

# Fratch Multipath-IP STU

## Installation Guide: Ethernet

This is a quick start guide for installing and connecting a Multi-path IP STU (referred to as a STU in this document) to the Multipath-IP network via an Ethernet connection.

|     | Prior to installation                                                                                                                                                                                                                                                                                                                              | Page |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| i   | PRE-STEP 1 Contact the central monitoring station and obtain the <i>UDP port</i> and the <i>Multipath-IP Network Key</i> .                                                                                                                                                                                                                         | 2    |
| ii  | PRE-STEP 2 Contact the client site and request that the IT administrator: <ul style="list-style-type: none"> <li>• Reads the Multipath-IP Network Administrator's Guide</li> <li>• Opens the necessary UDP ports</li> <li>• Sends details of the desired IP addressing scheme</li> <li>• Runs the Multipath-IP Network Test application</li> </ul> | 2    |
| iii | PRE-STEP 3 Send the plan activation form to the Central Monitoring Station <b>at least 24 hours prior to the installation</b> .                                                                                                                                                                                                                    | 2    |

### On Site Installation

|   |                                                                                              |   |
|---|----------------------------------------------------------------------------------------------|---|
| 1 | STEP 1 Run the Multi-path-IP Network Test application on the client's network.               | 3 |
| 2 | STEP 2 Connect the Antenna, Plug Pack, Battery, Communications to Alarm Panel and PSTN Line. | 3 |
| 3 | STEP 3 Change the Phone number on the Alarm Panel to a single digit.                         | 4 |
| 4 | STEP 4 Power up the STU and check for connection to the GSM network.                         | 4 |
| 5 | STEP 5 Connect the STU to the Ethernet network.                                              | 6 |
| 6 | STEP 6 Contact the Central Monitoring Station and enrol the STU.                             | 6 |
| 7 | STEP 7 Perform the minimum suggested site commissioning tests for Ethernet.                  | 7 |

Appendix A and B provide additional troubleshooting tips. See pages 8 and 12.

**Note**

The pre-installation steps should be completed *before visiting the client site*. After installation, standard site commissioning tests should be completed.



## Detailed Instructions: Pre-Install



### Obtain the UDP Port & Network Key from the Monitoring Station

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1. Contact the Central Monitoring Station and request the UDP Port number that is used by the Central Monitoring Station for Multipath-IP communications.
2. Request the *Multipath-IP Network Key*.



### Liaise with Client Site IT Administration

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3. **Ask the IT Administrator to run the Multipath-IP Network Test application.** The Multipath-IP Network Test application checks that a UDP connection is available between the client's local network and the monitoring station. In order to test the connection, the test application must be loaded onto a PC in the client's premises. This PC should be connected to the client's Ethernet network at the same connection point that the Multipath-IP STU will be connected. If the test fails, confirm with your IT administrator that the UDP ports are open (see step 4 below).

**Note:** In order to run this application the *Multipath-IP Network Key* obtained in step 2 is required to be entered.

The test application can be downloaded from [www.innerrange.com/Downloads/NTP.exe](http://www.innerrange.com/Downloads/NTP.exe)

A document specifically for network administrators can be downloaded from the Inner Range website at: [http://www.innerrange.com/Downloads/MIP\\_ITFAQ.pdf](http://www.innerrange.com/Downloads/MIP_ITFAQ.pdf)

It is recommended that this document be forwarded to the IT administrator at the client site.

4. **If the ports are closed, request that the UDP ports be opened.** Ensure the firewall protecting the local network has the specific UDP port nominated by the Central Monitoring Station opened for outgoing/incoming packets. Retry step 3 once completed.
5. **Obtain the IP addressing scheme.** The IT administrator at the client site will specify that the STU's will use static or dynamic IP addressing.
  - If dynamic IP addressing is used then no IP address details are required.
  - If static IP addressing is used, then the **IP address, subnet mask and gateway address** must be provided by your IT administrator. These addresses will look like four numbers separated by periods (for example, 192.168.0.1). These addresses are to be noted on the plan activation form (Included in the box).



### Submit the Plan Activation Form

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1. Ensure the **Plan Activation Form** (included in the box) has been submitted to the Central Monitoring Station **AT LEAST 24 HOURS PRIOR** to the installation.

# Detailed Instructions: On Site

## 1

### Run the Multipath-IP Network Test Application

The Multipath-IP Network Test application checks that a UDP connection is available between the client's local network and the Central Monitoring station. In order to test the connection, the test application should be loaded onto a PC in the client's premises. This PC should be connected to the client's Ethernet network at the same connection point that the STU will be connected. If the test fails, confirm with your IT administrator that the UDP ports are open.

## 2

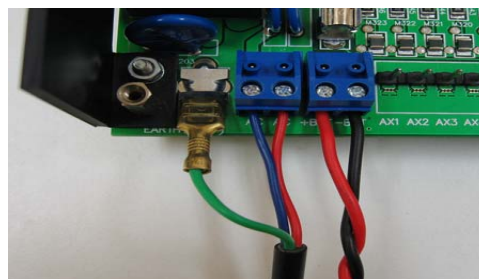
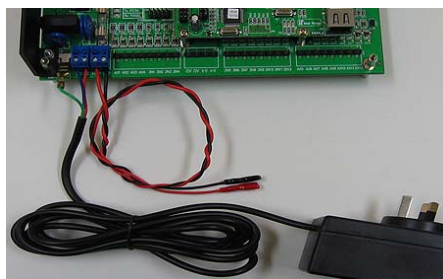
### Connect the Antenna to the STU

1. Connect the antenna to the GSM modem.
2. Ensure the antenna is "finger tight" only. **DO NOT OVERTIGHTEN.**
3. **DO NOT** cut, or otherwise modify the cable.
4. Ensure the cable is free of any kinks or sharp bends.



### Connect the Plug Pack and Battery Leads

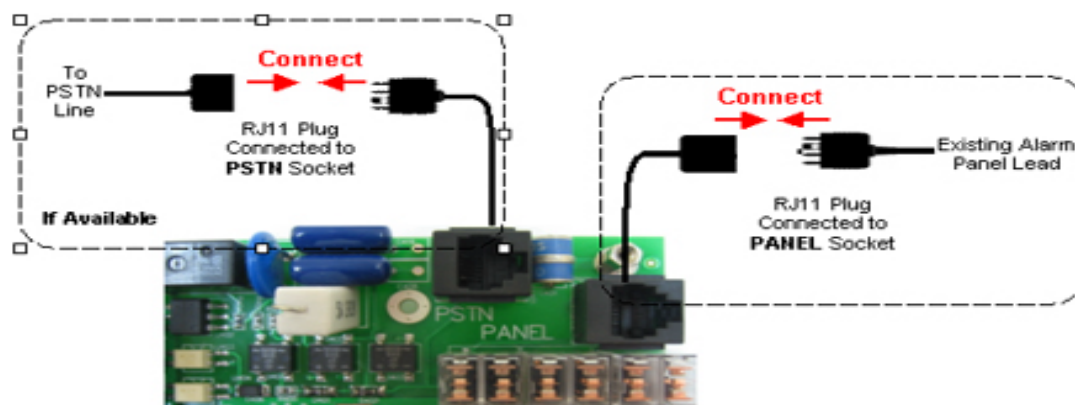
1. Attach the Spade socket to the green earth lead of the plug pack.
  2. Attach the 2 way terminal block to the red and blue leads of the plug pack.
  3. Connect terminal block and spade socket now attached to the plug pack, to the connectors marked AC and Earth on the STU.
  4. Attach the two way terminal block to the red and black battery leads.
  5. Connect the terminal block with the battery leads to connectors on the STU marked +BAT, -BAT.
- **DO NOT CONNECT THE PLUG PACK TO MAINS POWER YET.**



## Connect the Panel and PSTN Line

1. Connect the RJ11 connector of the phone cable to the RJ11 socket of the STU labelled "Panel".
2. Connect the 604 socket of the phone cable to the alarm panel.  
(Steps 3 and 4 are recommended but not essential)
3. Connect the RJ11 connector of the phone cable to the RJ11 socket of the STU labelled "PSTN".
4. Connect the 601 plug of the phone cable to the PSTN network.

It is highly recommended that a PSTN (Phone line) be connected to Multipath-IP installations, as the PSTN line provides an additional backup path for alarm communications and allows remote dialling into the alarm panel for programming changes.



## 3

### Change the Phone Number in the Alarm Panel to a Single Digit

(This step is recommended but not essential)

1. Change the programming in the alarm panel so that the reporting telephone number (of the Central Monitoring Station receiver) is a single digit. Any single digit is OK, for example change '0398091836' to '1'.

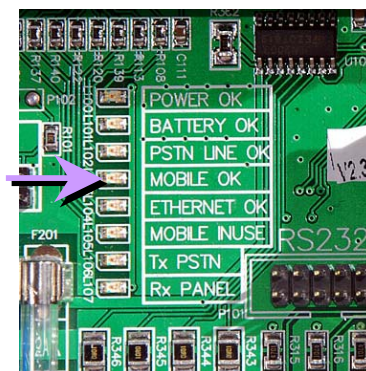
It is highly recommended that a single digit be programmed into the alarm panel as this speeds up the communications between the alarm panel and the STU and hence the overall reporting time to the Central Monitoring Station.

## 4

### Power Up the STU and Check for Connection to the GSM Network

1. Connect the plug pack to the 240VAC power source.
2. Attach the battery clips to the terminals of a 12V 7AH backup battery. (The battery is not supplied with the Multipath-IP STU)
3. Check for connection to the GSM network. The "Mobile OK" LED will initially flash. When the STU has successfully connected to the GSM network, then the "Mobile OK" LED will illuminate for approximately 5 seconds and then flash. (This 5 second illumination and flash sequence, will repeat every 10 seconds)

*After 1 minute, if the "Mobile OK" LED does not enter the 5 second illumination cycle, then relocate the antenna to a position with greater GSM signal strength.*



4. Check for adequate GSM signal strength. Once the "Mobile OK" LED has entered the 5 second illumination cycle, then the number of flashes represents the GSM signal strength.
  - 1 or 2 flashes represents low or unacceptable GSM signal strength.
  - 3 flashes represents adequate GSM signal strength.
  - 4 or 5 flashes represents good GSM signal strength.

**Note**

If the "Mobile OK" LED shows low GSM signal strength (i.e. 1 or 2 flashes), then relocate the antenna to a position with greater GSM signal strength.

**Note**

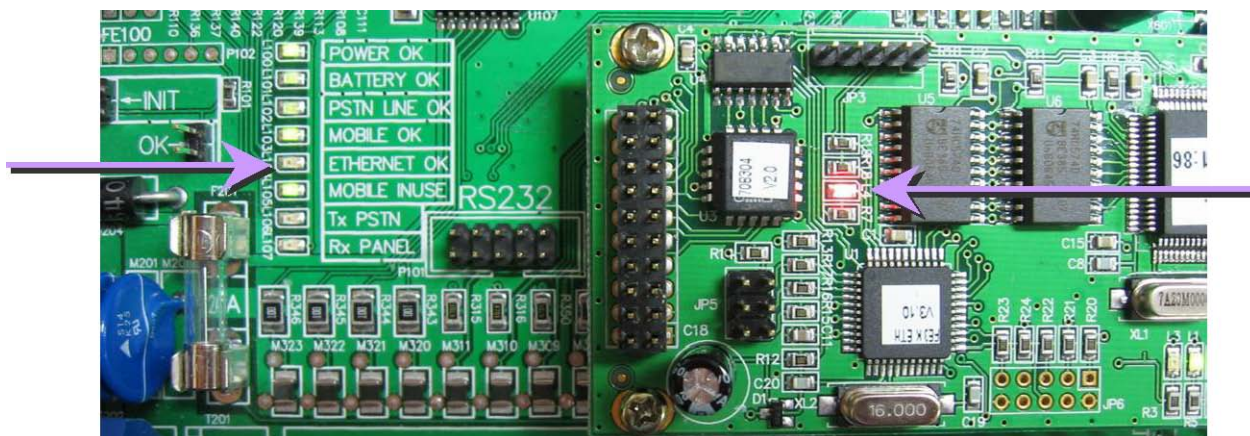
The signal level on a mobile phone can also be used to check the signal strength at different positions around a site. When relocating the GSM antenna, please allow 30 seconds for the new signal strength to be displayed.

5. In order to check the signal strength of the Backup SIM card (if it is available) the following steps can be used:
  - a. Connect a shorting link across the "OK" pins of the Multipath-IP STU.
  - b. Immediately the "PWR OK" and "BATTERY OK" lamps will begin flashing alternately and all other lamps will turn off.
  - c. In order to use the Backup SIM card the modem must first reset. Normally the modem takes about 1 minute to reset and display the signal strength of the Backup SIM card.
  - d. The "MOBILE OK" lamp now represents the status of the Backup SIM card in the same way as described above.
  - e. Repeat the steps above in order to maximise the signal strength for the Backup SIM card by moving the antenna location.
  - f. When this test has been completed, remove the shorting link from the "OK" pins. The "PWR OK" and "BATTERY OK" lamps will immediately stop flashing and all of the other lamps will again represent their labelled status.
  - g. Again the modem will take approximately 1 minute to reset and use the Primary SIM card.
  - h. The swapping and checking of SIM cards can be repeated as many times as necessary.

## 5

## Connect the STU to the Ethernet Network

1. Connect an RJ45 cable from the Multipath-IP STU to a network connection point.
2. Check that the network has been detected. The "L4" LED on the Ethernet card should illuminate.



If the "L4" LED is flashing, no Ethernet carrier has been detected.

- Verify correct operation of the Ethernet cable with a cable tester.
- Replace the Ethernet cable.
- Ensure that the correct Ethernet cable is being used for the application (crossover or straight through). Try both cable types if unsure.

Ensure the device is connected to a piece of networking hardware capable of communicating at 10Mbit. (A 10/100Mbit device is sufficient for this, whilst a 100Mbit only device is not).

## 6

## Contact the Monitoring Station and Enrol the Multipath-IP STU

1. Contact the Central Monitoring Station and request that the STU be enrolled (The Central Monitoring station should already have the mobile phone number of the STU. This is required for enrolment. This number is on the plan activation form.)
2. Receive confirmation from the Central Monitoring Station that the STU has been successfully enrolled.
3. Check that the "Ethernet OK" LED is on.

If the "Ethernet OK" LED is off there is an IP addressing problem.

- If the Multipath-IP STU is configured for dynamic IP addressing:
  - Contact the IT Administrator or Customer to ensure DHCP is enabled.
  - Connect the STU's Ethernet cable to a laptop computer configured for dynamic IP Assignment. Check to ensure an IP Address is allocated. (See Appendix A of the manual for details of this procedure) If an IP address is not allocated then contact the IT administrator and inform them that there appears to be a problem accessing the DHCP service.
  - If an IP address is allocated, reconnect the Ethernet cable to the Multipath-IP STU and retry the enrolment process.

- If the Multipath-IP STU is configured for static IP Addressing:
  - Ensure that the IP address assigned to the Multipath-IP STU is not being used by another device on the network. Use the ping utility from another computer on the network whilst the Multipath-IP STU is disconnected. (See Appendix B of the manual for details of this procedure)

If the "Ethernet OK" LED is flashing the unit has an IP address but is unable to communicate to the Multipath-IP Server in the Central Monitoring Station.

- Ensure the firewall protecting the local network has the specific UDP port nominated by the Central Monitoring Station opened for outgoing and incoming packets
- Ensure that the Central Monitoring Station currently has Ethernet connectivity with other customers and is not experiencing an outage. Try power cycling the router, modem or other networking hardware.

If the "ETHERNET OK" LED is flashing and the *Multipath-IP Network Test* application was run successfully then please contact Inner Range Tech Support for further information.

# 7

## Minimum suggested site commissioning tests for a Multipath-IP STU using Ethernet

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1. Verify polling on the primary IP path (ETHERNET)
  - a. The STU should be communicating to the Multipath-IP server via ETHERNET. To verify this, ask the Central Monitoring Station to check the Multipath-IP server STU message log, this will show the path that is being used.
  - b. Verify 3 successful polls (no retries) have been received by Multipath-IP server.
2. Verify polling on the secondary IP path (GPRS1)
  - a. Remove Ethernet network cable and STU should start communicating to the Multipath-IP server via GPRS1. To verify this, ask the Central Monitoring Station to check the Multipath-IP server STU message log, this will show the path that is being used.
  - b. Verify 3 successful polls (no retries) have been received by Multipath-IP server.
3. Verify polling on the redundant secondary IP path (GPRS2)
  - a. Remove GSM antenna and wait for "MOBILE OK" lamp to turn off. Replace GSM antenna. After approximately 1 minute the STU should be communicating to the Multipath-IP server via GPRS2. To verify this ask the Central Monitoring Station to check the Multipath-IP server STU message log, this will show the path that is being used.
  - b. Verify 3 successful polls (no retries) have been received by Multipath-IP server.
4. Verify recovery from power failure
  - a. Replace Ethernet network cable.
  - b. Remove power from the STU for approximately 10 seconds then apply power again. After approximately 1 minute the STU should be communicating to the Multipath-IP server via the primary IP path (ETHERNET). To verify this, ask the Central Monitoring Station to check the Multipath-IP server STU message log, this will show the path that is being used.
  - c. Verify 3 successful polls (no retries) have been received by Multipath-IP server.

# Appendix A:

## Checking that DHCP is enabled on a Network

DHCP, or “Dynamic Host Configuration Protocol”, means computers and devices on a network are allocated an “address” automatically. The address is essential for all communications with the device. This is the opposite to “static” address allocation, wherein all devices are configured manually.

One way to test that DHCP is enabled on a network is to try to add a machine to the network and see if the DHCP server gives the machine an address (known as a “DHCP Lease”).

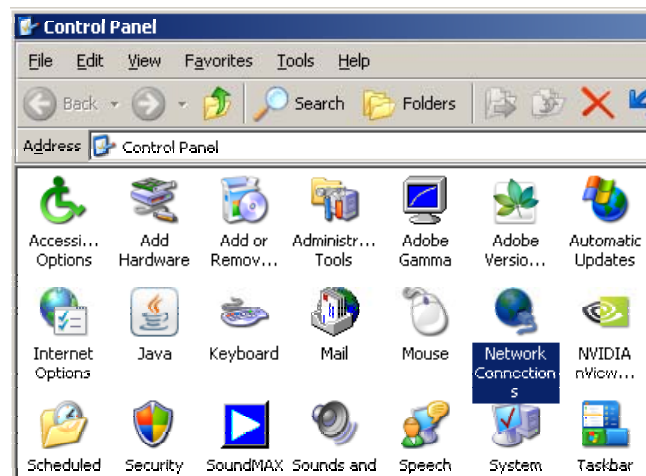
### 1. Set the machine to use DHCP

(Note: the methods and procedures depicted below may vary depending on your version of Microsoft® Windows®).

- a. Select Control Panel from the Windows Start Menu

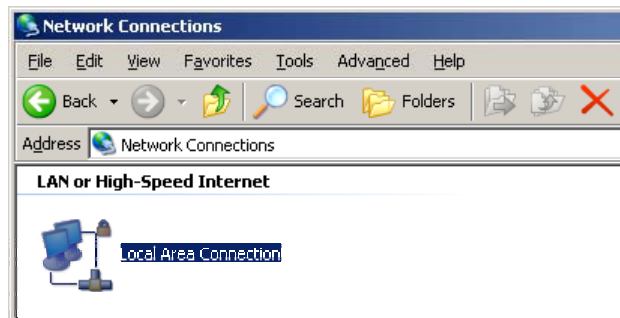


- b. Select Network Connections from the Control Panel

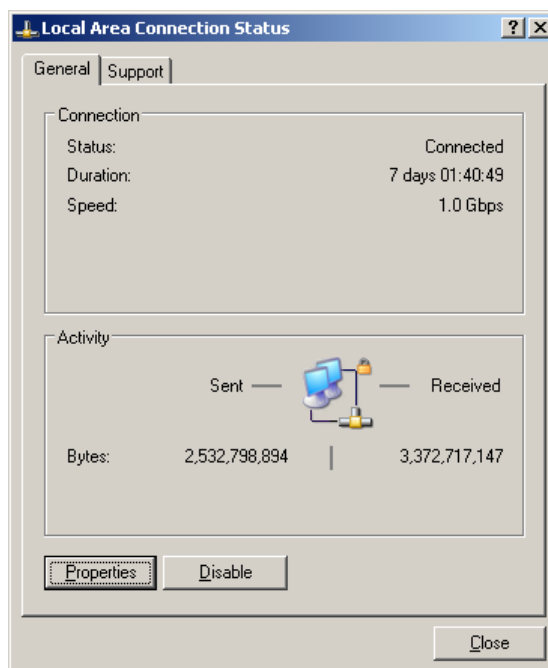


(Continued overleaf...)

- c. Select Local Area Connection. The Status Dialog will appear.

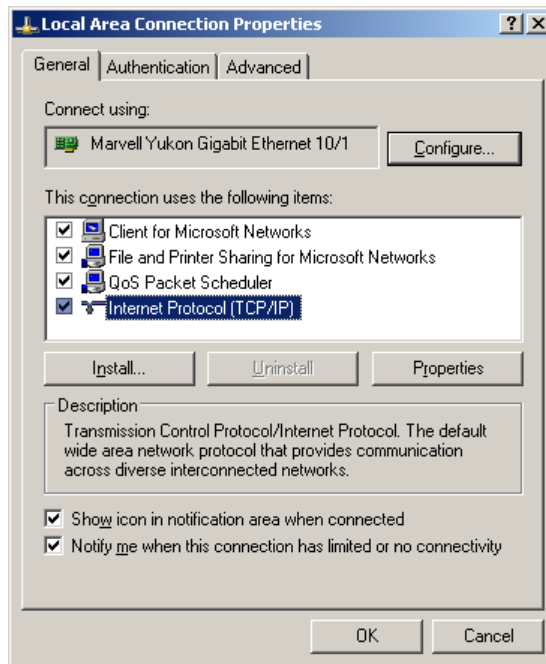


The Status Dialog will appear.

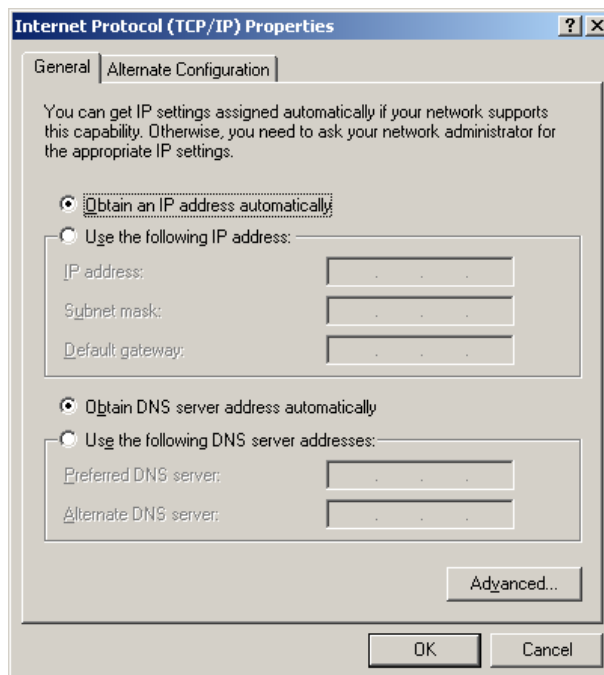


(Continued overleaf...)

- d. Select the Properties button. The Connection Properties Dialog will appear.



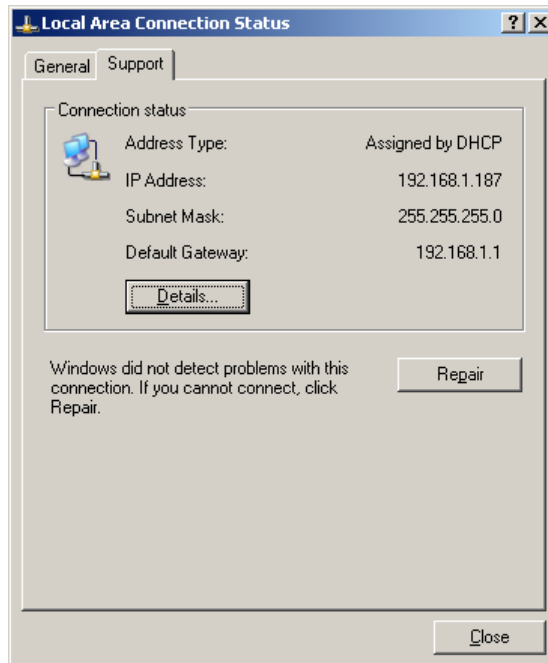
- e. Choose the Internet Protocol (TCP/IP) item from the list and select Properties. Another dialog, TCP/IP Properties will appear. (At this point, it may be wise to take a note of any existing settings, so that they can be reverted back to, if necessary).



- f. On the General tab of the new dialog, ensure that “Obtain an IP address automatically” and “Obtain DNS server address automatically” are selected.
- g. Select OK to close this dialog. Select OK to close the Connection Properties Dialog.

## 2. Check to see that an IP address has been assigned

- a. On the Status Dialog (opened in 1c above), select the Support tab. This will show the type of network connection (DHCP or manual) and other details about the connection.
- b. If the process in step 1 was successful, the dialog will appear as below, showing that:



- c. If the dialog is not as shown in (2b) above, try using the Repair button to refresh the connection. Another dialog will appear whilst the machine takes the necessary steps.
- d. If (2c) above did not appear to result in a successful connection using DHCP, contact the local network administrator. The failure to connect may be due to:
  - i. Some DHCP enabled networks have a register of MAC addresses of network interface devices that are authorised to be on the network. If the MAC address of the machine/STU is not in the register, it will be unable to obtain a DHCP lease from the DHCP server.
  - ii. There could be other network issues. Consult your local network administrator for assistance.

## Appendix B:

### Pinging an IP Address

To test whether an IP address is in use and/or if an IP address is responding to the network, you can attempt to 'ping' it. To ping an IP address using the Windows operating system:

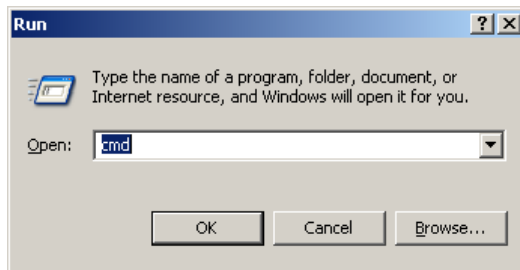
#### 1. Open the command line interface console (aka the 'cmd window')

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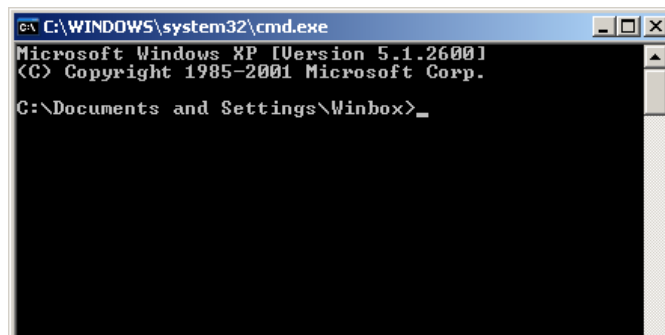
- a. Select Run from the Windows Start Menu.



- b. In the dialog that appears, type in cmd and then select the OK button.



- c. The cmd window will appear:



## 2. Use the 'ping' command to see if the IP address is responding

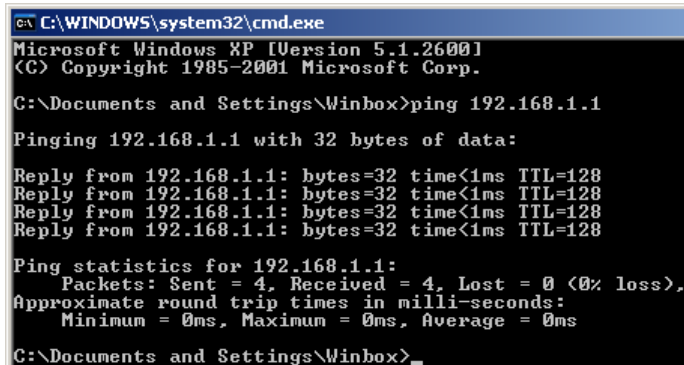
- a. In the cmd window, type in "ping" followed by the IP address of interest then hit Enter. For example, if you wanted to see if 192.168.1.1 was responding, you would type:  
ping 192.168.1.1



```
ca C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Winbox>ping 192.168.1.1
```

- b. The machine will then attempt to raise a response from the target IP address. If successful, the cmd window will look something like:



```
ca C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Winbox>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

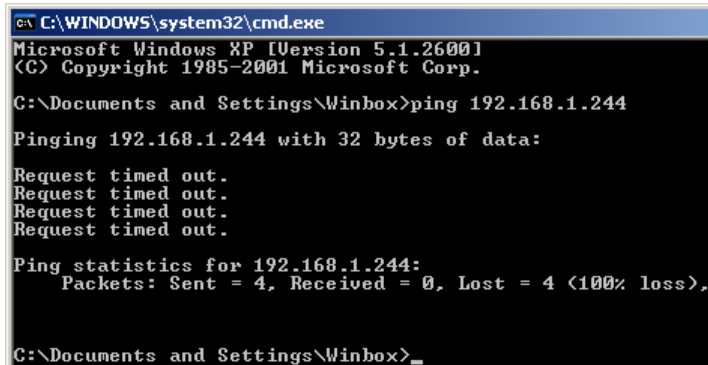
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Winbox>_
```

This means that there is something in the network responding to this IP address.

- c. If the target IP address does not respond, the cmd window may look something like:



```
ca C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Winbox>ping 192.168.1.244

Pinging 192.168.1.244 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.244:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Documents and Settings\Winbox>_
```

This means that there is no device/STU on the network with this IP address, or the device is set up to not respond to a ping. The Multipath-IP STU is always set up to respond to a ping.

**Disclaimer:**

While every effort has been made to ensure the accuracy of this manual, the manufacturer assumes no responsibility or liability for any errors or omissions. Due to ongoing development, this manual is subject to change without notice.