

Important Router Information

Dear Valued Customer:

This packet includes **important information about your equipment** which should be reviewed by you prior to speaking with our Installations Group.

It is not a replacement for our Technical Support but is designed to help us help you get your internet connection up and running as quickly as possible.

Our Installations Group will work with you via one hour appointments. **Please review this packet and follow the setup flowchart prior to your initial appointment with your Installations Representative**

Thank you very much and welcome to the Internet.

Technical Support: (888) 774-4206

Enclosed are the following documents regarding your Internet equipment:

- **Router Setup Flowchart**
- **Connectivity Flowchart**
- **Configuration Print Out**
- **Configuration Instructions**

Additional documents for Leased Line Customers:

- **Astrocom CSU/DSU Diagram**
- **Important Circuit Information**

Setup: MicroRouter 1220i – Leased Line

Instructions for connecting your MicroRouter 1220i Router for your leased line account:

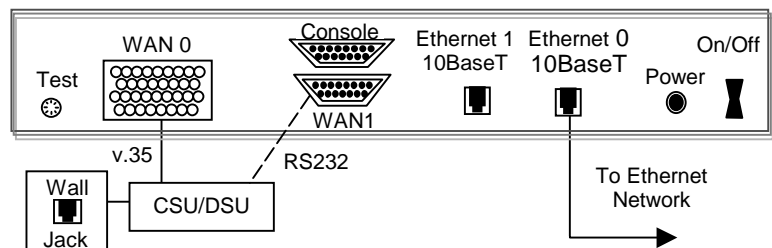
Prerequisites: Please run through the following flowchart to connect your equipment prior to scheduling your initial appointment with our Installations Group.

- Local Area Network (LAN) already setup
- TCP/IP configured on the individual workstations
- Circuit installed and tested - you will receive a message from us asking you to call for your installation appointment. Equipment should not be connected until this message is received.

Your router has been shipped to you preconfigured. Please check the configuration print out to verify that your Serial IP address and the DLCI number for your connection has been included. Also, when the connection is up and running, don't forget to change the router password.

Start Setup Flow

Connect the v.35 or the RS232 (56k only) cable from the appropriate WAN port to the CSU/DSU and the RJ45 cable from the CSU/DSU line port to the demarc.



Is your LAN connected to a hub?

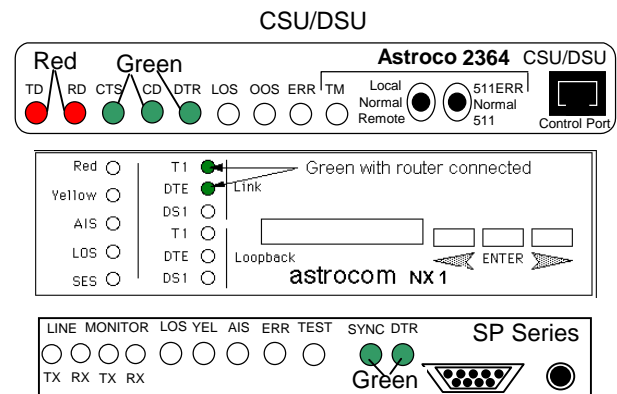
No

Connect a cross over RJ45 cable from the Ethernet 10BaseT port directly to your Ethernet card.

Yes

Connect the straight through Ethernet (RJ45) cable from the Ethernet 10BaseT port on the back of the router to your 10BaseT Hub.

Turn on the CSU/DSU then the router. Wait about 90 seconds. The router should have a good connection. Check the lights on your CSU/DSU (see diagrams).



Do the lights match the diagram of your model CSU/DSU?

No

Power down the router and the CSU/DSU. Try each of the following and then power up the CSU/DSU, then the router:

- Verify the cables are connected (see Astrocom diagram document).
- Swap cable with a different straight through RJ45 cable to the wall jack.
- Astrocom 2364 (56k service only)-both switches should be set to Normal and nothing connected to the Control Port.

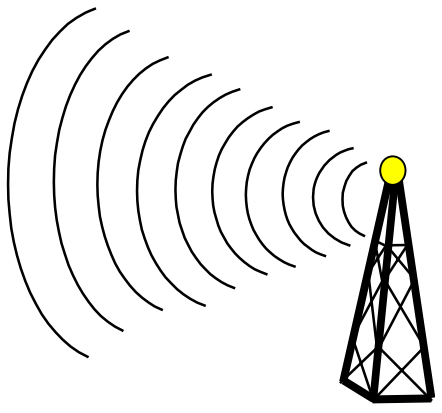
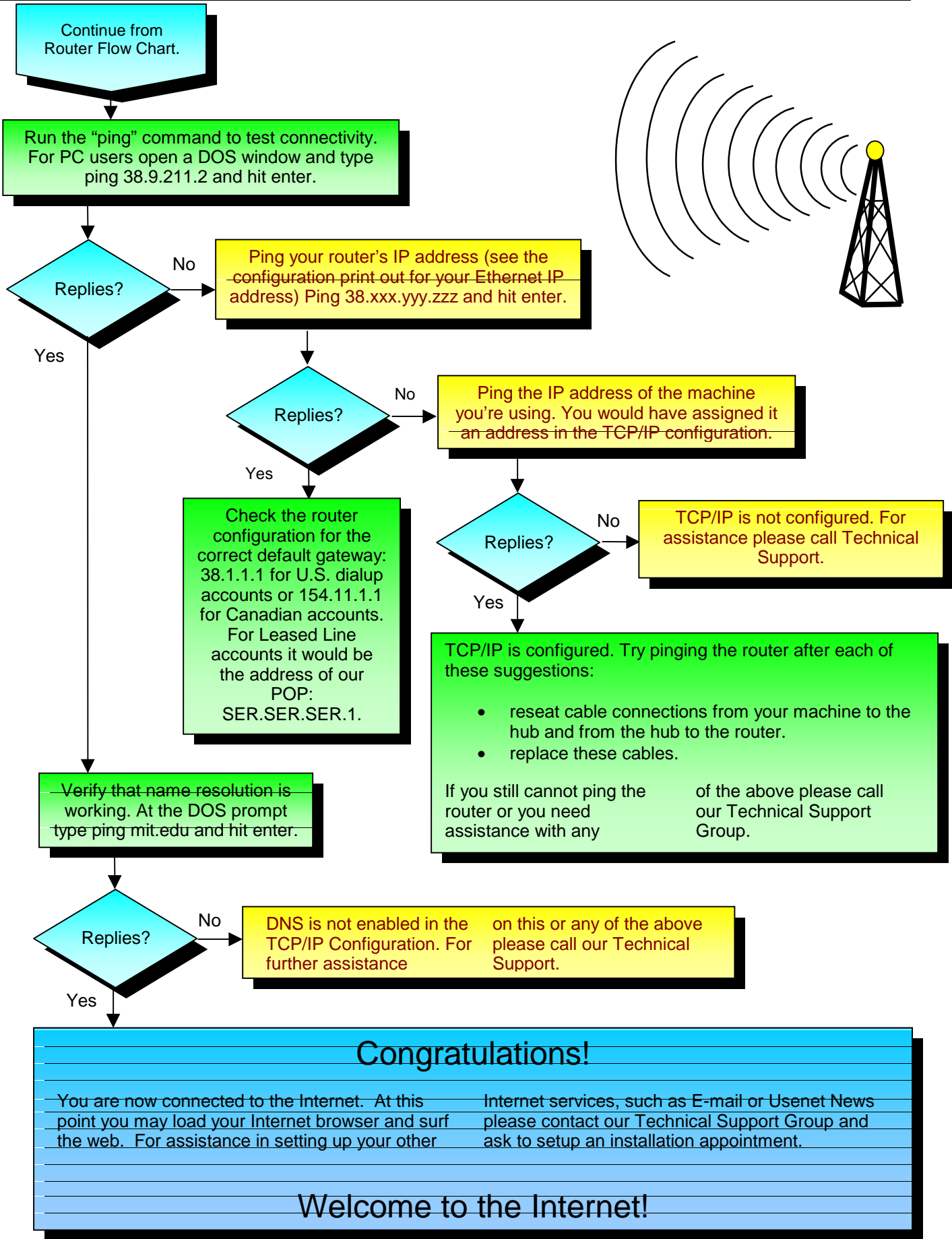
LOS (Loss of Signal) – no signal from telco
 DTR or DTE – no signal from router (power up router **after** CSU/DSU)
 -check cable and/or configuration

If the lights still do not match the diagrams above, troubleshooting will need to be completed by our

Technical Support Group with you and/or the Telephone Company.

Check Connectivity. See Connectivity Flow Chart.

Connectivity:



Configuring the MicroRouter 1220i – Leased Line

There are two ways to connect to the 1220i for command line access:

- Connecting a console to the AUX port of the router.
- Telnetting to the IP address of the Ethernet port.

Ports:

- Two Ethernet Interfaces with 10baseT connection
- One Serial Wan port (RS232)
- One Serial Wan port (v.35)
- One Serial port (for console)

The MR1220i comes with two cables, one to connect the console and one to connect the WAN:

- One cable comes with a male DB-25 connector (this is the Data or WAN cable).
- The other has a female DB-25 at one end (this is the AUX or Console cable).

The Console cable should be plugged into the back of the router in the port labeled Console. The terminal software should be set to 9600,8,none,1. When you connect the console, and the router is plugged in, you can turn it on and watch it boot.

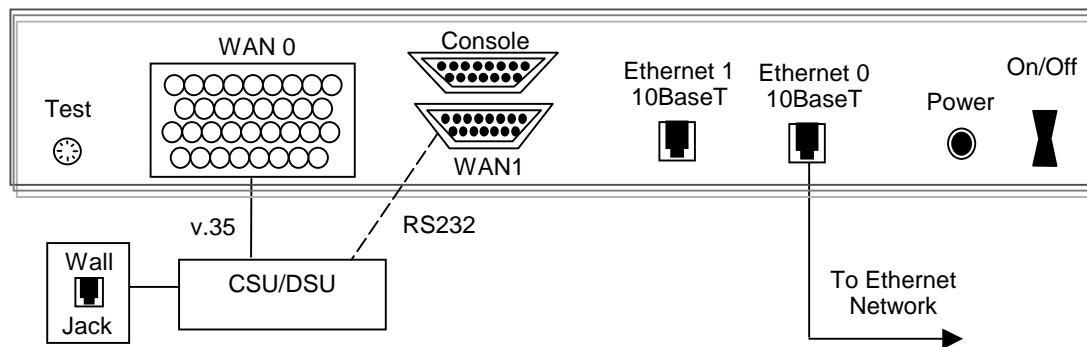
You will get the prompt:

```
System initialization complete.  
Enter Password: letmein
```

There are two modes in the shell software:

- Standard mode-This is used to display configuration information and statistics. The standard mode prompt ends with the > character.
- Enhanced mode-To make changes to the configuration you must be in the enhanced mode. It's prompt ends with the # character. You can enter the enhanced mode by issuing any 'set' command or by issuing the 'enhanced' command. You will be prompted to enter the password again. Once in the enhanced mode you can begin to configure the router.

Connect the router as in the diagram (Fractional T1 must use WAN 0 via v.35 cable):



Configuring the MicroRouter 1220i – Leased Line (cont'd)

The following commands can be used from a terminal session or telnet from either the LAN or through the FR RELAY.

Type the commands as shown. Type return at the end of each line. Variables used include POP, SER, DLCI, and LAN. All other entries are to be typed as shown.

Put router in Enhanced Mode. From the command prompt, type "en" and then reenter password. Select the appropriate configuration from the following:

Pre OS 4.0.1 (v.35)

```
interface wan b
set wan mode off
interface wan a
set ip on
set ip wan numbered
set ip wan notrigger
set ip address POP.POP.POP.SER
set ip mask 255.255.255.0
set ip broadcast POP.POP.POP.255
set ip flags rip1
set frelay dlci DLCI ip map POP.POP.POP.1 Broad
set frelay maint ANNEXD 10
set frelay mtu 1500
set wan mode frelay
set wan connect mode dedicated
set wan serial type sync External_tx_clock
reset ip routing 0.0.0.0 0.0.0.0 config
add ip route 0.0.0.0 0.0.0.0 POP.POP.POP.1 1 config
interface bridge
set ip off
interface ethernet b
set bridge off
interface ethernet a
set bridge off
set ip on
set ip address LAN.LAN.LAN.1
set ip mask 255.255.255.0
set ip broadcast LAN.LAN.LAN.255
set ip flags rip1
set sys log level 7
set password yourpassword
set system name DOMAIN
save
```

Pre OS 4.0.1 for 56K Service (RS232)

```
interface wan a
set wan mode off
interface wan b
set ip on
set ip wan numbered
set ip wan notrigger
set ip address POP.POP.POP.SER
set ip mask 255.255.255.0
set ip broadcast POP.POP.POP.255
set ip flags rip1
set frelay dlci DLCI ip map POP.POP.POP.1 Broad
set frelay maint ANNEXD 10
set frelay mtu 1500
set wan mode frelay
set wan connect mode dedicated
set wan serial type sync External_tx_clock
reset ip routing 0.0.0.0 0.0.0.0 config
add ip route 0.0.0.0 0.0.0.0 POP.POP.POP.1 1 config
interface bridge
set ip off
interface ethernet b
set bridge off
interface ethernet a
set bridge off
set ip on
set ip address LAN.LAN.LAN.1
set ip mask 255.255.255.0
set ip broadcast LAN.LAN.LAN.255
set ip flags rip1
set sys log level 7
set password yourpassword
set system name DOMAIN
save
```

Key:

LAN.LAN.LAN.LAN = Your router IP address
LAN.LAN.LAN.0 = Your class C network
LAN.LAN.LAN.255 = Your broadcast address
POP.POP.POP.SER = Your router serial IP address
POP.POP.POP.1 = Local POP IP address
POP.POP.POP.255 = Your serial IP broadcast address
DLCI = Customer DLCI number
DOMAIN = Your domain name

Configuring the MicroRouter 1220i – Leased Line (cont'd)

OS 4.0.1 (v.35)

```
[ General ]
RouterName           = DOMAIN
EthernetAddress      = 00:00:a5:4c:85:00
SoftwareVersion      = MicroRouter 1220i V4.0.1
RouterType           = MicroRouter 1220i
ConfiguredFrom       = Command Line, from
                      198.41.12.70
Password             = yourpassword
ConfiguredOn         = Timeserver not configured
```

```
[ Logging ]
Enabled              = TRUE
Level                = Notice
LogToAuxPort         = TRUE
LogToSysLog          = FALSE
```

```
[ IP Wan 0 ]
RIPVersion           = V1
RIPIn                = Off
RIPOut               = On
IPBroadcast          = POP.POP.POP.255
SubnetMask           = 255.255.255.0
IPAddress            = POP.POP.POP.SER
Mode                 = Routed
Numbered             = On
Updates              = Periodic
```

```
[ Link Config Wan 0 ]
Mode                 = FrameRelay
ConnectMode          = Dedicated
Dialing              = AT
Droplnact            = 10
DialIn               = TRUE
DialOut              = FALSE
```

```
[ V.35 Interface Wan 0 ]
TxInternal           = FALSE
FlowCntl             = None
```

```
[ IP Wan 1 ]
Mode                 = Off
[ Link Config Wan 1 ]
Mode                 = Off
[ IP Ethernet 0 ]
Mode                 = Routed
IPAddress            = LAN.LAN.LAN.LAN
SubnetMask           = 255.255.255.0
IPBroadcast          = LAN.LAN.LAN.255
RIPVersion           = None
RIPIn                = FALSE
RIPOut               = FALSE
```

```
[ Frame Relay Wan 0 ]
MaintProtocol        = annexd
MTU                  = 1500
PollingFrequency     = 10
DLCI                 = DLCI
Ip                   = POP.POP.POP.1
```

```
[ IP Static ]
0.0.0.0 0.0.0.0 POPIP.1 1 REDIST =RIP
```

OS 4.0.1 for 56K Service (RS232)

```
[ General ]
RouterName           = $domain$
EthernetAddress      = 00:00:a5:4c:85:00
SoftwareVersion      = MicroRouter 1220i V4.0.1
RouterType           = MicroRouter 1220i
ConfiguredOn         = Timeserver not configured
Password             = yourpassword
ConfiguredFrom       = Command Line, from
                      Console
```

```
[ Logging ]
Enabled              = TRUE
Level                = Notice
LogToAuxPort         = TRUE
LogToSysLog          = FALSE
```

```
[ IP Wan 0 ]
Mode                 = Off
```

```
[ Link Config Wan 0 ]
Mode                 = Off
```

```
[ IP Wan 1 ]
Updates              = Periodic
Numbered             = On
Mode                 = Routed
IPAddress            = POP.POP.POP.SER
SubnetMask           = 255.255.255.0
IPBroadcast          = POP.POP.POP.255
RIPOut               = On
RIPIn                = Off
RIPVersion           = V1
```

```
[ Link Config Wan 1 ]
DialOut              = Off
AlwaysUp             = On
ConnectMode          = Dedicated
Mode                 = FrameRelay
```

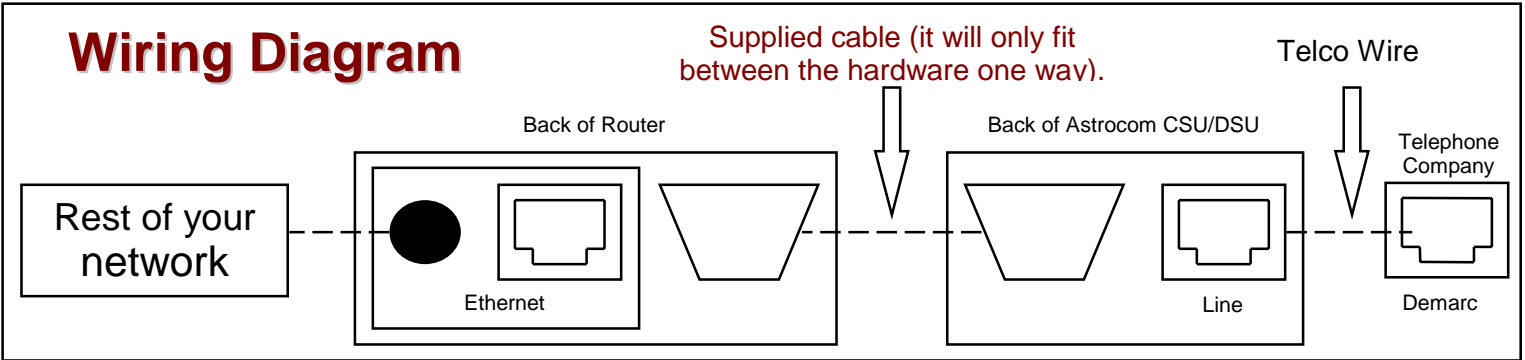
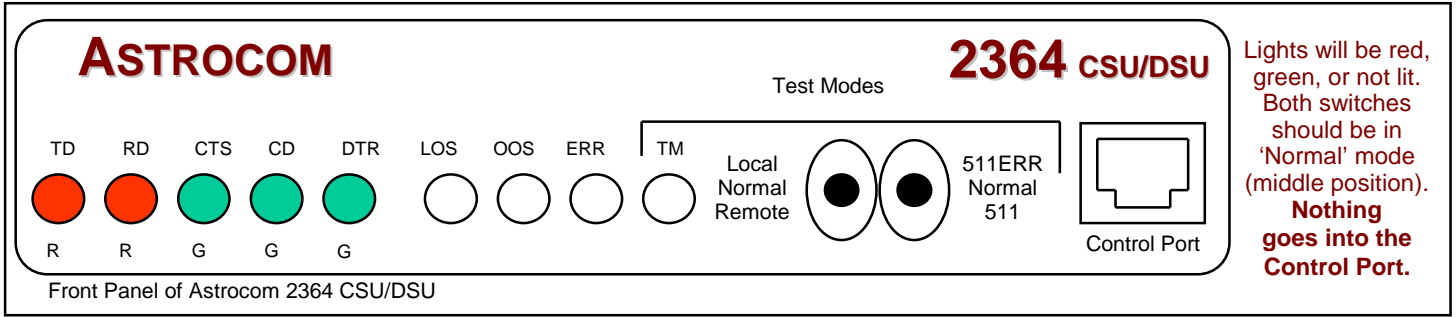
```
[ RS232 Interface Wan 1 ]
Baud                 = 56000
LinkType             = Sync
```

```
[ IP Ethernet 0 ]
RIPOut               = Off
RIPIn                = Off
RIPVersion           = None
IPBroadcast          = LAN.LAN.LAN.255
SubnetMask           = 255.255.255.0
IPAddress            = LAN.LAN.LAN.1
Mode                 = Routed
```

```
[ Frame Relay Wan 1 ]
DLCI                 = DLCI
Ip                   = POP.POP.POP.1
```

```
[ IP Static ]
0.0.0.0 0.0.0.0 POPIP.1 1 REDIST =RIP
```

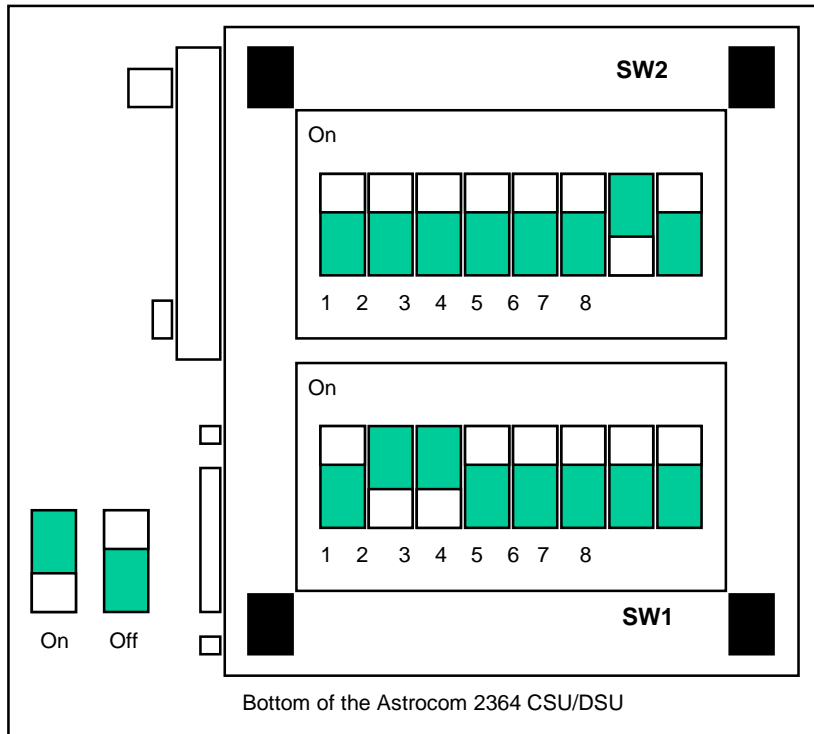
Astrocom Troubleshooting



Troubleshooting your connection and hardware: What you should see:

1) Confirm the settings on the bottom of the Astrocom. See diagram below.

	TD	RD	CTS	CD	DTR	LOS	OOS	ERR	TM
2) Plug in the power cord only and turn it on.	R	R	G	R	---	R	---	---	---
3) Put it into local loopback mode (put the left dip switch up).	R	R	G	G	---	---	---	---	R
4) Do hard loop (both switches to normal, put loop plug in line port).	R	R	G	G	---	---	---	---	---
5) Leave settings as above, and put 511ERR switch to up.	R	R	R	G	---	---	---	flash	R
6) Move switches to normal, and now plug in actual Telco circuit.	R	R	G	G	---	---	---	---	---
7) Plug router in to the CSU and turn it on.	R	R	G	G	G	---	---	---	---



Important Circuit Information

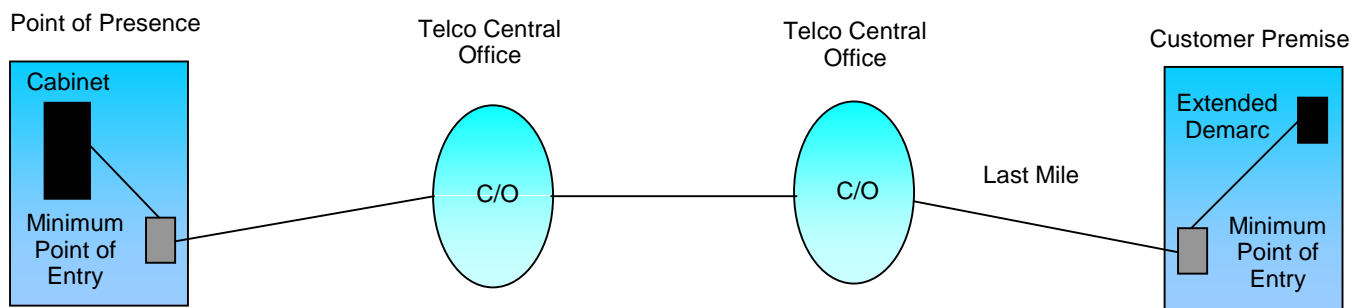
This document is designed to give you a general idea of what is involved in building a circuit for your Internet use.

You will be receiving weekly status updates which include the following dates concerning your Leased Line Circuit:

- Date the circuit was ordered by us.
- Estimated date of circuit installation (unconfirmed)
- Scheduled date of circuit installation (if provided by the telco)
- Date circuit turn up was accepted by our Network Operations Group

Once the circuit has been accepted by NOPs you will receive an “available” message indicating that the circuit is ready and to call our Corporate Installations Group to setup your initial appointment.

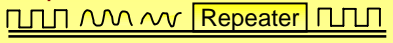
Please be aware that the circuit is not ready until you receive this message. It is often thought that when the circuit is installed at your site that all is ready to go. Sometimes it is, sometimes it is not. The following is a simple diagram of a circuit:



General Process:

1. The circuit is ordered by us with the telco. The telco “designs” the circuit from our Point of Presence (POP) to your site’s Minimum Point of Entry (MPOE).
2. The telco completes the circuit from our POP, through the Central Office(s), to your MPOE. An extended demarc needs to be run from the MPOE to your equipment room which is usually handled by the telco.
3. When the telco is done they will contact us to test the line. When test is complete and satisfactory you will be sent a message asking you to setup your initial appointment.

Some Pitfalls:

1. Due to timing, design changes may be required at one or more Telco Central Office.
2. Facilities problems occur, usually in the “Last Mile.” For example, construction requirements, repeaters required to “clean up” the signal.  **Repeater**
3. All looks ready to go but you still cannot get a good connection. It may be that a loop has been left at one of the Telco Central Offices not allowing the signal to reach your site. We have no way of knowing this at the time of testing but our Operations Group will work with the Telco to resolve.