

iDirect Technical Note

Subject: Recovering iNFINITI Remotes

Date: May 7, 2007

Applies To: Version 6.0.1 and Later

1. INTRODUCTION

This technical note contains information and procedures pertaining to:

- The Differences Between iNFINITI and NetModem II+ Series
- Required Procedures Before Attempting to Recover iNFINITI Remotes
- Reloading The Options File, which contains procedures for reloading an options file based on your IP connectivity
- Reloading the Image Package
- Recovering a Linux Password
- Appendix A, which contains the procedure for establishing a NetModem/Satellite Router Console connection
- Appendix B, which contains the procedure for gaining IP connectivity to the NetModem

2. DIFFERENCES BETWEEN INFINITI AND NETMODEM II+ SERIES

There are several distinct differences between the iNFINITI series and the II+ series images and options files, which require different procedures.

Unlike the NetModem II+ Series which uses a boot loader to load the software and the options file, the iNFINITI Series runs on a custom built Linux operating system, so “breaking” into the boot loader no longer applies. When the iNFINITI remote boots up, it first loads the Linux operating system which requires a login.

The factory default login is set to:

User Name: **root**

Password: **iDirect**

Once you log into the Linux prompt, you can access the iDirect application console by typing **telnet 0**, which results in another login prompt. The factory login for the application from this prompt is the username of **admin** and the password of **iDirect**. Once there, most of the known console commands are available.

The iDirect application runs as a service (similarly to the NMS servers and the Protocol

Processor server) called `iDirect_falcon`. The service can be started/stopped/restarted using the command:

```
service idirect_falcon <command>
```

Where: *command* = start, stop, or restart

For example, to start the service, enter: `service idirect_falcon start`

If you are unable to access the application using `telnet 0`, the service is not running and you may need to reload the images/options file. The following procedures explain how to perform these reload processes.

3. REQUIRED PROCEDURES BEFORE ATTEMPTING TO RECOVER INFINITI REMOTES

The following tasks must be completed before you begin to recover a remote:

1. Ensure you have a good options file. *The options file MUST match the Serial Number of the modem you are trying to recover.*
2. Locate the IP address of the iINFINITI Remote (using the console login). Refer to *Appendix A, Establishing a NetModem/Satellite Router Console Connection.*
3. Configure/change the PC IP address if necessary. Refer to *Appendix B, Gaining IP Connectivity to the NetModem.*
4. Install WinSCP. WinSCP is an open source SFTP client for Windows that offers secure file transfer between a local computer and a remote computer. You can load this application by accessing: <http://winscp.net/eng/index.php> .

Note: *When transferring an options file, click the check box to select the Text option in the Transfer Mode field.*

4. RELOADING THE OPTIONS FILE

Depending on whether you have IP connectivity between your PC and the NetModem, this section contains procedures for reloading the options file.

RELOADING THE OPTIONS FILE WHEN THERE IS IP CONNECTIVITY BETWEEN YOUR PC AND THE NETMODEM

You are now ready to begin reloading your options file. You need to perform one of the following procedures depending on whether you have IP connectivity.

To reload your options file with IP connectivity, invoke the ssh daemon on the iINFINITI and transfer the options file to the remote (this procedure bypasses iSite so that you are able to load the options file).

Perform the following steps *when you have IP connectivity* to invoke the ssh daemon and transfer the options file to the remote:

1. Rename the good options file on your local PC to: **falcon.opt**
2. Connect to the iNFINITI via the console cable and login using:

User Name: **root**
Password: **iDirect**

Note: Do not telnet 0, and make sure you stay at the Linux prompt.

3. Turn on the ssh daemon by entering the command:

```
service sshd start
```

4. Secure Copy the **falcon.opt** options file (you renamed in step 1) to the following location in the remote:

```
/etc/idirect/falcon/
```

Note: In order to transfer the options file, use the WinSCP application.

5. Restart Falcon by entering the command:

```
service idirect_falcon restart
```

RELOADING THE OPTIONS FILE WHEN YOU CANNOT GAIN IP CONNECTIVITY TO YOUR NETMODEM

If you do not have IP connectivity to your NetModem, you can reload your options file by performing the following procedure.

Perform the following steps to reload the options file when you *cannot* gain IP connectivity to your modem:

1. Open a known good options file in a text editor (i.e., NotePad) and copy all of the text to the Windows clipboard. ***The options file MUST match the Serial Number of the modem you are trying to install or recover.***
2. From the console, change your location to the options file directory by entering the command:

```
cd /etc/idirect/falcon/
```

3. Rename the current options file by entering the following command:

```
mv falcon.opt falcon.opt.old
```

4. Type the following command:

```
cat > falcon.opt
```

5. Paste the text that you previously copied (in step 1) to the console session, by right-clicking the mouse button and pasting to the Host.
6. Press the **Enter** key once, then press **Ctrl-D** to exit.
7. Examine the contents of **falcon.opt** file to ensure there are no extra characters by entering:

```
cat falcon.opt
```

8. Restart falcon by entering the command:

```
service idirect_falcon restart
```

5. RELOADING THE IMAGE PACKAGE

The following procedure describes how to reload an Image Package. This procedure requires IP connectivity between your PC and the NetModem. If you do not have IP connectivity, refer to the procedures in Appendix A and B before performing this procedure.

Perform the following steps to reload your Image Package:

Using WinSCP:

1. Connect to the iNFINITI via the console cable and login using the following:

User Name: **root**
Password: **iDirect**

Note: Do not telnet 0, and make sure you stay at the Linux prompt.

2. Turn on the ssh daemon by entering the command:

```
service sshd start
```

3. Secure Copy the Package file named:

```
remote-X_n_n.pkg to the /tmp/ directory
```

Where:

X = the major release (i.e., 6, 7, etc.)

n_n = the minor release (6_0_9_7, 7_0_1_2, or 7_0_2)

Note: In order to transfer the image package, use the WinSCP application.

4. In the console connection, enter the following command:

```
cd /tmp
```

Note: Ensure that you are at the /tmp directory and not in the /root directory. Make a backup copy of your options file before you start the package installation (to make a backup copy by entering the following commands:

```
cd /etc/idirect/falcon
```

```
cp falcon.opt falcon.opt-BU
```

5. In the console, type `ls -al` and press Enter.

Note: With the introduction of the iNfiniti product line, the software packages can consume a large portion of the allocated flash. Before you proceed with extracting the remote package, you need to temporarily increase the swap space with the following command.

The "df" command will show the current usage of the allocated disk space, in particular "/tmp". Once the swap is added, the percentage will drop allowing the software package to fully extract.

```
df
mount -t tmpfs -oremount,size=16M /tmp
df
```

6. Type each of the following commands exactly as shown, and press Enter after each command entry (if it is not exact, the install fails):

```
df
mount -t tmpfs -oremount,size=16M /tmp
df
package -mx -a remote-X_n_n.pkg
rm -f remote-X_n_n.pkg
chmod 744 package_install.sh
./package_install.sh
service idirect_falcon restart
```

Where:

X = the major release (i.e., 6, 7, etc.)

n_n = the software release string that displays when you enter the `ls -al` command (see example on the next page)

Note: The syntax of the package name MUST be identical to what is shown by Linux after executing the `ls -al` command. See the example below.

Example input for reloading the image package:

```
# pwd
/tmp
# ls -al
```

```

drwxrwxrwt    2 root    root          60 Jan  1  04:53
drwxr-xr-x    1 root    root           0 Jan  1  01:07
-rw-----    1 root    root    2369688 Dec  8  2005 remote -6_0_9.pkg
df
mount -t tmpfs -oremount,size=16M /tmp
df

# package -mx -a remote-6_0_9.pkg
# rm -f remote-6_0_9.pkg
# chmod 744 package_install.sh
# ./package_install.sh

*****Package installation script for falcon starts HERE*****

# cp falcon.opt-BU falcon.opt
# service idirect_falcon restart

```

7. Once the installation is complete, copy the BU options file to the Options.opt file.

LOADING IMAGES USING THE TFTP SERVER

Perform the following steps to load the images using the TFTP server:

1. Open iSite and, from the **File** menu, select **TFTP**. A pop-up window displays prompting you to the **TFTP** server local folder.
2. Browse and select the folder in which the remote package resides.
3. Open a console session to the iFINITI unit and login to the Linux prompt using:

```

User Name: root
Password: iDirect

```

4. Type the following command, then press **Enter** to stop the iDirect application:

```
service idirect_falcon stop
```

5. Type the following command, then press **Enter**:

```
tftp_package.sh <IP address of TFTP server> <package name>
```

For example, if the IP address of your PC is 10.10.1.2 and you are loading the 6.0.9 release remote package, the command is:

```
tftp_package.sh 10.10.1.2 remote-6_0_9.pkg
```

Installation starts automatically.

6. Once installation is complete, type the following command and press **Enter**:

```
idirect_falcon restart
```

6. RECOVERING A LINUX PASSWORD

You may be required to recover your Linux password (this process applies to the iNFINITI series). The following procedure explains how you can recover a Linux password.

Perform the following steps to recover the root password for the iNFINITI series:

1. Connect a PC to the modem via the console port. You can use Hyper Terminal or Tera-Term for this operation.

2. Reboot the iNFINITI NetModem.

The message **DRAM Test Successful** displays.

3. Press the **Spacebar** 3 - 4 times.

The **Redboot>** prompt displays.

4. Enter the command:

```
fis load Linux
```

The **Redboot>** prompt re-displays.

5. Enter the command:

```
exec -c "root=/dev/mtdblock2 console=ttyS1,9600 single"
```

The **/#** prompt displays. This indicates that you logged in without a password.

6. Enter the command:

```
passwd
```

You are then prompted to enter a new password.

7. Enter a new password.

8. When prompted, type the new password again to confirm.

9. Once you are successfully logged in, reset the iNFINITI remote. You can now log into

the iNFINITI remote.

7. APPENDICES

This section contains two appendices, including:

Establishing a NetModem/Satellite Router Console Connection, which outlines the procedure for establishing this type of connection.

Gaining IP Connectivity To The NetModem, which explains how to gain IP connectivity from your PC to your NetModem.

A. ESTABLISHING A NETMODEM/SATELLITE ROUTER CONSOLE CONNECTION

You can use any terminal emulator to connect to the NetModem console. The HyperTerm application comes pre-installed on all Windows 2000 and XP machines.

In addition to the NetModem Console Table cable, you will need an RJ-45 to DB-9 adapter.

The pin outs for a NetModem console cable are as follows:

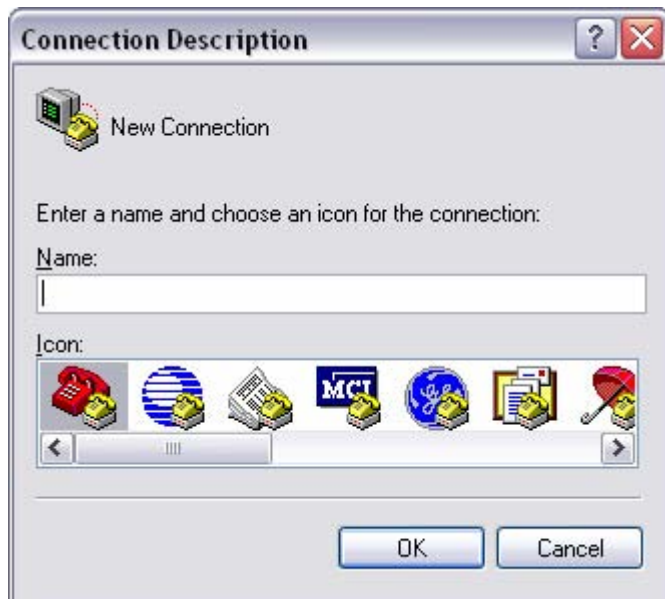
Table 3: DB-9 to RJ-45 Adapter Pinouts

DB-9 to RJ-45 Adapter Pin-Out		
RJ-45	Color Code	DB-9
1	Blue	8
2	Orange	6
3	Black	2
4	Red	5
5	Green	N.C.
6	Yellow	3
7	Brown	4
8	White/Gray	7

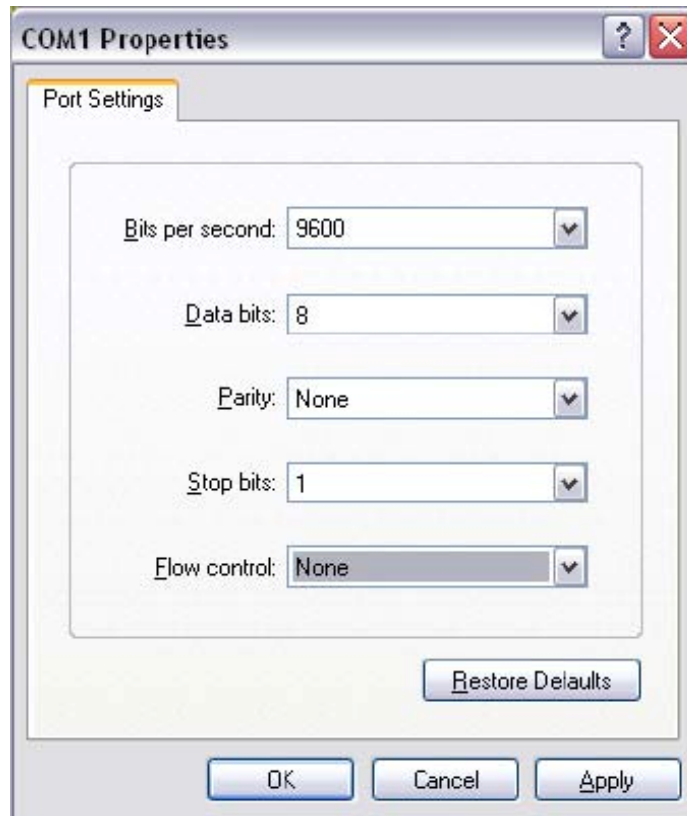
Complete the following procedure to set up and save a Hyper Terminal session:

1. Connect the RJ-45 to DB-9 adapter to the COM1 port of your laptop.
2. Plug the other end of the cable into the Console port of the iDirect NetModem or Satellite Router
3. In the Windows Start menu, select Programs, select Accessories, select Communications, and then select HyperTerminal.
4. You may have to answer some questions about your area code and provide dialing information. (The information that you enter here isn't important, but you must enter something.)
5. In the **Connection Description** dialog box, enter a name for the connection, such as "NetModem Console." (You may also select an icon other than the default icon

6. Select COM1 in the **Connect To** dialog box



7. Using the default variables in the COM1 Properties dialog box below, enter the session properties. Be certain that your settings exactly match these settings.



8. Click **Enter** a few times to see if you can generate a response from the NetModem. If you are successful, you will see the NetModem console prompt. If you are unable to generate a response from the NetModem, reexamine your settings to be certain that they are correct.

B. GAINING IP CONNECTIVITY TO THE NETMODEM

The purpose of this procedure is to gain IP connectivity to your NetModem.

MANDATORY CONDITIONS

Establishing IP connectivity to the NetModem from your laptop computer requires the following conditions to exist:

1. Your computer must be connected directly to the NetModem via a LAN crossover cable, or indirectly via an external switch or router
2. Your computer's IP address must be in the range of addresses specified by the NetModem's IP address and subnet mask
3. Your subnet mask must match the NetModem's subnet mask.

DETERMINING THE NETMODEM'S IP ADDRESS AND SUBNET MASK

1. The easiest way to determine the NetModem's IP address is to establish a console session and type the appropriate console command
2. Open a console session to the 0NetModem. (See Appendix A for details.)

Note: Use the ifconfig command to find out the currently-configured IP address.

```
ppp - HyperTerminal
File Edit View Call Transfer Help
Device TDMA Rx2 Modem Clock not locked
Device TDMA Rx2 TPC Clock not locked
Calculated TPC Iterations = 15
Rx2 quad demod pwr status =0
Freq = 1800.0000 LO = 1798.7500 NCO = 1.2500 LPF = 4.0000
SyncEth0: updated system config file "/etc/network/interfaces"
SIOCDELRT: No such process
PCI: enabling device 00:0f.0 (0000 -> 0002)
UnixControl::Reload: /sbin/route add -net 0.0.0.0 netmask 0.0.0.0 gw 10.10.20.2
tun0 < /dev/null
Receiver is turned on and Mode Change applied
OK

Starting falcon_monitor:OK

iDirect Linux 2.4.24-uc0-iDirect0
Kernel 2.4.24-uc0-iDirect0 on an armv5b

iDirect login: root
Password:
Linux iDirect 2.4.24-uc0-iDirect0 #1 Fri Apr 29 16:01:03 GMT 2005 armv5b unknown
# _

Connected 0:02:28 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

3. At the Linux prompt, enter the following command: (for 3000 series, type: ifconfig iXP0)

```
ifconfig iXP1
```

Note: *iXP1* for a 5000 or 7000 series Satellite Router to determine the Satellite Router's IP address. Type: *ifconfig iXP0* for 3000 series

```
ppp - HyperTerminal
File Edit View Call Transfer Help
# ifconfig
ixp1 Link encap:Ethernet HWaddr 00:60:43:00:11:55
      inet addr:192.168.0.1 Bcast:192.168.0.255 Mask:255.255.255.0
      UP BROADCAST RUNNING MULTICAST MTU:1504 Metric:1
      RX packets:0 errors:0 dropped:0 overruns:0 frame:0
      TX packets:500 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:256
      RX bytes:0 (0.0 B) TX bytes:341292 (333.2 KiB)

lo Link encap:Local Loopback
   inet addr:127.0.0.1 Mask:255.0.0.0
   inet6 addr: ::1/128 Scope:Host
   UP LOOPBACK RUNNING MTU:16436 Metric:1
   RX packets:3 errors:0 dropped:0 overruns:0 frame:0
   TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
   collisions:0 txqueuelen:0
   RX bytes:120 (120.0 B) TX bytes:120 (120.0 B)

tun0 Link encap:Point-Point Protocol
     inet addr:172.20.31.2 P-t-P:172.20.31.2 Mask:255.255.255.0
     UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1
     RX packets:0 errors:0 dropped:0 overruns:0 frame:0
     TX packets:7 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:10
     RX bytes:0 (0.0 B) TX bytes:448 (448.0 B)

#
Connected 0:09:16 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

4. Check the IP address and subnet mask of the Satellite Router.
5. Configure your laptop's IP address to be in the same subnet as the Satellite Router's interface.
6. Use the following commands to change the default gateway of the Satellite Router to be the same as your laptop's IP address by entering the following commands:

```
route -n
route del default gw
route add default gw
```

```
# route -n
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use    Iface
192.168.0.0      0.0.0.0        255.255.255.0   U      0      0      0      ixp1
172.20.31.0      0.0.0.0        255.255.255.0   U      0      0      0      tun0
0.0.0.0          172.20.31.2    0.0.0.0         UG     0      0      0      tun0
# route del default gw 172.20.31.2
# route add default gw 192.168.0.2
#
```