFTP settings
- SNMP manager settings

Product Identifier

This field is used by the ZTC poller to tell the EDD which model number is supported by the ***ZTC application***, e.g. FCM9004. In the future this field will be used to ensure that all EDD devices of a specific product type within the network are automatically installed with the same software version.

Software version

This field is used by the ZTC poller to inform the EDD which software version is supported by the ***ZTC application*** . In future this parameter will be used to ensure that all EDD devices of a specific product type within the network are automatically installed with the same software version.

Provider Id

This field is used by the ZTC poller to tell the EDD which Ethernet Service Provider network it has been installed on. This field is currently used for information only.

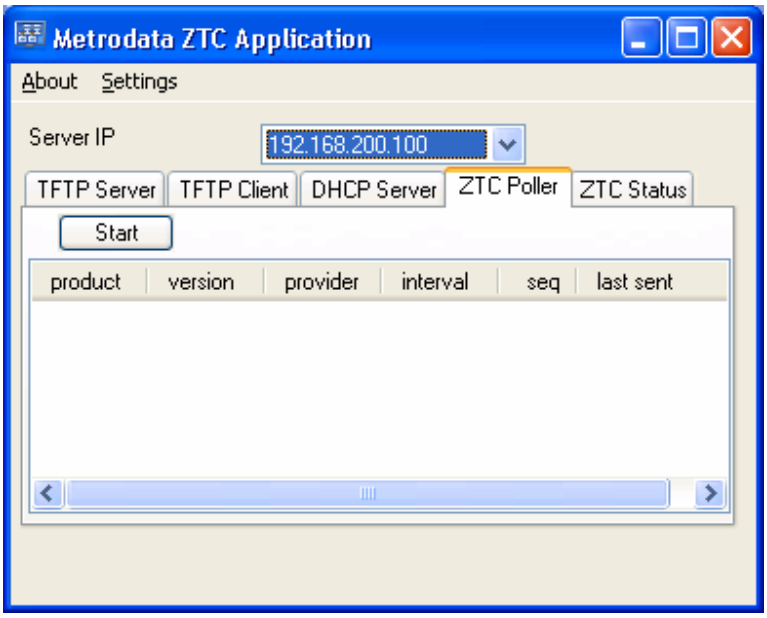
TFTP settings

This field is used by the ZTC poller to inform the EDD the identity of the TFTP server where the customer site specific configuration can be downloaded from.

SNMP manager settings

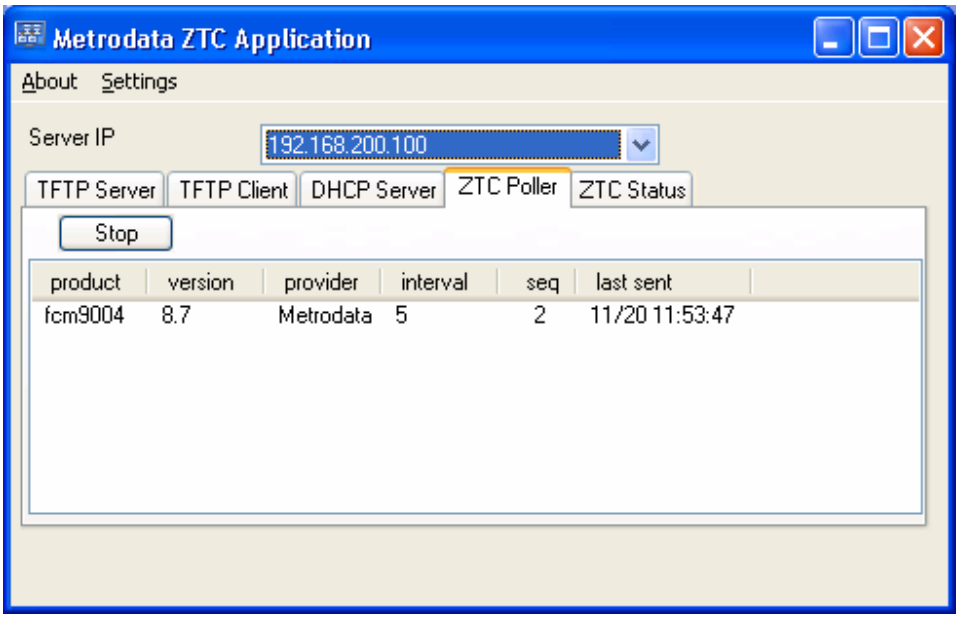
This field is used by the ZTC poller to tell the EDD where to send the SNMP traps that form part of the ZTC process, in order that ZTC progress can be monitored.

2.4 ZTC Poller Window

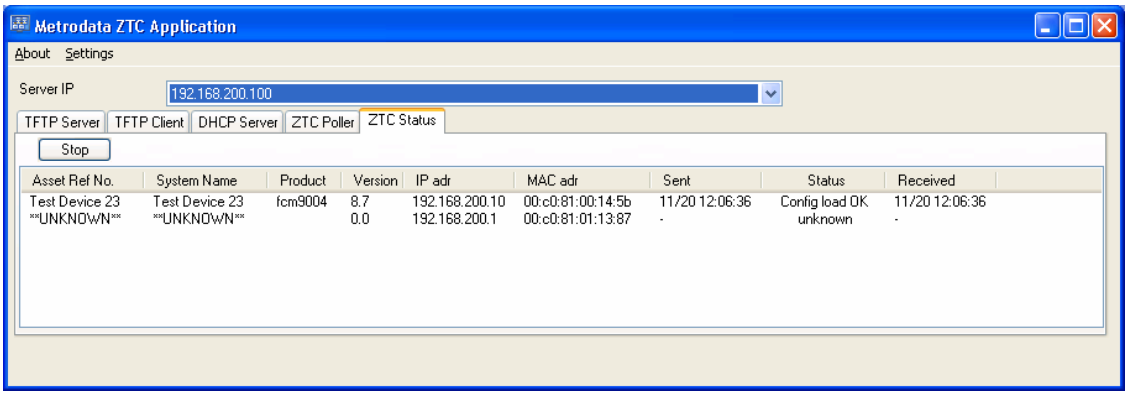


Selecting the ZTC Poller tab displays the ZTC Poller window.

Once started the ZTC Poller will continually send ZTC transmissions at the selected interval.



2.5 ZTC Status Window



The ZTC Status window displays a summary of the ZTC status for all devices that are in the Inventory.

The ***ZTC Application*** gathers information based on the ZTC process and displays this on the ZTC Status window. If the ZTC Application is involved in the DHCP process then relevant information is passed to the ZTC Status window. This software also listens for SNMP ZTC traps that are generated by the EDD as part of the ZTC process and uses these to update the status. So depending on the network topology more or less status information is available to display on the ZTC Status Window.

Note that devices shown as “UNKNOWN” are other devices that have been served IP information by the “built in” DHCP server.

3 EDD Configurator

The ***EDD Configurator*** provides the facilities to generate and maintain the following:

- Service Provider default configuration files
- Customer site EDD specific configuration files.

The ***EDD Configurator*** is supplied with a standard Default Profile file. Typically this file contains configuration definitions that are common to all EDD devices across the Service Provider's network.

The Default Profile Selection selects which Default Profile file is used as the starting point for generating customer site specific EDD configurations.

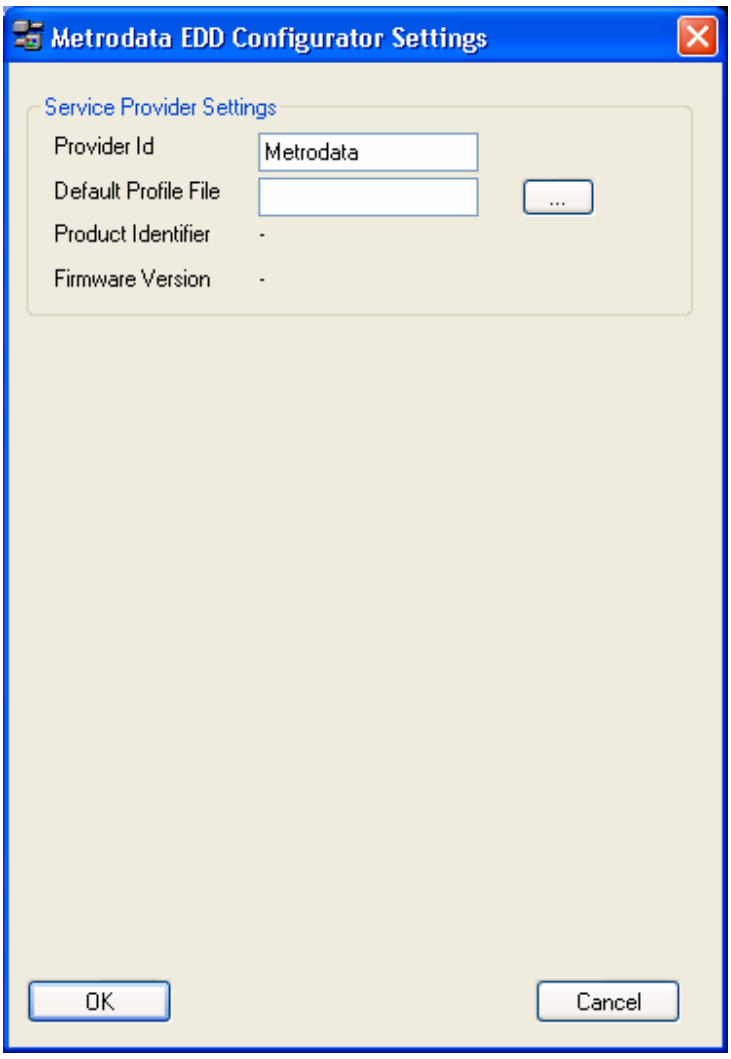
The ***EDD Configurator*** is launched by selecting it via the Start menu, or alternatively clicking on the ***EDD Configurator*** icon on the desktop.

The ***EDD Configurator*** is supplied with a standard Default Profile file. Typically this file contains configuration definitions that are common to all EDD devices across the Service Provider's network.

This Default Profile file can be customized if required by using the "Default Profile Edit" function.

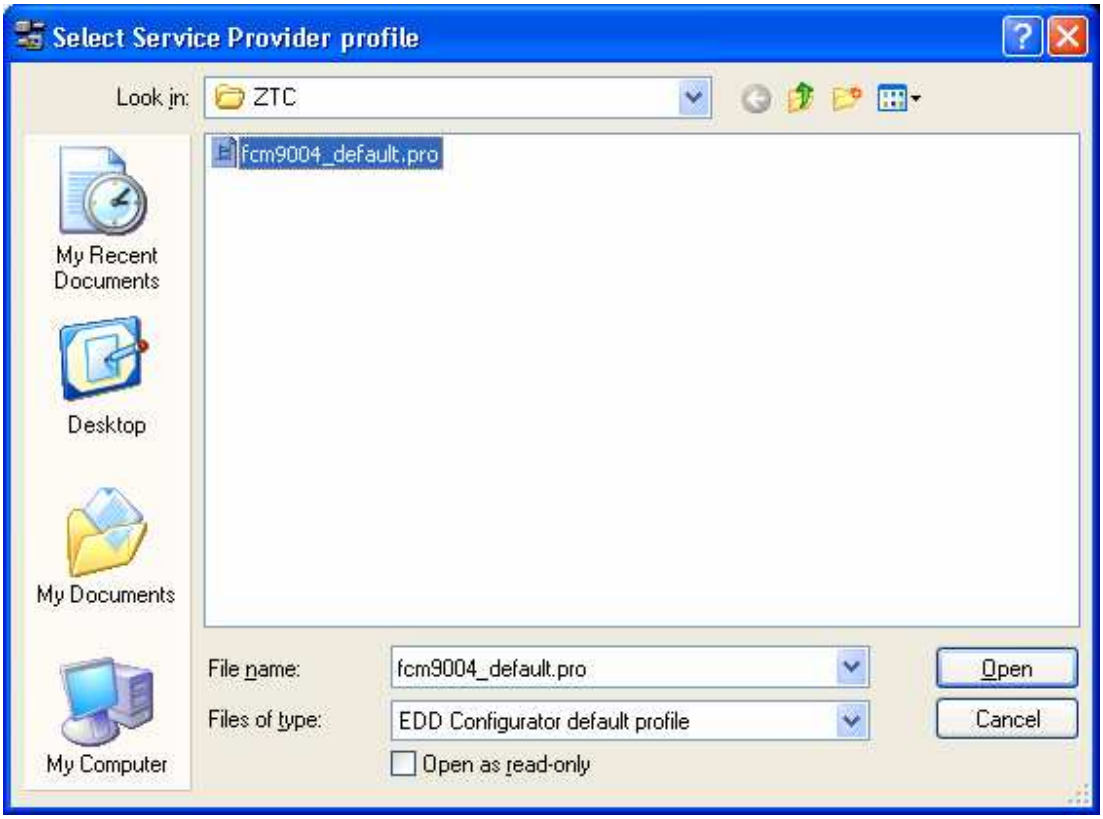
The Default Profile Selection selects which Default Profile file is used as the starting point for generating customer site specific EDD configurations.

3.1 Default Profile Selection

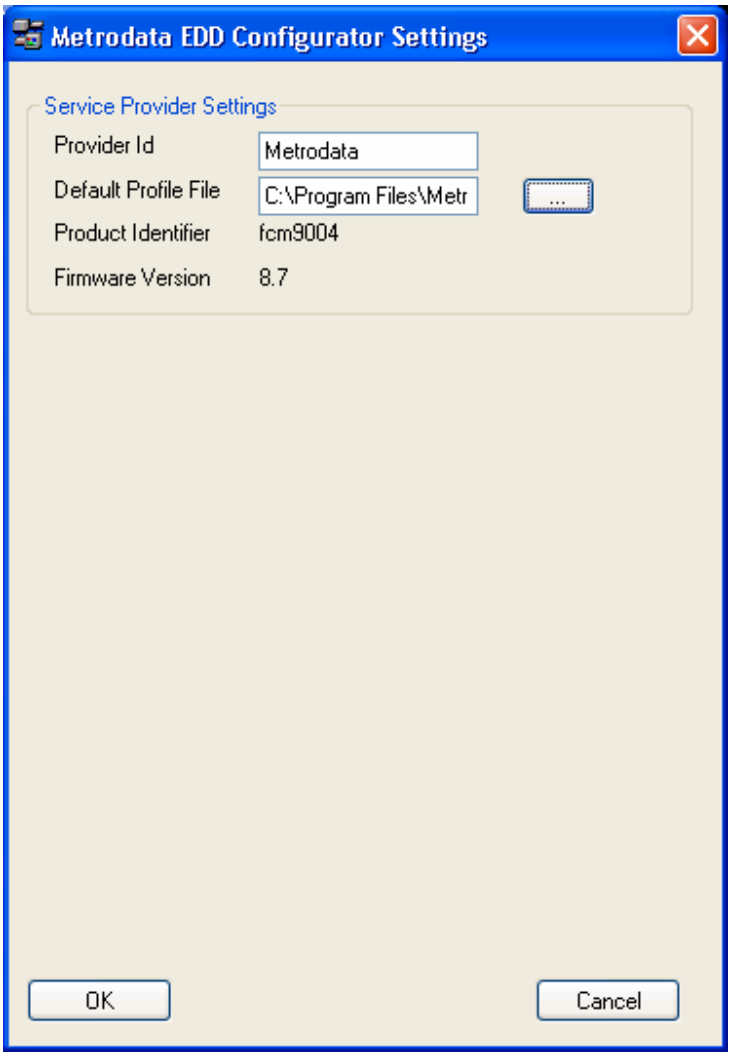


The Default Profile File is selected by clicking on the browse button, and selecting the appropriate file.

Note ***EDD Configurator*** default profile files have file extension type ".pro".



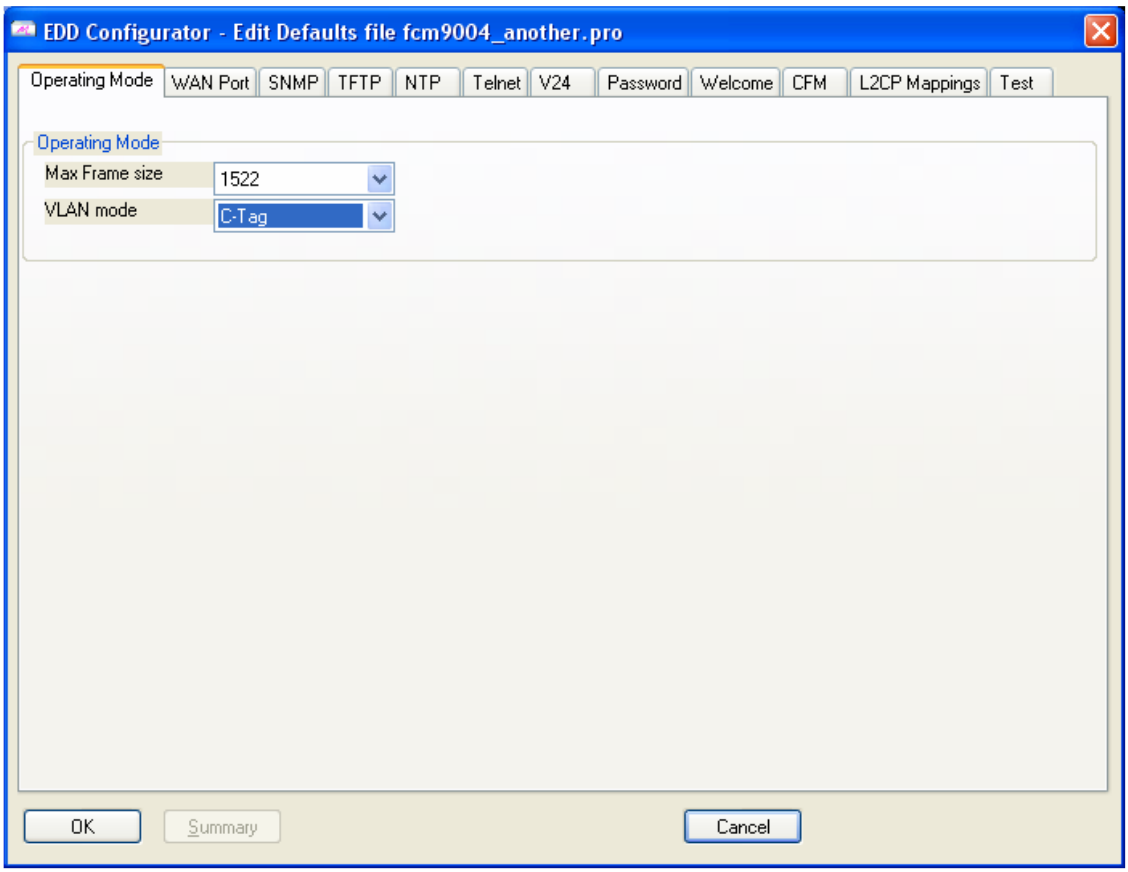
Click on the Open button to select the ***EDD Configurator*** Default Profile.



3.2 Default Profile Edit

The Default Profile Settings can be modified by using the Default Profile Edit function. The following sections show which default profile settings can be changed.

3.2.1 Operating Mode

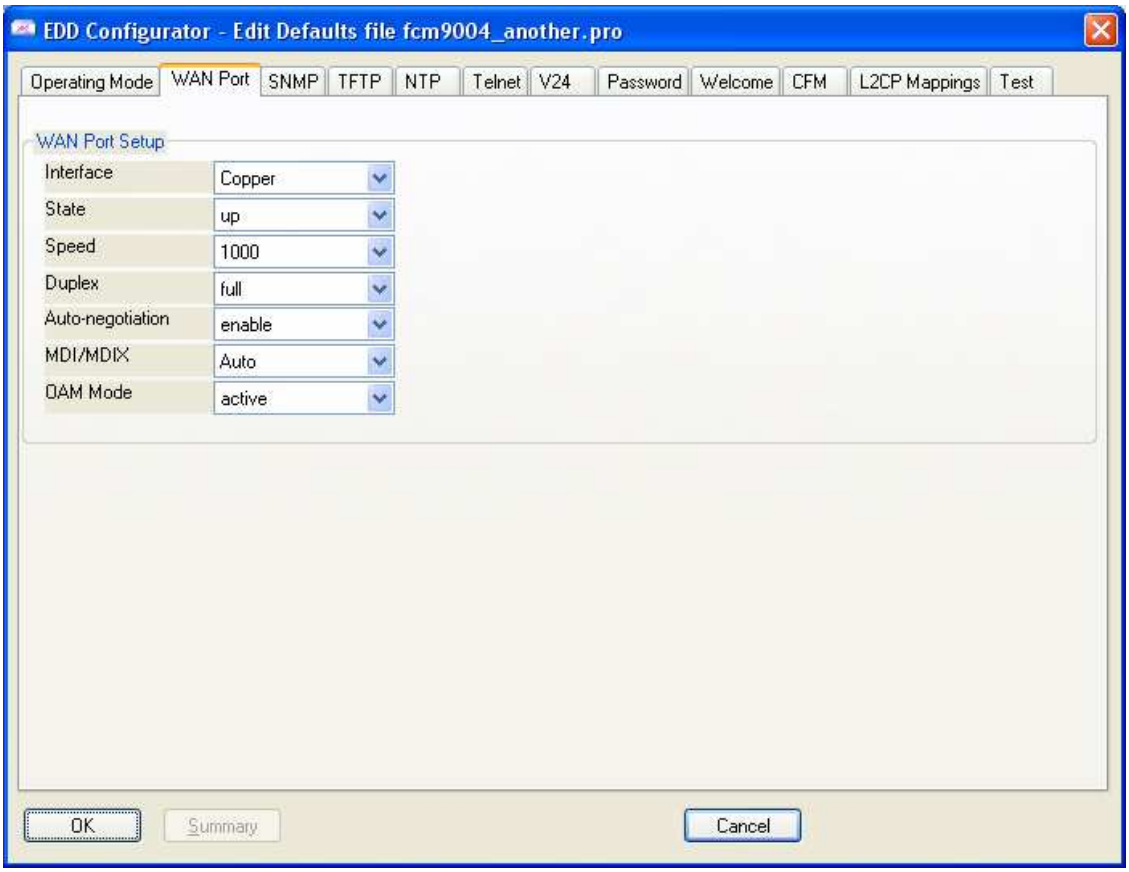


VLAN mode selects the Global VLAN mode for the EDDs in the network:

- C-TAG only
- S-TAG only
- Both C-TAG and S-TAG

Frame size select the maximum frame size, e.g. 1522, 2048, 10,000 bytes.

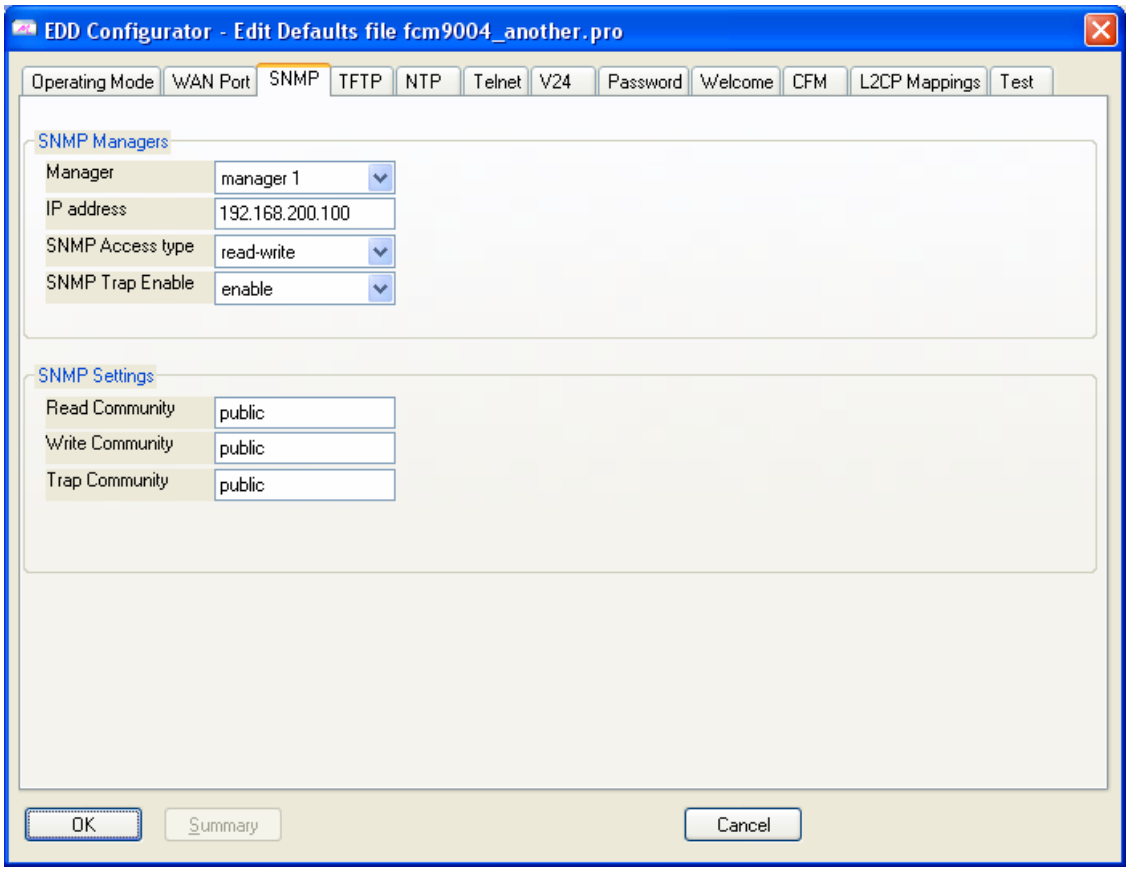
3.2.2 WAN Port Setup



This is used to configure the WAN port on the EDD.

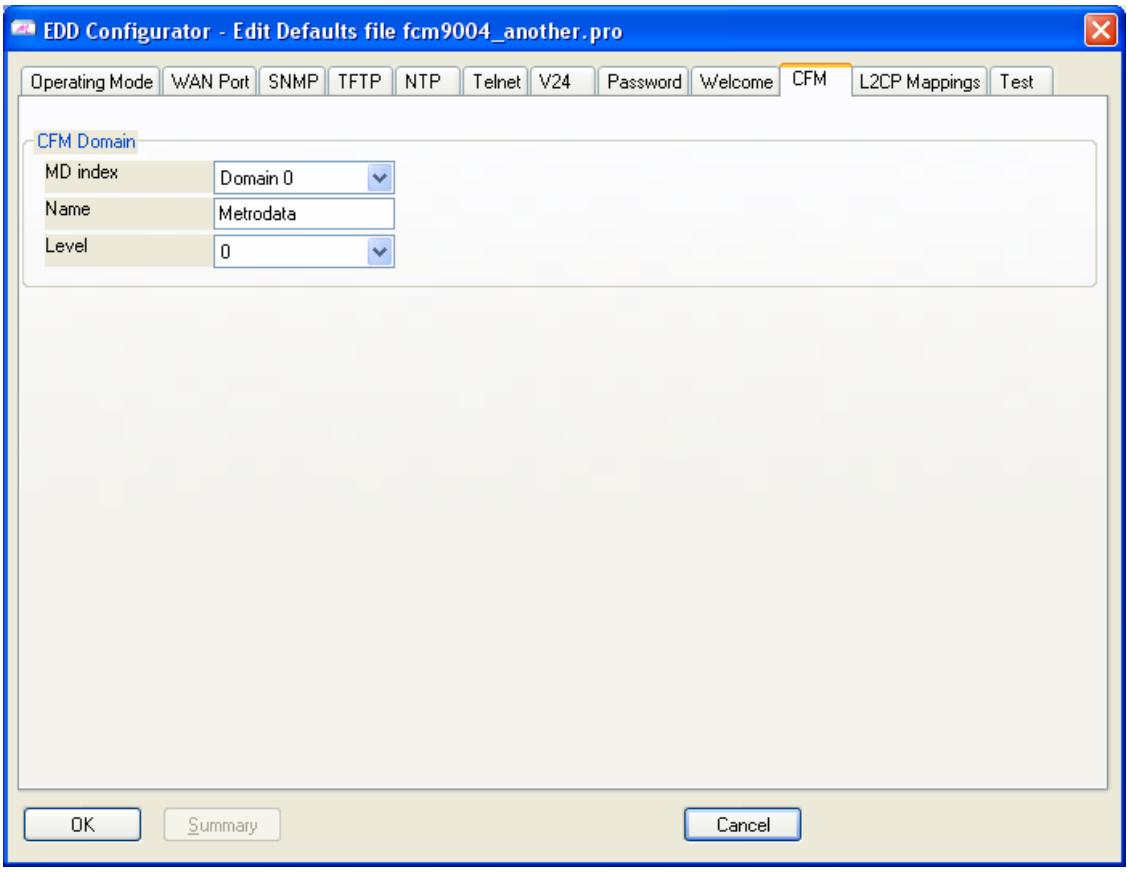
Note that some edit forms have a Summary button which shows a summary of all current settings controlled by the edit form.

3.2.3 SNMP Settings



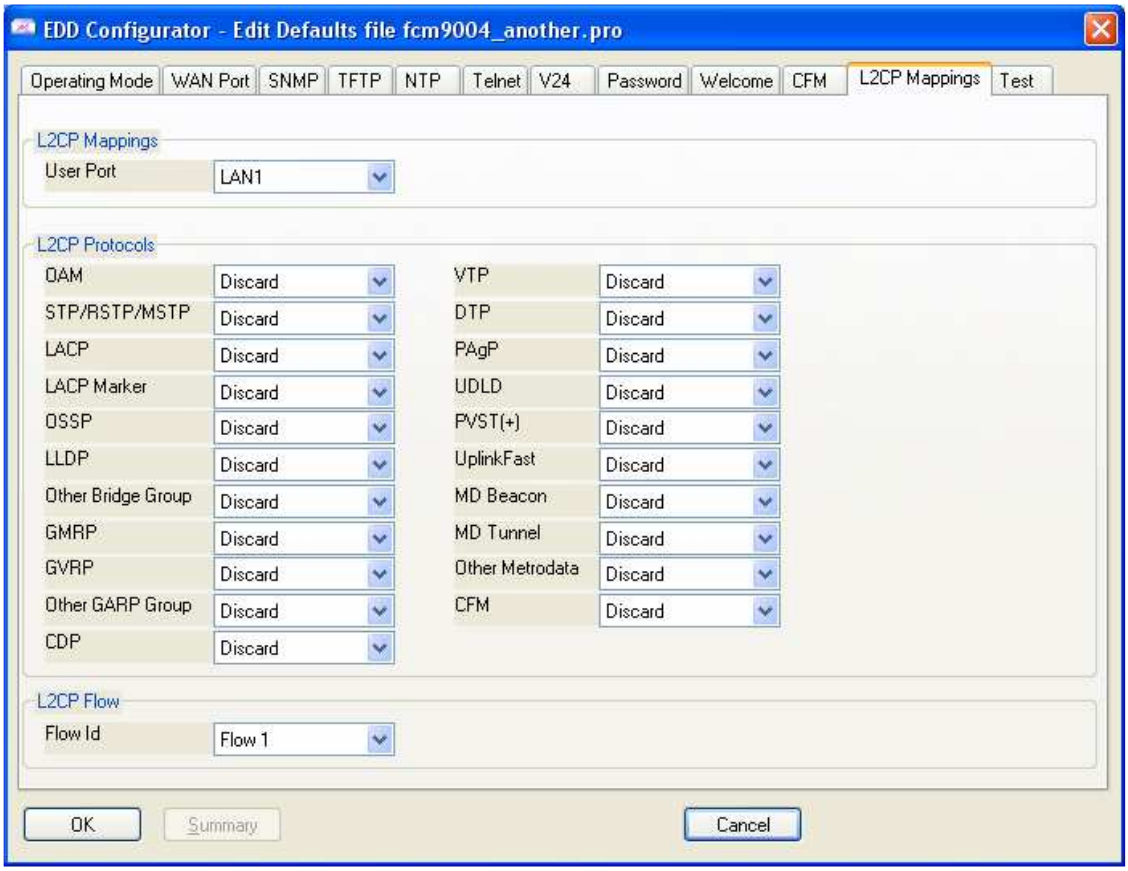
The SNMP settings allow the SNMP Manager and SNMP community strings to be defined.

3.2.4 CFM Settings



The CFM Settings allows a number of CFM Management Domains to be created.
CFM Management Associations and End Points are defined in the device specific menus.

3.2.5 L2CP Settings



The L2CP Flow item “Flow Id” controls which flow is used to transport the selected protocols for the selected port.

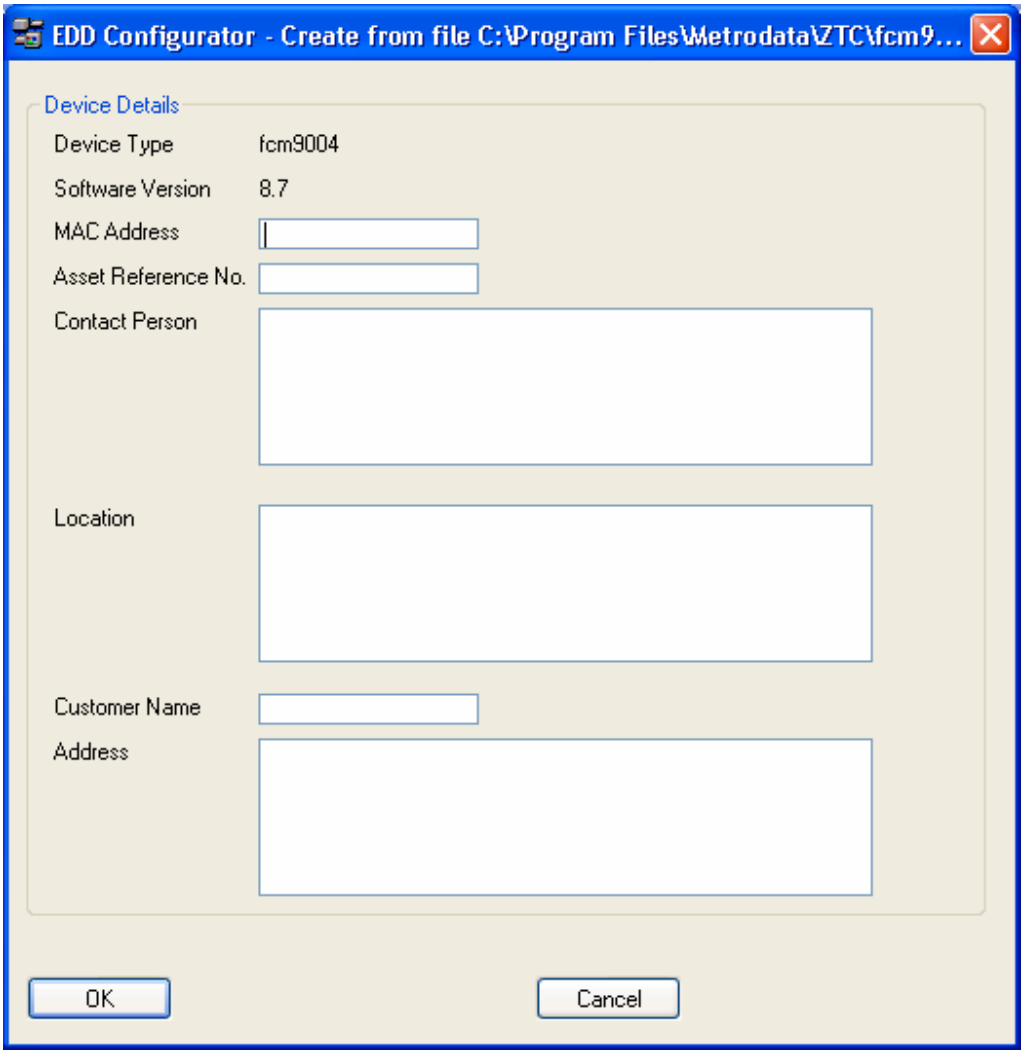
3.3 Inventory

The Inventory maintains a list of all ZTC devices that have been created, and can be viewed using the View Inventory menu tab.

Initially no EDD devices will be present in the inventory.

A new device may be created by clicking on “Create new device”, or right click on the mouse and select “Create new device” menu tab.

3.3.1 Create New Device



The new device configuration file will be created using the current default profile.

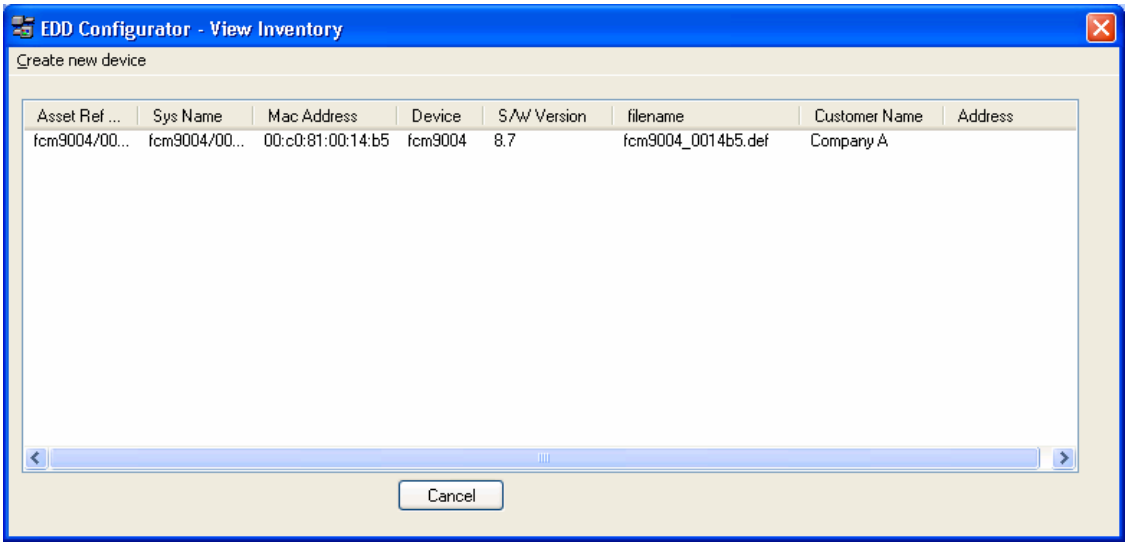
Each device is identified using the MAC address and Asset Reference No.

MAC address
This may be either a 12 character MAC address e.g. 00c081010203 , or a 6 character "short MAC format" which assumes the OUI part is 00c081 e.g. 010203

Asset Reference No.
This is used to uniquely identify the device and may be up to 32 characters.

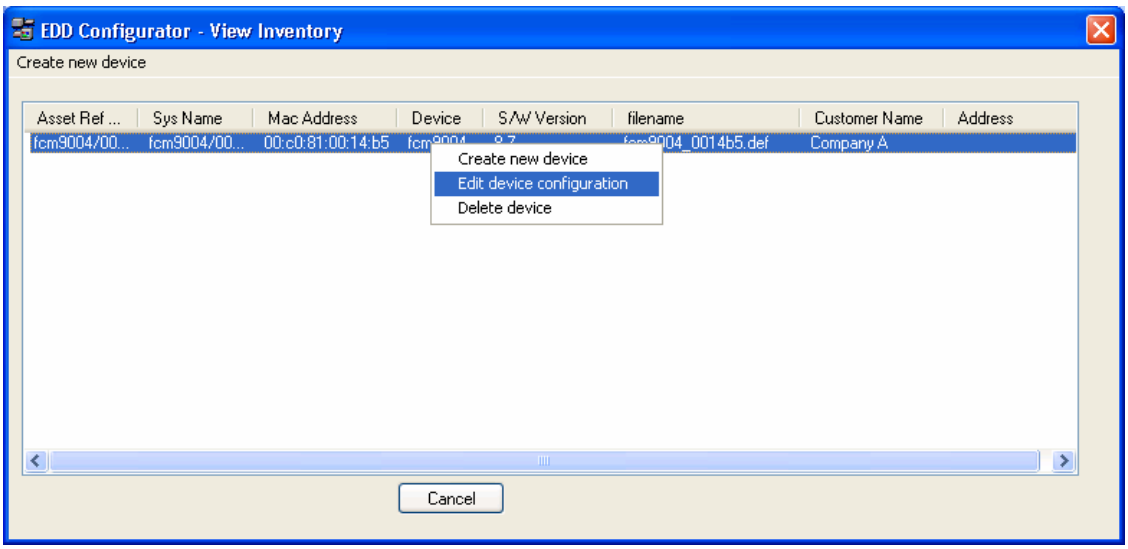
3.3.2 View Inventory

The View Inventory lists all ZTC devices that have been created, with display of Asset id, system name , MAC address etc in a tabular form. The inventory view also allows selection of device for editing the device configuration details.



The device configuration values editor function is selected by right clicking on the mouse, and selecting “Edit device configuration”.

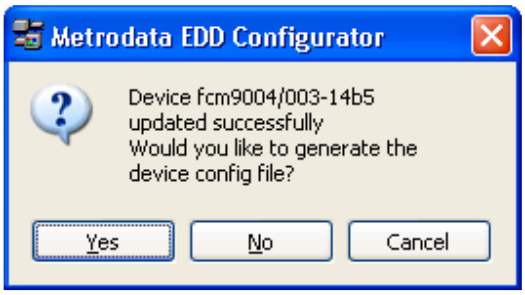
3.4 Edit Device configuration



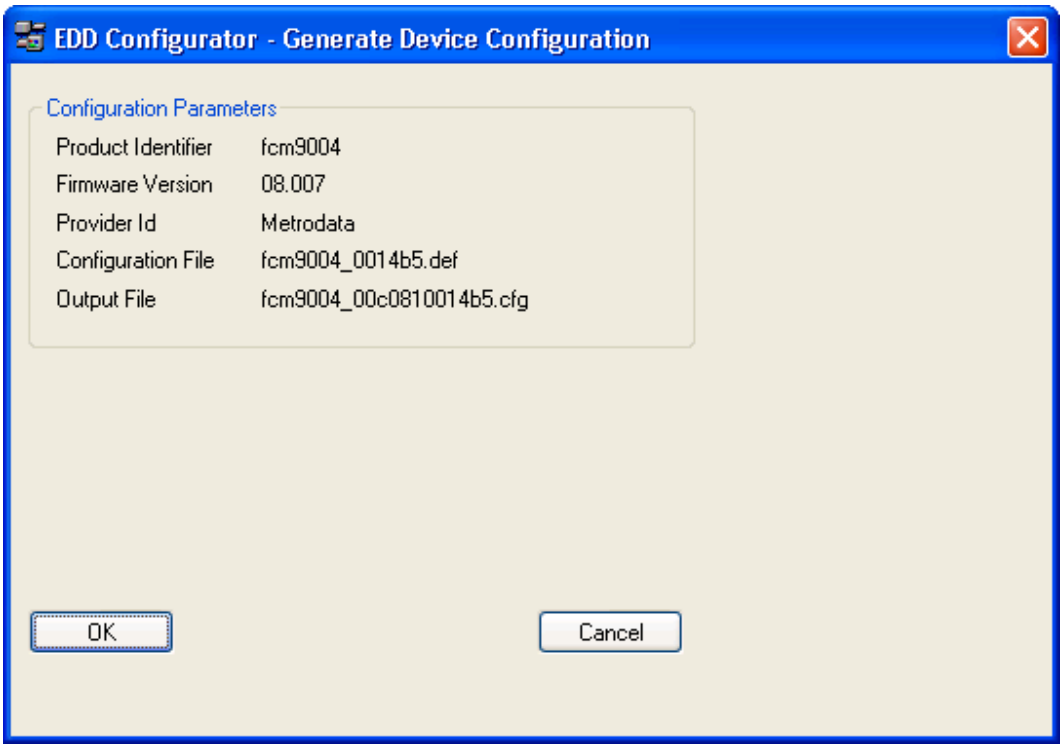
The ***EDD Configurator*** Edit function allows the device specific configuration parameters to be modified.

When modification of the settings has been completed, press OK.

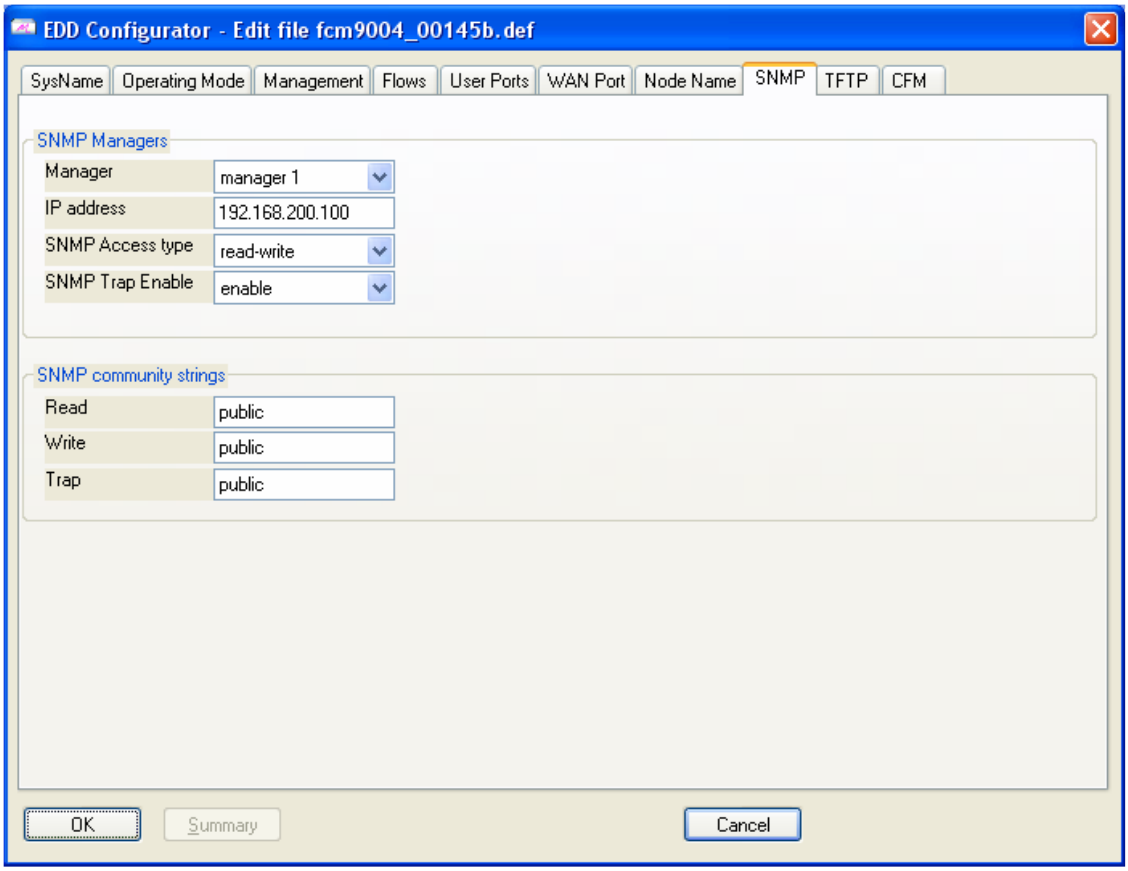
This will write the new settings into the device settings file, and optionally generate the device configuration file. This device configuration file is the file that is downloaded to the EDD by the ZTC process.



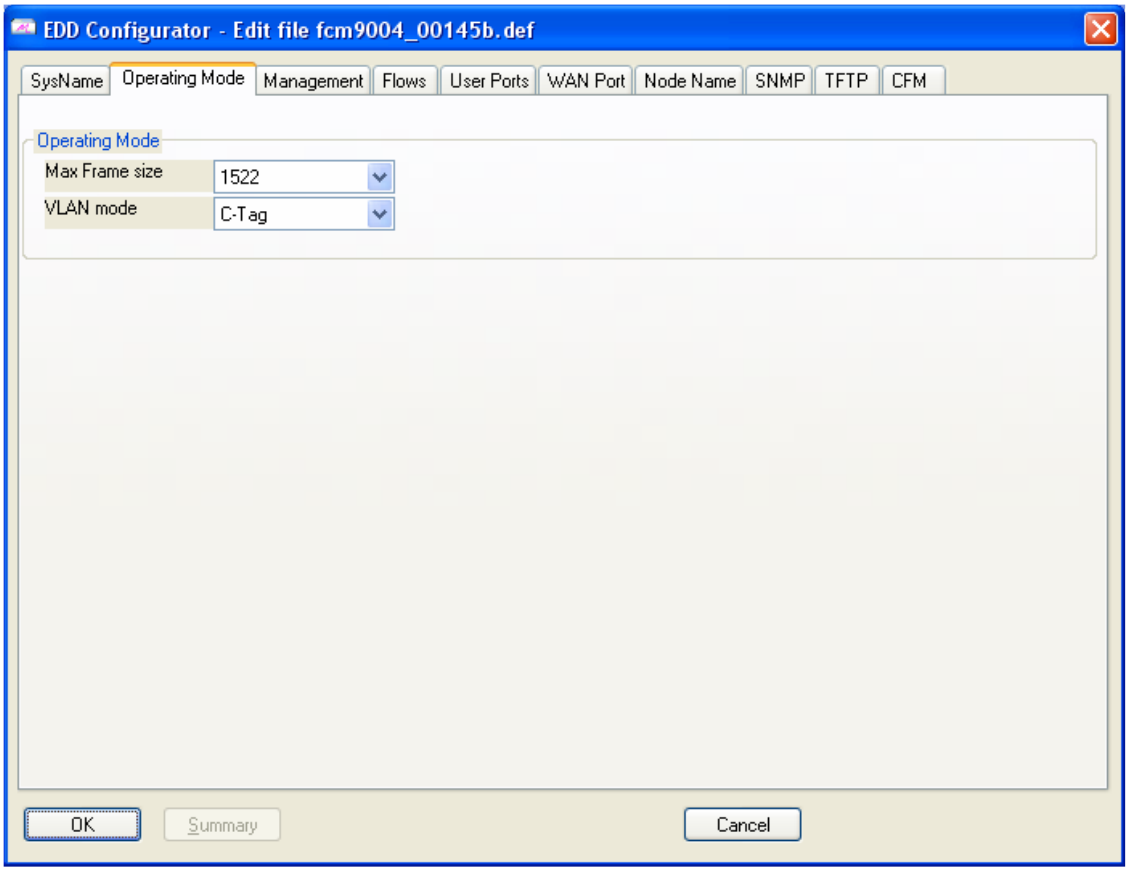
By choosing <Yes>, the downloadable device configuration file will be generated.



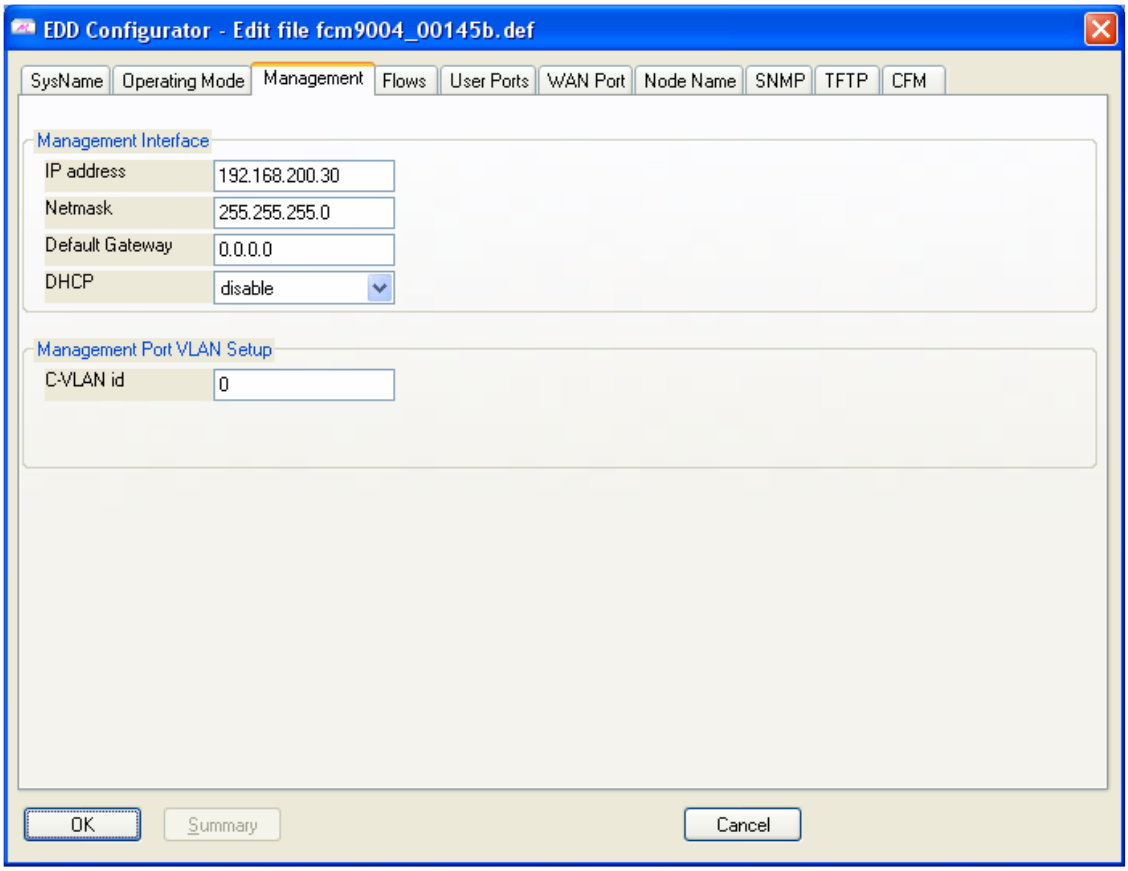
3.4.1 SNMP Settings



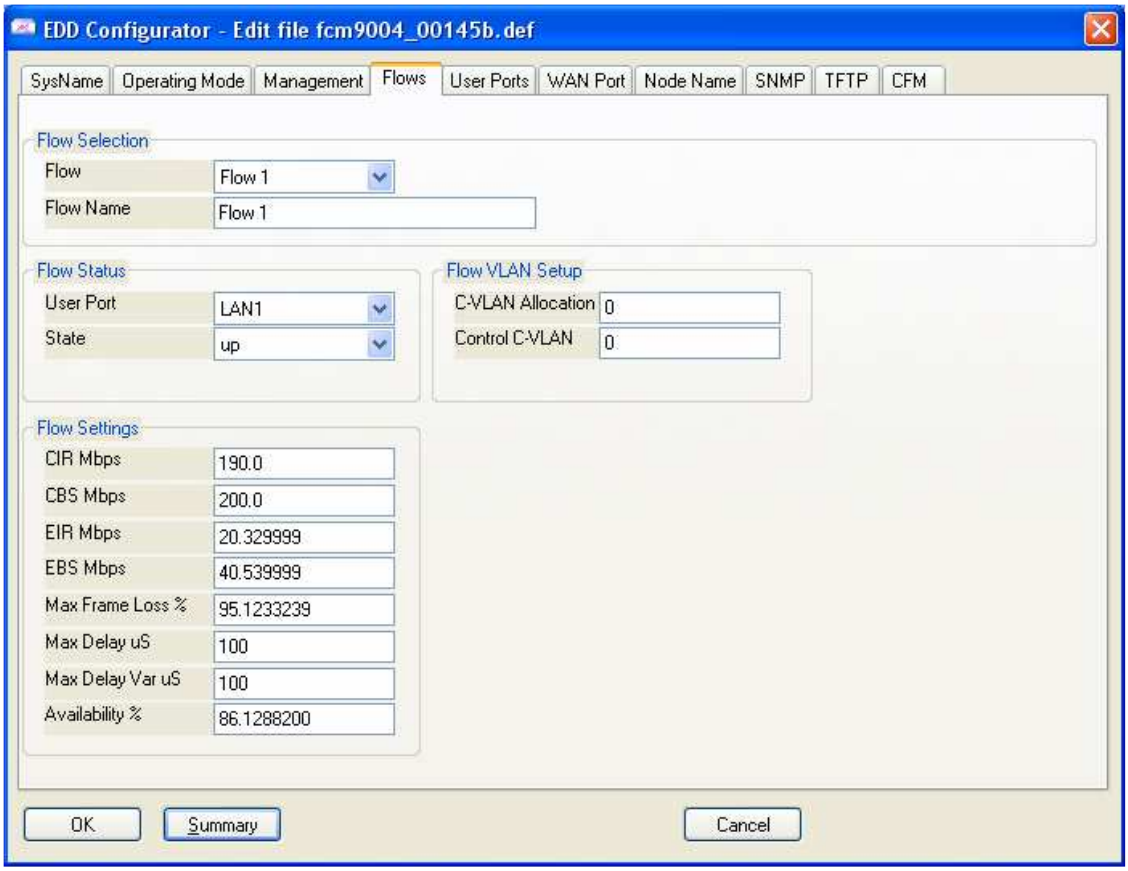
3.4.2 Operating Mode Settings



3.4.3 Management Settings

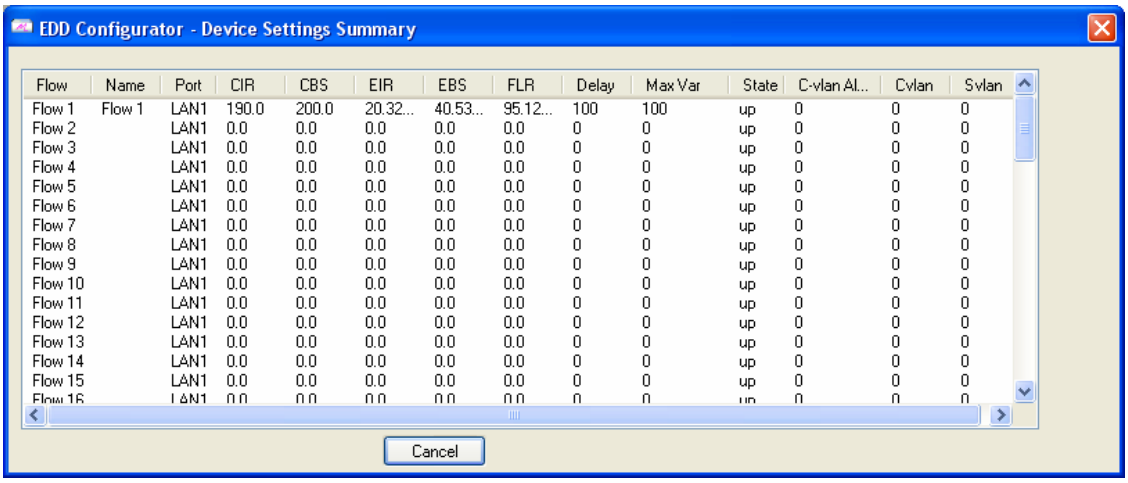


3.4.4 Flow Settings

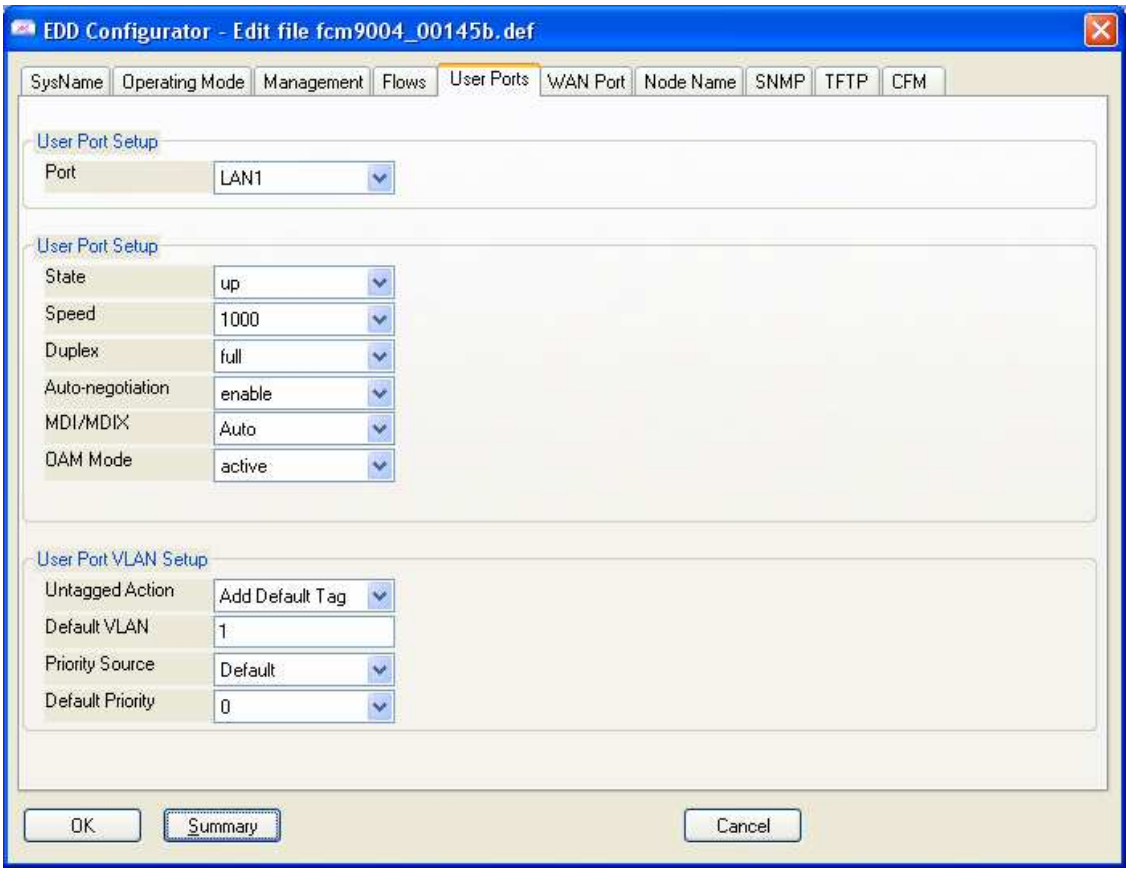


The Flow field is used to select which flow is to be configured. Each Individual flow may be configured with CIR, EIR, Maximum Frame Loss %, etc.

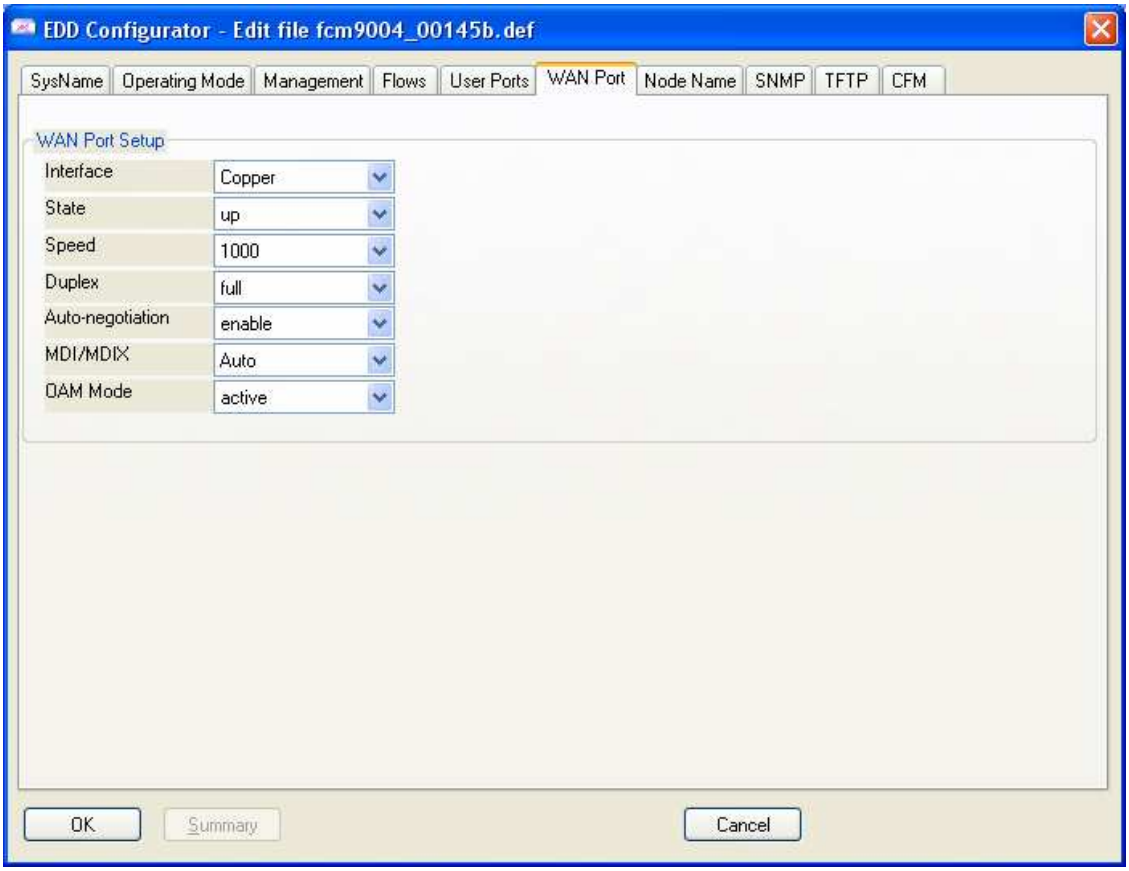
Note that some edit forms have a Summary button which shows a summary of all current settings controlled by the edit form.



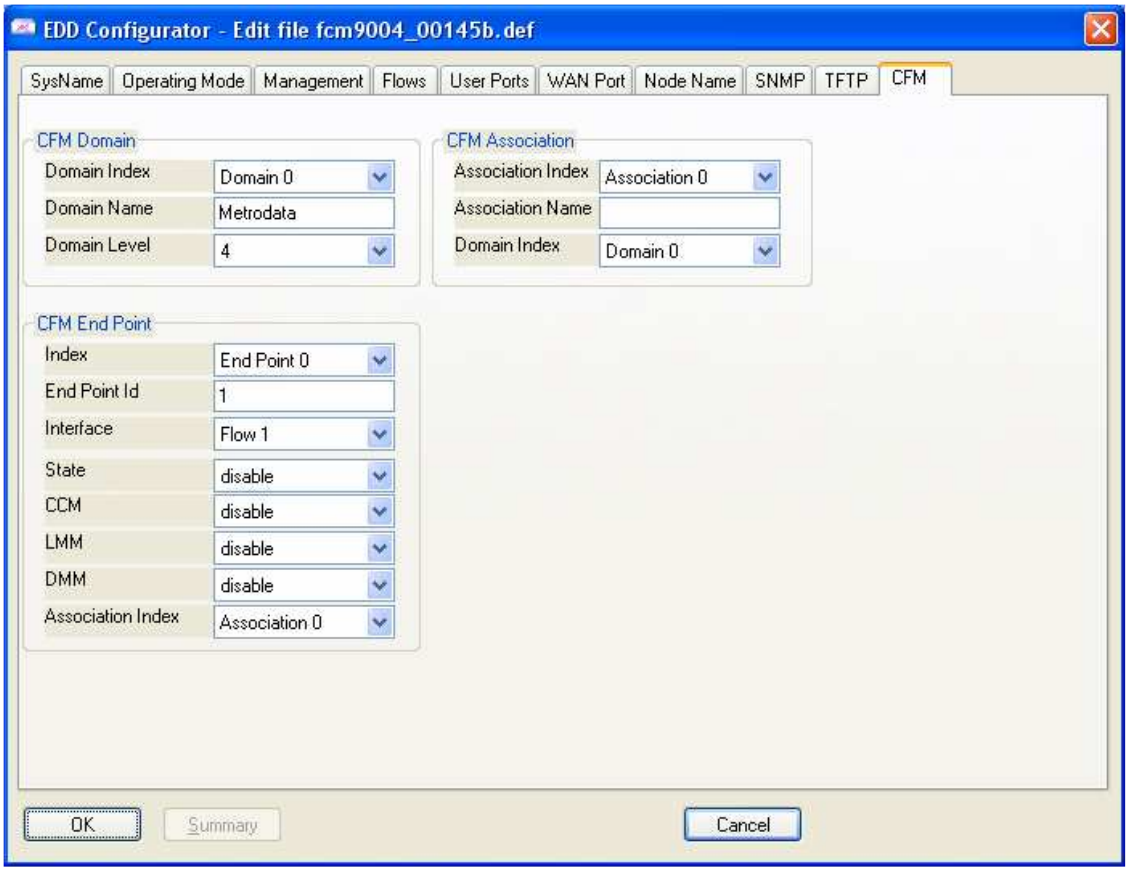
3.4.5 User Port Settings



3.4.6 WAN Port Settings

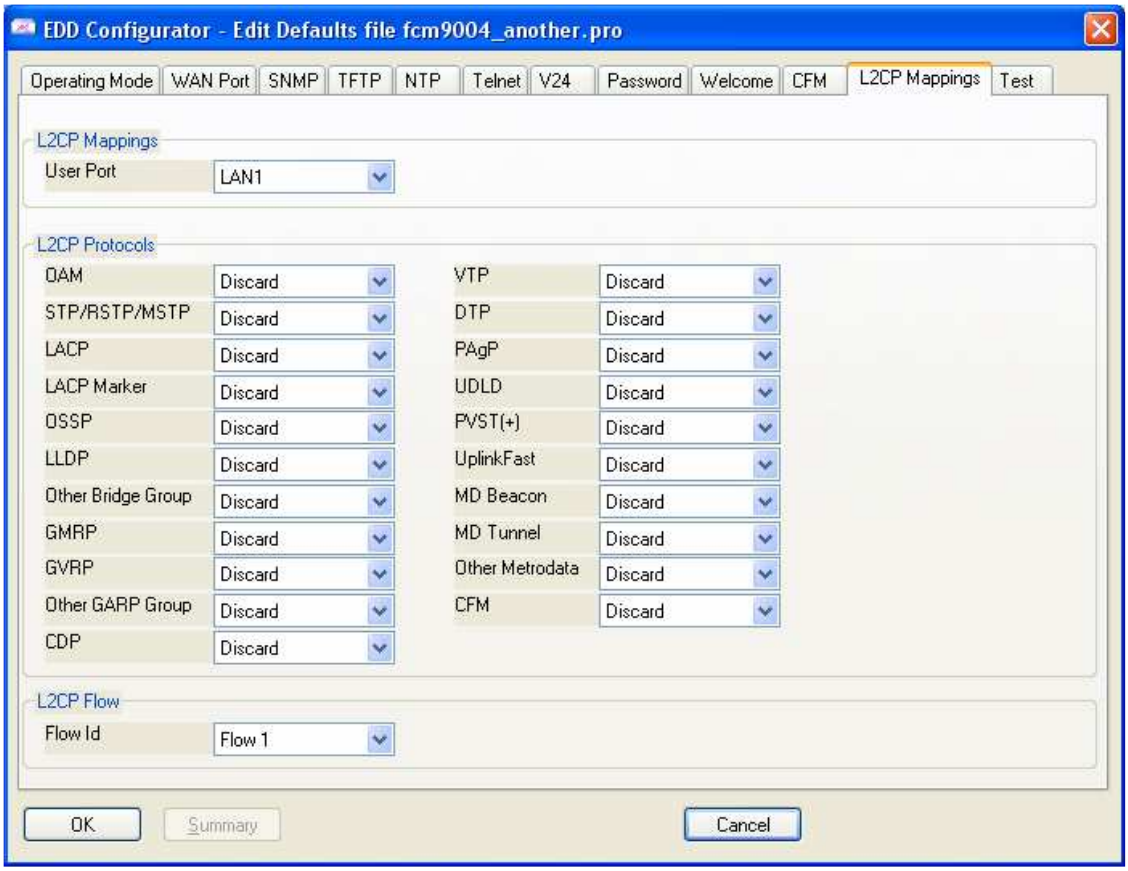


3.4.7 CFM Settings



The CFM Settings allow CFM Domains, Associations and End Points to be defined.

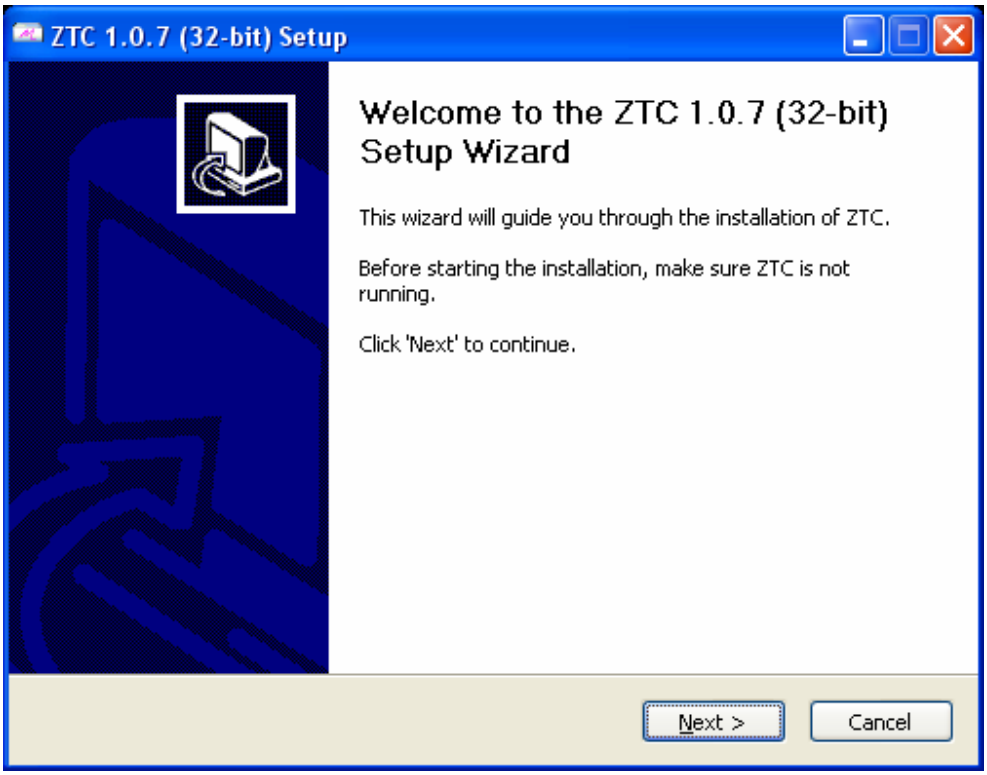
3.4.8 L2CP Settings

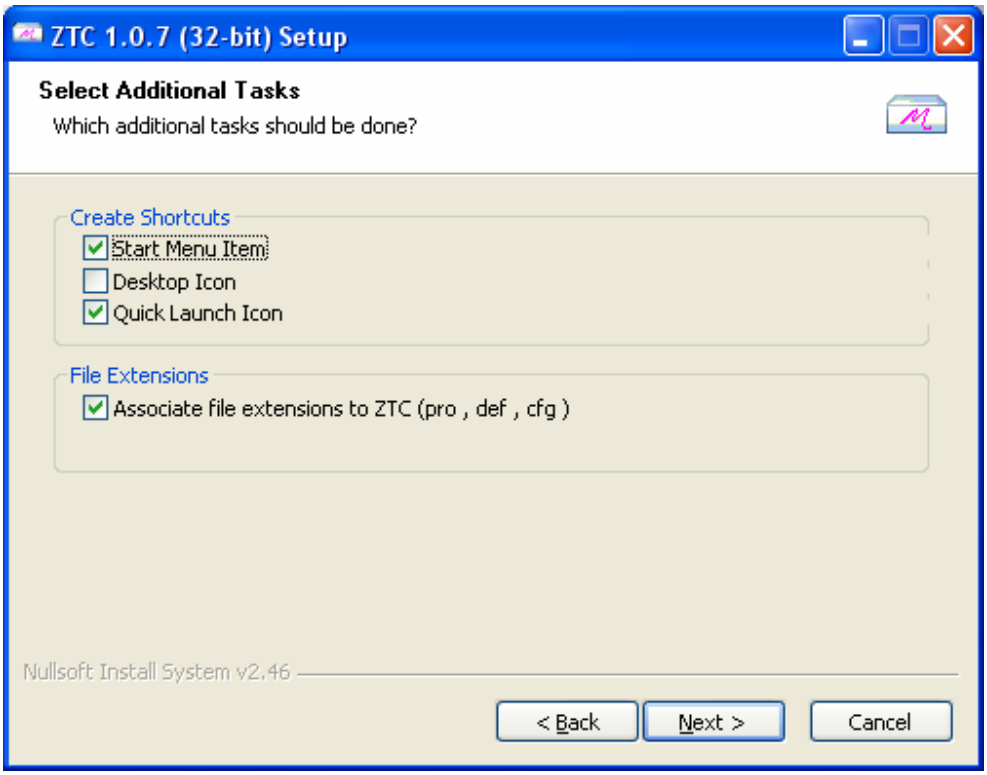


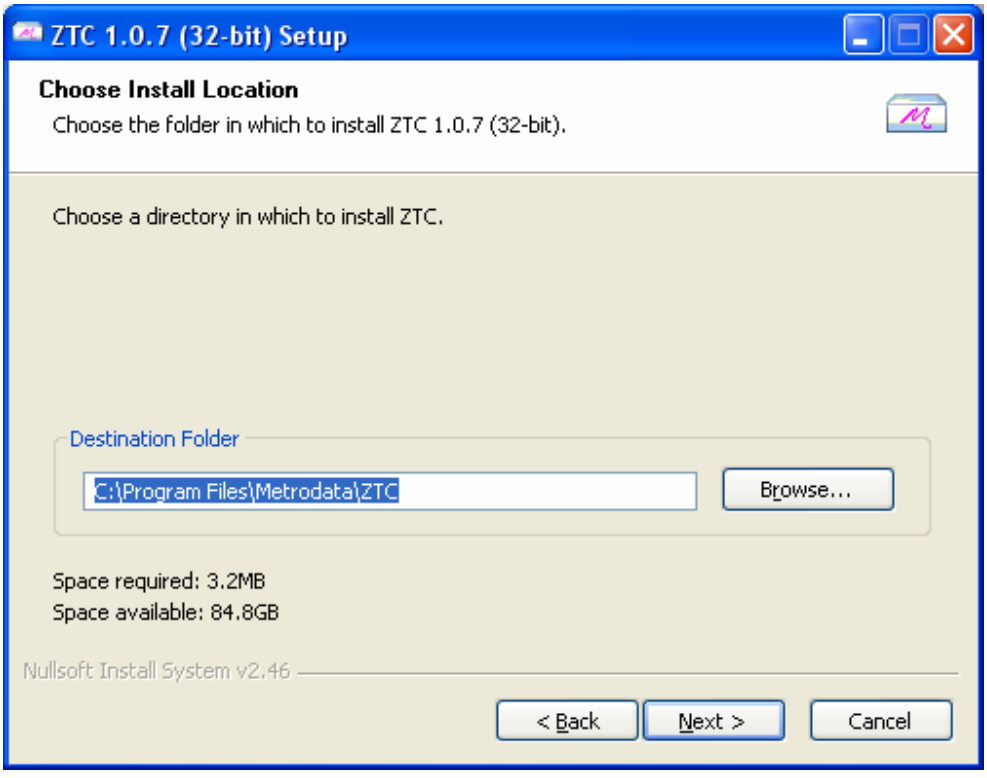
The L2CP Flow item “Flow Id” controls which flow is used to transport the selected protocols for the selected port.

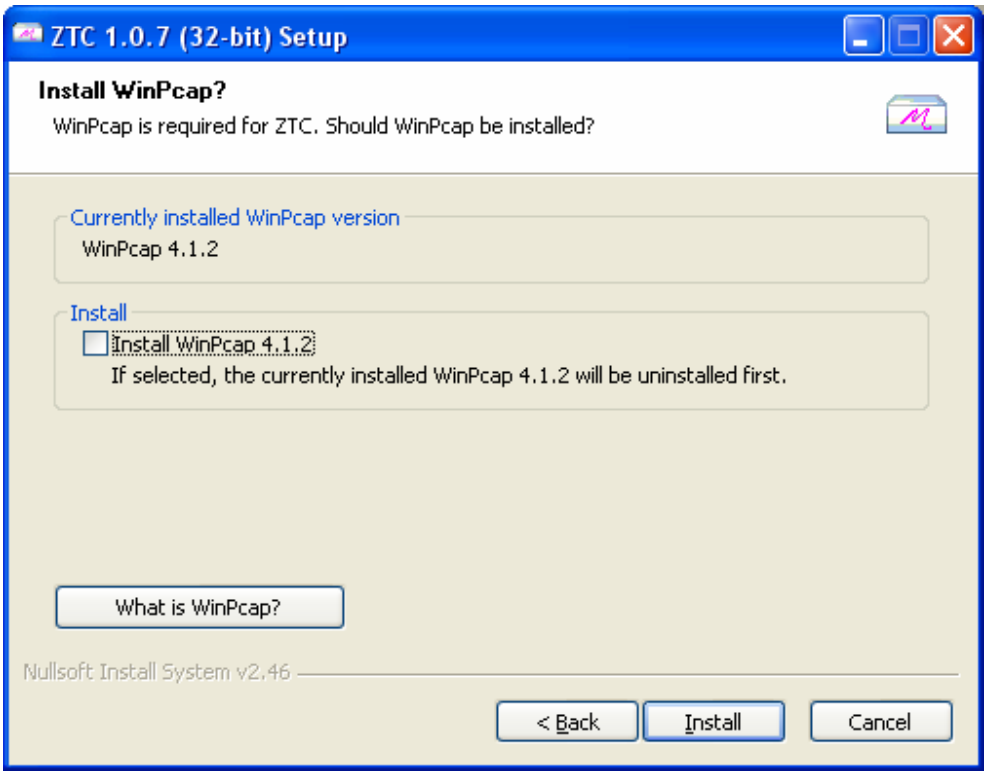
4 ZTC Software Installation

The ZTC software is installed by running the ztc-win32-1.0.7.exe file. This file is contained in the ztc-win32-1.0.7.zip file. The following pages detail the installation process.

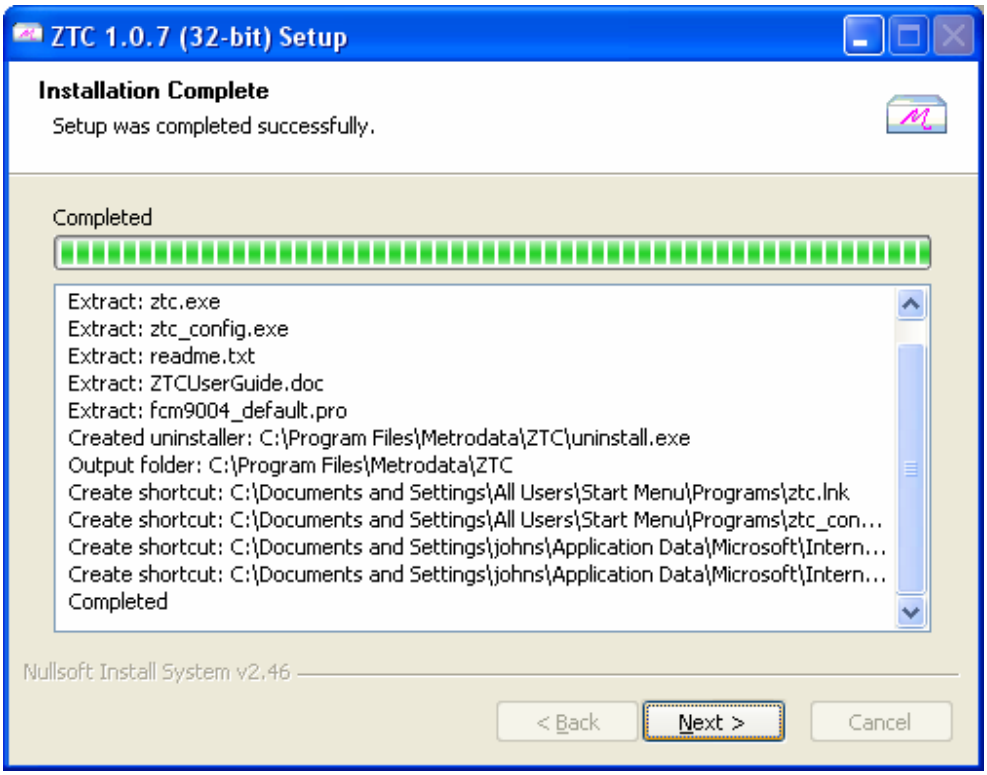


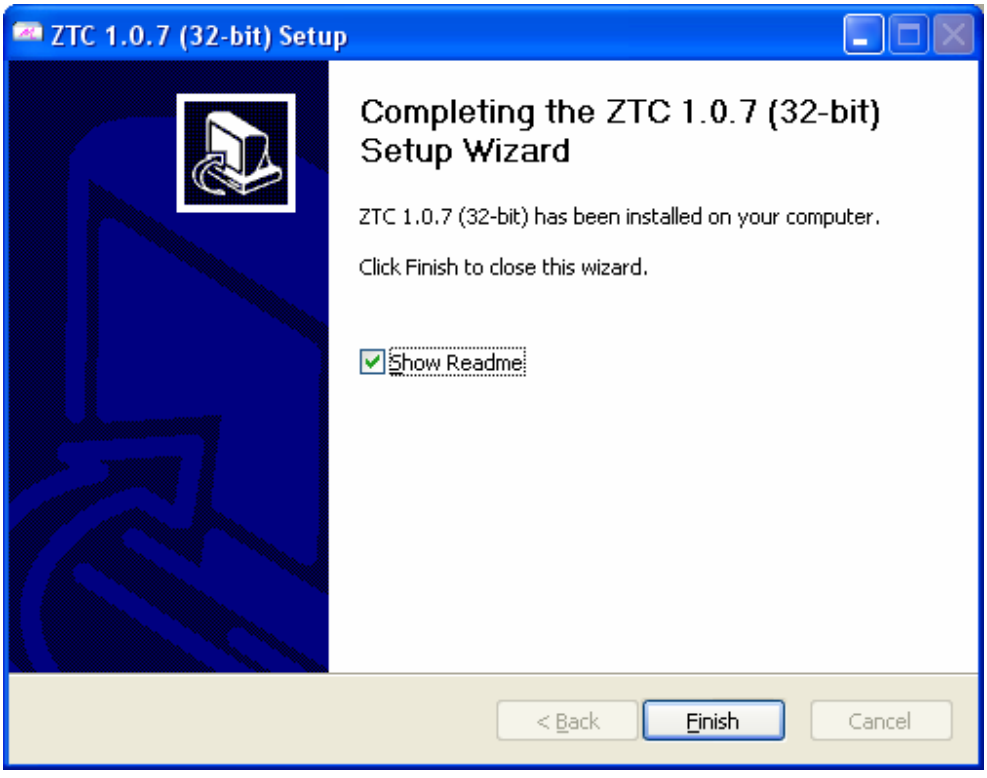

ZTC 1.0.7 (32-bit) Setup
Select Additional Tasks
Which additional tasks should be done?
Create Shortcuts
Start Menu Item
Desktop Icon
Quick Launch Icon
File Extensions
Associate file extensions to ZTC (pro , def , cfg)
Nullsoft Install System v2.46
< Back
Next >
Cancel


ZTC 1.0.7 (32-bit) Setup
Choose Install Location
Choose the folder in which to install ZTC 1.0.7 (32-bit).
Choose a directory in which to install ZTC.
Destination Folder
C:\Program Files\Metrodata\ZTC
Browse...
Space required: 3.2MB
Space available: 84.8GB
Nullsoft Install System v2.46
< Back
Next >
Cancel



The WinPCap driver allows the ZTC protocol to operate. This protocol uses multicast packets to communicate with ZTC enabled EDD devices on the network

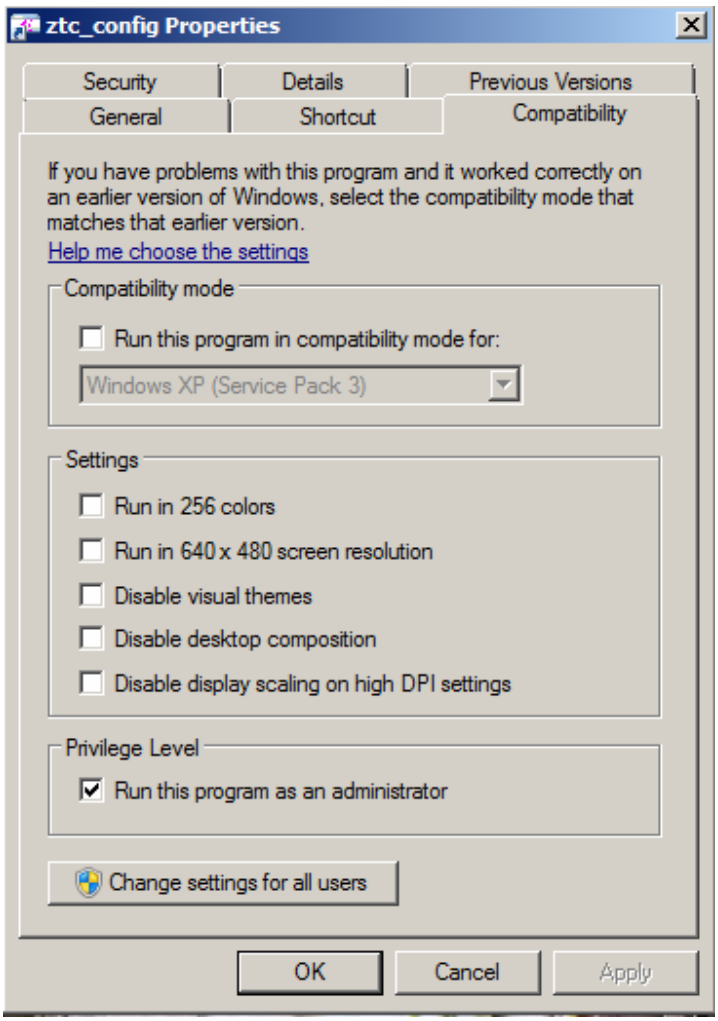

ZTC 1.0.7 (32-bit) Setup
Installation Complete
Setup was completed successfully.
Completed
Extract: ztc.exe
Extract: ztc_config.exe
Extract: readme.txt
Extract: ZTCUserGuide.doc
Extract: fcm9004_default.pro
Created uninstaller: C:\Program Files\Metrodata\ZTC\uninstall.exe
Output folder: C:\Program Files\Metrodata\ZTC
Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\ztc.lnk
Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\ztc_con...
Create shortcut: C:\Documents and Settings\johns\Application Data\Microsoft\Intern...
Create shortcut: C:\Documents and Settings\johns\Application Data\Microsoft\Intern...
Completed
Nullsoft Install System v2.46
< Back
Next >
Cancel


ZTC 1.0.7 (32-bit) Setup
Completing the ZTC 1.0.7 (32-bit) Setup Wizard
ZTC 1.0.7 (32-bit) has been installed on your computer.
Click Finish to close this wizard.
Show Readme
< Back
Finish
Cancel

4.1 Windows 7 Installation Note

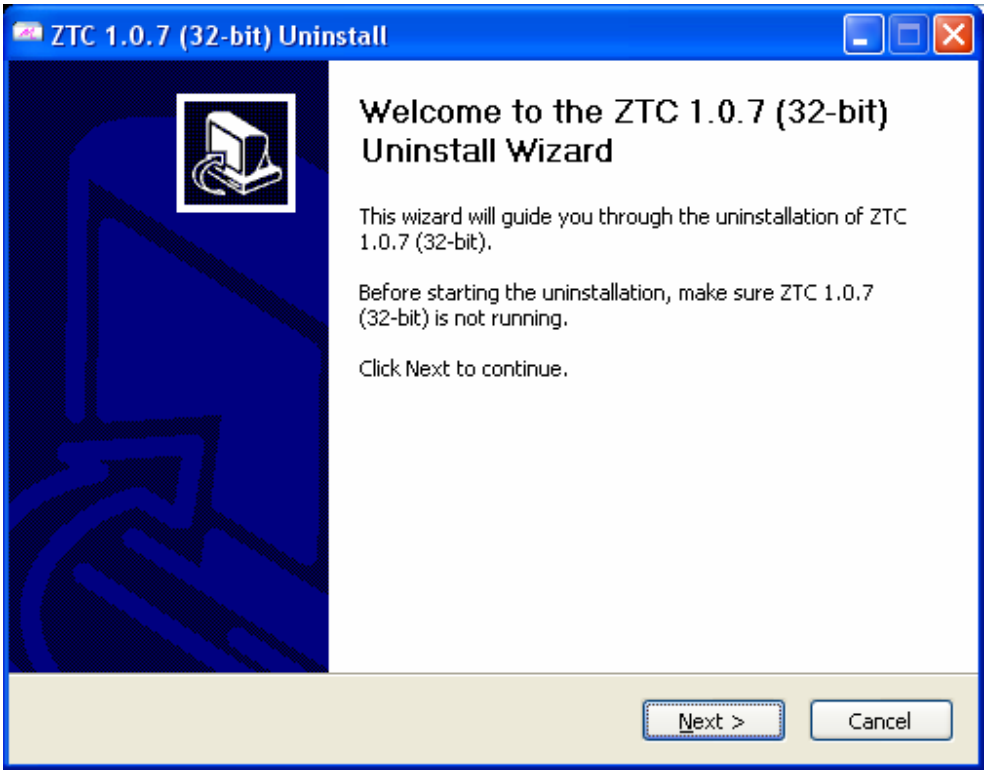
When installing on a Windows 7 system, the Privilege Level of the ZTC and ZTC config executables must be changed to “Run this program as administrator”.

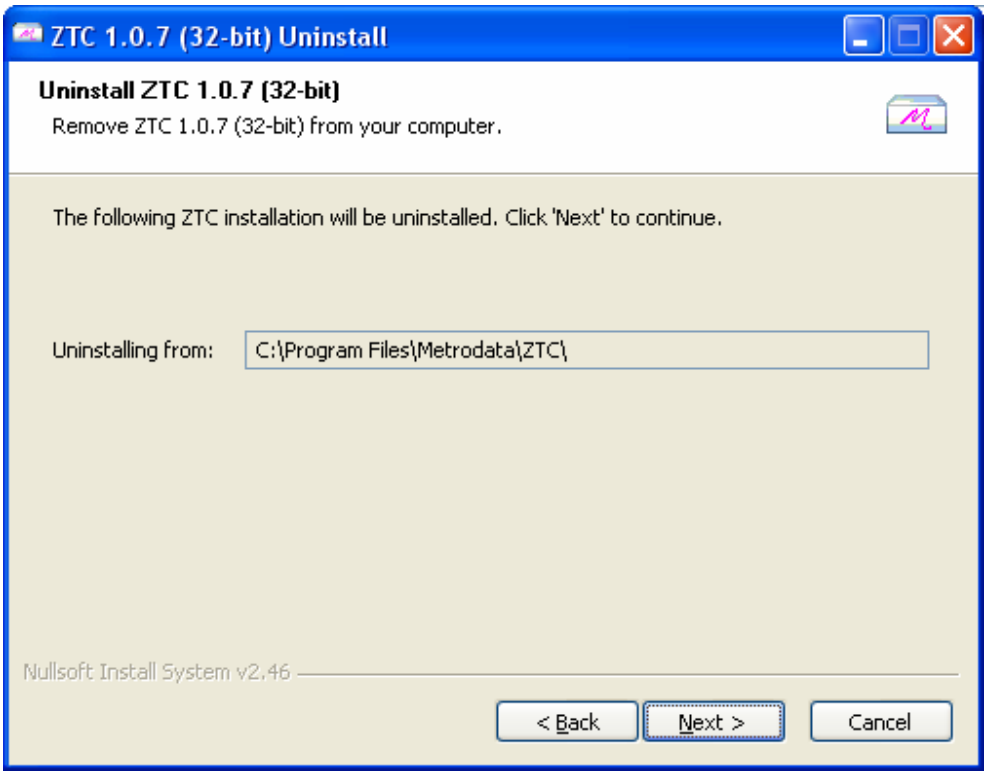
The Privilege level may be changed using by right clicking on “Properties”.

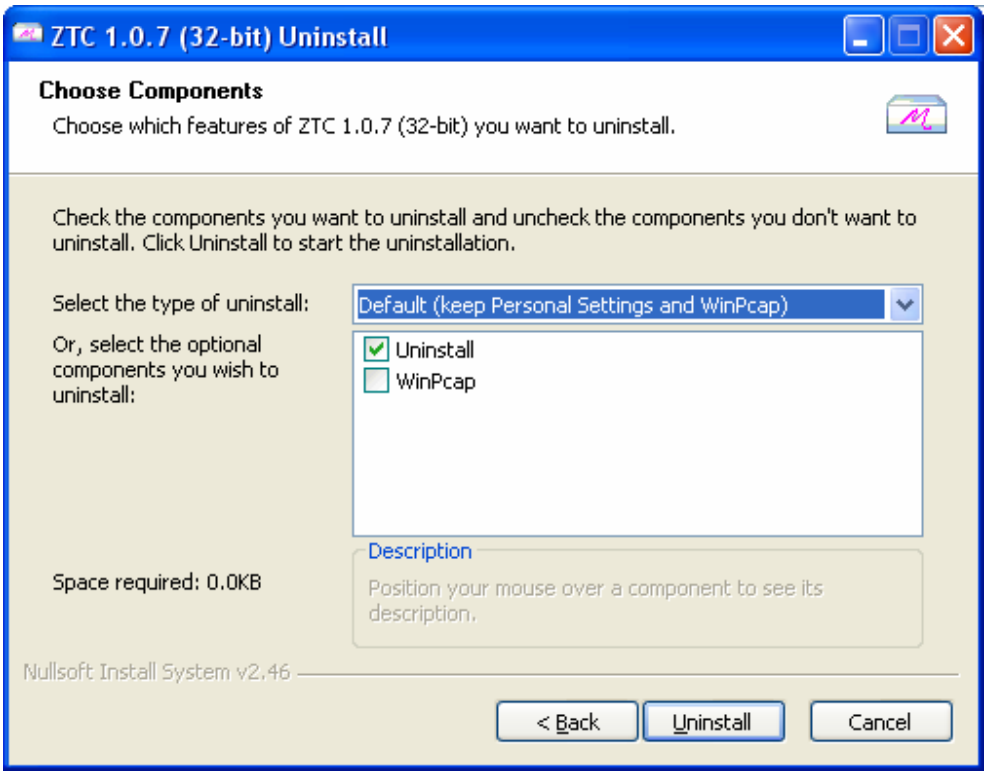


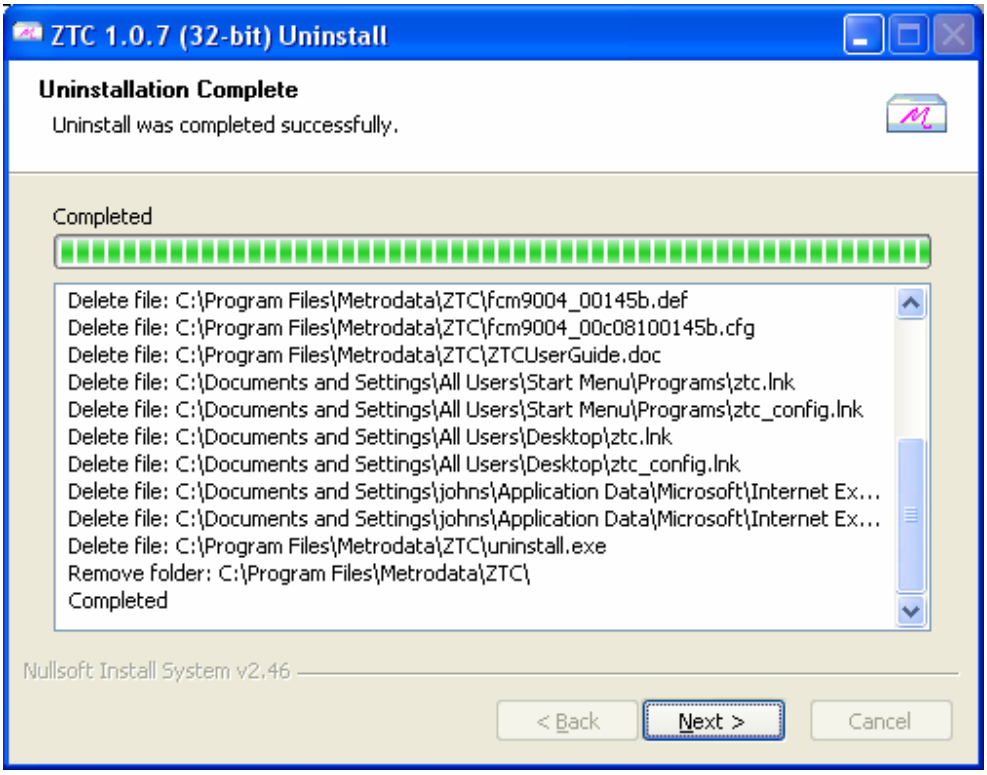
5 Uninstall ZTC Application

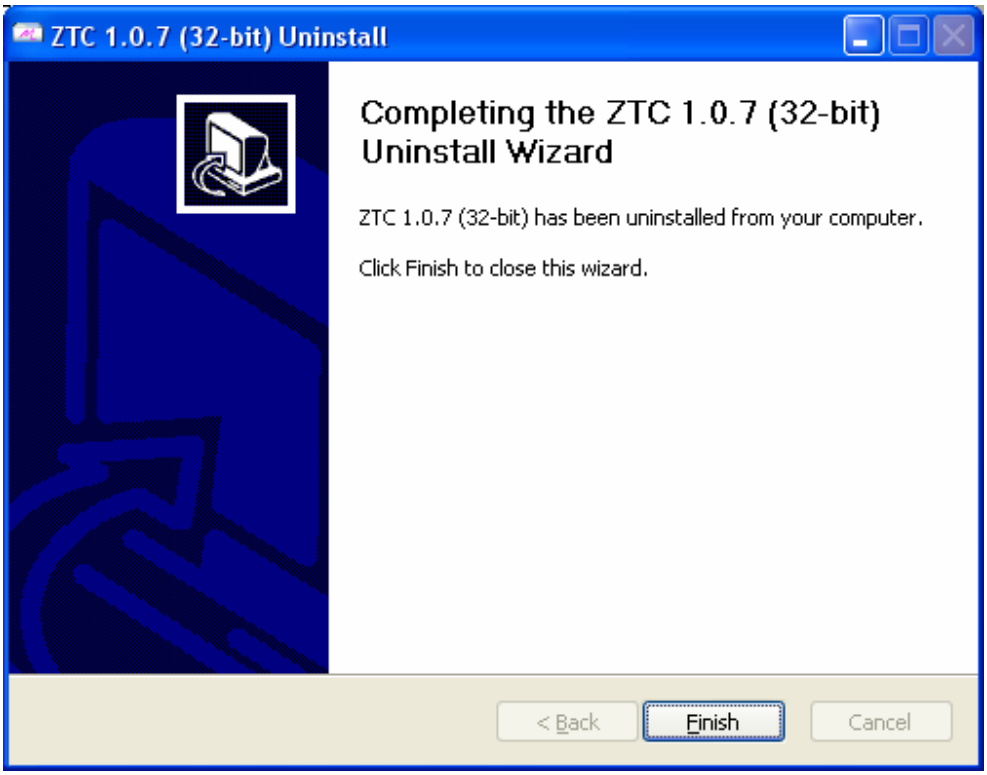
The ZTC application may be uninstalled using Control Panel / Add or Remove Programs.
.




ZTC 1.0.7 (32-bit) Uninstall
Uninstall ZTC 1.0.7 (32-bit)
Remove ZTC 1.0.7 (32-bit) from your computer.
The following ZTC installation will be uninstalled. Click 'Next' to continue.
Uninstalling from:
C:\Program Files\Metrodata\ZTC\
Nullsoft Install System v2.46
< Back
Next >
Cancel


ZTC 1.0.7 (32-bit) Uninstall
Choose Components
Choose which features of ZTC 1.0.7 (32-bit) you want to uninstall.
Check the components you want to uninstall and uncheck the components you don't want to uninstall. Click Uninstall to start the uninstallation.
Select the type of uninstall:
Default (keep Personal Settings and WinPcap)
Or, select the optional components you wish to uninstall:
Uninstall
WinPcap
Description
Position your mouse over a component to see its description.
Space required: 0.0KB
Nullsoft Install System v2.46
< Back
Uninstall
Cancel


ZTC 1.0.7 (32-bit) Uninstall
Uninstallation Complete
Uninstall was completed successfully.
Completed
Delete file: C:\Program Files\Metrodata\ZTC\fcm9004_00145b.def
Delete file: C:\Program Files\Metrodata\ZTC\fcm9004_00c08100145b.cfg
Delete file: C:\Program Files\Metrodata\ZTC\ZTCUserGuide.doc
Delete file: C:\Documents and Settings\All Users\Start Menu\Programs\ztc.lnk
Delete file: C:\Documents and Settings\All Users\Start Menu\Programs\ztc_config.lnk
Delete file: C:\Documents and Settings\All Users\Desktop\ztc.lnk
Delete file: C:\Documents and Settings\All Users\Desktop\ztc_config.lnk
Delete file: C:\Documents and Settings\johns\Application Data\Microsoft\Internet Ex...
Delete file: C:\Documents and Settings\johns\Application Data\Microsoft\Internet Ex...
Delete file: C:\Program Files\Metrodata\ZTC\uninstall.exe
Remove folder: C:\Program Files\Metrodata\ZTC\
Completed
Nullsoft Install System v2.46
< Back
Next >
Cancel


ZTC 1.0.7 (32-bit) Uninstall
Completing the ZTC 1.0.7 (32-bit) Uninstall Wizard
ZTC 1.0.7 (32-bit) has been uninstalled from your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel