



ISCS

RECEIVE-ONLY SATELLITE SYSTEM

INSTALLATION & MAINTENANCE MANUAL

March 11, 2010

Version 5.1

Table of Contents

1	OVERVIEW	4
1.1	SATELLITES USED	5
1.1.1	<i>Atlantic Ocean Region</i>	<i>5</i>
1.1.2	<i>Pacific Ocean Region.....</i>	<i>6</i>
1.1.3	<i>Indian Ocean Region</i>	<i>7</i>
2	INSTALLATION	8
2.1	ANTENNA.....	8
2.2	MODEM INSTALL	8
2.3	MODEM SETUP.....	8
2.3.1	<i>Region Configuration</i>	<i>9</i>
2.3.2	<i>Front Panel Method.....</i>	<i>10</i>
2.3.3	<i>Telnet or Console Port Method.....</i>	<i>12</i>
2.4	PDRECEIVER SOFTWARE INSTALL	19
2.4.1	<i>Verizon Business Product Code.....</i>	<i>19</i>
2.4.2	<i>Install Windows Software</i>	<i>20</i>
2.4.3	<i>Install Linux Software.....</i>	<i>25</i>
2.4.4	<i>Software Tools to edit the Linux direcpc.ini File.....</i>	<i>29</i>
2.4.5	<i>Miscellaneous Linux Commands.....</i>	<i>31</i>
2.4.6	<i>Changing the Time zone on Linux</i>	<i>31</i>
3	TROUBLESHOOTING	32
3.1	MODEM.....	32
3.1.1	<i>Confirming Modem Cabling.....</i>	<i>34</i>
3.1.2	<i>Verifying Traffic.....</i>	<i>34</i>
3.1.3	<i>Retrieving Software Revisions.....</i>	<i>35</i>
3.1.4	<i>Sun Outages.....</i>	<i>36</i>
3.1.5	<i>Changing Frequencies.....</i>	<i>36</i>
3.1.6	<i>Modem Firmware Upgrades.....</i>	<i>36</i>
3.1.7	<i>FTP Method.....</i>	<i>36</i>
3.2	WORKSTATION SOFTWARE	37
3.2.1	<i>Windows Software.....</i>	<i>37</i>
3.2.2	<i>Linux Software</i>	<i>38</i>
4	OPENING A TROUBLE-TICKET WITH VERIZON BUSINESS.....	39

1 Overview

The International Satellite Communications System (ISCS) network is a completely IP based network that utilizes as its method of transmission a satellite VSAT technology to reach a global coverage area. Verizon Business Telecommunications has developed a custom designed satellite network to provide delivery of critical weather related information.

This network takes advantage of the inherent broadcast nature of satellite transmission, allowing for many remote locations scattered around a large area to receive information via relatively small data links.

Verizon Business has chosen a packet delivery system that provides efficient broadcast of data via IP multicasting technology optimized for satellite transmission.

In order to access this system, a software application, "PDReceiver", is required to be installed on each client computer to receive and decipher the multicast data stream.

This manual provides the requirements and instructions for installing the software application on an MS-Windows and Linux based personal computer. The manual also includes setup procedures for the satellite modem.

An additional section provides a troubleshooting guide to confirm correct system operation.

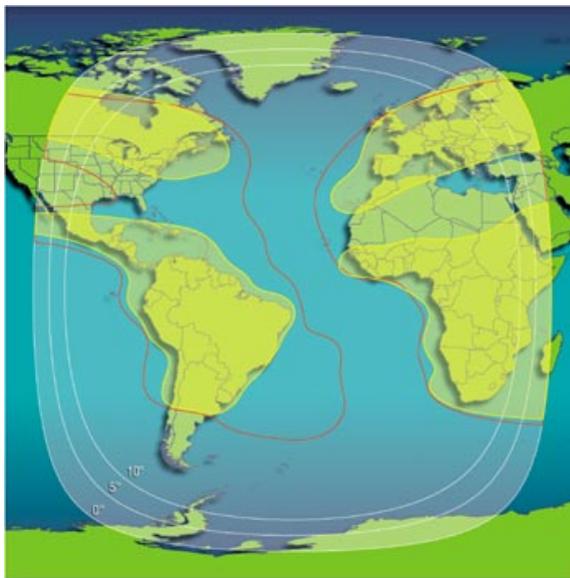
1.1 Satellites Used

The current satellites used by Verizon Business are shown below. It must be noted that these could change, and to confirm the latest, please contact Verizon Business. For full technical details of these satellites, go to the Intelsat Web site below:

<http://www.intelsat.com/resources/coveragemaps.aspx>

1.1.1 Atlantic Ocean Region

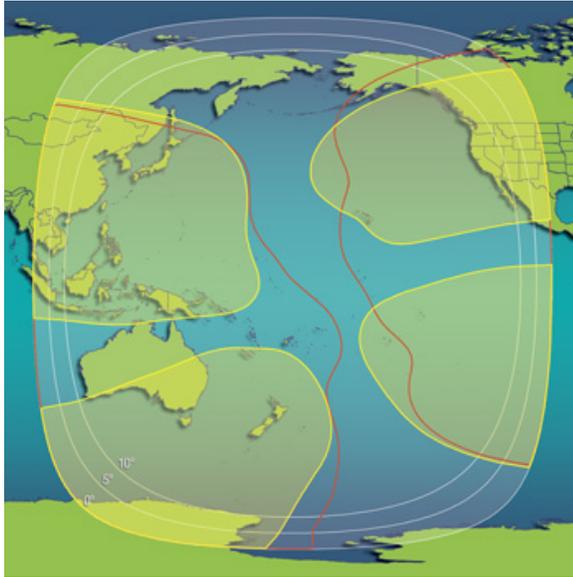
The Satellite used is Intelsat 903 @ 325.5°E



Verizon Business Uplink Site at Andover in the State of Maine

1.1.2 Pacific Ocean Region

The Satellite used is Intelsat 701 @ 180°E



Verizon Business Uplink Site at Yacolt in the State of Washington

1.1.3 Indian Ocean Region

The Satellite used is Intelsat 906 @ 64°E



Intelsat's Uplink Site at Fuchsstadt in Germany

2 Installation

2.1 Antenna

The antenna used is normally a non-penetrating mount C-Band offset antenna. The polarization is circular. The antenna installation is not discussed in this document. Please contact Verizon Business with any questions.

2.2 Modem Install

The CDM570L-IP modem is an L-Band modem and is connected to a single coax cable to a LNB located on the antenna. The modem has a 50 ohm “N” type connector located on the rear of the modem (left side) marked RX. In most cases there will be an “N” type to F adapter installed on the modem. The coax cable therefore has an “F” type connector at both ends, one end connecting to the LNB the other at the modem.

The modems IP interface (Top RJ45 Connector - Traffic) connects to a PC workstation via an Ethernet cross-over cable. The IP address will be provided by Verizon Business at time of installation.



2.3 Modem Setup

There are several ways to configure the CDM-570L IP modem. The modem has an internal Web Server, FTP Server, Telnet Server and a Console Serial RS232 port. The modem can also be setup by the front panel.

The serial console port or the front panel is initially used to setup the modem’s IP address. Once the IP address is setup then the unit can be configured via a Telnet session to the modem. The modem also has a FTP server to upgrade the modem’s firmware locally if required.

In practice, it is best to setup the IP Ethernet parameters of the modem via the modem’s front panel LCD menu. The satellite parameters are then best setup via a Telnet session; this also confirms that there is good communications between the computer and the modem.

2.3.1 Region Configuration

The modems have similar configurations for all regions except the following:

- a. Frequency
- b. Coding Rate

The only other differences from site to site are the IP addresses and subnet mask settings.

AOR (Atlantic Ocean Region)

Receiver Frequency.. [0985.8].
Receive Data Rate... [0128.000].
Decoder Type..... [TURBO]
Decoder Rate..... [21/44].

Actual C-Band Frequency is: 4164.2 MHz

POR (Pacific Ocean Region)

Receiver Frequency.. [1004.5].
Receive Data Rate... [0128.000].
Decoder Type..... [TURBO]
Decoder Rate..... [3/4].

Actual C-Band Frequency is: 4145.5 MHz

IOR (Indian Ocean Region)

Receiver Frequency.. [954.85].
Receive Data Rate... [0128.000].
Decoder Type..... [TURBO]
Decoder Rate..... [3/4].

Actual C-Band Frequency is: 4195.1500 MHz

2.3.2 Front Panel Method

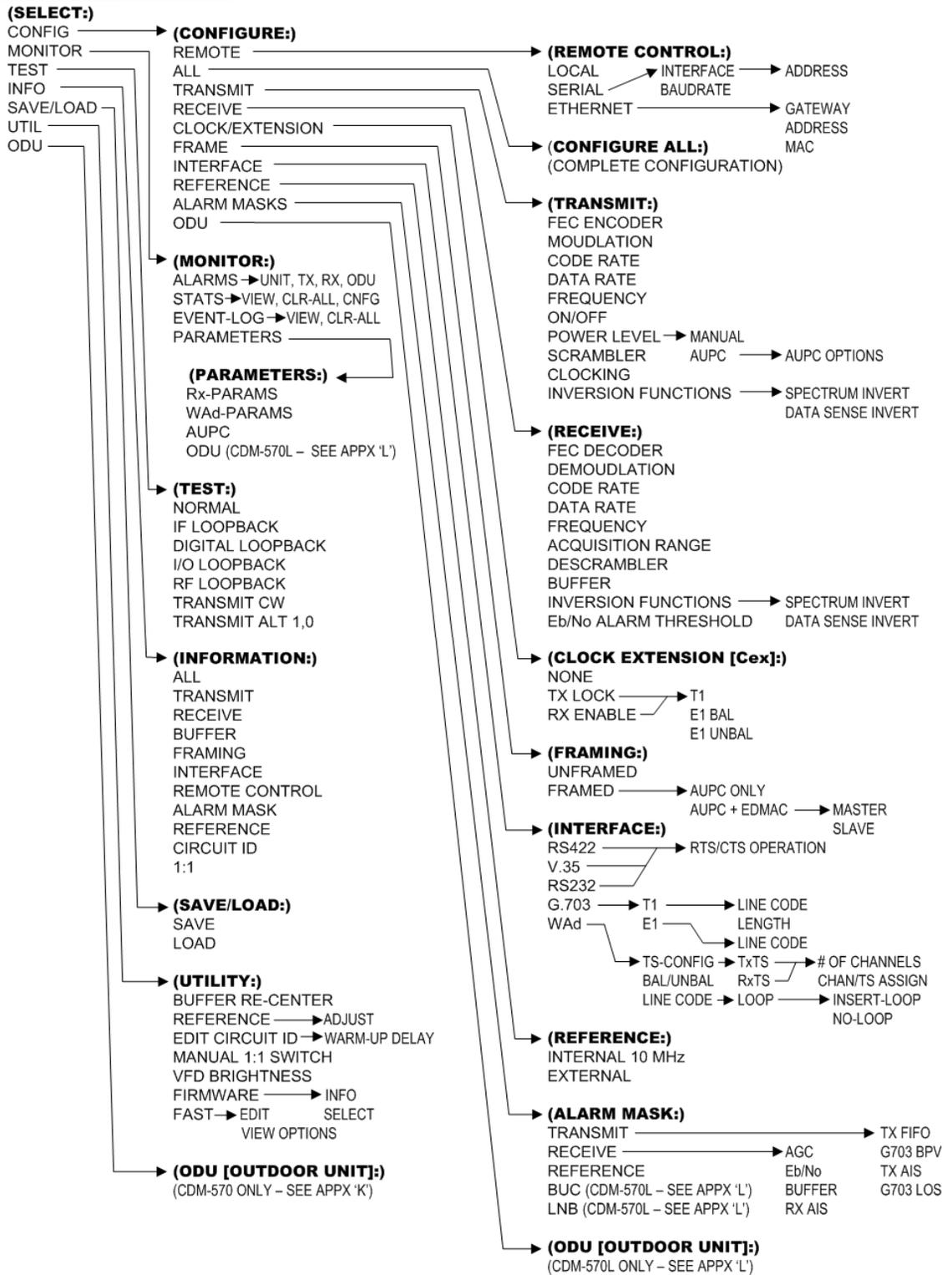


Modem Front panel



Enter IP address

First press the CLR key until the display is at the top-level screen where the Config option can be seen. Select using the left-right keys so the cursor is at Config and press the ENT key. Then select Local and press the ENT key again. Press ENT key again and this time select Ethernet. Then select Address and use the left-right keys up/down keys to enter the IP address and the mask. The mask is after the / and is a setting between 24 and 30.



2.3.3 Telnet or Console Port Method

To configure your Modem's IP Interface, you can also use the Console port on the back of the Modem with the supplied Serial configuration cable. The Terminal program must be configured for 38400 bps with No Parity and 1 Stop Bit.

You can also Telnet in to the Modem over the Ethernet LAN. To Telnet into the Modem you must first have the Modem setup with an IP Address.

From a command line (Windows or Linux), type Telnet then a space followed by the IP address of the modem. Use the following user names and passwords:

Login: comtech
Password: comtech

Main Menu

Administration.....A
Interface Configuration.....I
QoS Configuration.....Q
Route Table.....R
Protocol Configuration.....P
Satellite Modem Configuration.....M
Redundancy Configuration.....E
Operations and Maintenance.....O

Save Parameters to permanent storage.....S
Exit.....X

Administration

Name/Password Configuration.....P
Access Lists.....A
Feature Configuration.....F
3xDES Configuration.....D
SMTP Configuration.....M
SNMP Configuration.....N
Working Mode.....[Managed Switch].....C
Managed Switch Multicast Option....[Enabled].....E
Header comp refresh rate (in pkts) for UDP/RTP1....[50].....H
Header comp refresh rate (in pkts) for UDP.....[50].....U
Header comp refresh rate (in pkts) for all others..[50].....O
Payload comp refresh rate (in pkts).....[50].....Q
Telnet timeout.....[5].....T

Save Parameters to permanent storage.....S
Exit.....X

Access Lists

AccessClient1.....[NOT-DEFINED/NA].....1
AccessClient2.....[NOT-DEFINED/NA].....2
AccessClient3.....[NOT-DEFINED/NA].....3
AccessClient4.....[NOT-DEFINED/NA].....4
Access List Enforcement..[Disabled].....E

Save Parameters to permanent storage.....S
Exit.....X

Feature Configuration

Ping Reply.....[Enabled].....P
Telnet.....[Enabled].....E
SNMP.....[Enabled].....N
IGMP.....[Disabled].....I
Downlink Route All Available Multicast..[Enabled].....M
Quality of Service (QoS).....[Disabled].....Q
Transmit 3xDES Encryption.....[Unavailable].....T
Receive 3xDES Decryption.....[Unavailable]
L3/L4/L5 Tx Header Compression.....[Disabled].....H
L3/L4/L5 Rx Header Compression.....[Disabled].....K
L2 Tx Header Compression.....[Enabled].....L
L2 Rx Header Compression.....[Enabled].....J
Tx Payload Compression.....[Disabled].....C
Rx Payload Compression.....[Available]
FAST Feature Code.....Y
Vipersat Feature Codes.....[Unavailable]
Vipersat File Streamer.....[Unavailable]

Save Parameters to permanent storage.....S
Exit.....X

Not allowed to navigate to Triple DES Encrypt/Decrypt Configuration menu Reason:
Triple DES Encrypt/Decrypt Feature unavailable

SMTP Configuration

SMTP Server IP Address..[NOT-DEFINED].....I
SMTP Domain.....[].....D
SMTP Destination Name...[].....N

Save Parameters to permanent storage.....S
Exit.....X

SNMP Configuration

SNMP Read Community.....[public].....R
SNMP Write Community.....[private].....W
SNMP Trap Community.....[public].....T
SNMP Trap Destination #1.....[NOT-DEFINED].....D
SNMP Trap Destination #2.....[NOT-DEFINED].....2
SNMP Trap Version.....[SNMPv1].....V
SNMP Enable Authentication Trap..[Disabled].....A
SNMP System Contact.....[].....C
SNMP System Name.....[].....N
SNMP System Location.....[].....O
SNMP Stats.....P

Save Parameters to permanent storage.....S
Exit.....X

Interface Configuration

Ethernet Interface.....E
Satellite/HDLC Interface.....H

Save Parameters to permanent storage.....S
Exit.....X

Ethernet Interface

NOTE: IP address will be assigned for each site

MAC Address.....[00-06-B0-01-40-04]
Speed/Mode.....[Auto].....E
IP Address.....[192.168.1.1].....I
Subnet Prefix Length.....[24].....M
Link Status.....[Auto - Neg Done For 100-Full Mode -- Link UP]
Managed Switch MAC Learning..[Enabled].....A
Managed Switch Gateway IP....[NOT-DEFINED].....G
VLAN.....[Disabled].....V
VLAN Table.....T

Save Parameters to permanent storage.....S
Exit.....X

Satellite/HDLC Interface

HDLC Addr Mode.....[Point-To-Point Mode]
Receive HDLC Channel Addresses.....H

Save Parameters to permanent storage.....S
 Exit.....X

Receive HDLC Channel Addresses

HDLC Addr 1.....[NOT-USED].....1
 HDLC Addr 2.....[NOT-USED].....2
 HDLC Addr 3.....[NOT-USED].....3
 HDLC Addr 4.....[NOT-USED].....4
 Delete HDLC Addr.....D

Save Parameters to permanent storage.....S
 Exit.....X

QoS Configuration

QoS Mode.....[Rule-Max/Pri Mode].....M
 QoS Rules Configuration.....Q
 DiffServ Rules Configuration.....D
 Typical System Latency (msecs).....[5000].....A
 Enable WAN Segmentation and Reassembly (SAR)..[Enabled].....R

Save Parameters to permanent storage.....S
 Exit.....X

QoS Rules Configuration

SrcIP	DestIP	Prot	SPort	DPort	MaxBW	PWF
RL01..	[UNKNOWN]					1
RL02..	[UNKNOWN]					2
RL03..	[UNKNOWN]					3
RL04..	[UNKNOWN]					4
RL05..	[UNKNOWN]					5
RL06..	[UNKNOWN]					6
RL07..	[UNKNOWN]					7
RL08..	[UNKNOWN]					8
Def...[	***/**/*	ALL	***	***	99999	9NN]R

[P-Priority W-WRED(Yes/No) F-Filter(Yes/No)]
 Del.....D
 Base...[1].....B
 Stat.....T
 QoS...[QoS Feature is DISABLED]

Save Parameters to permanent storage.....S
 Exit.....X

DiffServ Rules Configuration

Class	DSCP	MinBw	MaxBW	Priority
Rule01..	[UNKNOWN]	.....	.....	1
Rule02..	[UNKNOWN]	.....	.....	2
Rule03..	[UNKNOWN]	.....	.....	3
Rule04..	[UNKNOWN]	.....	.....	4
Rule05..	[UNKNOWN]	.....	.....	5
Rule06..	[UNKNOWN]	.....	.....	6
Rule07..	[UNKNOWN]	.....	.....	7
Rule08..	[UNKNOWN]	.....	.....	8
Base...[1]	.....	.....	.....	B

Save Parameters to permanent storage.....S
 Exit.....X

Configuring the Route Table

Route Name	Dest IP/SNet Bits	Next Hop	MultiCast State
Route001...	[UNKNOWN]	.....	1
Route002...	[UNKNOWN]	.....	2
Route003...	[UNKNOWN]	.....	3
Route004...	[UNKNOWN]	.....	4
Route005...	[UNKNOWN]	.....	5
Route006...	[UNKNOWN]	.....	6
Route007...	[UNKNOWN]	.....	7
Route008...	[UNKNOWN]	.....	8
Base...[1]	.....	.....	B
Delete.....	.....	.....	D
Display.....	.....	.....	P
PerRoute.....	.....	.....	E
DL Mcast...[Enabled]	.....	.....
AddFilter.....	.....	.....	A
DelFilter.....	.....	.....	R

Save Parameters to permanent storage.....S
 Exit.....X

Protocol Configuration Page

IGMP.....	I
ARP.....	A
DHCP Server IP Address..[NOT-DEFINED].....	R

Save Parameters to permanent storage.....S
 Exit.....X

IGMP Information

IGMP.....[Disabled]
View IGMP Table.....V
Modem as Server: IGMP query period.....[30].....Q
Modem as Server: IGMP max. response time.....[28].....R
Modem as Server: Num. missed responses before leaving IGMP group
[5].....M
Modem as Client: Recognize IGMP Queries.....[No].....C
Modem as Client: Router Alert Option for V1 report.[No].....A
Modem as Client: IGMP Version used for Unsolicited Reports.[V1].U
Modem as Client: Unsolicited Report Interval, sec..[25].....I

Save Parameters to permanent storage.....S
Exit.....X

ARP Table Utilities

IP	Layer2	
Entry0001.....	[UNKNOWN].....	1
Entry0002.....	[UNKNOWN].....	2
Entry0003.....	[UNKNOWN].....	3
Entry0004.....	[UNKNOWN].....	4
Entry0005.....	[UNKNOWN].....	5
Entry0006.....	[UNKNOWN].....	6
Entry0007.....	[UNKNOWN].....	7
Entry0008.....	[UNKNOWN].....	8
Delete ARP Entry.....		D
Display Arp Tbl.....		A
Flush ARP Table.....		F
Base.....[1].....		B

Save Parameters to permanent storage.....S
Exit.....X

Satellite Modem

Modem Type.....[CDM-570L]
Configuration.....C
Monitor.....M
Information.....I
Utilities.....U

Save Parameters to permanent storage.....S
Exit.....X

Configuration

Tx Configuration.....T
Rx Configuration.....R
Framing Mode Configuration.....F
Data Interface Configuration.....I



Reference Configuration.....E
Alarm Mask Configuration.....A
BUC Configuration.....B
LNB Configuration.....N

Save Parameters to permanent storage.....S
Exit.....X

Rx Configuration

NOTE: Settings will depend on Region

Rx Frequency.....[0985.8000].....Q
Rx Data Rate.....[0128.000].....D
Rx Symbol Rate.....[0134.095]
Rx FEC.....[Turbo].....T
Rx Code Rate.....[21/44].....R
Rx Demodulation.....[QPSK].....M
Rx Spectrum Inversion..[Inverted].....U
Rx Data Inversion.....[Normal].....I
Rx Descrambling.....[On-Default].....B
Rx Acquisition Range..[032].....W
Eb/No Alarm Point.....[02.0].....P
Rx Buffer Size.....[Disabled].....F
Recenter Rx Buffer.....C

Save Parameters to permanent storage.....S
Exit.....X

Framing Mode Configuration

Framing Mode.....[Unframed].....F
EDMAC Mode.....[EDMAC Off].....D
EDMAC Slave Address Range.....[0020].....V
AUPC.....[Disable].....A
Max Power Reached Action.....[No_Action].....R
Remote Demod Unlock Action.....[Nominal_Power].....U
Target Eb/No of Remote Demod (db)..[3.0].....E
Maximum Power Limit.....[3].....M

Save Parameters to permanent storage.....S
Exit.....X

Data Interface Configuration

Data Interface..[IP Interface].....I

Save Parameters to permanent storage.....S
Exit.....X

Reference Configuration

Frequency Reference..[Internal 10 MHz].....R
Test Mode.....[Normal].....T

Save Parameters to permanent storage.....S
Exit.....X

Low Noise Block Converter(LNB) Configuration

LNB DC Supply Voltage.....[18 Volts].....P
LNB 10MHz Reference.....[Off].....R
LNB Current Alarm Upper Limit (mA)..[600].....H
LNB Current Alarm Lower Limit (mA)..[10].....C
LNB LO Frequency (MHz).....[05150+].....F

Save Parameters to permanent storage.....S
Exit.....X

2.4 PDReceiver Software Install

The instructions below show how to install both Windows and Linux PDReceiver software. It is suggested that these operating systems be kept up to date with all available security patches to protect against any viruses. Memory use should also be monitored at regular intervals to make sure there is available hard drive space to receive the weather data files.

2.4.1 Verizon Business Product Code

This is an 8 Character Code that will be supplied by Verizon Business. This code is required to receive data correctly. This code will be required to install the PDReceiver software on both Windows and Linux Operating Systems. On Windows it is easy to add this to the installation screen. On Linux the configuration file "direcpc.ini" needs to be edited with the supplied 8-character code. (See Linux installation later on in this document.)

2.4.2 Install Windows Software

Installation requirements differ slightly among Windows 95/98/XP/2000 environments. However, the following minimum hardware recommendations apply for all PDRReceiver software.

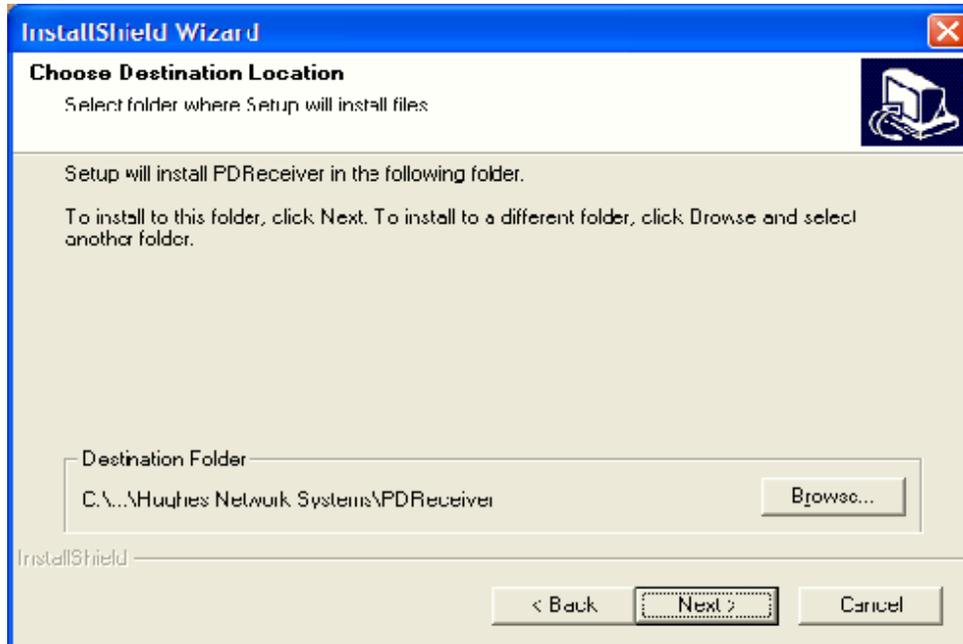
- Pentium II/266 MHz
- 128 MB memory (256 Mb of Memory is preferred)
- One 10/100 Ethernet Adapter (Dual Ethernet Adapters are preferred)
- 10 GB hard drive (content data storage may require additional space)

Operating systems: - Windows 95/98/XP/2000/Win NT 4.0 (with service pack 5.0 or greater).

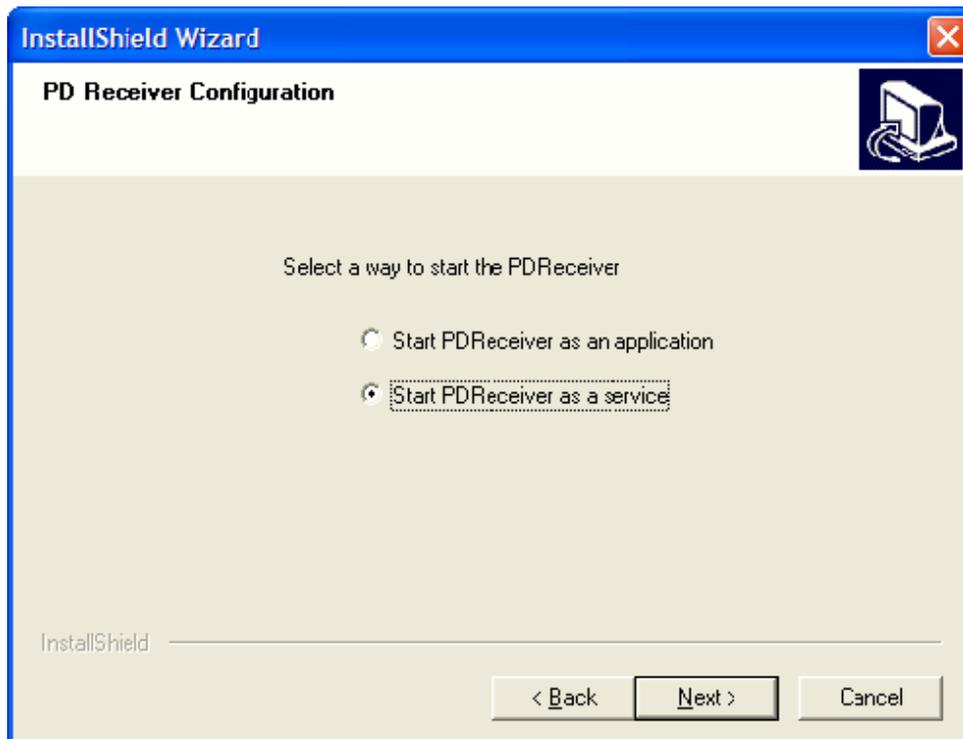
Step 1. Execute the installation program by double clicking PDRECEIVER_4.2.0.29.exe. You will see the following screen:

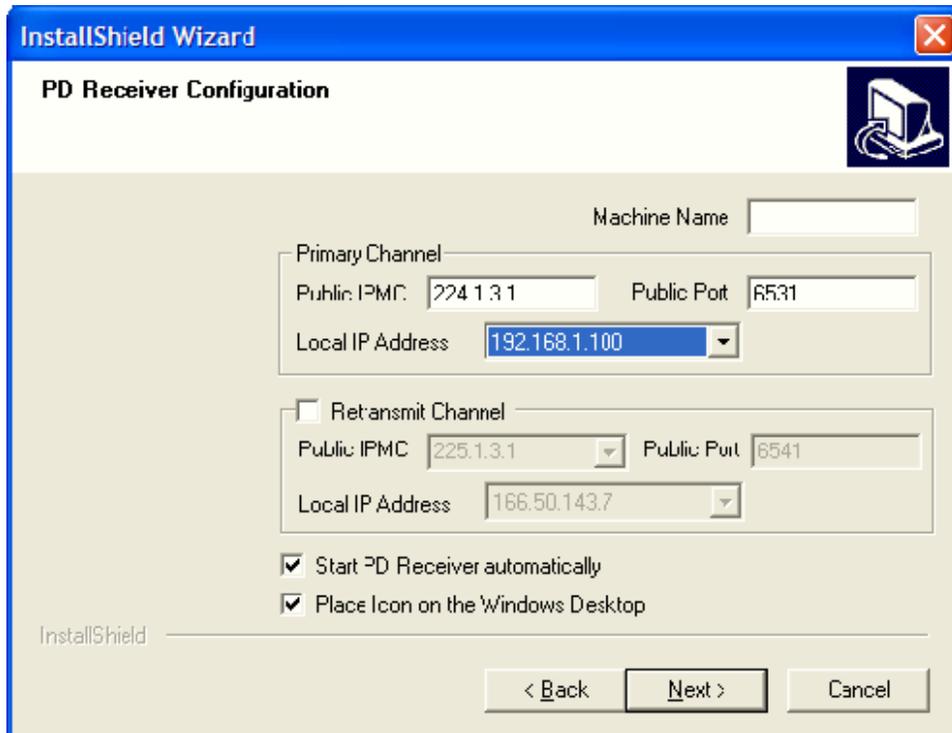


Step 2. Please read the message and choose "Next".



Step 3. Select the installation directory for your PD Receiver install. Hit "Next".





PLEASE READ THIS SECTION PRIOR TO MAKING YOUR SELECTION:

- If you are using Windows XP, 2000 or Win NT 4.0, you can run PDRReceiver as a Service.

Select Start PDRReceiver as an application if you want to run PDRReceiver in the foreground.

Select Start PDRReceiver as a service if you want to run PDRReceiver in the background.

- If you are using Windows 95 or Windows 98, the PDRReceiver is run as an Application.

Retransmit Channel - Off (do not check mark this field)

- Public IPMC = (not used)

Machine Name - Enter your Verizon Business Assigned unique eight-character Site ID.

Primary Channel - Public IPMC = 224.1.3.1 (this is the default)

- Public Port = 6531 (this is the default)

Step 4. Please select the desired startup method and Hit "Next".

Step 5. Please input your details as described above and Hit "Next".

If you chose to run the PD Receiver as a service it will start automatically for you even if no user has logged onto the computer. The Services method is the preferred option. It permits unattended servers to insure proper restart of the services in the event of a power failure or reboot of your computer running the PD Receiver software.

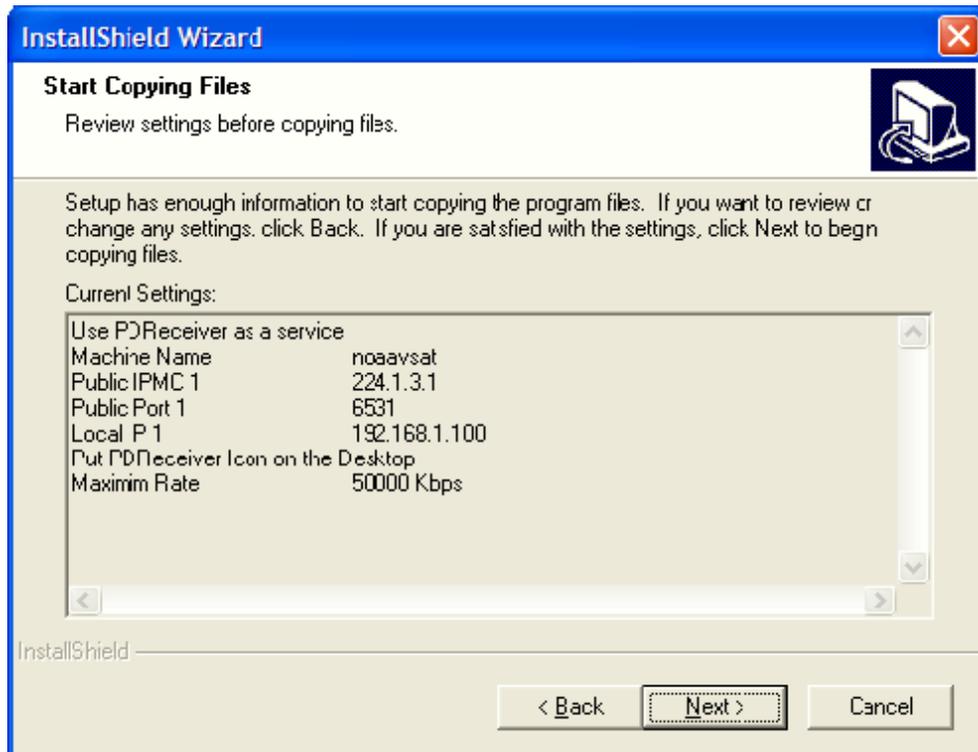
Note: If the PD Receiver is run as an application you must log onto your computer before the application will start.

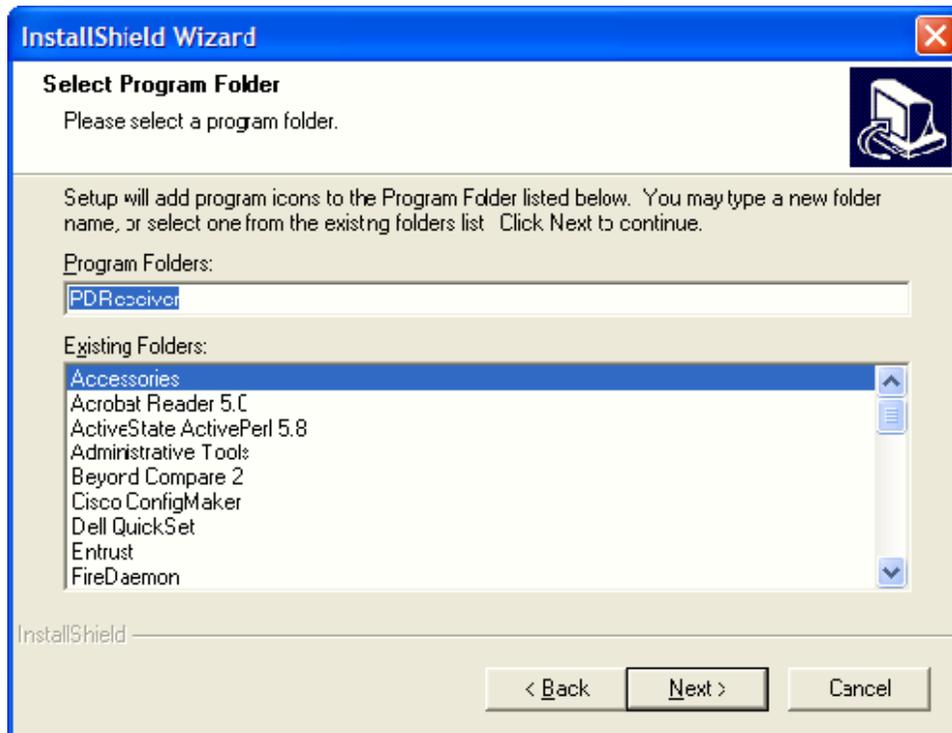
Place Icon on the Windows Desktop - On (Place check mark this field)

Note: Your Machine Name and assigned Local IP address can be found on your site documentation provided by Verizon Business. This info may be found in a number of places but will also be on a document called a "Site Passport" where you will find all the important details of your site. "It is critical that your IP address and Machine name are correct for proper operation of the site"

Step 6. Please input your desired location of the program icons, Hit "Next".

Step 7. Review current settings in the window and if correct then, Hit Next".





2.4.3 Install Linux Software

Unzip the file named “PDRReceiver for Linux PDR 2.1.41 - (Current).gz”
This file when unzipped will extract the image file to load on the Linux PC.

The installable image is: PDRReceiver-2.1.41-1.i386.rpm

Login as root using the “su” command and then the root password. The cursor will change to a # mark.

To install the rpm package put PDRReceiver-2.1.41-1.i386.rpm into /tmp and run the following as root:

```
rpm -i PDRReceiver-2.1.41-1.i386.rpm
```

To start the PDRReceiver go to /usr/hns/pdreceiver/bin and run:
“./rc.direcpc”

To stop the PDRReceiver go to /usr/hns/pdreceiver/bin and run: “./rc.direcpc
rm”

The operational commands in /usr/hns/pdreceiver/bin are:

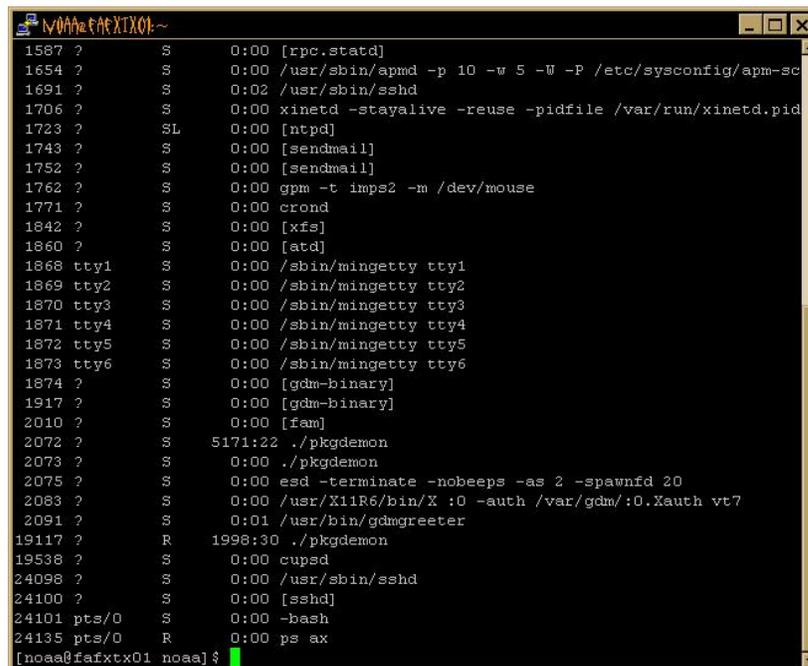
- pkgstat - permits viewing the local catalog of files and their attributes. Also permits viewing global reception statistics.
- pkgcldef - client definition utility to associate a virtual client name with an absolute pathname on the local receiver.
- pkgcssel - to explicitly request a "Selectable" file.
- pkgunsel - to unselect a previously requested file.

To uninstall your current PDReceiver, from the root account:

- 1) run: `/usr/hns/pdreceiver/bin/rc.dirccpc rm` (to stop pkgdemon)
- 2) run: `rpm -e PDReceiver` (to remove the PDReceiver package)

To confirm the program is running, type "ps ax"

The screen will show "./pkgdemon" running.



```
noaa@faftx01:~$ ps ax
1587 ?        S          0:00 [rpc.statd]
1654 ?        S          0:00 /usr/sbin/apmd -p 10 -w 5 -W -P /etc/sysconfig/apm-sc
1691 ?        S          0:02 /usr/sbin/sshd
1706 ?        S          0:00 xinetd -stayalive -reuse -pidfile /var/run/xinetd.pid
1723 ?        SL         0:00 [ntpd]
1743 ?        S          0:00 [sendmail]
1752 ?        S          0:00 [sendmail]
1762 ?        S          0:00 gpm -t imps2 -m /dev/mouse
1771 ?        S          0:00 crond
1842 ?        S          0:00 [xfs]
1860 ?        S          0:00 [atd]
1868 tty1     S          0:00 /sbin/mingetty tty1
1869 tty2     S          0:00 /sbin/mingetty tty2
1870 tty3     S          0:00 /sbin/mingetty tty3
1871 tty4     S          0:00 /sbin/mingetty tty4
1872 tty5     S          0:00 /sbin/mingetty tty5
1873 tty6     S          0:00 /sbin/mingetty tty6
1874 ?        S          0:00 [gdm-binary]
1917 ?        S          0:00 [gdm-binary]
2010 ?        S          0:00 [fam]
2072 ?        S          5171:22 ./pkgdemon
2073 ?        S          0:00 ./pkgdemon
2075 ?        S          0:00 esd -terminate -nobeeps -as 2 -spawnfd 20
2083 ?        S          0:00 /usr/X11R6/bin/X :0 -auth /var/gdm/:0.Xauth vt7
2091 ?        S          0:01 /usr/bin/gdmgreeter
19117 ?       R          1998:30 ./pkgdemon
19538 ?        S          0:00 cupsd
24098 ?        S          0:00 /usr/sbin/sshd
24100 ?        S          0:00 [sshd]
24101 pts/0    S          0:00 -bash
24135 pts/0    R          0:00 ps ax
[noaa@faftx01 noaa]$
```

Confirming the Ethernet ports are configured correctly.
Go to root

```
ROOT@FAFXTX01:~  
2072 ? S 5171:22 ./pkgdemon  
2073 ? S 0:00 ./pkgdemon  
2075 ? S 0:00 esd -terminate -nobeeps -as  
2083 ? S 0:00 /usr/X11R6/bin/X :0 -auth /  
2091 ? S 0:01 /usr/bin/gdmgreeter  
19117 ? R 1998:30 ./pkgdemon  
19538 ? S 0:00 cupsd  
24098 ? S 0:00 /usr/sbin/sshd  
24100 ? S 0:00 [sshd]  
24101 pts/0 S 0:00 -bash  
24135 pts/0 R 0:00 ps ax  
[noaa@fafxtx01 noaa]$ su -  
Password:  
[root@fafxtx01 root]#  
[root@fafxtx01 root]#  
[root@fafxtx01 root]#  
[root@fafxtx01 root]#
```

Type “ifconfig” to confirm Ethernet ports are configured correctly.

```
ROOT@FAFXTX01:~  
0 carrier:0  
collisions:0 txqueuelen:0  
RX bytes:511749 (499.7 Kb) TX bytes:511749  
(499.7 Kb)  
[root@fafxtx01 root]# ifconfig  
eth0 Link encap:Ethernet HWaddr 00:11:95:1E:54:D4  
inet addr:192.4.118.62 Bcast:192.4.118.63 Mask:255.255.255.252  
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
RX packets:7769883 errors:0 dropped:0 overruns:0 frame:0  
TX packets:22987 errors:0 dropped:0 overruns:0 carrier:0  
collisions:28 txqueuelen:100  
RX bytes:3779043181 (3603.9 Mb) TX bytes:1379220 (1.3 Mb)  
Interrupt:5 Base address:0x3000  
eth1 Link encap:Ethernet HWaddr 00:02:A5:92:19:FD  
inet addr:166.34.86.194 Bcast:166.34.86.255 Mask:255.255.255.0  
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
RX packets:86811 errors:0 dropped:0 overruns:0 frame:0  
TX packets:31146 errors:0 dropped:0 overruns:0 carrier:0  
collisions:1309 txqueuelen:100  
RX bytes:6192431 (5.9 Mb) TX bytes:14448953 (13.7 Mb)  
Interrupt:10 Base address:0x1400 Memory:40000000-40000038
```

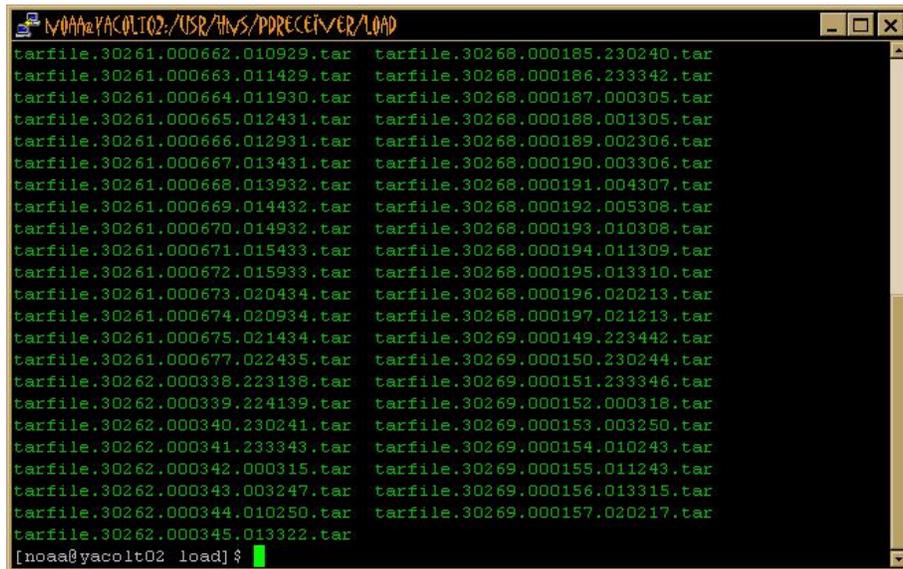
To Change IP and Mask, type the following command:

```
ifconfig eth0 inet 192.4.119.134 netmask 255.255.255.252
```

Note -This function will revert back to the original settings on a reboot. To enable the system to reboot to this configuration, the files “ifcfg-eth0” and “ifcfg-eth1” will have to be edited on the etc/sysconfig/network-scripts directory.

Confirm Tar files are being received by going to directory
cd /usr/hns/pdreceiver/load

Type “ls” and files should be displayed



```
noaa@yacolt02: /usr/hns/pdreceiver/load
tarfile.30261.000662.010929.tar tarfile.30268.000185.230240.tar
tarfile.30261.000663.011429.tar tarfile.30268.000186.233342.tar
tarfile.30261.000664.011930.tar tarfile.30268.000187.000305.tar
tarfile.30261.000665.012431.tar tarfile.30268.000188.001305.tar
tarfile.30261.000666.012931.tar tarfile.30268.000189.002306.tar
tarfile.30261.000667.013431.tar tarfile.30268.000190.003306.tar
tarfile.30261.000668.013932.tar tarfile.30268.000191.004307.tar
tarfile.30261.000669.014432.tar tarfile.30268.000192.005308.tar
tarfile.30261.000670.014932.tar tarfile.30268.000193.010308.tar
tarfile.30261.000671.015433.tar tarfile.30268.000194.011309.tar
tarfile.30261.000672.015933.tar tarfile.30268.000195.013310.tar
tarfile.30261.000673.020434.tar tarfile.30268.000196.020213.tar
tarfile.30261.000674.020934.tar tarfile.30268.000197.021213.tar
tarfile.30261.000675.021434.tar tarfile.30269.000149.223442.tar
tarfile.30261.000677.022435.tar tarfile.30269.000150.230244.tar
tarfile.30262.000338.223138.tar tarfile.30269.000151.233346.tar
tarfile.30262.000339.224139.tar tarfile.30269.000152.000318.tar
tarfile.30262.000340.230241.tar tarfile.30269.000153.003250.tar
tarfile.30262.000341.233343.tar tarfile.30269.000154.010243.tar
tarfile.30262.000342.000315.tar tarfile.30269.000155.011243.tar
tarfile.30262.000343.003247.tar tarfile.30269.000156.013315.tar
tarfile.30262.000344.010250.tar tarfile.30269.000157.020217.tar
tarfile.30262.000345.013322.tar
[noaa@yacolt02 load] $
```

Also go to the db directory by typing cd /usr/hns/pdreceiver/db

Type “more diliverd.log” This will show the last received files and confirm the system is working OK.

2.4.4 Software Tools to edit the Linux direcpc.ini File

VI Text Editor (loaded on the Linux PC)

Edit the “direcpc.ini” config file in the /usr/hns/pdreceiver/bin directory. See example below of a typical file.

Type “cd /usr/hns/pdreceiver/bin”

Type “vi direcpc.ini”

Use “VI” editor to change/edit the local IP address and the Site ID code.

1. BroadcastIPAddress1=224.1.3.1:6531
2. #The network adapter over which to receive PD if multi-homed
LocalIPAddress1=192.4.119.134
3. #Set SFS_NODE to this remote's 8 alphanumeric character site id
SFS_NODE=NOPAUST1

Make sure the # marks are removed at IP Address and Node definition lines.

Note - The IP Address is the address the computer is configured for, not the modem's IP address.

Note - Steps 2 and 3 require unique IP address and a Verizon Business 8 Character Code.

Use VI commands

x= Delete Character
i= Insert Character
:q= Quit without saving
ESC to exit above modes
ZZ to write and save to file.

Example Configuration File "direcpc.ini"

```
[DirecPC]
Version=2.1.41
user=linux_guy
company=HNS
#Warning: Changing the following well-known location will disable
#the auto-upgrade feature of this receiver.
MainDirectory=/usr/hns/pdreceiver
[PackageDelivery]
SFS_APPL_BUF=240000
SFS_SFX=/usr/hns/pdreceiver/db
SFS_EVT=/usr/hns/pdreceiver/db
SFS_SFX_DEFAULT_DEST=/usr/hns/pdreceiver/load
SFS_SFX_LOAD=/usr/hns/pdreceiver/tmpohold
BroadcastIPAddress1=224.1.3.1:6531
#
#The network adapter over which to receive PD if multi-homed
LocalIPAddress1=192.4.119.134
#
# An optional retransmit channel
# can be configured by setting
# BroadcastIPAddress2 to either
#   Public Retransmit Address and Port
#   (Must match the retransmit address on PDSender)
#   or UNICAST:<port number> (e.g., UNICAST:6551)
#   The port must not be in use.
#   It is necessary to set LocalIPAddress2
#   in case of UNICAST retransmission.
#BroadcastIPAddress2=225.1.3.1:6541
#LocalIPAddress2=
#
# To disable file reception progress meter
# on platforms with GNOME desktop GUI support
# uncomment the following line.
#EnableProgressMeter=0
#
#The IP:Port where the receiver should HTTP/POST retransmission requests
#and confirmations. This will override any IP:Port announced by the PDSender.
#If the user does not know what this should be leave it blank and the
#receiver will learn the IP:Port from the PDSender.
#ReturnHTTPAddress=192.168.1.104:6588
#The HTTP Proxy to use for HTTP return traffic.
#ReturnHTTPProxy=192.168.1.105:8080
#EnableHTTPProxy=0
#For debugging only
#EnableDebug=1
#TF_Recon=5
#TF_Loadr=2
#TF_Parsr=4
#DeleteOnDelivery=1
#PromiscuousMode=1
#Set SFS_NODE to this remote's 8 alphanumeric character siteid
SFS_NODE=NOPAUST1
```

2.4.5 Miscellaneous Linux Commands

TOP To see the last time the unit was rebooted and other statistics.
Q To exit.
Free To Show Memory Statistics

2.4.6 Changing the Time zone on Linux

If your time zone is not set correctly, you may simply (or not) change it to the new time zone that you need. You can find out for sure what your time zone is by typing: **“date”** at the command line. The output should be something similar to:

Sat 10 Apr 2004 10:16:00 AM EDT -0.125188 seconds

You will notice directly after the time (10:16:00 AM EDT) in this case that we are running Eastern Daylight Time. If you want to change it to something different, you have to update the file in **/etc/localtime** which is your **“timezone”** file.

Here's what to do. First, follow these commands:

```
cd /usr/share/zoneinfo
```

You should see a list of files that are broken down by country. In our case, we want to change our time zone to GMT, so we are going to make a backup of our original time file and then copy the new one to the location.

```
“cd /usr/share/zoneinfo”  
“cp /etc/localtime /etc/localtime-orig”  
“cp GMT /etc/localtime”
```

Next, we should bump our time against a timeserver and get everything set properly. The following commands will sync your system clock to a timeserver (time.nist.gov) and then sync your hardware clock to your system clock.

```
“/usr/bin/rdate -s 166.37.162.103”  
“/sbin/hwclock --systohc”
```

Now check your time. Type **“date”** The output should now read:

Sat 10 Apr 2004 10:18:00 AM **GMT** -0.125188 seconds

3 Troubleshooting

3.1 Modem

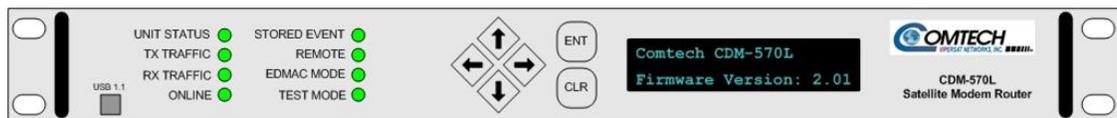
Confirm the following:

1. Confirm the following Modem Monitor settings by accessing the modem's front panel.
 - a. Eb/No Level
 - b. Receive Level

If the Eb/No level is between 3 and 16 dB and that the signal level is between -30 and -60db then all is normal. This confirms that the antenna and modem are operating OK.

Make a note of these settings and advise Verizon Business.

Note - If after troubleshooting the software there is still no data being received, turn power to the modem OFF, wait 30 seconds and turn the power back ON. Confirm that the modem's front panel LCD display returns to displaying the Menu Screen.



Under normal working conditions, the modem used for NOAA should show three (3) Green LED's on the front panel. These are the "Unit Status", "Rx Traffic" and the "Online" indicators. There may also be amber lights on the "Stored Events" and "Remote" indicators. The two amber LED's can be ON or OFF without effecting the operation of the modem.

If you see these three green LED's then you know that your IP Modem is **powered up** and it is **locked onto the satellite signal** for the NOAA broadcast.

To check the Satellite signal reception in more detail you need to utilize the front panel keypad and display.

First press the clear key repeatedly until the display is at the top-level screen where it shows the version number on it. Then follow the directions below:

Press the right button until you see the word “ **Monitor** ” in the display then press “ **Enter** ” you should now see the RAW BER info shown below, press the “**Right**” Arrow key to advance to the next screens.

Description	Reading
RAW BER	: 0.0E-3 or Higher
Corrected BER	: 0.0E-10
Eb/No	: 3.0 dB or Higher
Receive Signal	: -80 dBm or Lower
Sweep Frequency	: +/- 8000 Hz
LNB Current	: 100 to 350 mA

Notes: If you see no “Rx Traffic” light on the modem and you see “No Data” in the BER and Eb/No fields you have one of these possible problems:

- a. Antenna Pointing Problem
- b. LNB Failure (check LNB current, if 0 or very high very good possibility the LNB is bad)
- c. IFL Cable or connector Issue between the IP Modem and the LNB located on the Antenna.
- d. Cable Surge protector failure. (Most likely if failure occurred after Thunderstorm or Power Outage).
- e. Modem Configuration problem or Modem Failure.

3.1.1 Confirming Modem Cabling

To confirm good communications between the computer and the Satellite Modem, go to a Windows command line prompt or if using Linux go to the Terminal program screen. Type the command “ping” then a space followed by the IP address of the Modem. This confirms that the cable and IP settings of the Modem and computer are correct and fully operational.

Example: “**ping 192.4.118.134**”

There should be a response to this command if operating correctly.

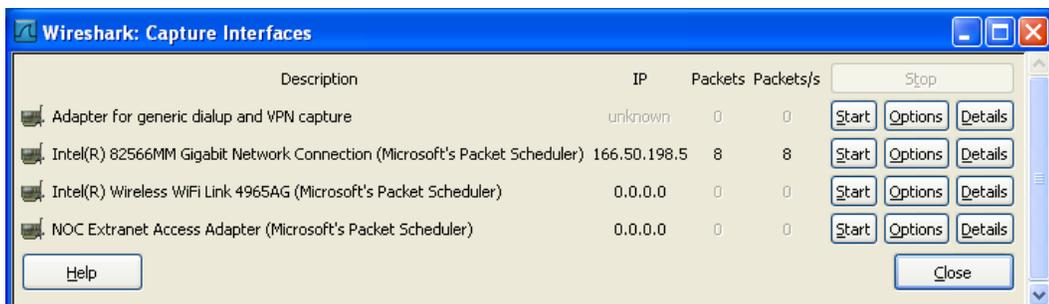
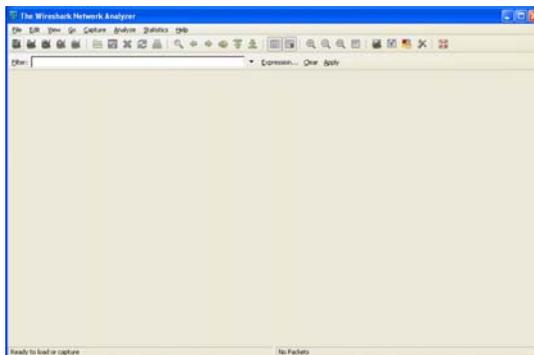
Note the Ethernet cable is a crossover type if it is directly connected from the Modem to the computer’s Ethernet port.

3.1.2 Verifying Traffic

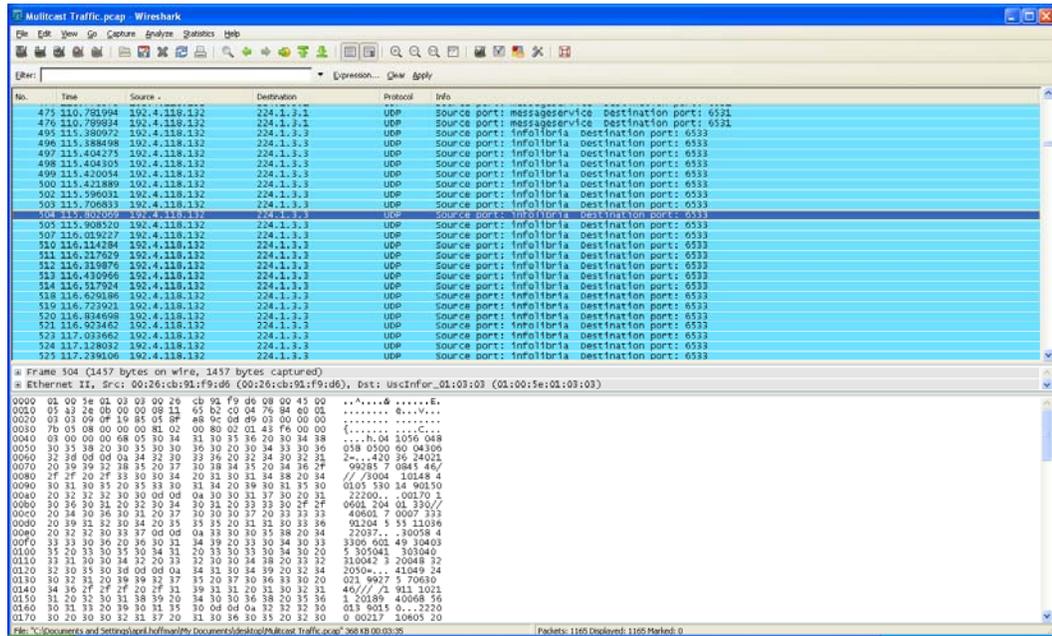
To verify if the modem is receiving multicast traffic, you can download Wireshark to another computer. <http://www.wireshark.org/>

Plug the LAN cable from the PC with Wireshark to the Traffic port of the Comtech Modem.

Open Wireshark up. Click the first icon. This is the List the available capture Interfaces



Click on Start for the interface that is connected to the Comtech Modem. Let this run for 5 to 10 minutes. Once done, click 4th icon over which is the stop button. You can sort the data by clicking on any of the columns in Wireshark. Click on Source to sort the Source. Look for 192.4.118.132 or 13. This is the Multicast Server IP address. (See below) If you see this, example below, then Multicast traffic is making it to the site. You can save this capture by clicking of the 7th icon on the task bar and save the data. You can email this information to Verizon to analyze.



3.1.3 Retrieving Software Revisions

From the modem's front panel, press the Clear button several times to go back to the top level menu option. Use the right arrow button to select "Utility" Press the enter Key. Press the right hand Arrow Key again until the "System" option is displayed. Press the Enter key and then the right hand key again several times until the Software Revisions are displayed

Note the following settings and email if requested by Verizon Business.

- M&C Firmware Revision :
- Boot Firmware Revision :
- FPGA Firmware Revision :
- IP Module Firmware Revision :

3.1.4 Sun Outages

Sun Outages occur twice a year at Spring (March & April) and Fall (September & October). To confirm when outages will affect your site go to the Intelsat Web site below:

<http://www.intelsat.com/resources/satellites/sun.aspx>

The following tables at this Web site provide sun interference predictions. Degradation of service may be expected during periods indicated. These outages can last for up to 10 minutes each day for up to 6 consecutive days during these periods.

Confirm with Verizon Business if you are unable to access this Web site.

3.1.5 Changing Frequencies

The receive frequency can be changed by the front panel keypad. Note - This should only be done at the request of Verizon Business.

Select "Config" on the front panel keyboard and then select "RX". Press the right arrow key once and change the "Frq" to the new setting by using the arrow keys. Press Enter to save it.

3.1.6 Modem Firmware Upgrades

Modems can be firmware upgraded by one of two methods:

1. The Firmware can be uploaded from the Verizon Business transmitting earth station over the satellite. (preferred method)
2. Upgrade firmware can be loaded locally into the modem via an FTP function.

3.1.7 FTP Method

IP Module Firmware Revisions can be done via an FTP transfer to the modem.

If the user is not familiar with the FTP file transfer function, then this procedure can be obtained from Verizon Business.

3.2 Workstation Software

3.2.1 Windows Software

- a. Use Windows explorer and go to the /hns/pdreceiver/db directory. Double Click Type on file "delivered.log" Windows Notepad should open up and display the files received. Confirm the last entry displayed and confirm if it is a recently updated file. Repeat and observe if the log updates.
- b. Go back one directory level and go to the load directory /usr/hns/pdreceiver/load and observe any tar files with up to date time stamps.
- c. If there are still no up to date received files, then stop and restart the direcpc program. If there are still no files received in the delivered.log file or the load directory then perform the following:
- d. Go to a command or DOS prompt and type the ping command "ping 192.4.119.?" and confirm you can ping the modem. Note that the IP address is always 192.4.118.? for the Atlantic region and 192.4.119.? for the Pacific region. The last octet noted here with a ?. can vary depending on the customer. If there is no response, check the following:
- e. Confirm the IP address in the modem. It should be 192.4.119, ? /30. This should be in the Systems Utility menu from the modem's front panel. Advise Verizon Business of the IP address in the modem.
- f. Check the Ethernet cable from the modem to the computer. This cross-over cable can become disconnected if not fully secured to the rear of the modem.
- g. With Windows Explorer go to the /hns/pdreceiver/bin directory and click on the file "direcpc.ini" Windows Notepad should open and confirm that the display shows the file and that the local IP address line displays the same as the modem's but the last octet is 1 different. Confirm the last line of this file has an 8 character ID. This ID should be the original that was assigned. Advise Verizon Business of these two settings.

3.2.2 Linux Software

- a. Go to the `/usr/hns/pdreceiver/db` directory by typing the command `cd /usr/hns/pdreceiver/db`. Type "more delivered.log" and confirm the last entry displayed. Repeat and observe if the log updates.
- b. Go back one level by typing `cd ..` and then go to the load directory with the command `cd load`. Observe any tar files with up to date time stamps.
- c. Another option to check for the receive status is to type the `./pkgstat f s` command in the `/usr/hns/pdreceiver/bin` directory and observe for the received product files incrementing. This command also displays the status of the files and if they were confirmed received without any missing packets.
- d. Type the command "ps ax" and confirm if the `pkgdemon` is displayed and running. If the display does not show the `pkgdemon` is running then restart the PDRReceiver by typing `./rc.direcpc`. (Note that the period followed by the / is the Linux command to start the `rc.direcpc` program.) Confirm that it says `pkgdemon` is starting.
- e. If still no files are received in the `delivered.log` file or the load directory then perform the following:
- f. Type the command `./rc.direcpc rm` to stop the program and `./rc.direcpc` to restart it.
- g. Type the ping command "ping 192.4.119.?" and confirm you can ping the modem. Note that the IP address is always 192.4.118.? for the Atlantic region and 192.4.119.? for the Pacific region. The last octet noted here with a ?. can vary depending on the customer. If there is no response check the following:
- h. Confirm the IP address in the modem, it should be 192.4.119, ? /30. This should be in the systems utility menu from the modems front panel. Advise Verizon Business of the IP address in the modem.
- i. Check the Ethernet cable from the modem to the computer. This cross-over cable can become disconnected if not fully secured to the rear of the modem.

- j. Go to the /usr/hns/pdreceiver/bin directory and type "more direcpc.ini" Confirm that the display shows the file and that the Local IP address is the same as the modems but the last octet is +1. Confirm the last line has an 8 character ID. This ID should be the original that was assigned on installation.

4 Opening a Trouble-Ticket with Verizon Business

If you are calling within the USA please call the Verizon Business World Wide Customer Care Center at Toll Free 800-937-2862.

If possible please have your assigned circuit number when calling.

See also the list below of Free Phone numbers when calling from other countries.

After reporting a problem to Verizon Business you will be given a trouble-ticket number. This number should always be referenced any time when calling to check on the status of your problem.

If you are unable to call the Verizon Business World Wide Customer Care Center, you can Email the NOAA Control Center at toc.nwstg@noaa.gov and ask them to call Verizon Business to open a trouble ticket.

The 24 hour NOAA Control Center number is (301) 713-0902

VERIZON BUSINESS World Wide Customer Care Center

Free Numbers

COUNTRY	DIALED NUMBER
ARGENTINA	001-800-2220153
AUSTRALIA	1-800-43864
AUSTRALIA	800-93728620
AVANTEL 1	001-8009372862
AVANTEL 2	001-8009372862
AVANTEL 3	001-8009372862
AVANTEL 4	001-8009372862
BARBADOS	1-800-5343199
BELGIUM	0800-72638
BELGIUM	800-93728620
BEZEQ	1-800-940-4262
BEZEQ	800-93728620
BRAZIL	00081-4-550-3378
CHILE	123-0-020-0206
COLOMBIA	980-9-54456
COSTA RICA	0800-012-0837
CTC	800-532871
DACOM	800-93728620
DENMARK	8088-6658
DENMARK	800-93728620
DOM REPUBL	1-8881561350
FINLAND	0-800-1-111568
FRANCE	0800-901221
FRANCE	800-93728620
GERMANY	0800-1004517
GERMANY	800-93728620
HONG KONG	800-933822
HONG KONG	800-93728620
HUNGARY	06-800-13458
IDC	800-93728620
INDONESIA	001-803-011-2228
IRELAND	1-800-554410
IRELAND	800-93728620
ITALY	800-877542

JAPAN	00531-1-27180
JAPAN	800-93728620
JAPAN NTT	800-93728620
JAPAN TELE	800-93728620
KOREA-TELE	00798-14-800-3010
KOREA-TELE	800-93728620
MALAYSIA	1-800-80-8558
MALAYSIA	800-93728620
MERCURY	800-93728620
MEXICO 1	001-8009372862
MEXICO 2	001-8009372862
MEXICO 3	001-8009372862
MEXICO 4	001-8009372862
NETHERLAND	0800-0229226
NEW ZEALND	0800-445813
NEW ZEALND	800-93728620
NICARAGUA	001-800-2201223
NORWAY	800-11998
NORWAY	800-93728620
OPTUS	800-93728620
PANAMA	001-800-507-1661
PLDT PHILI	1-800-1-114-0558
PLDT PHILI	800-93728620
PORTUGAL	800-8-12922
PORTUGAL	800-93728620
SINGAPORE	800-1202916
SINGAPORE	800-93728620
SO AFRICA	080-09-92933
SPAIN	900-971934
SPAIN	800-93728620
SWEDEN	020-79-8638
SWEDEN	800-93728620
SWITZRLND	0800-893601
SWITZRLND	800-93728620
TAIWAN	00801-13-9329
THAILAND	001-800-12-066-3304
THAILAND	800-93728620
TRIN TOBAG	1-8009372862
UN KNGDM	08-008956800
UN KNGDM	800-93728620
URUGUAY	000-413-598-2344
VENEZUELA	0800-1-00-4744