

# How to Recover an EVOLUTION Modem (X3/X5) Software Reference iDx 3.x.x.x

**Updated:**     *September 20<sup>th</sup> 2016*

## Overview

**Recovery Procedures (to be completed in the following order):**

- **Procedure 1.    Establishing Console Connectivity**
- **Procedure 2.    Loading Linux from Redboot**
- **Procedure 3.    Establishing IP Connectivity**
- **Procedure 4.    Reloading Image Software Package**
- **Procedure 5.    Reloading Options File**

### Item requirements:

- Windows based PC with a COM port
- A rollover "cisco" console (as described in Procedure 1)
- iSite application (PC software)
- A current options file and Image Software "Firmware" as supplied by Telenor.

### Instructional Notes:

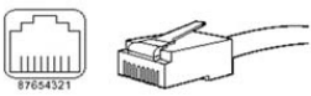

- When you see the input: `<value>`, when entering in the required value, omit the `< >'s'`.
- Please note the use of the word **remote** and **modem** may be used interchangeably with each other; each usage referring to the iDirect device in which we will be recovering in this procedure.

## Procedure 1. Establishing Console Connectivity

**This procedure describes how to establish a console connection between a PC and the remote. Any terminal emulator can be used with a console cable to connect to the console.**

- The HyperTerminal application comes preinstalled on all Windows 2000 and XP machines.
- Telenor recommends the use of the freeware program Putty  
<http://www.chiark.greenend.org.uk/~sgtatham/putty/>

In addition to a terminal emulation application, a rollover "cisco" console cable is needed. The straight-through Ethernet cable that is included with the device can be joined to a DB9-to-RJ45 adapter to construct a console cable. The adapter pin-outs to construct the console cable using a straight-through Ethernet cable are presented in the following table:

 RJ-45 Connector	Console Port(DTE)	RJ-45 Pin	Color Code	RJ-45 to DB-9 Adapter Pin	Console Device
 DB-9 to RJ-45 Adapter	RTS	1	Blue	8	CTS
	DTR	2	Orange	6	DSR
	TxD	3	Black	2	RxD
	GND	4	Red	NC	GND
	GND	5	Green	5	GND
	RxD	6	Yellow	3	TxD
	DSR	7	Brown	4	DTR
	Rx-RF-Power	8	White/Grey	9	--

1. Connect the DB-9 end of the console cable to the COM port of the PC, and the RJ-45 end of the cable into the Console port of the remote device.
2. Start HyperTerminal or Putty
3. Set Port Settings to **COM1**  
(COM1 is the most typical port – may differ between some PCs)
4. Set Bits per second to **9600** (also see note below), Data bits to **8**, Parity to **None**, Stop bits to **1** and Flow Control to **None**.

**Note: All remotes initially boot up at 9600. For modems configured for Serial GPS (mobile), a bps rate of 4800 instead of 9600 would be used once the Options File has been auto-loaded during boot-up. In this case, it is normal to see unintelligible text display on the console if the boot load sequence is not interrupted.**

5. Press **Enter** a few times to generate a response from the remote.

## Procedure 2. Loading Linux from Redboot

These steps describe how to interrupt the boot process and manually start the Linux kernel.

**Note:** This procedure presupposes that *Procedure 1* has been completed, and therefore console connectivity has been established.

**To load Linux from Redboot:**

1. Recycle the power on the iDirect modem.

You will see growing series of ". . . . ." as the DRAM test is the first test of the modem at boot up.

2. The message DRAM Test Successful displays on the console. Immediately press the **spacebar** 4 to 5 times, in order to interrupt the boot load sequence and enter RedBoot.

The Redboot> prompt displays.

3. Load the Linux kernel by entering the following console session commands:

```
fis load Linux [press enter]
exec -c "root=/dev/mtdblock2 console=ttyS1,9600 single" [press enter]
```

Boot up process may take about a minute or two.  
The /# prompt is displayed, indicating a login without password.

4. Change the root password by entering the following console command:

```
passwd [press enter]
```

5. Type a new password and press **Enter**.

**Note:** While any password is valid, it will be overwritten by the Options File at the end of this document.

6. When prompted, enter the new password again to confirm.

## Procedure 3. Establishing IP Connectivity

This procedure describes how to use the console to establish IP and Secure Shell connectivity to the remote.

**Note:** This procedure presupposes Procedures 1-2 have been completed; Console connectivity has been established and the Linux kernel has been started.

**To determine remotes unit IP Address and Subnet Mask:**

1. At the /# Linux console session prompt, enter the following console session command to view the interface configurations:

```
ifconfig [press enter]
```

The interface configurations are displayed.

2. Annotate what is displayed as the first interface (**ixp0** or **ixp1**); this information is needed in the following steps to configure the IP address and cabling.

What follows after the inet addr and netmask fields under the first listed interface is the remotes unit's IP address and subnet mask.

3. If a valid/correct IP address and subnet mask were displayed in Step 1, skip to Step 5. If a valid IP address and subnet mask is not present, configure it by entering following console command:

```
ifconfig <interface> <ip address> netmask 255.255.255.0 [press enter]
```

**where:**

**interface** = ixp0 or ixp1 (as noted in Step 2)

**ip address** = desired address (192.168.0.1, for example)

**Note:** Changing the IP address using this method is temporary; it will be overwritten by the IP address configured in the Options file when the file is read, which occurs during reboot at the end of this document.

4. Confirm the interface configurations in Step 3 took by entering the following console command:

```
ifconfig [press enter]
```

**Note:** Anotate what is now displayed as the IP address (inet addr) of the first interface; this information is needed in later procedure steps.

5. Turn on the SSH daemon by entering the following console command:

```
service sshd start [press enter]
```

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### To configure PC interfaces for remotes subnets:

6. Using a straight Ethernet cable connect the PC's Ethernet interface to the remotes unit's LAN A port if the interface annotated in Step 2 was ixp0. If the interface annotated in Step 2 was ixp1, connect to the remotes unit's LAN B interface instead.
7. Using the Windows **Internet Protocol (TCP/IP) Properties** dialog box, configure the PC's Default gateway to match the remotes' IP address (x.x.x.x), and the PC's IP address to be in the same subnet (x.x.x.x+1). For example, if the remotes' IP address and Subnet mask (noted in Step 2) are 192.168.0.1 and 255.255.255.0, a correct configuration for the PC would be 192.168.0.2
8. From the Windows Command Prompt, verify IP connectivity by successfully pinging the remotes unit's IP address:

`ping <ip address> [press enter]`

**where:** `ip address` = remotes' unit's IP address (as noted in Step 2; or Step 4 if changed.)

## Procedure 4. Reloading Image Software Package 'the Firmware'

This procedure describes how to load the Image Software Packages into the remote using iSite.

**Note:** This procedure presupposes *Procedures 1-3* has been completed; Console connectivity has been established, the Linux kernel has been started and IP connectivity has been established. To reload the Image Software Package using

### TFTP:

1. To use the TFTP Server included with iSite:
  - a. Close any open sessions of iSite
  - b. Launch a new session of the iSite application
  - c. Select File —>TFTP

The TFTP Settings dialog box displays.

Browse and select the folder on the PC containing the remotes package file(s) and click OK.

The folders, if downloaded from the Telenor site, will be correctly labeled for each remote type.

**You MUST load the Linux (bsp) package before loading the Remote (rmt) package!**

2. Increase the swap-space in the /tmp directory by entering the following console commands:

```
df [press enter]
```

```
mount -t tmpfs -o remount,size=16M /tmp [press enter]
```

```
df [press enter]
```

3. Load the prep/Linux package by entering the following console command:

```
tftp_package.sh <ip address> <linux_package.pkg> [press enter]
```

where:

*ip address* = address of TFTP server (PC) (as noted in Step 7 of *Procedure 3*)

*linux\_package.pkg* = required Linux package within the correct remotes' type folder.

File will have "bsp" within its name (*Board Support Package*).

**Wait until package flash states completed, may take 2-4 minutes.**

**Note:** If a tftp: timeout error message displays, close iSite, ensure any other running iSite applications are closed, any firewalls are turned off and return to Step 1. Continuous repeat failures would indicate a PC TCP/IP interface issue; Reboot the PC.

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4. Again increase the swap-space in the /tmp directory by entering the following console commands:

```
df [press enter]
```

```
mount -t tmpfs -o remount,size=16M /tmp [press enter]
```

```
df [press enter]
```

5. Load the remote package by entering the following console command:

```
tftp_package.sh <ip address> <remote_package.pkg> [press enter]
```

where:

*ip address* = address of TFTP server (PC) (as noted in Step 7 of *Procedure 3*)

*remote\_package.pkg* = required remote package within the correct remotes' type folder.

File will have "rmt" within its name.

**Wait until package flash states completed, may take 2-4 minutes.**

## Procedure 5. Reloading Options File

This procedure describes how to load the Options File into the remote.

**Note:** This procedure presupposes *Procedures 1-4 (or just step 1 if just loading an options file)* has been completed; Console connectivity has been established, the Linux kernel has been started, IP connectivity was established and the Image Software Packages have been loaded. To reload the Options file:

1. Open the Telenor provided Options file in a text editor (i.e., Notepad) and copy all of the text to the Windows clipboard.

Keyboard shortcut: **Ctrl-A, Ctrl-C**

2. Move to the Options file directory within the remote by entering the following console command:

```
cd /etc/idirect/falcon/ [press enter]
```

3. Rename the current Options file within the remote by entering the following console command:

```
mv falcon.opt falcon.opt.old [press enter]
```

Note: A no Such file or directory error displays if there is no existing Options file.

4. Create a new Options file within the remote for editing by entering the following console command:

```
cat > falcon.opt [press enter]
```

5. Move the mouse cursor to the location of the console cursor, and **right-mouse-click** to paste the text previously copied (in Step 1) into the console session.

6. Press **Enter** once and then press **Ctrl-D** to exit.

7. Examine the contents at the end of the falcon.opt file, ensuring no extra characters were inserted by entering the following console command:

```
cat falcon.opt [press enter]
```

8. Reboot the remote unit by entering the following console command:

```
reboot [press enter]
```

9. The modem will reboot with the loaded Software Packages and Options file.

10. During the boot up process, you should watch to see if the Status LED stay either green or off.

If you notice the Status LED lit **red** during the boot up process, inform Telenor Helpdesk.

By the end of the boot up process (3 minutes), you should be able to log into the modem with the IP address as assigned by the Options file.