



Connectware™

Digi One™ EM

Configuration and Administration
Guide

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Use the Quick Start Guide that shipped with your device to walk you through the hardware setup and setting the initial IP address. Then use your browser to complete configuration of your device.

Assign an Initial IP Address

The Digi device ships with DHCP (Dynamic Host Configuration Protocol) enabled to automatically assign an IP address to your device. Use the Digi Device and Terminal Server Setup utility to discover the Digi device on the network. Locate your device by matching the MAC address found on the back of Digi One device server to the MAC address listed on screen. Go to “Configure the Digi One EM Device Server” and complete the configuration of your device server.

If DHCP is not available on the local network, the IP address for your device will be displayed as 0.0.0.0. Highlight the device in the list and click Set IP Address... If you are unable to use the CD-ROM, see Alternative Method for Setting the IP Address also in this chapter.

Configure the Digi One EM Device Server

1. After the Digi device server is assigned an IP address, highlight the device in the list and then click Configure....

Note: The device server must have an initial IP set.

2. Enter the username `root`
3. Enter the default password `dbps`.
Note: To change the password click Admin > Change Password after you log on your device server.
4. Click Configure > Port
5. Select your Device type (terminal, printer, modem in), Baud rate, Terminal type (vt-100, wy60, and wy60-e are the most common terminal types), Data bits, Flow control, Parity, and Stop bits from the drop down menus.
6. Click Submit to save the configuration.

Note: For advanced configurations such as AutoConnect, TCP/UDP, UDP Multi-cast, or Tunneling see Chapter 2 “Configure Ports”.

Alternative Method for Setting the IP Address

There is an alternative method for setting the IP address if you are unable to use the CD-ROM.

Configure the IP Address Using ARP-Ping

1. Access a server on the same subnet as the Digi device.
2. Manually update the server’s ARP (Address Resolution Protocol) table using the Digi device’s MAC address (on the bottom of the unit) and the IP address you want assigned to the Digi device. The following is an example of how this is done on a Microsoft Windows system:

```
arp -s 192.168.2.2 00-40-9D-00-00-00
```

3. Ping the Digi device using the IP address just assigned.

```
ping 192.168.2.2
```

Note: The ping will probably time out before there is a response from the Digi device. Wait a few seconds and then ping the Digi device again. The Digi device replies to the ping, indicating that the IP address has been configured.

ARP is a protocol using a hardware MAC address and internet IP address to locate hardware on a network. Ping is a method to initialize the IP address to the device server. The ARP command establishes the hardware on the network and the Ping initializes the device server.

Reconfigure, Reset, or Change the IP Address

1. Enter the current IP address in the URL of your browser.
2. Enter the username `root`.
3. Enter the default password `dbps`.
4. Click `Configure > Network` and enter the new IP address, Subnet mask, and Default gateway.
5. Click `Submit` to save the configuration.
6. Reboot the unit to utilize new IP address.

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Use Your Browser to Configure the Device Server

1. Enter the IP address of the Digi device server in your browser's URL address bar.
2. Log on with the username `root` and the default password `dbps`.
Note: The configuration is displayed. From the Information screen you can configure port parameters, printers, AutoConnect, TCP/UDP socket ports, UDP multi-cast, and serial tunnels.

Configure Port Parameters

1. Click `Configure > Port`.
2. Select your Device type, Baud rate, Terminal type, Data bits, Flow control, Parity, and Stop bits from the drop down menus.
Note: You must select a terminal type that is compatible with your Operating System. Three typical terminal types are provided: VT-100 (default), wy60 and wy60-e.

3. Click Submit to save the configuration

Configure Ports for Printers

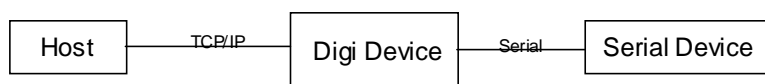
1. Enter the Digi One EM IP address in your browser's URL.
2. Enter the username `root` and the default password is `dbps`.
3. Click Configure > Port.
4. Select Printer from the drop down Device type menu.
Note: Terminal type is not necessary.
5. Select Flow control (Hardware or Software) from the drop down menu.
6. Enter the Baud rate.
7. Select the Data bits, Parity, and Stop bits from the drop down menus.
Note: Printer settings must have the same settings as the serial port it is connected to.
8. Choose Submit.
Note: To return to the main Port menu, choose Port from the menu.

Configure LPD/LPR Printers in Windows 2000

1. From the Start button go to Settings and select Printers
2. Double-click the **Add New Printer Wizard** and click Next.
3. Select the Local Printer option and click Next.
4. Select the Create a New Port option, select LPR Port from the drop down box and click Next.
5. Enter the IP Address of the Digi One EM.
6. Select the Manufacturer and Model of the Printer you are installing and click Next.
7. Enter a name for the Printer, specify if this is the default printer, and click Next.
8. You will now have the option to share the printer. Click Next.
9. The printer will not be available until the server is rebooted. Select No when asked to print a test page.
10. To print a test page, reboot the Windows 2000 Server and then select the option to Print Test Page from the properties of the newly added printer.

Configure a Port for AutoConnect

The AutoConnect feature allows you to automatically connect a port to a host on the LAN.



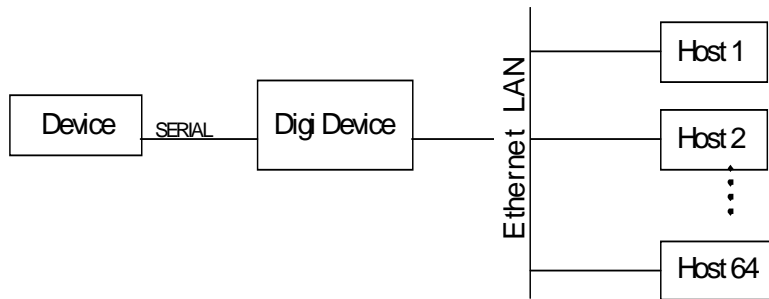
1. Click Configure > Port > Advanced.
2. Select Enable AutoConnect and enter the IP address of the network server and the TCP Port number.
3. Select your Service (Telnet, RLogin, or Raw) from the drop-down menu.
4. Select the Flush Start Character (On allows the first character to initiate connection, Off sends the first character as data) from the drop-down menu.
5. Select Force DCD for 3-wire devices.
6. Select Binary Mode (On for Telnet binary connection, Off for ASCII connections.)
7. Choose Submit to save the configuration.

Configure TCP/UDP Socket Port

1. Click Configure > Network.
2. Enter the base socket range you want to use in the Base socket field.
Note: Base socket range numbers are numbers 2000 - 9000 in 1000 increments. The default port setting is 2001 for Telnet and 2101 for raw. The raw port will always be 100 greater than the telnet port. Use the Help button for additional examples and information.
3. Choose Submit to save the configuration.

Configure the Port for UDP Multi-cast

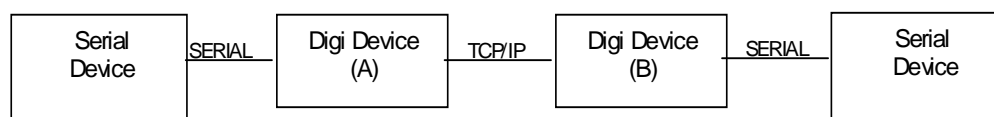
The UDP multi-cast feature allows you to configure the Digi device to send UDP multi-casts automatically to a host or multiple hosts on the LAN.



1. Select Configure > Port > Device type - Printer
2. Click Advanced.
3. Click UDP serial (on the bottom of the page.)
4. Configure the port as needed from the options displayed.
5. Set Buffer settings.
Note: Default buffer feature is 100 ms for Timer/idle delay and 1024 bytes for the buffer settings.
6. Choose the Add destination button on the bottom of the page.
Note: The same page is displayed, but a UDP port has been added.
7. Click the new port from the Description column and add the IP address and UDP port number.
8. Choose Submit to save the configuration.

Create a Serial Tunnel Between Digi Devices

Tunneling is the transmission of serial data over a network such as the Internet. The serial data is transmitted through the Digi device in a network packet that serves literally as an envelope to carry the information through the Ethernet LAN. The second Digi device receives and opens the network packet (or envelope) and transmits the data to the second serial device without altering or transforming the data in any way. The serial devices talk to each other as if connected directly, but they are actually connected through a TCP/IP network. With a tunnel configuration, the serial devices communicate as if they were connected directly to each other. To ensure the configuration is correct, each serial device's serial parameters must be configured to match the Digi device server to which it is connected. To avoid difficulty, set up the device server designated (B) as the Server so the device server designated (A) as the Client will have a device to communicate with after it is configured.



Set up the Device Server (B)

1. Open your browser.
2. Enter the IP address of the device server that you will designate to accept the data.
3. Log on with Username `root` and default Password `dbps`.
4. Click Configure > Port
5. Set Device type to Printer, Terminal type to vt100, and Baud rate, Data bits, Flow control, Parity, and Stop bits to match the peripheral serial device settings.
6. Click Submit to save this configuration.
7. Click Advance.
8. Enable Binary Mode if this is a Telnet connection and binary data will be transferred through the connection.
9. Choose Submit to save the configuration.

Set up the Device Server (A)

1. Open your browser.
2. Enter the IP address of the device server that you will designate initialize the connection.
3. Log on with Username `root` and default Password `dbps`.
4. Click Configure > Port
5. Set Device type to Terminal if a connection is made when DTR (data terminal ready) goes high. Set Device type to Modem In if a connection is made when DCD (data carrier detect) goes high
6. Set Baud rate, Data bits, Flow control, Parity, and Stop bits to match the periph-

erial serial device settings.

Note: Terminal type does not matter

7. Click Submit to save this configuration.
8. Click the Advance button and Enable Autoconnect.
9. Select the Flush Start Character (On allows the first character to initiate connection, Off sends the first character as data) from the drop-down menu.
10. Enter the IP address of the device server designated as Server.
11. Enter the server TCP port socket number.
12. Enable Binary Mode (for a Telnet connection and binary data will be transferred through the connection - leave blank for ASCII connection.)
13. Enable Forced DCD if necessary (Forced DCD will autoconnect Client to Server with 3-wire connections.)
14. Click Submit to save configuration.

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Upgrading the OS (Firmware)

1. Access the web interface by entering the Digi One EM IP address in a browser's URL window.
2. Log on to the Digi One EM with username `root` and default password `dbps`.
3. From the main menu, choose Admin and then either HTTP upgrade or TFTP upgrade.
4. Follow the prompts to complete the upgrade.
5. Reboot after upgrade is complete.

Run Digi One EM Hardware Diagnostics

1. Connect a terminal to a Digi One EM serial port.
2. Configure the terminal emulation program with the following settings:
 - VT-100 emulation
 - 9600 baud
 - 8-bit characters
 - 1 stop bit

No parity

Note: In Diags mode, the port settings revert to the default settings. After the Diags mode, the port settings will revert to the saved settings before the going into Diags mode.

3. Reboot the Digi One EM.
4. When the LED begins blinking continuously, press the letter **▼** key. When the Hardware Diagnostics Menu appears, select a test to perform.

Digi One Does Not Complete the Boot Cycle or POST

Verify the Network Cabling

1. Check the Ethernet cable. Verify the following:
 - The Ethernet cable is connected securely at both ends.
 - The Ethernet cable is pinned correctly.
 - The quality of the cable is sufficient for the cable length and the cable environment. Common Category 5 Unshielded Twisted Pair cabling can generally be run 300 meters at a speed of 10 Mbps and 150 meters at higher speeds. Consult an Ethernet cable manufacturer for a recommended cable for your configuration.
2. Verify your Ethernet hub. See your Ethernet hub manual.

Load the POST image

1. Enter the IP Address in the URL.
2. Click Admin.
3. Click Upgrade.
4. Select either Upgrade Firmware (EOS) or Upgrade BOOT/POST image and click Next.
5. Choose to upgrade through either HTTP or TFTP.
6. Enter or browse for the HTTP BOOT/POST image and click Upgrade Now OR Enter or browse for the TFTP BOOT/PSOST image, enter the TFTP Server IP and click Upgrade Now.
7. Click Reboot from the left Navigation bar.

Trouble Accessing the Port

Use this procedure if you are having trouble accessing a Digi One EM port. The specific problem may be a printer or modem is not working properly or the IP address is not configured correctly.

Assumptions

- The Digi One EM completes the boot cycle. If it is not, see Digi One Does Not Complete the Boot Cycle or POST on page 14. The discussion also goes through the steps of validating the network connection.
- The network is working.

Ping an IP Address

Connect your Digi device to the Ethernet network and ping the IP address.

```
ping ip-address
```

If there is no response go back and reconfigure your IP address.

Check for Duplicate IP Addresses

1. From another system on the network, use the ping command to determine if the IP address is in use. The following is the command syntax:

```
ping ip-address
```

2. Do one of the following:
 - If there is no response to the ping, exit this procedure and return to the symptoms section of this chapter. Two devices using the same IP address is not the problem.
 - If there is a response, continue with this procedure.
3. Unplug the power to the Digi One EM and then ping again.
4. Do one of the following:
 - If there is a response to the ping, there is another device using that IP address. Assign one of the devices a new IP address.
 - If there is no response, plug the power cable into the Digi One EM. Another device is not using the IP address assigned Digi One EM.

Trouble Accessing Device Server on the Network

If your Digi One EM has been assigned a static IP address for a different network, it will not be available on your network. If this is the case, you will need to reset the unit to its factory default state by following the procedure in the section, Hardware Reset Button on page 17.

Check Device Type

Under the Configure > Port link from the web interface, verify the device type is set correctly for your application. See the help button for a more detailed description of device types.

Unable to Configure Device Server for Tunneling

1. Set up the device server that will receive first.
2. If you have already set up the device server that will send data, disable it to make configuration changes

Configuration Considerations for Printers

Be aware of the following considerations when configuring the Digi One EM to handle printers.

Determine Your Printer's Flow Control Requirements

Setting the Digi One EM flow control parameters incorrectly may cause the printer not to print all data sent to it. Check the printer's documentation to determine if it uses hardware flow control, software flow control, or no flow control at all. Here

are some tips to ensure that the printer performs as expected:

- If flow control is necessary, ensure that the printer and Digi One EM use the same flow control scheme.
- Most printers that use hardware flow control issue the DTR (data terminal ready) signal when they are ready for data. If this is the case, the DTR pin on the cable from the printer must be wired to an input on the Digi One EM port (usually CTS or DCD) that can be used for flow control.