

# VINETIC®

Voice and Internet Enhanced Telephony Interface  
Circuit

T.38 Test Application Release 1.0

Programmer's Reference

**CONFIDENTIAL**  
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Communications



N e v e r   s t o p   t h i n k i n g .

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| Page | Subjects (major changes since last revision) |
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## **Preface**

Infineon Technologies offers FAX services over IP within the T.38 FAX Relay Package together with some VINETIC chipsets. The package includes the T.38 Protocol Stack, the T.38 FAX Agent and the documentation. Additional Test Software within the T.38 FAX Relay package enables the user to use the T.38 Protocol Stack on the VINETIC evaluation package Easy334 for development and demonstration purposes.

### **Scope of the document**

With T.38 the ITU-T provides a standard based protocol for FAX Relay which specifies the transmission of the Internet Facsimile Protocol (IFP) data packets over the IP Network.

For evaluation and demonstration purpose a Test Application is part of the T.38 FAX Relay delivery which enables the user to make an "internal" FAX call over two Phone Channels. This document describes how to use the T.38 Protocol Stack together with the T.38 FAX Agent and the Test Application on the Easy334 Evaluation Board.

## 1 T.38 FAX Relay Package Contents

The T.38 FAX Relay Package V1.1 for Linux includes the following parts:

### **Documentation as part of the T.38 FAX Relay Package documentation**

- T.38 Protocol Stack User's Manual Programmer's Reference
- T.38 Fax Agent User's Manual Programmer's Reference
- T.38 Test Application User's Manual Programmer's Reference
- VINETIC® T.38 FAX Relay Package Release Notes

### **Software as part of the T.38 FAX Relay Software Package**

- T.38 Protocol Stack
- T.38 FAX-Agent
- Test Application

### **VINETIC Driver and Firmware:**

- VINETIC firmware version 16.15.56
- Driver version 0.11.9.1

Note: Driver version 0.11.9.1 is a patched version of 0.11.8.4 for FAX.

### **Required additional Hardware and Software components, not included in the T.38 FAX-Relay Package**

- VINETIC-4VIP Tool Package and EASY 334 Evaluation board - Package V 1.3
- PC and Power Supply as recommended in the VINETIC-4VIP Tool Package for EASY 334
- ucLIB-C Linux Tool Chain for Test Application Generation (only required for development purpose)

## 2 Test Application

A typical product supporting T.38 requires modules like Configuration Management, Resource Management, Signaling User Agent and Signaling Protocol Stack.

The Test Application enables the user to set up internal FAX calls over the IP network sockets through the T.38 Protocol Stack. The FAX data packets are looped back on the network layer. There is no need of a Signaling Protocol Stack.

The Test Application simulates the Signalling (Signaling User Agent, Signaling Stack) by sending to the T.38 FAX Agent module, the required T.38 session set up and shutdown messages.

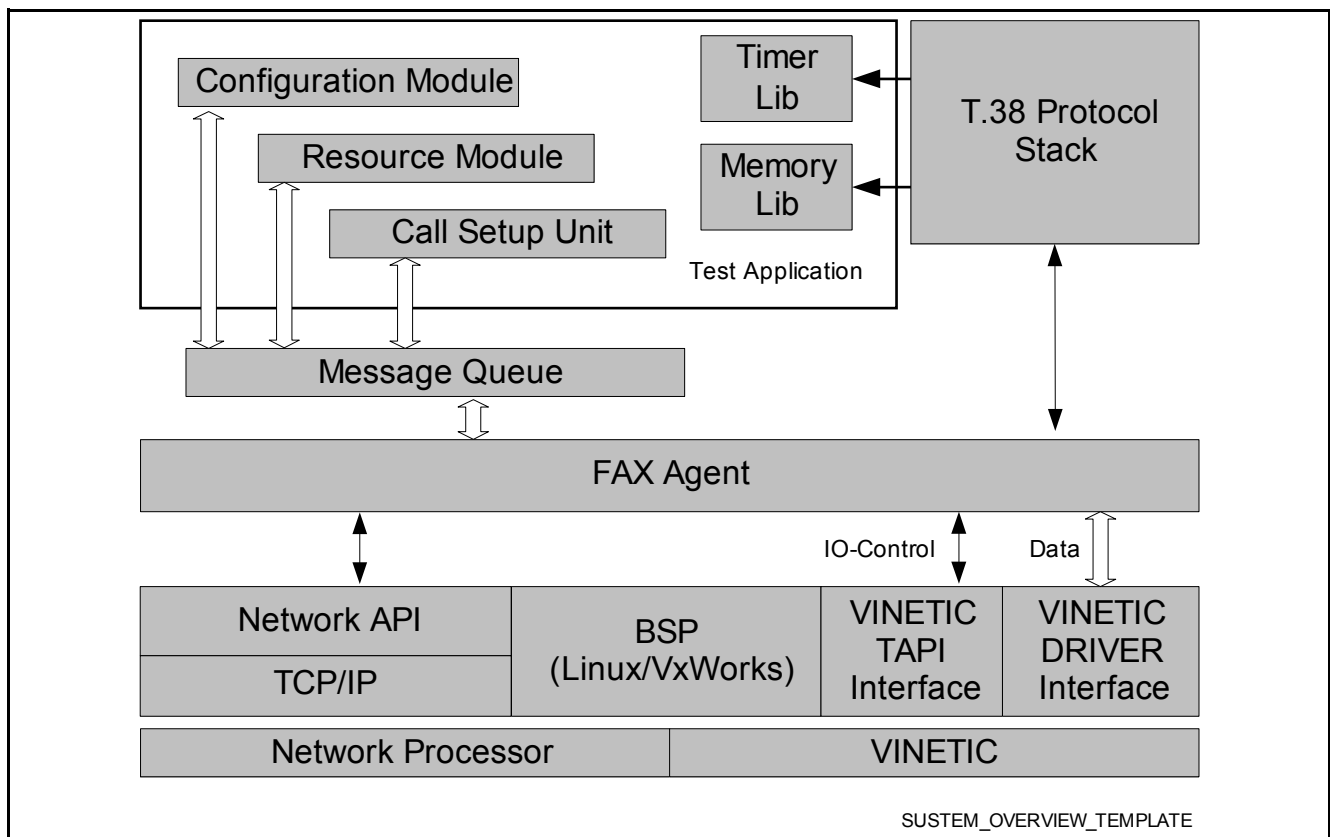
For this scenario only the Test Application, the T.38 Protocol Stack and the T.38 FAX Agent are required at the application level.

*Note: External calls to other gateway implementations are not supported by the Test Application.*

### Test Application includes the following modules

- Timer Library
- Memory Library
- Call Setup Unit (Equivalent to Signaling User Agent)
- Configuration Module
- Resource Management Module

**Figure 1** shows the organization of the modules for the Test Application.



**Figure 1 Test Application Module Organization**



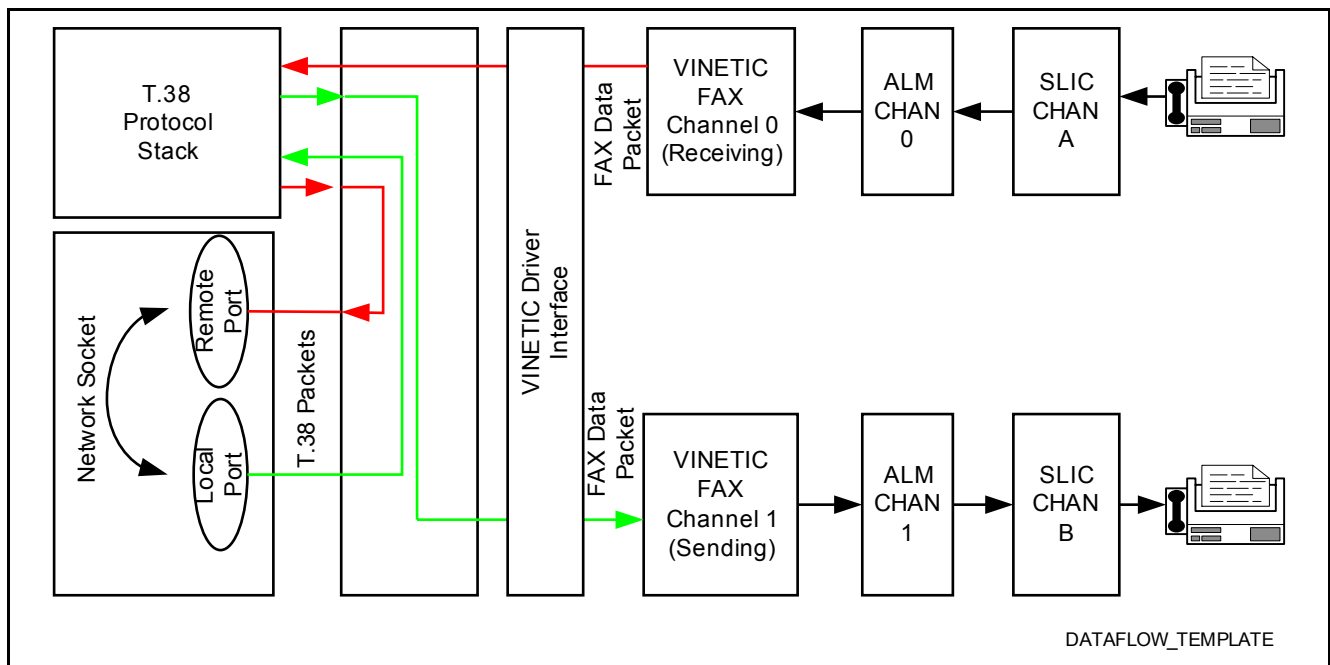
### Functional description of the Test Application

The Test Application allocates two Phone Channels for the FAX call. During the initialization of the T.38 FAX Agent FAX Channel 0 (Sending) is configured with the local port number and FAX Channel 1 (Receiving) is configured with the Remote port.

In the sending direction (FAX Channel 0) the T.38 FAX Agent reads out the FAX data packet from the VINETIC device and passes the packet to the T.38 Protocol Stack. After processing the packet by the T.38 Protocol Stack the T.38 FAX Agent sends the packet through the Network Interface (Remote Port).

In the receiving direction (FAX Channel 1) the T.38 FAX Agent reads out and passes the FAX packets available on the Local Port (Network Protocol Stack) to the T.38 Protocol Stack for processing. After processing, the T.38 Protocol Stack passes the FAX packets (through the T.38 FAX Agent) to the Driver interface.

**Figure 2** shows the data packet flow within the Test Application. The red line represent the sending flow direction and the green line represents the receiving flow direction.



**Figure 2** Data Packet Flow

### 3 Setup and Configuration

The following chapter describes the configuration and setup for the Test Application.

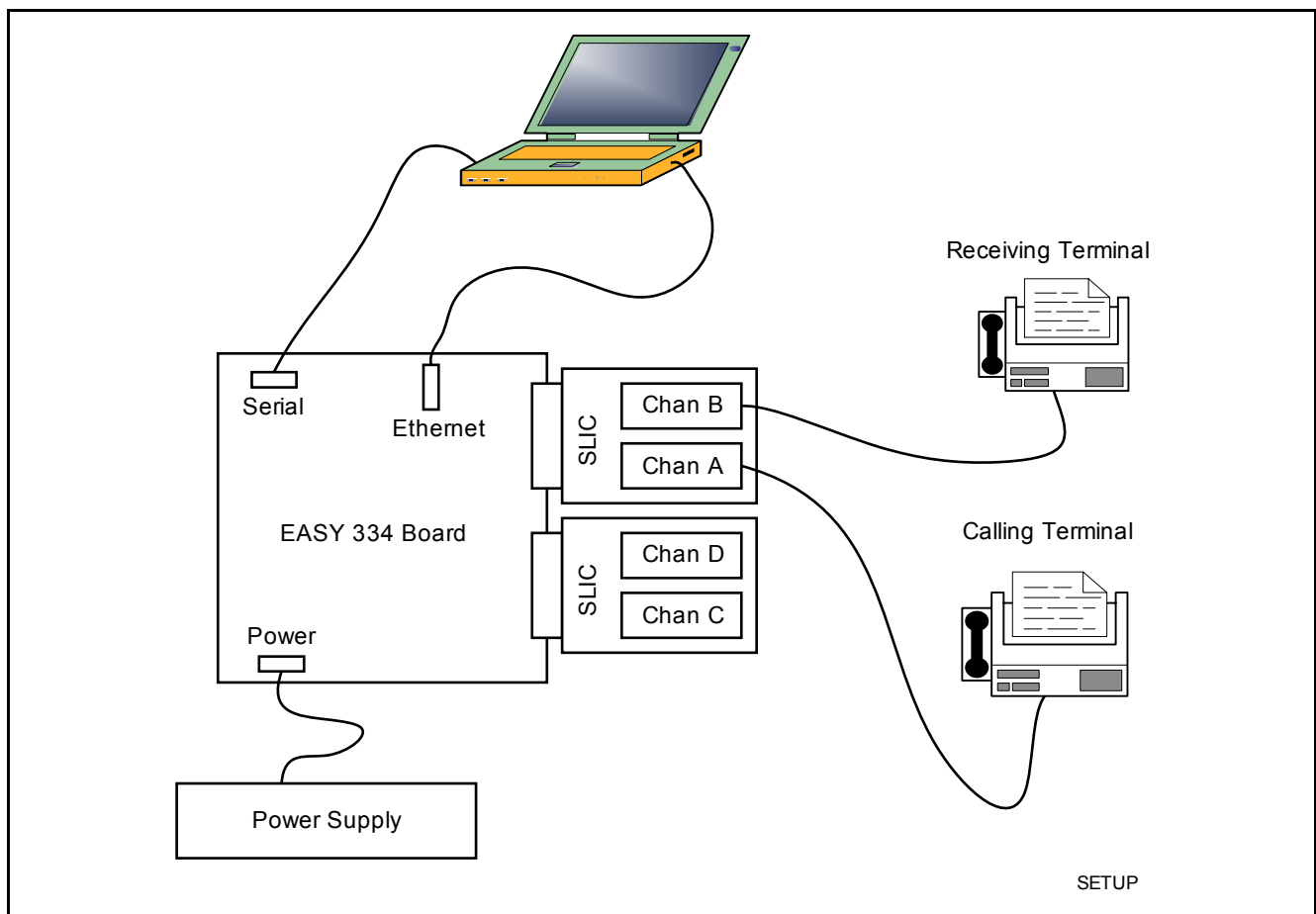
#### Note

The T.38 FAX Relay Package is compiled and tested together with the Test Application for ucLIBC Linux on the EASY334 board.

#### 3.1 Environment Setup

For using the Test Application first the configuration and setup of the EASY 334 board is necessary. How to configure the EASY 334 evaluation board is described in the EASY 334 Quick Start Guide. To transmit a FAX, two normal G3FE FAX terminals are required and must be connected to the SLIC Modules.

**Figure 3** shows the Test Application Setup.



**Figure 3** Hardware Setup

#### 3.2 TFTP & Terminal Configuration

After the Board setup is done the VINETIC driver and Test Application can be downloaded via TFTP to the EASY 334 MPC module. Therefore the configuration of the TeraTerm terminal and the TFTP server is necessary. The TeraTerm Terminal and the TFTP32 tool are included in the tool directory ".tools".

##### TeraTerm Terminal Configuration

The TeraTerm "serial Port" setting is as follows:

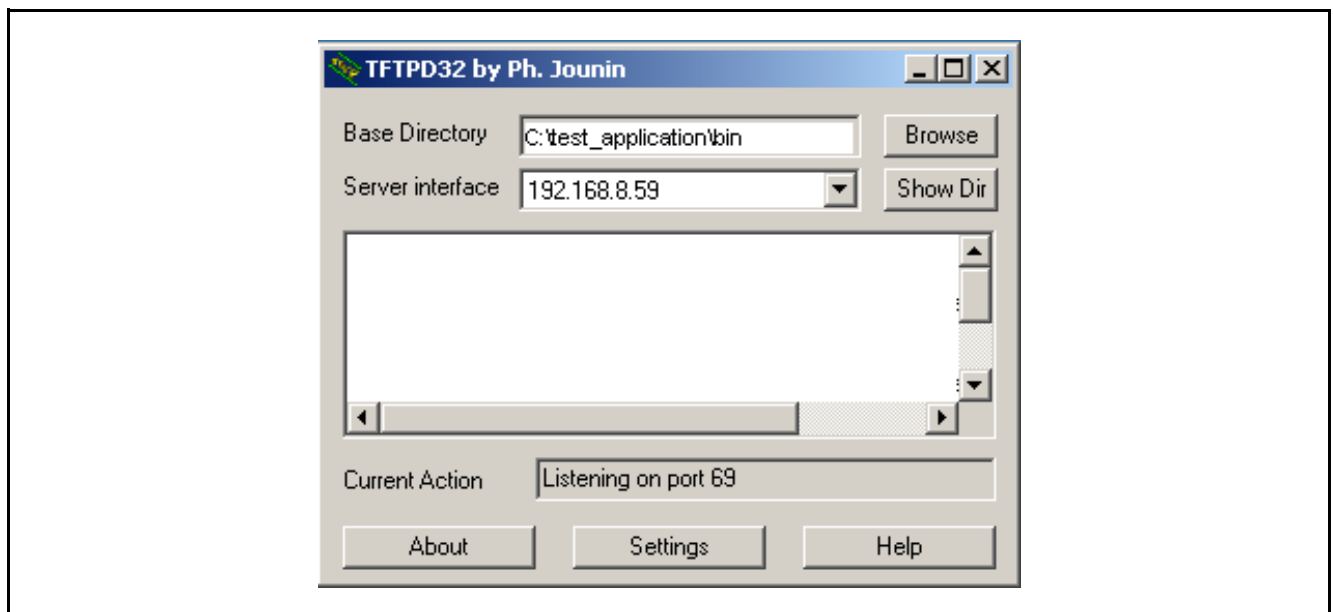
- Port: COM1
- Baud Rate: 38400
- Data: 8 Bit
- Parity: None
- Stop: 1 Bit
- Flow Control: None

## TFTPD32 Server Configuration

The TFTPD32 can be used for downloading the Driver and the Application. The TFTPD is configured with the following settings:

- Server Interface: This field should show the IP address of the PC.
- Set the path to the sources in the Base Directory of TFTPD32 (for example \test\_application\bin)

**Figure 4** shows the setting of the Base Directory and the Server Interface for TFTPD32.



**Figure 4** TFTPD32 Settings (Base Directory and Server Interface)

**Figure 5** shows the TFTPD32 Interface Configuration.

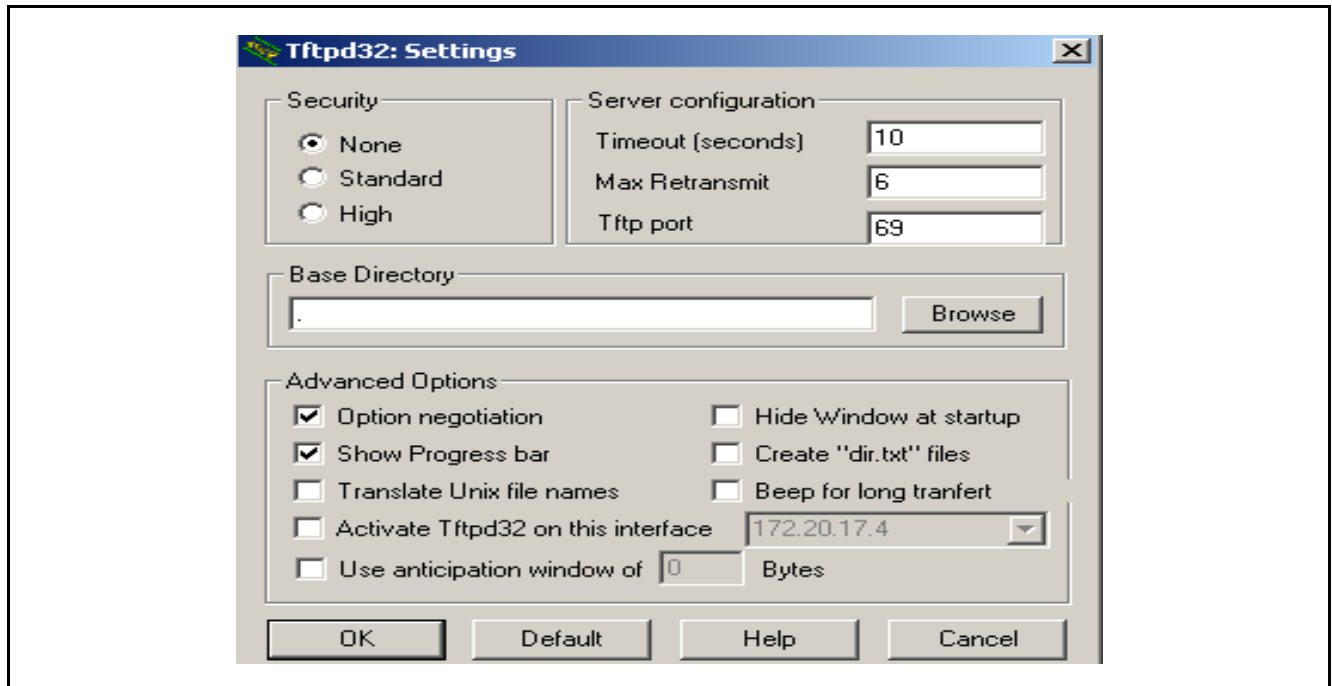


Figure 5 TFTP32 Settings (Interface Configuration)

### 3.3 How to Compile

The following sub chapter describes how to compile the T.38 Protocol Stack and the Test Application under uclIBC Linux.

#### Settings of COMPILER\_DIR, PRODUCT and IFX\_PRODUCT\_ROOT variable

- Set the path to the development tool chain on the Linux host to the COMPILER\_DIR variable. For example:
  - export COMPILER\_DIR=/home/usr/projects/uclibc/buildroot/buildpowerpc/staging\_dir/bin/ <Enter>
- Select the EASY 334 platform for the PRODUCT variable.
  - export PRODUCT=EASY334
- Set the path to the T.38 FAX Relay and Test Application sources on the Linux host. For example:
  - export IFX\_PRODUCT\_ROOT=/home/usr/delivery1.1/T38-FAX-Relay

#### Compiling the T.38 FAX Relay Package

- Move to the folder `./T38-FAX-Relay/FAX/Make/` and execute the “make” file:
  - make clean all <Enter>

The “make” file creates the “libFAX.a” file and copies the file to the target directory `./T38-FAX-Relay/lib/`.

#### Compiling the Memory Library

- Move to the folder `./T38-FAX-Relay/Mlib/Make/` and execute the “make” file:
  - make clean all <Enter>

The “make” file creates the “libMemory.a” file and copies the file to the target directory `./T38-FAX-Relay/lib/`.

#### Compiling the Timer Library

- Move to the folder `./T38-FAX-Relay/Timerlib/Make/` and execute the “make” file:
  - make clean all <Enter>

The “make” file creates the “libTimer.a” file and copies the file to the target directory `./T38-FAX-Relay/lib/`.

### Compiling the Test Application

- Move to the folder “./T38-FAX-Relay/Callsetup/Make/” and execute the “make” file:
  - Copy the DRAMfw.c and PRAMfw.c files from the “./Firmware” folder to the folder “./Callsetup/src” folder.
  - make clean all <Enter>

The “make” file creates the bin file “callsetupunit” and copies the file to the target directory “./T38-FAX-Relay/bin/”.

## 3.4 Initialization Files

There are two configuration files to configure the T.38 Protocol Stack and the Test Application. The file “config.ini” is used for configuring the Test Application and the file “t38.ini” is used for the T.38 Protocol Stack configuration. The configuration files are located under “.\T38\_FAX-Relay\bin”.

### T.38 Configuration

The parameters used in the t38.ini file are described in the “T.38 Protocol Stack” document.

### Test Application Configuration

The “config.ini” file contains the Test Application parameters that need to be configured prior to start the Test Application. Those parameters are:

- Call Direction
  - Parameter: iCallDir
  - iCallDir = 1, Outgoing Call (Not supported for Revision V1.1)
  - iCallDir = 0, Incoming Call (Not supported for Revision V1.1)
- IP Address
  - Parameter: ipaddr, Board IP Address of EASY 334.

## 3.5 Application Download

Before downloading the application through the TeraTerm interface, please make sure that TFTP332 Server is running on the host.

### Download the required files:

- Change Path by entering the following command from TeraTerm terminal:
  - cd /opt/ifx/bin <Enter>
- File Download (located in the TFTP Server Base Directory):
  - tftp -g -r drv\_vinetic [PC IP Address] <Enter>
  - tftp -g -r callsetupunit [PC IP Address] <Enter>
  - tftp -g -r t38.ini [IPC IP Address] <Enter>
  - tftp -g -r config.ini [PC IP Address] <Enter>

## 3.6 Starting the Application

Before starting the application the VINETIC Device Node have to be created from the TeraTerm terminal:

### VINETIC Device Node

- Create the Device Node by entering the following commands from the TeraTerm terminal:
  - mknod /dev/vin10 c 230 10 <Enter>
  - mknod /dev/vin11 c 230 11 <Enter>
  - mknod /dev/vin12 c 230 12 <Enter>
  - mknod /dev/vin13 c 230 13 <Enter>
  - mknod /dev/vin14 c 230 14 <Enter>

**Working Directory**

- Change to the directory by entering the following command from the TeraTerm terminal:
  - `cd /opt/ifx/bin <Enter>`

**Change Access Permission**

- Change the permission by entering the following command from the TeraTerm terminal if necessary:
  - `chmod 777 callsetupunit <Enter>`

**Driver Load**

- Load the Driver by entering the following command from the TeraTerm terminal:
  - `insmod drv_vinetic <Enter>`

**Start of the Test Application**

- Start the Test Application by entering the following command from the TeraTerm terminal:
  - `./callsetupunit& <Enter>`

**3.7 Transmit FAX**

After the EASY 334 board is configured and the application is running, the FAX transmission can be started. The calling FAX terminal is connected to the SLIC Module A and the receiving FAX terminal is connected to the SLIC Module B. To start the transmission the following steps are necessary:

- Go Off-Hook on the calling FAX terminal.
  - In the loudspeaker from the handset you should hear the dial tone. Both FAX terminals must be switched to the FAX mode by the user.
- Dial Digit 2 on the calling FAX terminal.
  - After dialing the Digit 2 the receiving FAX terminal is ringing.
- Press Start button on the calling FAX terminal.
  - The calling FAX terminal starts sending the page.
  - The calling FAX terminal displays "Sending" and the receiving FAX terminal should display "Receiving"

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