NOAA/ISCS

RECEIVE-ONLY SATELLITE SYSTEM

INSTALLATION & MAINTENANCE MANUAL

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Version 1.2

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Table of Contents

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. MCI 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.

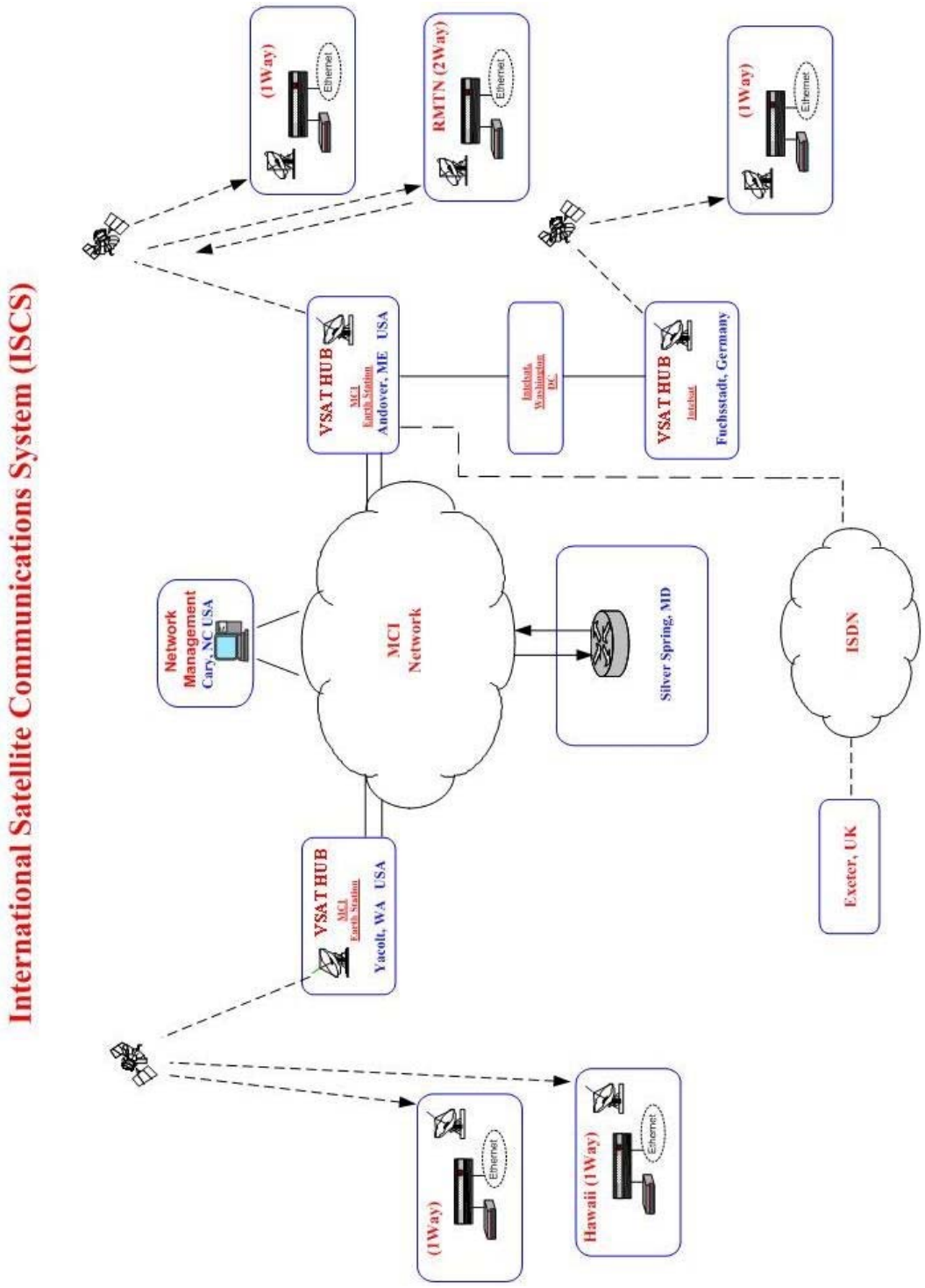
MCI has chosen a packet delivery system that provides efficient broadcast of data via IP multicasting technology optimized for satellite transmission.

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 Overview Diagram

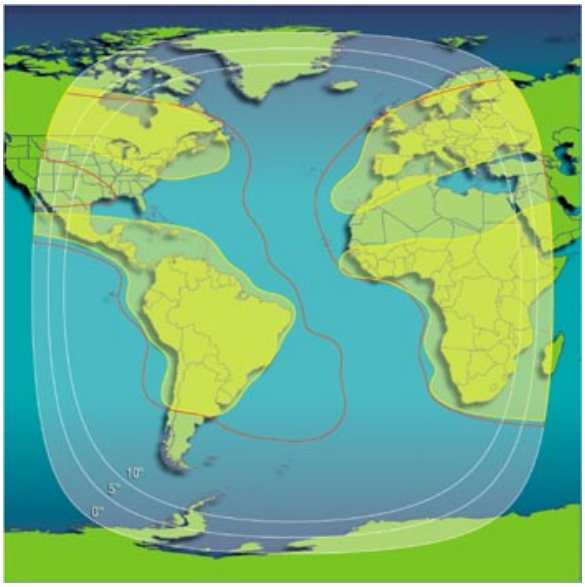


1.2 Satellites Used

The current satellites used by MCI are shown below. It must be noted that these could change, and to confirm the latest, please contact MCI. For full technical details of these satellites, go to the Intelsat Web site below:
http://www.intelsat.com/resources/coveragemaps.aspx

1.2.1 Atlantic Ocean Region

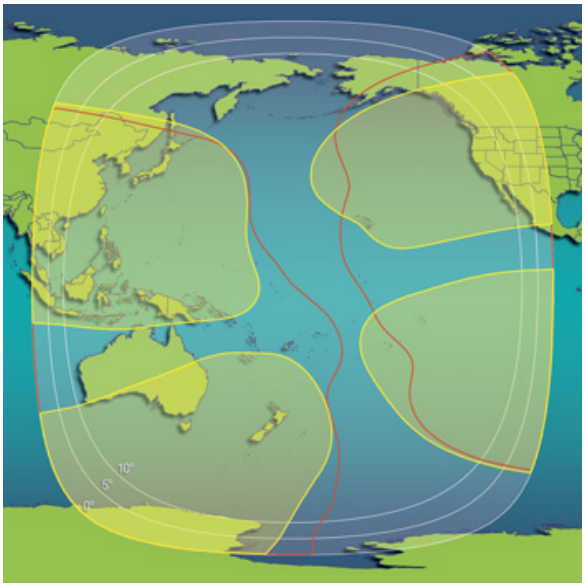
The Satellite used is Intelsat 903 @ 325.5°E



MCI's Uplink Site at Andover in the State of Maine

1.2.2 Pacific Ocean Region

The Satellite used is Intelsat 701 @ 180°E



MCI's Uplink Site at Yacolt in the State of Washington

1.2.3 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 MCI 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) connects to a PC workstation via an Ethernet cross-over cable. The IP address will be provided by MCI at time of installation.

Note - Besides being required to interface with the PC workstation, this IP address is used to update the modem's firmware over the air via the satellite.

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.. [**969.35**].
Receive Data Rate... [**0128.000**].
Decoder Type..... [**TURBO**]
Decoder Rate..... [**3/4**].

Actual C-Band Frequency is: 4180.65 MHz

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:

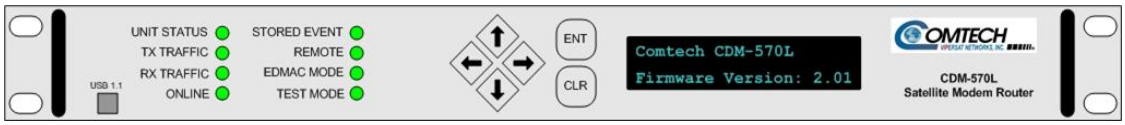
Press the right button until you see the word " **Monitor** " in the display then press " **Enter** "

Typical Value	Your Readings
RAW BER	: 0.0E-3 or Higher
Corrected BER	: 0.0E-10
Eb/No	: 5.0 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:

1). Antenna Pointing Problem
2). LNB Failure (check LNB current, if 0 or very high, very good possibility the LNB is bad)
3). IFL Cable Issue between the IP Modem and the LNB located on the Antenna.
4). Cable Surge protector failure. (Most likely if failure occurred after Thunderstorm or Power Outage.
5). Modem Configuration problem or Modem Failure.

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. Pres 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.....[**Easy Connect Mode**]..... C
WAN Framing Mode..... [**Comtech Native**].... W
Easyconnect 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

Feature Configuration

Ping Reply..... [**Enabled**]..... P
Telnet..... [**Enabled**]..... E
SNMP..... [**Disabled**]..... N
IGMP..... [**Disabled**]..... I
Downlink Route All Available Multicast..[**Enabled**]..... M
Redundancy..... [**Disabled**]..... R
Quality of Service (QoS)..... [**Disabled**]..... Q
Transmit 3xDES Encryption.....[**Unavailable**].....T
Receive 3xDES Decryption.....[**Unavailable**]
Tx Header Compression..... [**Disabled**]..... H
Rx Header Compression..... [**Disabled**]..... K
Tx Payload Compression..... [**Disabled**]..... C
Rx Payload Compression..... [**Available**]
Vipersat Feature Codes..... [**000:0000-0000-0000:0.00**]....F

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

Ethernet Interface

MAC Address..... [**00-06-B0-00-26-97**]
Speed/Mode..... [**10 MB/sec Half Duplex**].....E
IP Address..... [**192.4.118.61**]..... I
Subnet Prefix Length..... [**30**]..... M

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

Modem Parameters Page

Modem Type.....[CDM-570L]
Modem Summary..... I
Transmit Modem Configuration..... T
Receive Modem Configuration..... R
AUPC..... P
Miscellaneous..... M
Alarm Masks..... A
Utilities..... U
Events and Statistics..... E
BUC Configuration..... B
LNB Configuration..... N
BUC Status..... C

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

Receive Modem Configuration Page

Receiver Frequency.. [**0992.3000**]....(**Check Region**)..... Q
Receive Data Rate... [**0128.000**]..... D
Decoder Type..... [**TURBO**]..... T
Decoder Rate..... [**21/44**]..... (**Check Region**)..... R
Modulation Type..... [**QPSK**]..... M
Spectrum..... [**INV**]..... U
De-scrambler..... [**On-Default**]..... B
Sweep Width..... [**030**]..... W
Eb/No Alarm Point... [**06.0**]..... P

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

Low Noise Block Converter(LNB) Configuration

LNB Power Control..... [**18 Volts**]..... P
LNB Reference Enable..... **[Off]**..... R
LNB Low Current Threshold (10-400 mA)...[**10**].....C
LNB High Current Threshold (50-600 mA).. **[600]**..... H
LNB LO Frequency (03000- to 65000+)..... [**05150+**].....L
LNB Current..... [10]
LNB Voltage..... [17.8]

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

Alarm Masks Modem Configuration

Tx FIFO Mask.. [**Masked**]..... A
G.703 BPV Mask. [**Masked**]..... B
Tx AIS Mask. [**Masked**]..... C
Rx AGC Mask.. [**Unmasked**].....D
Eb/No Mask.. [**Unmasked**].....E
Rx AIS Mask.. [**Unmasked**].....F
Buffer Slip Mask.. [**Unmasked**].....G
Ext. Ref. Mask.. [**Masked**]..... H
BUC Mask.. [**Masked**]..... I
LNB Mask.. [**Unmasked**].....J

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

System time is MON JUN 20 14:37:16 2005

CDM_IP built May 20 2005 @ 11:55:48
Booted using image #1
Using configuration parameters from PARAM file on Flash

Type	Built (EST)	Name	Rev	Len
Boot	1/13/2005 16:30	FW10873-1a	1.1.1	457800
Bulk #1	5/20/2005 14:02	FW10875e	1.4.5	1366220
Bulk #2	5/20/2005 14:02	FW10875e	1.4.5	1366220
EVENTLOG	6/20/2005 14:13	eventlog	1.0.0	30720
PARAM	6/20/2005 14:23	console	1.4.5	3224
FPGA TX1	8/17/2004 12:22	FW10877-Tx	A	510324
FPGA RX1	1/13/2005 17:13	FW10876-Rx	B	510324
FPGA TX2	8/17/2004 12:22	FW10877-Tx	A	510324
FPGA RX2	1/13/2005 17:13	FW10876-Rx	B	510324

Name/Password Configuration

Admin User/Password.....[**comtech/comtech**].....A
Read/Write User/Password..[**opcenter/1234**].....W
Read Only User/Password...[**monitor/1234**].....R

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

Transmit Modem Configuration Page

Transmit Frequency.. [1200.0000]..... Q
Transmit Data Rate. [0064.000]..... D
Encoder Type..... [VIT]..... T
Encoder Rate..... [1/2]..... R
Modulation Type..... [QPSK]..... M
Spectrum..... [NRM]..... U
Scrambler..... [On-Default]..... B
Tx Output Power..... [30.0]..... P
Carrier..... [**Off**]..... C

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

Modem Utilities Page

Modem Time.....	[**14:43:28**].....	T
Modem Date.....	[**20/06/05**].....	D
Circuit ID.....	[----------].....	I
Local/Remote State...	[**Loca**l].....	R
Load Configuration.....		G
Store Configuration.....		O
Active Image.....	.[**Bulk-2**].....	A

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

Operations and Maintenance

Unit Information.....		I
Boot From.....	.[**Latest**].....	B
Upgrade To.....	[**Oldest**].....	U
Blind Load Multicast Address..	[**239.4.5.7**].....	M
PARAM Image.....	[**PARAM**].....	C
Statistics.....		T
Event Log.....		E
Database Operations.....		D
Reset.....		R
Diagnostics.....		G

Save Parameters to permanent storage.....	S
Exit.....	X
Telnet Logout.....	L

Miscellaneous

Data Interface..[IP Interface].....	I
Test Mode.....[Normal].....	T

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 MCI Product Code

This is an 8 Character Code that will be supplied by MCI. 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.)

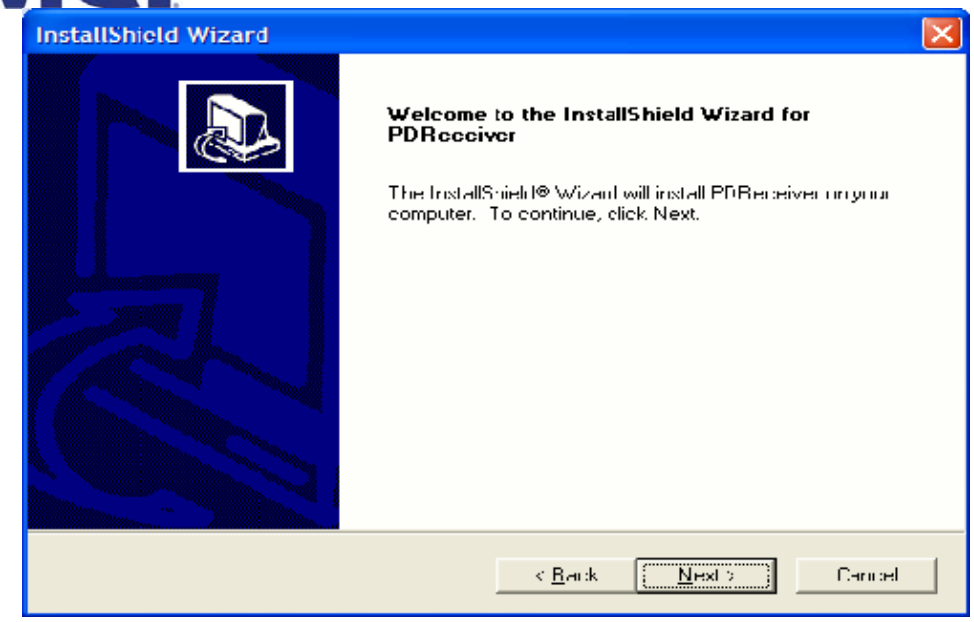
2.4.2 Install Windows Software

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

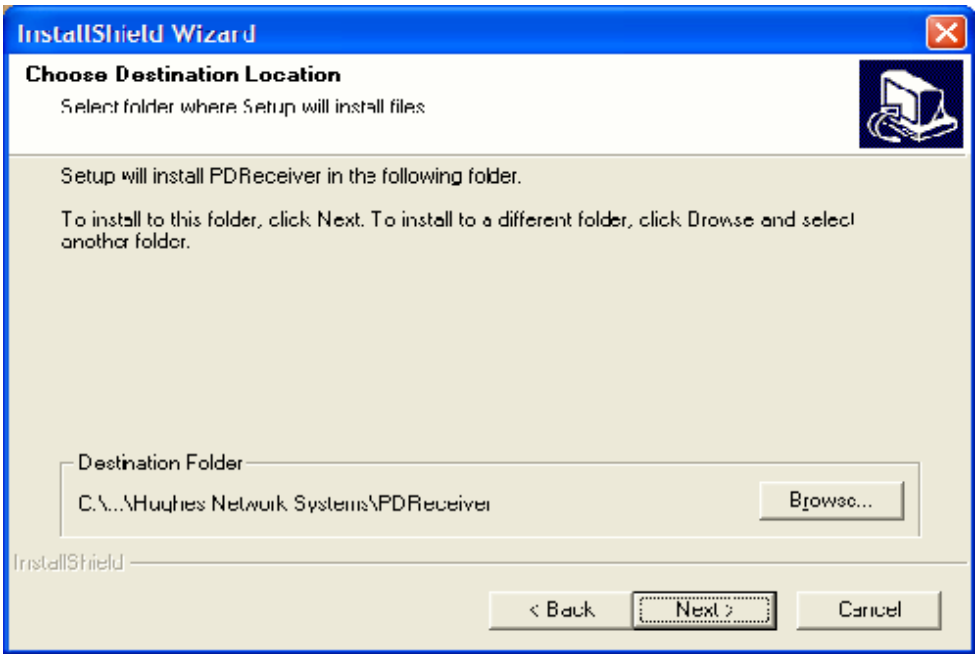
- Pentium II/266 MHz
- 128 MB memory (256 Mb of Memory is preferred)
- One 10/100 Ethernet Adapter (Dual Ethernet Adapters are preferred)
- 10 GB hard drive (content data storage may require additional space)

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

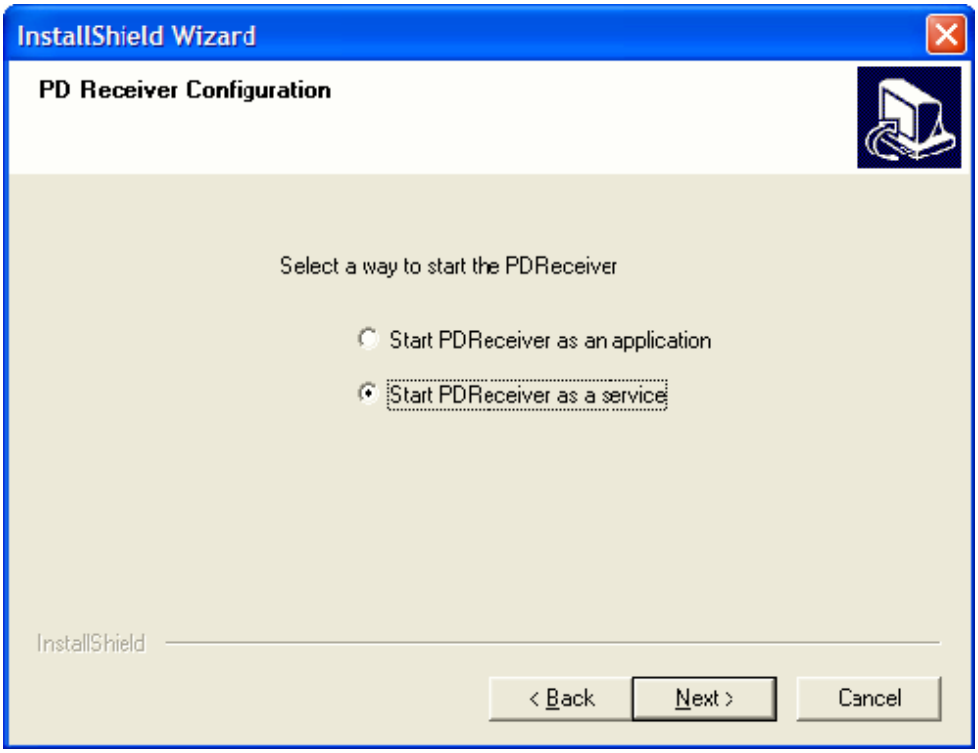
Step 1. Execute the installation program by double clicking PDRECEIVER_4.2.0.29.exe. You will see the following screen:



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:

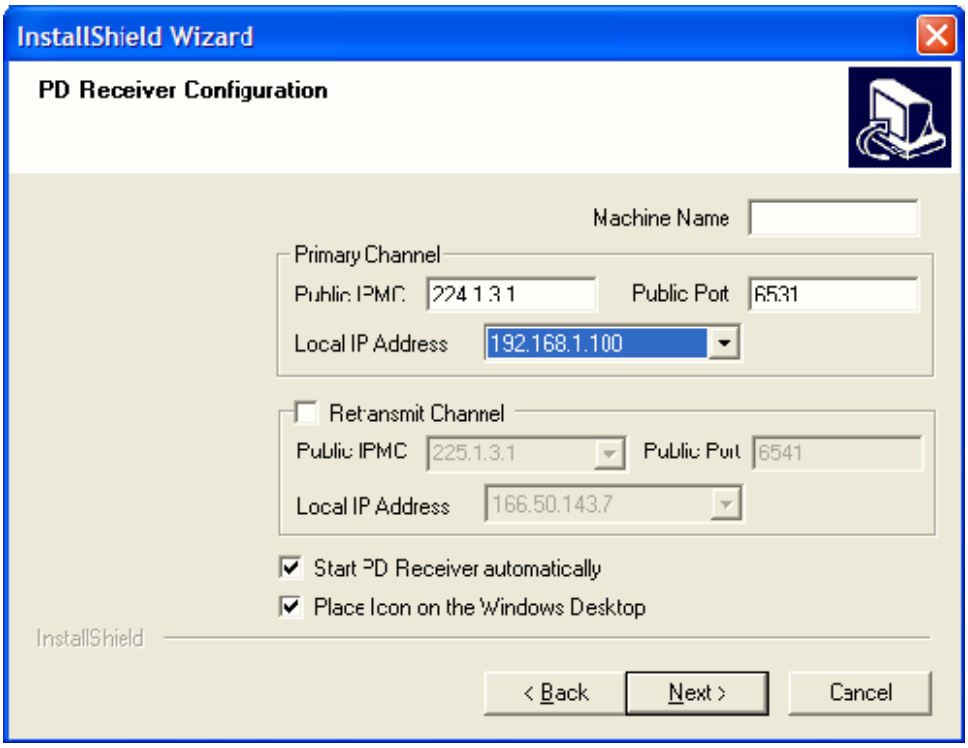
- If you are using Windows XP, 2000 or Win NT 4.0, you can run PDReceiver as a Service.

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

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

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

Retransmit Channel - Off (do not check mark this field)
- Public IPMC = (not used)
Machine Name - Enter your MCI 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.

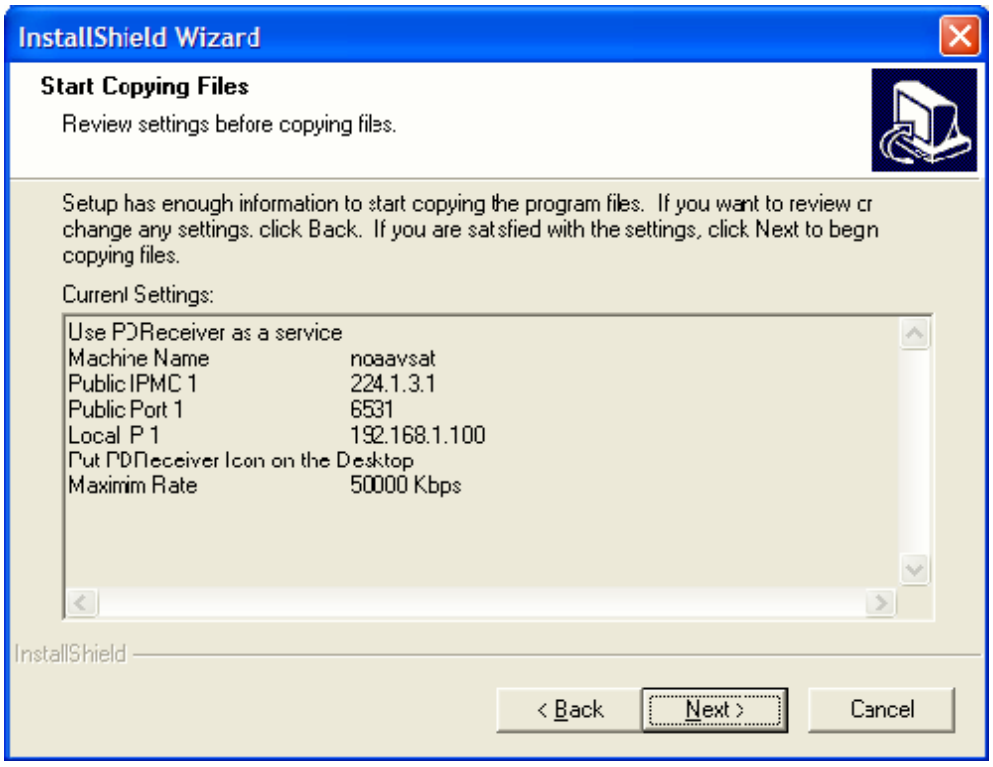
Note: If the PD Receiver is run as an application you must log onto your computer before the application will start.

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 MCI. 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".




InstallShield Wizard
Select Program Folder
Please select a program folder.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.
Program Folders:
PDReceiver
Existing Folders:
Accessories
Acrobat Reader 5.0
ActiveState ActivePerl 5.8
Administrative Tools
Beyond Compare 2
Cisco ConfigMaker
Dell QuickSet
Entrust
FireDaemon
InstallShield
< Back
Next >
Cancel

2.4.3 Install Linux Software

Unzip the file named “PDReceiver 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: PDReceiver-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 PDReceiver-2.1.41-1.i386.rpm into /tmp and run the following as root:

rpm -i PDReceiver-2.1.41-1.i386.rpm

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

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

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

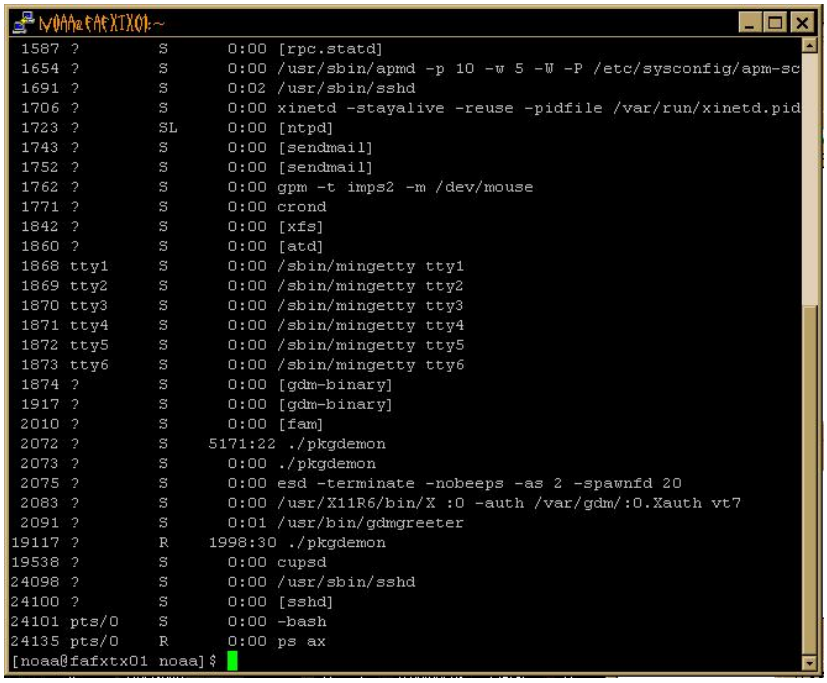
pkgstat -	permits viewing the local catalog of files and their attributes. Also permits viewing global reception statistics.
pkgcldef -	client definition utility to associate a virtual client name with an absolute pathname on the local receiver.
pkgcssel -	to explicitly request a "Selectable" file.
pkgunsel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

To uninstall your current PDReceiver, from the root account:

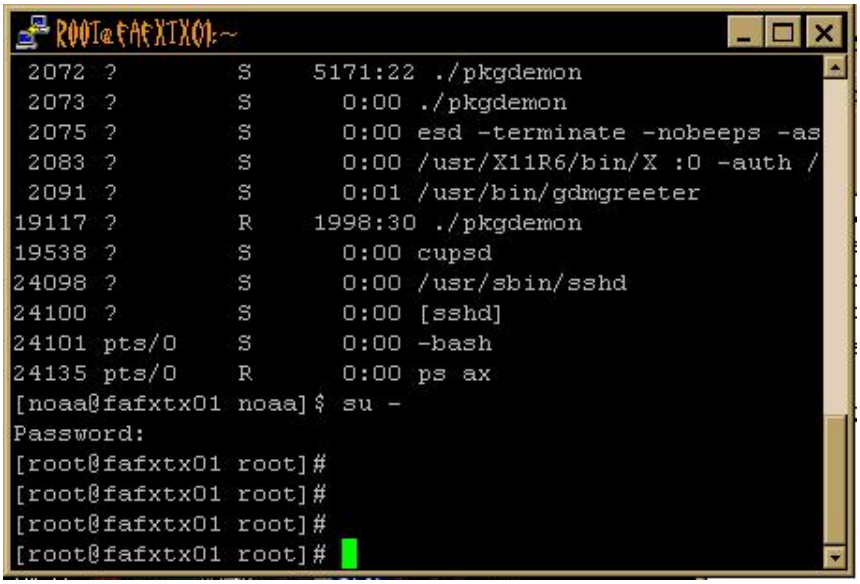
1) run: /usr/hns/pdreceiver/bin/rc.direcpc rm (to stop pkgdemon)
2) run: rpm -e PDReceiver (to remove the PDReceiver package)

To confirm the program is running, type “ps ax”

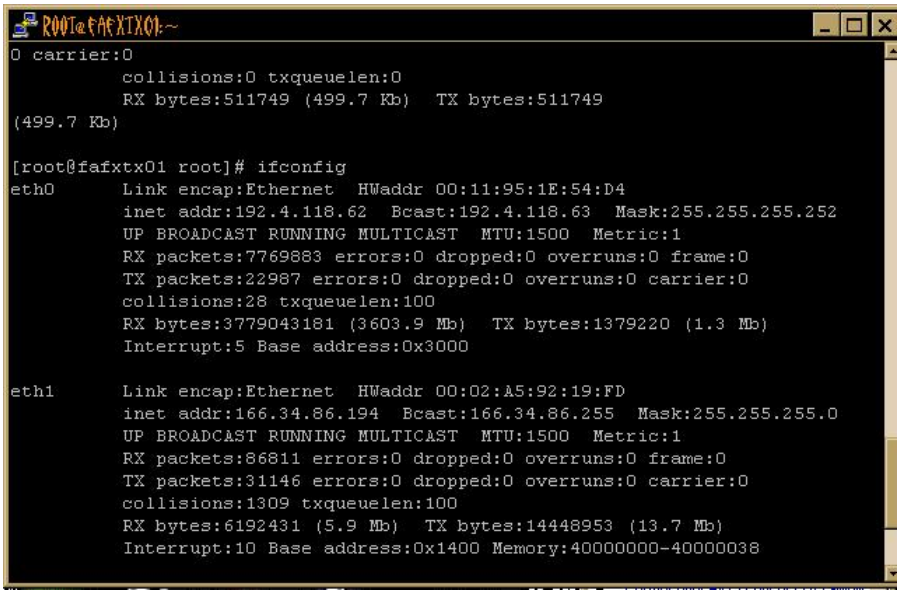
The screen will show “./pkgdemon” running.



Confirming the Ethernet ports are configured correctly.
Go to root



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



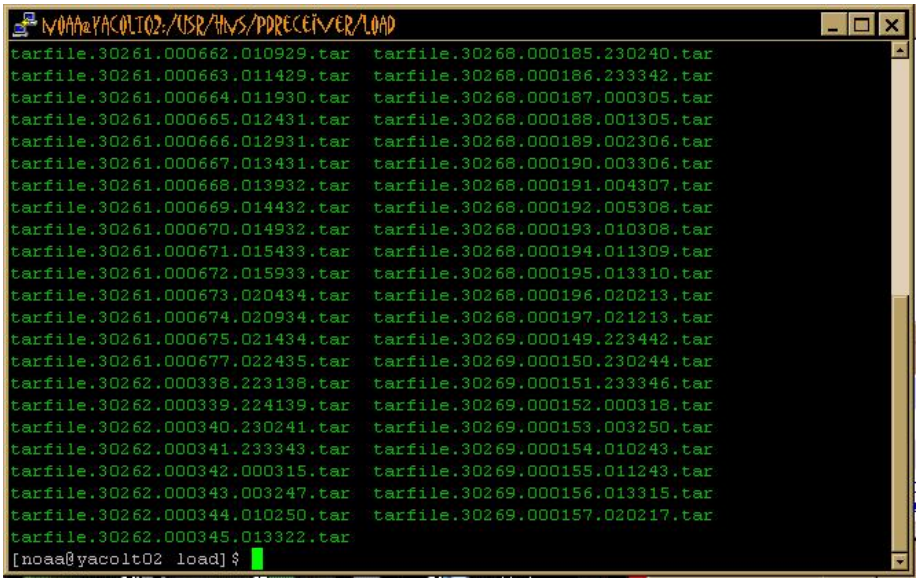
To Change IP and Mask, type the following command:

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



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 an MCI 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/tmphold
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:

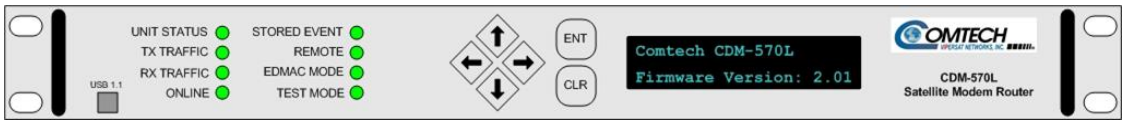
1. Confirm the following Modem Monitor settings by accessing the modem's front panel.

   a. Eb/No Level
   b. Receive Level

If the Eb/No level is between 4 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 MCI.

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	Rreading
RAW BER	: 0.0E-3 or Higher
Corrected BER	: 0.0E-10
Eb/No	: 5.0 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 Lunix 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 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 MCI.

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

3.1.3 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 MCI if you are unable to access this Web site.

3.1.4 Changing Frequencies

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

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.

3.1.5 Modem Firmware Upgrades

Modems can be firmware upgraded by one of two methods:

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

3.1.6 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 MCI.

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 MCI 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 MCI 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 PDReceiver 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" tp 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 MCI 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 MCI

If you are calling within the USA please call the MCI 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 MCI 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 MCI World Wide Customer Care Center, you can Email the NOAA Control Center at toc.nwstg@noaa.gov and ask them to call MCI to open a trouble ticket.

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

MCI 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