

Hi-Fi JET PRO II Practical Ethernet Guide

Overview

When To Use This Guide

The ultimate goal of this guide is to quickly connect, configure and print to your Roland Hi-Fi JET PRO II using the printer's Ethernet port. That's why we put the word "Practical" in the title. To this end, you will notice that technical terms are kept to a minimum and the instructions are kept as simple and as straight forward as possible. With such a practical goal in mind, this guide limits itself to setup and configuration of only two types of connections - either a computer to printer or a single hub network.

This guide also includes a worksheet on page three. You should print out this Ethernet Configuration Worksheet before starting and use it as a reference for network setup.

When NOT To Use This Guide

This guide limits its scope to just two simple network setups for good reason. This guide is not meant as a networking primer nor does it replace your network administrator. It also does not explain how to share information between computers on the network; it is meant to have one or more computers print to one Hi-Fi JET PRO II.

Please note that this guide will not necessarily help a Hi-Fi JET PRO II user connect to a network managed by a network administrator or an IS department. Attempting to configure your printer onto such a network can be frustrating at best and catastrophic at worst. Because the practical goal of this guide is to allow you to print as quickly as possible, asking your network administrator to configure the Hi-Fi JET PRO II in a complex network is probably the best way to meet this goal.

How do you know if you are dealing with a more complex network? Ask yourself the following questions and if you answer yes to any of them, you should defer setup to your IS professional:

- 1) Do you have a person or department in charge of your network?
- 2) Does your network automatically assign IP addresses using DHCP or BootP?
- 3) Is there a server room or central hub?
- 4) Does your network have a Router or Switch?
- 5) Are you too excited to get your Hi-Fi JET Pro II printing even though your IS department should be setting it up?

If you are not sure whether to answer yes to these questions you should play it safe and ask your IS professional to look over this guide and determine whether he/she should setup the Hi-Fi JET PRO II for you.

How to use this Guide

Before you do anything else, print out the Ethernet Configuration Worksheet (the very next page). This worksheet will allow you to write down and track your IP addresses and your Printer's Ethernet hardware address. You will refer to this worksheet quite often as you work your way through this guide.

Once you've printed out the Ethernet Configuration Worksheet, just follow the guide step-by-step. It will take you through the physical setup of the simple network, help you assign IP addresses to each component on your network, configure your IP setup on each workstation, configure the printer's Ethernet port, and configure Roland ColorRIP software to send your print jobs to the printer.

There are also two helpful appendices. The first appendix will allow you to reset you printer's Ethernet port if necessary. The second appendix is a quick glossary of networking terms.

Your IP Address May Differ

Remember, the IP addresses used here are examples only and may not match the actual IP addresses you will ultimately use. In the two networking scenarios we cover here (computer to printer and single hub network) you can use the IP addresses found in the guide, but only if you started from scratch.

Also, the printer's Ethernet hardware address is specific to the Hi-Fi JET PRO II used as an example in this document and will NOT the be same as your printer's hardware address.

Ethernet Configuration Worksheet

Hardware Checklist

Assigning IP Addresses

Printer to Computer	Printer to Computer
<input type="checkbox"/> Cross-over-cable	
<input type="checkbox"/> Hi-Fi JET PRO II	Hi-Fi JET PRO II ____ . ____ . ____ . ____
<input type="checkbox"/> Computer	Computer ____ . ____ . ____ . ____
Single Hub	Single Hub
<input type="checkbox"/> Ethernet Hub	
<input type="checkbox"/> Hi-Fi JET PRO II	Hi-Fi JET PRO II ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 1 with patch cord	Computer 1 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 2 with patch cord	Computer 2 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 3 with patch cord	Computer 3 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 4 with patch cord	Computer 4 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 5 with patch cord	Computer 5 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 6 with patch cord	Computer 6 ____ . ____ . ____ . ____
<input type="checkbox"/> Computer 7 with patch cord	Computer 7 ____ . ____ . ____ . ____

Setting the Hi-Fi JET PR II's IP Address

Hi-Fi JET PRO Ethernet Hardware Address 00 C0 EB ____ ____ ____

Network Hardware Setup

Printer to Computer

To connect one computer to the Hi-Fi JET Pro II you will need the following three items

- Cross-over-cable
- Hi-Fi JET PRO II
- Computer

1) Locate the Ethernet Port on the back of the Hi-Fi JET PRO II.

It looks like a large phone jack and can be found just above the parallel port.

2) Insert one end of the Ethernet Cross-over Cable into it.

3) Locate the Ethernet port on the computer and plug the other end of the cable into it.

Congratulations, you have just physically setup the most simple of networks. Proceed to the next chapter for network configuration.

Network Hardware Setup (cont'd)

Single Hub

To connect the printer to a single hub you will need the following as a minimum:

- Ethernet Hub
- Hi-Fi JET PRO II
- Computer with patch cord

You can add more computers to your hub, just make sure you also have a patch cord for each computer.

1) Plug-in the power cord for your Ethernet Hub

You should purchase a 10/100 or 100BaseT Hub. Plug in the power adaptor. Most ports come with 4 to 16 ports and perhaps an “uplink” port. For this document, A 5-port LinkSys Hub (Model EFHA05W) was used. This is a 10/100BaseT Hub with five ports and an uplink port.

2) Next obtain as many Ethernet patch cords as there are printers and computers.

3) Locate the Ethernet Port on the back of the Hi-Fi JET PRO II and insert one end of the patch cord into it. Then plug the other end of the cable into the hub.

4) Next locate the Ethernet port on your computer, insert one end of the patch cable into it and the other end into the hub. Repeat step 4 with the next computer(s).

If your computer does not have a corresponding Ethernet port, you will have to purchase Network Interface Card (NIC) before you can proceed. You will need to follow the instructions provided by the NIC’s manufacturer to install and setup network card.

NOTE: Do not use a Ethernet cable (cross-over or patch) longer than 25 feet. Longer cables tend to have more signal degradation resulting in slower printing and/or printing errors. Also try not to have any Ethernet cord near a high voltage power supply.

Assigning IP Addresses

An IP address is a set of four numbers separated by three periods (for example 192.100.10.123). You will need a unique IP address for every hardware device you intend to connect. For the purposes of this guide, you should keep the first three numbers or segments the same and only change the last number. The hub does not require an IP address.

When choosing a number for each segment, keep the values between 2 and 250.

Look over the examples below before you assign your own IP addresses. Use the Ethernet Configuration Worksheet to write down the IP addresses you've assigned. You can use this worksheet to track your IP addresses.

Label your printer or computer with the IP address that has been assigned to it (permanent marker and masking tape will work in a pinch).

Print to Computer

If you are connecting the Hi-Fi JET PRO II to a computer via a cross-over cable, you are dealing with two hardware devices, therefore you will only need two unique IP addresses. You could, for example assign the following IP addresses:

Hi-Fi JET PRO II	<u> 192 </u> . <u> 10 </u> . <u> 10 </u> . <u> 5 </u>
Computer	<u> 192 </u> . <u> 10 </u> . <u> 10 </u> . <u> 10 </u>

Single Hub

If you are setting up a network with a single hub, you will need to assign a unique IP address for every device on the network (not counting the hub). For example, you have a Hi-Fi JET PRO II that you want to connect to a Mac and one PC through a hub. There are three hardware devices, therefore assign three IP addresses:

Hi-Fi JET PRO II	<u> 192 </u> . <u> 10 </u> . <u> 10 </u> . <u> 5 </u>
Computer 1 (Mac)	<u> 192 </u> . <u> 10 </u> . <u> 10 </u> . <u> 10 </u>
Computer 2 (PC)	<u> 192 </u> . <u> 10 </u> . <u> 10 </u> . <u> 11 </u>

As long as your hub has more network ports available (ports not marked as “uplink”) you can continue to add more computers. Make sure you have an Ethernet patch cord for each computer.

Workstation IP Configuration

Macintosh

In Mac OS 9, there are two control panels you will need to configure. It is recommended that you restart your Macintosh after configuring these control panels.

AppleTalk Control Panel

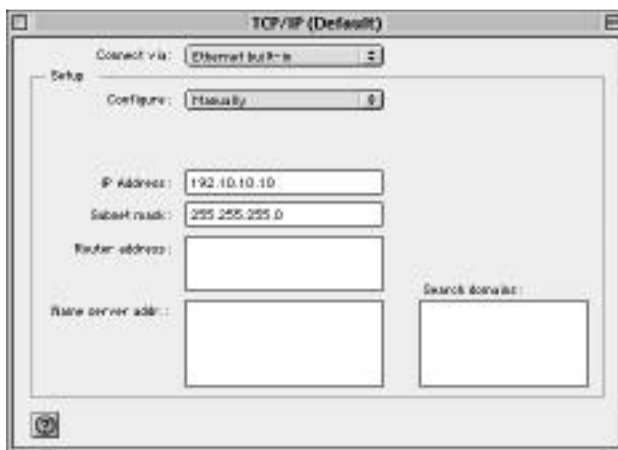
- 1) Locate the **AppleTalk** Control Panel (**Apple Menu>Control Panels>AppleTalk**)
- 2) If it prompts you to activate AppleTalk, click **YES**
- 3) Choose **Ethernet**
- 4) Close and save settings.



Here's how your AppleTalk settings should look when you're done.

TCP/IP Control Panel

- 1) Locate the **TCP/IP** Control Panel (**Apple Menu>Control Panels>TCP/IP**)
- 2) Set Connect via to **Ethernet**
- 3) Set Configure to **Manually**
- 4) Type in your chosen IP address (refer to your Ethernet Configuration worksheet)
- 5) Enter **255.255.255.0** as your Subnet Mask
- 6) Close and save settings



Here's how your TCP/IP settings should look when you're done.

We chose 192.10.10.10 as an example.

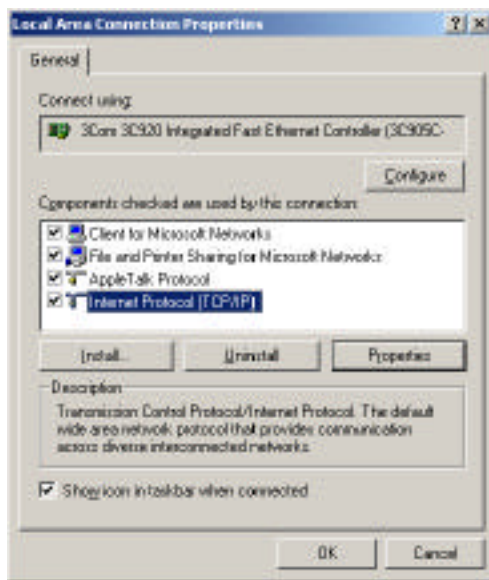
Workstation IP Configuration (cont'd)

Windows

With virtually all versions of Windows, you will need to locate the Network Control Panel. The following examples were taken from a Windows XP system and should apply to Windows 2000 as well. It is recommended that you restart after reconfiguring your network settings

Internet Protocol (TCP/IP) Control Panel

- 1) Locate the **Network Control Panel (Start>Settings>Control Panel>Network Connections)**
- 2) Right click on **Local Area Connection** and select **Properties**
- 3) Select **Internet Protocol (TCP/IP)** and click on the **Properties** button

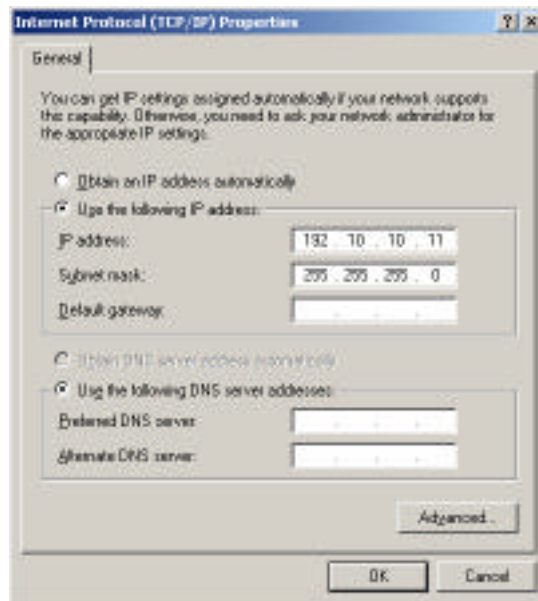


You will need to select Internet Protocol and then click on the Properties button to assign an IP address in Windows.

- 4) Click on **Use the following IP address:**
- 5) Type in your chosen IP address (refer to your Ethernet Configuration worksheet)
- 6) Enter **255.255.255.0** as your Subnet Mask
- 7) Click **OK**

Workstation IP Configuration (cont'd)

Windows (cont'd)



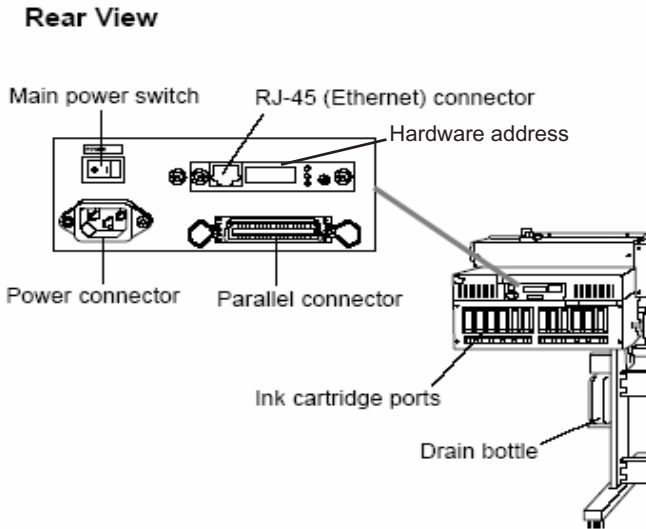
Here's how your TCP/IP settings should look when you're done.

We chose 192.10.10.11 as an example.

Setting the Hi-Fi JET PRO II's IP Address

Locating the Hi-Fi JET PRO II's Hardware Address

Now that you have configured your workstation IP addresses. You will need to assign an IP address for the Hi-Fi JET PRO II. First, you will need to locate the port's hardware address. This is located underneath the serial number of the printer, next to the Ethernet connector.



Locate the Hardware address on the back of the printer, next to the Ethernet connector.

We chose 00 C0 EB 03 C2 6F as an example.

Please write those twelve digits down on your Ethernet Configuration worksheet (the first six digits have already been written down for you).

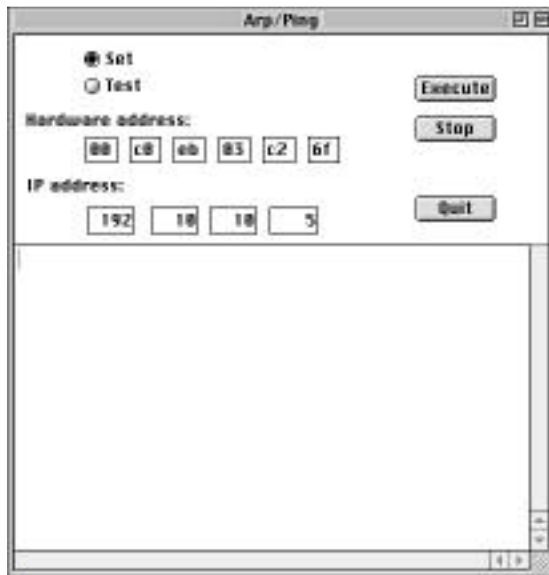
00 C0 EB 03 C2 6F

You can now configure the printer's Ethernet port once from either a Macintosh (with the Arp/Ping Utility) or a PC.

From Macintosh

You will use a program called Arp/Ping located on the Roland Print Server CD. Copy the program to your hard drive.

- 1) Launch the Arp/Ping utility
- 2) Select the **Set** radial button to activate the Hardware address fields.
- 3) Input the hardware address you have previously written down into the proper fields.
- 4) Type in your chosen IP address (refer to your Ethernet Configuration worksheet)
- 5) Click **Execute**

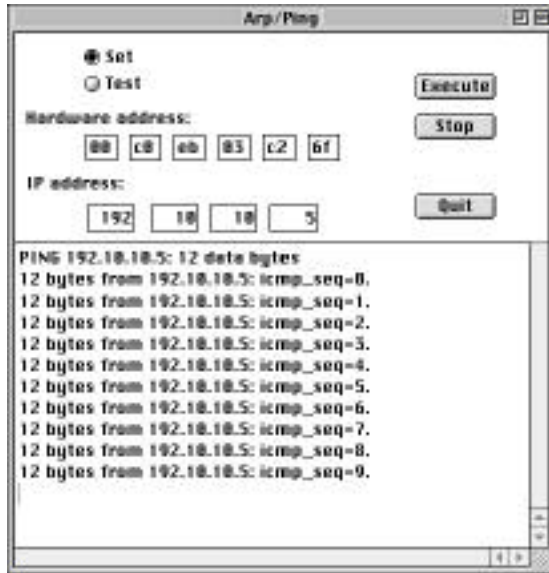


We chose 00 C0 EB 03 C2 6F and 192.10.10.5 as examples. Your screen may look slightly different from the one pictured here.

Setting the Hi-Fi JET Pro II's IP Address (cont'd)

From Macintosh (cont'd)

If the printer's Ethernet port has been properly configured, you should see the following screen:



The Arp/Ping utility will configure the printer's Ethernet port and automatically ping (verify) the printer's IP address.

At this point, your printer has been assigned its new IP address.

Quit Arp/Ping and proceed to the Roland ColorRIP Setup.

Setting the Hi-Fi JET Pro II's IP Address (cont'd)

From Windows

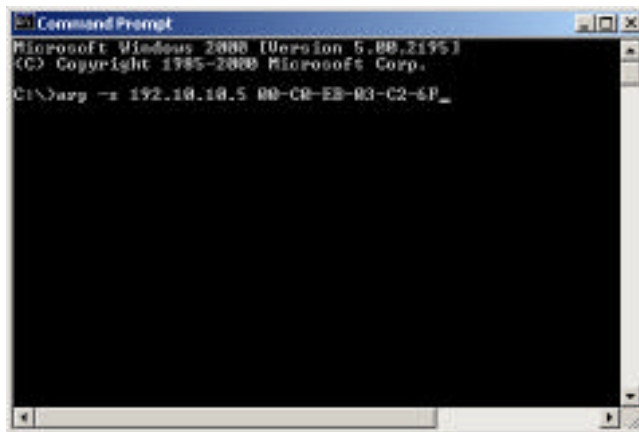
You can configure the printer's Ethernet port from a PC using the Command Prompt. DOS commands are very specific, you must know both the printer's assigned IP address and the printer's Ethernet hardware address before proceeding.

- 1) Launch the Command Prompt

Typically found using the following path: Start Menu>Programs>Accessories>Command Prompt

- 2) Locate the IP address you have assigned to the printer (refer to your Ethernet Configuration worksheet)
- 3) Locate the printer's Ethernet hardware address (refer to your Ethernet Configuration worksheet)
- 4) Type: `arp -s [printer's IP address] [printer's hardware address]`

For example: `arp -s 192.10.10.5 00-C0-EB-03-C2-6F`



Following the syntax is very specific when typing in a DOS Command.

Make sure you have a space between each element of the command.

Only use zeros and not the letter "o" for both the IP and the Ethernet hardware address.

We chose 00 C0 EB 03 C2 6F and 192.10.10.5 as examples. Your screen may look slightly different from the one pictured here.

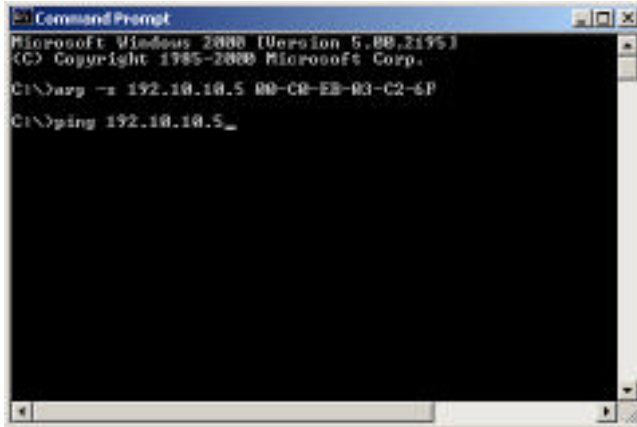
Setting the Hi-Fi JET Pro II's IP Address (cont'd)

From Windows (cont'd)

Next you will need to verify or “ping” the IP address you have just assigned.

- 1) Launch the Command Prompt again if necessary
- 2) Type: ping [printer's IP address]

For example, ping 192.10.10.5



```
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

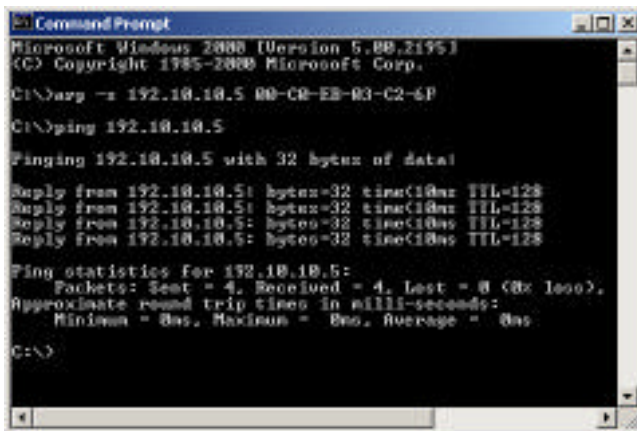
C:\>arp -s 192.10.10.5 00-C0-EB-03-C2-6F

C:\>ping 192.10.10.5_
```

Use the “ping” command to verify the printer's IP address you've assigned will work.

We chose 192.10.10.5 as an example.

If the IP address has been assigned properly, you should see the following screen:



```
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>arp -s 192.10.10.5 00-C0-EB-03-C2-6F

C:\>ping 192.10.10.5

Pinging 192.10.10.5 with 32 bytes of data:

Reply from 192.10.10.5: bytes=32 time<10ms TTL=128
Reply from 192.10.10.5: bytes=32 time<10ms TTL=128
Reply from 192.10.10.5: bytes=32 time<10ms TTL=128
Reply from 192.10.10.5: bytes=32 time<10ms TTL=128

Ping statistics for 192.10.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 8ms, Maximum = 8ms, Average = 8ms

C:\>
```

You should receive four replies from your newly configured printer. At this point, your printer has been assigned its new IP address.

Close the DOS Prompt and proceed to the Roland ColorRIP Setup.

Appendix 1 – Resetting Ethernet Card

When Ethernet cards become confused or just plain stubborn, it's good to know that manufacturers have built in a reset button. Perhaps the ArpPing commands don't seem to take a new IP address or all the lights come on and stay on without budging. Then it's time to reset by following the steps below:

1. Turn off the main power on the Hi-Fi JET Pro II
2. Press and hold the blue Ethernet reset button
3. While holding the reset button, turn the main power back on
4. When top green and middle orange lights start blinking quickly, release the blue reset button
5. Immediately press and release the blue reset button once more
6. Once the orange light starts to blink slowly, turn the main power off
 - a. If Ethernet cord is still attached, the green light should turn solid
7. Turn main power back on and then press the operate button
8. The Ethernet card has been reset

At this point, the Ethernet card does not have any IP address assigned. The cleansed Ethernet card is now ready to receive your Arp and Ping commands for a new IP Address.

Appendix 2 – Glossary

ARP – Abbreviation for Address Resolution Protocol; a protocol used to translate an IP address to a hardware address

ARP reply – A packet that is returned to the sender of an IP address to a hardware address.

ARP request – A broadcast packet that seeks to resolve an IP address to a hardware address.

Bandwidth – the amount of data that can move through a network

DHCP – Dynamic Host Configuration Protocol; a protocol where hardware devices can attain an IP address when they log onto the network. A special server (DHCP server) on the network controls the allocation of “leasing” of unique IP addresses to each hardware device when it logs on. Quite often the hardware device is given a new IP address each time it logs on, hence the word “dynamic” in DHCP.

Exclusion – An IP address that falls into a range of addresses to be leased, but has been set by an administrator not to be leased. A Hi-Fi JET Pro will likely be part of this exclusion list.

Headers – Bits of information attached to each packet to properly address and route the packet on a network.

Host – Any device on a network that has a TCP/IP address. This could be a printer, computer workstation or server.

Network Administrator – A person who installs, monitors, and troubleshoots a network

Network topology – Describes how a network is connected and how each host knows when and how to transmit and receive data.

NIC – Abbreviation for Network Interface Card; a piece of hardware used by a host to connect to a network.

Packet – A unit of data that is prepared for transmission onto a network.

PING – Abbreviation for Packet InterNet Groper; a software utility that tests connectivity between two TCP/IP hosts. Often used as a verb and spelled “ping” or “pinging”.

Protocols – Rules that govern the communications between hosts.

Router – A host that interfaces with other networks and can move packets from one network to another.

TCP/IP – Abbreviation for Transmission Control Protocol/Internet Protocol. These two robust standards allow for the proper addressing and communication of individual devices (including the internet).

URL – Abbreviation for Uniform Resource Locator. This is the address of a website, for example, www.rolanddga.com is Roland’s URL.