Digi
Connectware™

User Guide

Digi One IA
Digi One SP

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Contents

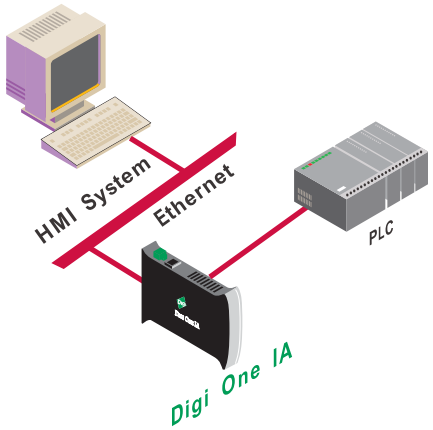
Chapter 1 *Introduction*

In This Chapter

Introducing the Digi One IA

Digi One IA Overview

The Digi One IA device server easily enables any industrial device with a serial port to connect to the Ethernet. These devices include Programmable Logic Controllers, process and quality equipment, motors, drives, bar-code readers, operator displays, and other types of manufacturing equipment.



The Digi One IA delivers cost-effective performance and capability in a rugged DIN Rail mountable enclosure specifically designed for the Industrial Automation market.

Part of Digi's broad device server offering, the Digi One IA delivers standard Serial-to-Ethernet connectivity and is ideal for the following applications:

- TCP socket and UDP socket
  Socket support includes serial bridging, which requires two device servers, each providing network connectivity for a serial device that would otherwise be limited to communication over a serial cable.
- RealPort (COM Port Redirection using Digi's patented RealPort software)

Enables applications and serial devices to communicate over an Ethernet network as though they were communicating in their native serial mode over a cable.

The Digi One IA is easy to install locally or remotely through a variety of IP addressing methods. These include DHCP, ARP-Ping, static IP, and Setup, an application included on the installation CD that automatically detects all Digi One devices on your network.

Digi One IA Key Features

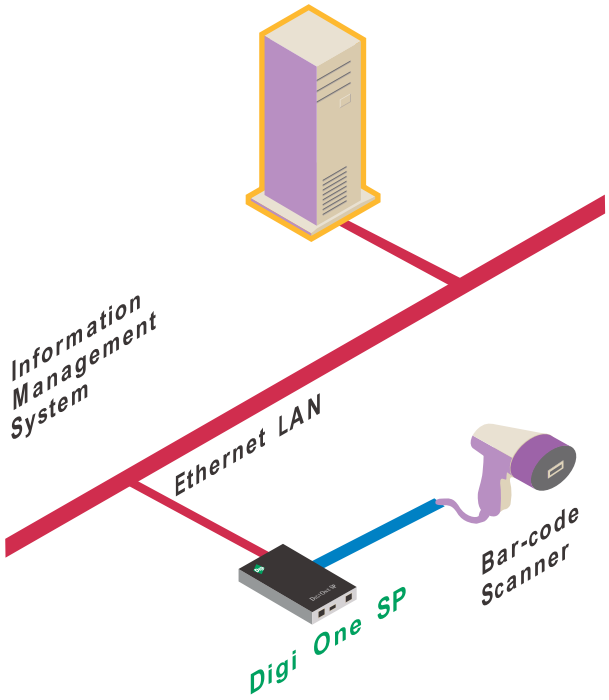
Here are some key Digi One IA features:

- TCP/UDP socket services for broad device connectivity and application use
- Support for RFC 2217
- RealPort (COM Port Redirection)
- DB9M and screw terminals for serial port connection
- Galvanically isolated (from earth ground)
- Class 1, Div2 rated
- Industry leading low latency
- EIA-232/422/485 switch selectable
- Easy configuration using the install CD through Setup wizard and web interface

Introducing the Digi One SP

Digi One SP Overview

The Digi One SP device server easily allows any device with a serial port to connect to the Ethernet. The compact Digi One SP delivers cost-effective performance and capability in one of the smallest form factors available.



Part of Digi's broad device server offering, the Digi One SP delivers standard Serial-to-Ethernet connectivity and is ideal for the following applications:

- TCP socket and UDP socket
  Socket support includes serial bridging, which requires two device servers, each providing network connectivity for a serial device that would otherwise be limited to communication over a serial cable.

- COM Port Redirection using Digi's patented RealPort software, which enables applications and serial devices to communicate over an Ethernet network as though they were communicating in their native serial mode over a cable.

The Digi One SP is easy to install locally or remotely through a variety of IP addressing methods. These include DHCP, ARP-Ping, static IP, and Setup, an application on the installation CD that automatically detects all Digi One devices on your network.

Digi One SP Key Features

Here are some key Digi One SP features:

- TCP/UDP socket services for broad device connectivity and application use
- Support for RFC 2217
- RealPort (COM Port Redirection)
- DB9M for serial port connection
- Galvanically isolated (from earth ground)
- Industry leading low latency
- EIA-232/422/485 switch selectable
- Easy configuration using the install CD through Setup wizard and web interface

Chapter 1

Chapter 2 Configuring the IP Address

In This Chapter

IP Address Configuration Methods

An IP address can be assigned to the device server using any of the following methods:

- Setup wizard
  “Discovers” the device and then provides a method for assigning an IP address. See "Configuring the IP Address with the Setup Wizard" on page 13.
- DHCP
  The device server’s default configuration is as a DHCP client. See "Configuring the IP Address with DHCP" on page 14.
- ARP-Ping
  Enables IP address assignment by updating the ARP tables on a PC with the device server’s MAC address and then pinging the device server. See "Configuring an IP Address with ARP-Ping" on page 14.
- Web browser
  This method works only for changing the IP address of a device server that has already been assigned one.

Before you configure your device server, write down the MAC Address located on the bottom of your product.

Configuring the IP Address with the Setup Wizard

This procedure describes how to configure an IP address using the CD that came in your device server package.

Prerequisites

This procedure assumes the following:

- That the device server is connected to the network and powered up
- That the CD will be used on a system running Microsoft Windows operating system
- Record the device server's MAC address

Procedure

1. Insert the Digi CD in the CD drive.
2. If the CD does not start automatically, double-click My Computer > CD ROM Drive > setup.exe
3. The wizard will automatically pop up. Click Next.
   The Digi application finds and lists all of the Digi devices on your network.
4. Locate your device server by its MAC address.
5. Select the device server and then choose Configure.
6. Follow the wizard to configure your device server.

Configuring the IP Address with DHCP

Prerequisite

This procedure assumes the following:

- That the device server is configured as a DHCP client. Since this is the default configuration, this will be the case unless the configuration has been changed.
- That the device server is not powered on

Procedure

1. Set up a permanent entry for the device server on a DHCP server.
2. Connect the device server to the network and power it on.

   The IP address configured in step 1 is assigned automatically.

Configuring an IP Address with ARP-Ping

Prerequisites

This procedure assumes the following:

- That the device server is connected to the network and powered up
- That you have access to a PC on the same LAN as the device server
- No DHCP server is running
- No IP address has been configured

Procedure

1. Manually update the PC's ARP (Address Resolution Protocol) table using the device server's MAC address (on the

bottom of the unit) and the IP address you want assigned to the device server.

Here is how this is done on a system running Microsoft Windows operating system:

a. Access the command line.

b. Issue the following command:

```
arp -s ip-address mac-address
```

Example

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

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

```
ping 192.168.2.2
```

The ping will probably time out before there is a response from the device server. Wait a few seconds and then ping the device server again. The device server will respond indicating that the IP address has been configured.

Testing the IP Address Configuration

Use this procedure to test your IP address configuration.

Prerequisite

This procedure assumes that you have configured the device server with an IP address.

Procedure

1. Access the command line of a PC or other networked device.
2. Issue the following command:

```
ping ip-address
```

where *ip-address* is the address you assigned to the device server.

Example

```
ping 192.168.2.2
```

A reply should be returned.

Changing an IP Address from a Web Browser

Prerequisite

This procedure assumes that the device server already has an IP address and you simply want to change it.

Procedure

1. Open a web browser and enter the device server's current IP address in the URL address bar.
2. When the device server prompts you to log on, specify the following:
   - The username is **`root.`**
   - The default password is **`dbps`**.
3. Click Network to access the Network Configuration page.
4. Enter an IP address (and other network-related parameters) and then click Apply to save the configuration.

Chapter 3 Setting Up RealPort (COM Port Redirection)

In This Chapter

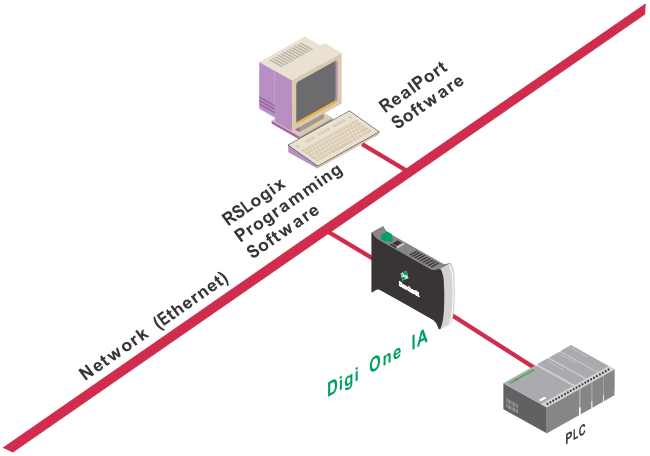
What is RealPort

Many serial devices, including barcode scanners and sensors, don't have an Ethernet port. And even if they did, the applications that run them work on COM1. They know nothing of networking or TCP/IP. Many of these applications were written before TCP/IP and Internet were common.

RealPort® allows you to really network enable your device with our device servers. With a Digi device server, you can easily connect your device to the network. The legacy application, however, may not support TCP/IP. That's where RealPort comes in.

Installed on a network-based PC, RealPort emulates a serial port. That is, the application "thinks" it is working with a real serial port, such as COM1. When the application sends data to this serial port, RealPort ships the data across the network to the device server which in turn routes it to the serial device. This is also referred to as COM Port Redirection. The network is transparent to both the application and the device.

In the example that follows, the RSLogix software and the PLC communicate as though they were connected with a serial cable.



RealPort Setup Overview

To set up a RealPort configuration, complete the following tasks:

1. Configure the device server for RealPort. See "Configuring the Device Server for RealPort" on page 19.
2. Install the RealPort software on your PC. See "Installing RealPort on a System Running Microsoft Windows Operating System from the CD" on page 20.

   For UNIX RealPort software and documentation, see the Digi web site (www.digi.com).

Configuring the Device Server for RealPort

1. Access the configuration by opening a web browser and entering the IP address in the URL address bar.
2. Log on as the root user (User Name **root**). The default password is **dbps**.
3. If this is not a new device server, restore the default settings by clicking Administration.
4. Select Restore Factory Default Settings and click Restore.
5. Verify RealPort is usable, Click Serial Port > RealPort Settings

   NOTE: No other serial communication settings are required.
6. Load RealPort driver. See "Installing RealPort on a System Running Microsoft Windows Operating System from the CD" on page 20

Installing RealPort on a System Running Microsoft Windows Operating System from the CD

Use this procedure to install RealPort software

1. Place the CD in the CD drive.
2. If the CD does not start automatically, do the following:
   a. Choose Start > Run.
   b. In the run dialog, browse to the root of the CD and then choose setup.exe.
3. Click Cancel on the wizard (this will close the Setup wizard).
4. Click Install Optional Software.
5. Click RealPort.
6. Follow the on-screen prompts and use the Microsoft Windows Help for assistance.

   NOTE: See the Digi website for UNIX RealPort drivers and documentation.

Installing RealPort on a Windows System from the Web

1. Go to www.digi.com
2. Click Support.
3. Click Drivers.
4. Select your product.
5. Select your operating system.
6. Click Latest Driver.
7. Download the driver and follow the ‘readme’ for download instructions.

Chapter 3

Chapter 4 Using the Web Interface

In This Chapter

Introduction

This section describes the web interface that may be used to configure the device server. The interface is recommended for use if the wizard is unavailable or your application requires specific alterations not accessible on the wizard.

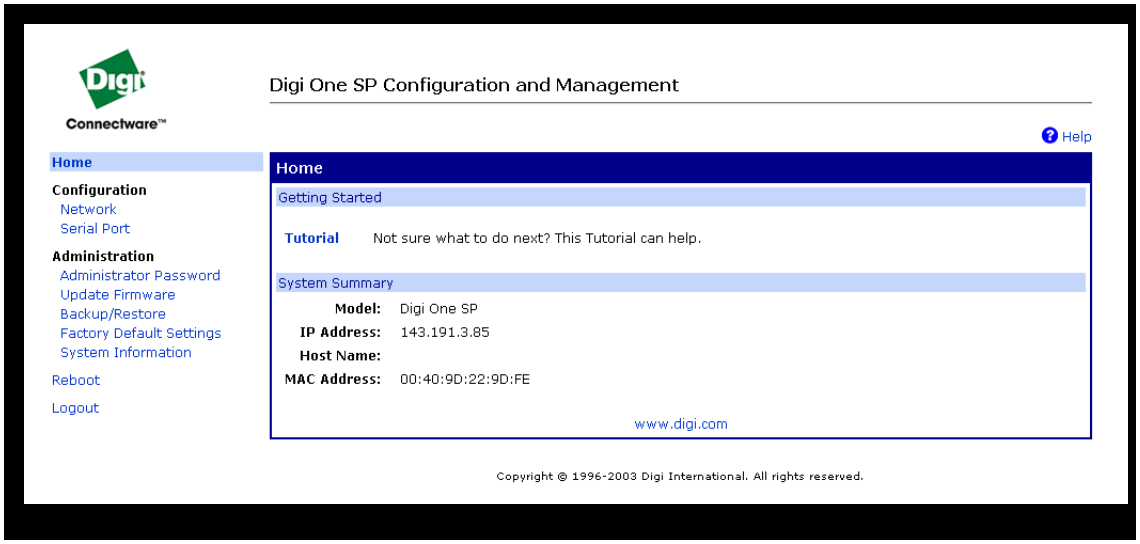
Getting Started

The wizard from the CD is designed to successfully configure the Digi device server. However, if you need to alter your configuration, or you do not have the CD, use the web interface to access your device server.

Enter the IP address in the URL address bar of your browser.

Enter the User Name **`root`** and default Password **`dbps`**.

After you log on, you will see this screen:

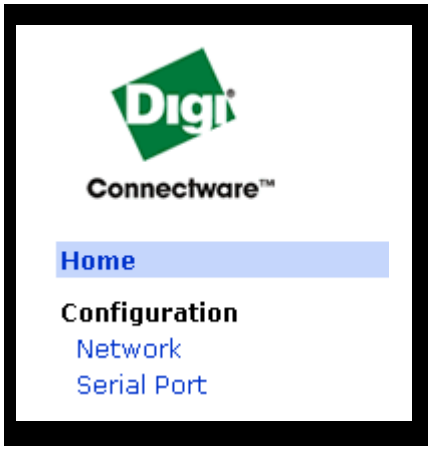


If you are unsure about changes to make your configuration successful, use the Tutorial to learn more.

Navigation

Use the left navigation bar to configure the network or the serial port. If you have questions about any settings, use the help button at the top right hand corner.

Configuration



Under the Configuration heading on the left navigation bar are two links: Network and Serial Port.

Use the Network link to set your IP address or to activate DHCP.

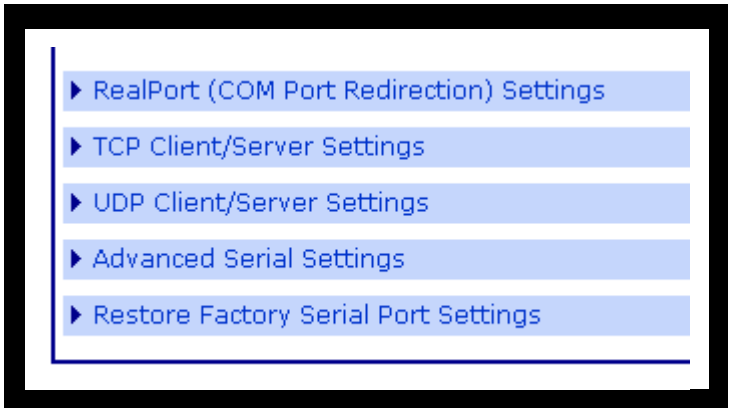
At the bottom of the Network Configuration page, is a link to Additional Network Settings.

Use this page to adjust Network Optimization, Ethernet

Speed, Telnet Break, Ethernet Mode, TCP Time-To-Live, IP Time-To-Live, Probe Interval, Probe Count, Retransmission Timeout, DHCP Client Identifier, Client Identifier Type, Enable TCP Keep-Alive, Idle Timeout, and Keep-Alive Byte.

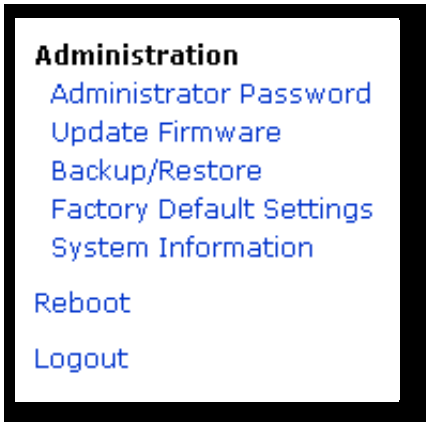
Use the Serial Port link to set the Basic Serial Settings (baud rate, data bits, parity, stop bits, and flow control).

At the bottom of the Serial Port link under Basic Serial



Settings page are several links to alternative configurations. The Tutorial on the home page or the Help button in the upper right corner has additional information about each configuration.

Administration



Use the Administration section of the web interface to change the password, update firmware, save or restore settings, reset factory default settings, read system statistics, reboot, or logout.

Chapter 4

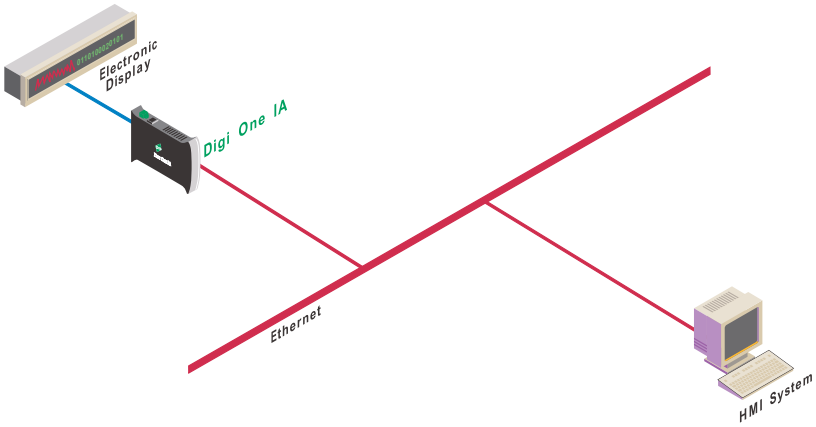
Chapter 5 Configuring Advanced Functions

In This Chapter

Configuring the Device Server for Incoming Connections

Introduction

This section describes how to configure the device server for incoming connections providing TCP or UDP socket service for a serial device connected to the serial port. In this type of configuration, another network device initiates the communications. The device server simply waits for incoming traffic and then passes data to the serial device connected to its port. The following figure illustrates this configuration.



RFC 2217 Support

Digi device servers support RFC 2217, an extension of the Telnet protocol used to access serial devices over the network. RFC 2217 implementations enable applications to set the parameters of remote serial ports (baud rate, flow control, etc.), detect line signal changes, as well as receive and transmit data. The configuration information provided in this section applies to device servers functioning as RFC 2217 servers. If you have altered the device server, restore the factory default settings following the procedure in Chapter 3. No additional configuration is required.

About TCP and UDP Port Numbers

Digi device servers use the TCP and UDP port numbering conventions described in the following table:

For this connection type...	Use this Port
Telnet to the serial port	2001 (TCP only)
Raw connection to the serial port	2101(TCP and UDP)

You must ensure that the application or device that initiates communication with the device server uses these ports. If they cannot be configured to use these ports, you can change what is known as the “base socket” on the device server, which allows you to use different port numbers to designate a Telnet or raw connection to the serial port. See "Changing the Base Socket: Procedure" on page 31 for more information.

Changing the Base Socket: Procedure

1. Access the configuration by opening a web browser and entering the device server’s IP address in the URL window.
2. Log on to the device server as the root user (User Name **`root`**). The default root password is **`dbps`**.

3. From the main menu, choose Network.
4. Use the base socket field to change the base socket. Specify a multiple of 100 between 1000 and 50000. Telnet connections will use the base socket value plus one. Raw connections will use the base socket value plus 101 (one-hundred one). The following table illustrates how this works:

If the base socket is...	Then Telnet uses...	Then Raw uses...
3000	3001	3101
4100	4101	4201
8000	8001	8101

5. Click Apply.

Configuring the Device Server as a Server: Procedure

1. Access the configuration by opening a web browser and entering the device server's IP address in the URL window.
2. Log on to the device server as the root user (User Name **`root`**). The default root password is **`dbps`**.
3. From the main menu, choose Serial Port.
4. Select Restore Factory Serial Port Settings and Click Restore.

If the Digi device server has been altered from the factory settings, restore the factory default settings.

5. Select Basic Serial Port Settings and configure the Digi device server to match the settings of the attached serial device. (If using RFC 2217 protocol, do not modify the port settings from the defaults.)
6. Click Apply
7. Select TCP Client / TCP Server Settings and record the TCP port numbers listed under the TCP Server header. The TCP port number is needed to configure the application or device that accesses the device server's serial port

from the network.

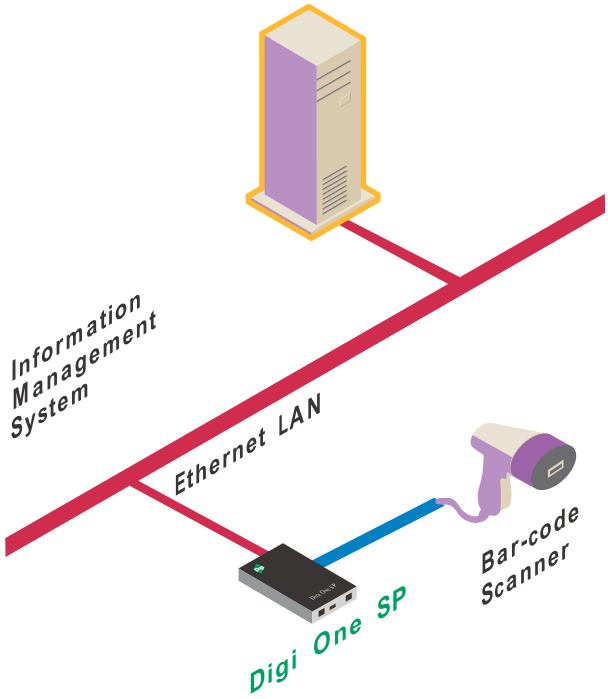
Autoconnecting to a Network Host (TCP Clients)

Introduction

This section describes how to configure the device server to initiate an automatic connection (autoconnect) to a host on the network. The device server initiates TCP connections to applications running on servers or serial devices connected to server serial ports (sometimes called TCP socket service). There are three conditions that use this configuration:

- DCD signal goes high
- Data arrives
- Always

The following figure provides an example of a device server configured for autoconnection. This connection can be configured to be always up or to be triggered whenever the data is received on the device server port.



Autoconnecting to a Network Host: Procedure

1. Access the configuration by opening a web browser and entering the device server's IP address in the URL window.
2. Log on to the device server as the root user (User Name **`root`**). The default root password is **`dbps`**.
3. Click Serial Port Settings

If the Digi device server has been altered from the factory settings, restore the factory default settings.

4. Select Restore Factory Serial Port Settings and Click Restore.
5. Configure the Basic Serial Port Settings to match the settings of the attached serial device.
6. Click Apply to save the configuration.
7. Select TCP Client / TCP Server Settings and check the Automatically establish TCP connections box.
8. Select the Connect option that describes when the TCP connection will be initiated.
9. Enter the IP address or DNS name of the destination server in the Connect To box.
10. Select a Service to use for the connection: Raw, Rlogin, or Telnet.
11. Specify the destination TCP Port Number.

    The Port number depends on the conventions used on the remote server or device. The following table provides common TCP port number conventions:

Connection Type	Common TCP Port
Telnet	23
Rlogin	513
Reverse Telnet to the port of a Digi device server	2001
Raw connection to the port of a Digi device server	2101

Raw connection to a non-Digi deviceyou must enter your value.

12. Click Apply to save the configuration.

Autoconnecting to a Network Host (UDP)

Introduction

This section describes how to configure the device server to initiate an automatic connection (autoconnect) to one or more hosts on the network. The device server initiates UDP communications to applications running on servers or serial devices connected to server serial ports (sometimes called UDP socket service).

This configuration provides multicasting capability. That is, multiple devices can be identified as destinations for a single communication.

Autoconnecting to Network Hosts: Procedure

1. Access the configuration by opening a web browser and entering the device server's IP address in the URL window.
2. Log on to the device server as the root user (User Name **`root`**). The default root password is **`dbps`**.
3. From the main menu, choose Serial Port.
4. Select Restore Factory Serial Port Settings and Click Restore.
5. Select Basic Serial Port Settings and configure the Digi device server to match the settings of the attached serial device.
6. Click Apply to save the configuration.
7. Click UDP Client / UDP Server Settings and enter the following for each of the UDP destinations:
   - a description of the destination
   - the destination IP address
   - the destination UDP port

   Click Add
8. Select the options that define when data is sent.
9. Click Apply to save the configuration.

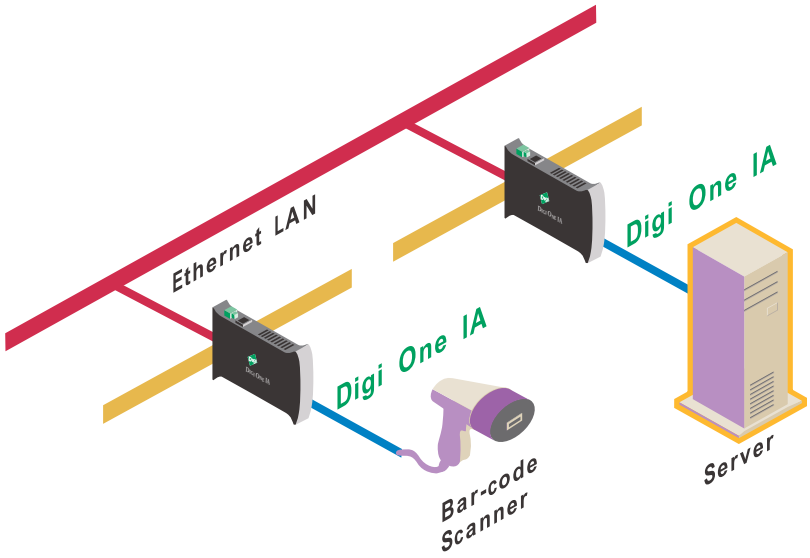
If the Digi device server has been altered from the factory settings, restore the factory default settings.

Configuring a Network Serial Bridge

Introduction

A serial bridge is a network connection between two serial devices, each of which uses a device server. The serial devices “think” they are communicating with each other across a serial cable using serial communication techniques. There is no need to reconfigure the server or the serial device. Neither is aware of the intervening network.

The following figure illustrates this configuration.



Configuring a Serial Bridge: Procedure

1. Access the configuration by opening a web browser and entering the device server's IP address in the URL window.
2. Log on to the device server as the root user (User Name **`root`**). The default root password is **`dbps`**.
3. From the main menu, choose Serial Port.
4. Select Restore Factory Serial Port Settings and Click Restore.
5. Configure the Basic Serial Port Settings to match the settings of the attached serial device.
6. Click Apply to save the configuration.
7. Select TCP Client / TCP Server Settings and check the Automatically establish TCP connections box.
8. Select Connect > Bridge/Tunnel (bi-directional).
9. In the Connect To box, type the IP address or DNS name of the other Digi device.
10. In the TCP Port Number box, type the Raw TCP port number for the destination serial port.
    NOTE: The default value is 2101.
11. Click Apply to save the configuration.
12. Follow the same steps to configure the other Digi device server of the bridge, specifying the IP address of the first Digi device in the 'Connect to' box.

If the Digi device server has been altered from the factory settings, restore the factory default settings.

Chapter 5

Chapter 6 *Administration*

In This Chapter

Changing the Root Password

For security reasons, we recommend you change the root password immediately. This procedure shows you how.

Prerequisite

This procedure assumes that you are the root user and that you know the current root password.

Procedure

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Administrator Password.
4. Fill in the New Password and Confirm Password fields.
5. Click Apply to save the password.
6. Log on using new password (you will receive notification password is changed).

Updating Firmware

This procedure shows you how to update the device servers firmware from a file on your PC or through TFTP.

Note: The recommended preferred method is to download the firmware to your local hard drive. TFTP, however, is often used in UNIX environments, so TFTP is supported as well.

Prerequisite

This procedure assumes that:

- You have already downloaded the firmware file from the Digi web site
- TFTP is running (if you are using the TFTP option)

Procedure for Updating from a File on Your PC

DO NOT close your browser until the update is complete and you have been prompted to reboot

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Upgrade Firmware from the main menu.
4. Click Browse to select the file.
5. Click Update.

Procedure for TFTP

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Upgrade Firmware from the main menu.

4. Click From a TFTP Server
5. Enter the name of the firmware file.
6. Enter the IP address of the TFTP server where firmware file is located.
7. Click Update.

Updating POST Code

This procedure shows you how to upgrade POST code from a file or TFTP. Typically, POST upgrades are not required and should only be done if the firmware release notes indicate that this step is required.

Note: The preferred method is to use your web browser and download the file onto your PC. TFTP, however, is often used in UNIX environments, so TFTP is supported as well.

Prerequisite

This procedure assumes that:

- You have already downloaded the firmware file from the Digi web site
- TFTP is running (if you are using the TFTP option)

Procedure

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Upgrade Firmware from the main menu.
4. From the dropdown menu, select Boot/POST.
5. Click Browse to select the Boot/Post image.
6. Click Update.

Restoring the Configuration to Factory Defaults

Introduction

The two procedures in this section restore the configuration to defaults. The first procedure resets the configuration from a web browser which will clear all current settings except the IP address settings and administrator password. This is the best way to reset the configuration because you can also back up the settings (which provides a means for restoring it after you have worked through configuration issues). See "Backup/Restore the Configuration" on page 48 for more information.

The second procedure resets the configuration using the reset button on the device server. Use this method if you cannot access the device from a web browser.

Resetting the Configuration from a Browser

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log on, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Factory Default Settings from the main menu.
4. Click Restore

Resetting the Configuration Using the Reset Button

1. Power off the device server by unplugging the power.
2. Use a pen or the point of a paper clip (NOT SHARP or the button could be damaged) to press and hold down the reset button. The following figures help you locate the reset button. The first shows a Digi One IA. The second a Digi One SP.

3. While holding the reset button, power up the unit.
4. Hold the button for 20 seconds and then release it.

The default configuration is restored.

Backup/Restore the Configuration

This procedure shows you how to backup or restore the configuration to a server and to download a configuration from a server to a file or TFTP.

Prerequisite

If you intend to use TFTP, ensure that the TFTP program is running on a server before you begin this procedure.

Procedure

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Choose Backup/Restore from the main menu.
4. Choose the appropriate option (Backup or Restore) and select your file.

Viewing Port or Network Statistics and Settings

Introduction

Use this procedure to view port or network statistics and configuration settings.

Procedure

1. Open a web browser and enter the device server's IP address in the URL window.
2. When the device server prompts you to log in, enter the following:
   - User Name is **`root`**
   - The root default password is **`dbps`**
3. Click System Information from the main menu.
4. Click details for more information.

Use your browser's Refresh option to update the statistics.

Chapter 6

Chapter 7 *Troubleshooting*

In This Chapter

Before contacting Tech Support, check the following:

Introduction

Before contacting Tech Support there are several things you can do to identify if the problem is related to hardware, software, or firmware. The following sections will walk you through the basic diagnostic procedures.

Hardware

The following tests or procedures will help you determine if the problem is related to the hardware.

Power

Always check the power first. The LED panel on the device server will indicate if the power is detected.

The Digi One IA uses a green power light and the Digi One SP uses a red power light.

Be sure to use a proper power supply for your device. The Digi One SP comes with its own power supply. Use the table below for the Digi One IA power requirements.

Input Voltage	Input Current
9V	414mA
10V	333mA
11V	297mA
12V	268mA
13V	244mA
14V	210mA
20V	153mA
25V	125mA
30V	105mA

Ethernet Cable

When you connect the Ethernet cable, the Digi One IA Red Link LED should go out. If it stays on, the network is not detected. The Digi One SP Green Link LED should stay on. If it goes out, the network is not detected.

Check the Ethernet cable for the following:

- Connected securely at both ends
- Pinned correctly
- Quality is sufficient for cable length and environment
- Ethernet hub is properly configured
  Refer to the Chapter 8 Reference for more information about LEDs.

EIA 232/422/485 Switches

Verify the EIA 232/422/484 switches are set to your peripheral device's requirements. These settings are on the Digi One IA label, the Quick Start guide for the Digi One SP, and the reference section of this guide. However, if you are having trouble logging on to the Digi One IA device and assigning an IP address, set the switches to EIA-232 (1-up; 2, 3, & 4 - down). After your initial configuration, change the switches to match your peripheral device's requirements. Go to Chapter 8 for additional Reference information.

IP Address

The IP address must be configured on the device server and the Subnet Mask and Gateway must be correct before it can be accessed on the network

Verify the Digi device server's IP address using PING. See Chapter 2 Getting Started page 14 for instructions.

If you are unable to PING, you may have a duplicate IP address or the IP is not configured correctly. Go back to Chapter 2 or run the wizard from the CD to set the IP address.

If you can PING, you can now verify the connection to the serial port on the device server. Connect the loop back plug (shipped with your device) to the serial port on the device server. Make a connection between the serial port of the device server and your operating system using the following Telnet command:

`telnet` *`191.168.2.2`* `2001`

(use the IP address you assigned)

Type a unique word or phrase to see if it displays on the screen properly - that is every stroke is displayed. Verify that local echo is not on by removing the loop back and type another word or phrase. There should be no display. If the display is correct with the loop back, you have successfully connected to the port and your device server is configured correctly. To disconnect, press Ctrl] and at the Telnet prompt, type quit.

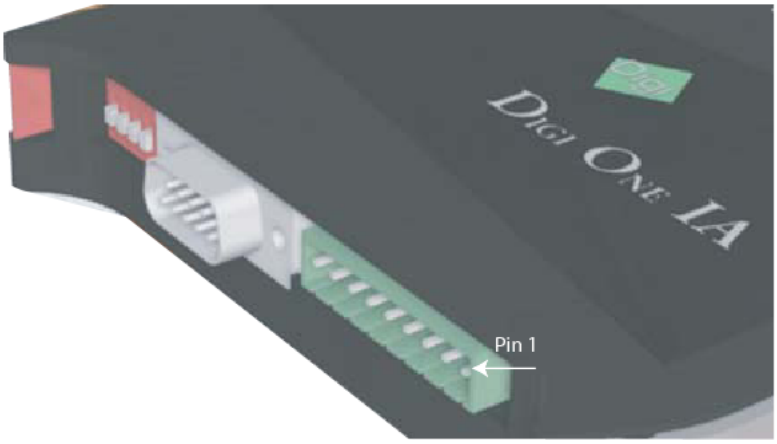
If you are unable to Telnet to the port, make sure you are running the latest firmware release available and the port is configured to accept inbound connections.

If your device server is configured correctly but you are unable to communicate with your serial device connected to the device server port, check the cabling.

Cabling

Make sure you have the proper cabling from the Digi One IA (or SP) device server's serial port to the connecting device. The Digi One is a DTE device.

The DB9 pinout can be found on the Digi One IA device label or on the Quick Start Guide for the Digi One SP. If you are using the Screw Terminal Block instead of the DB9 serial port, count pin # 1 as the one farthest from the DB9 serial port. Pinout information is also available in this manual and online at http://support.digi.com.



If your cabling is correct, try resetting the device in Chapter 7 Administration, page 46 or 47.

Software

RealPort

Install RealPort according to the procedure in Chapter 3 pages 19-21. If the IP address is set correctly but you are having trouble with RealPort, verify TCP port 771 is open for the RealPort driver to get to the Digi One device server.

1. Download RealPort from the CD enclosed with the device

server or from the Tech Support FTP site.

2. Verify you have the latest version of the driver installed.
3. Open up Hyper-terminal and connect to the COM Port you want to test.
4. Plug the DB-9 Loop back (shipped with the product) into the serial port into the Digi device.
5. Type a unique word or phrase to see if it displays on the screen properly - that is every stroke is displayed. Verify that local echo is not on by removing the loop back and type another word or phrase. There should be no display. If the display is correct with the loop back, you have successfully connected to the port and your device server is configured correctly. If it doesn't work go to step 6.

If Hyper-Terminal works with the loop back but you cannot communicate with your serial device, check the cabling.

6. If you continue to have problems, try to Telnet to the device server serial port (as discussed earlier in this chapter) to verify the hardware setup.

Firmware

If your hardware is okay, make sure you are running the latest firmware version available. Check the Digi Support site for the latest firmware and/or POST updates for your device:

http://ftp.digi.com/support/firmware

1. Download a copy of the firmware file.
2. Access the Digi device server's web interface by entering the Digi device server's IP address in a browser's URL window and log on (User Name **root**, Password **dbps**).
3. Choose Update Firmware from main menu.
4. Browse to the location on your system where the firmware has been saved, select the correct file, and click Update.

Do not leave your browser until you are prompted to reboot.

5. Reboot the device when prompted.
6. Access the Digi device server's web interface and verify on the Information Page that the Firmware version has

been successfully updated.

Before contacting Tech Support, check the following:

Chapter 8 Reference

In This Chapter

Digi One IA LEDs

	LED	Color	State	Indicates
LAN	Power	Green	On	Power detected
			off	No power detected
	Link	Red	On	No network detected
			Off	Network detected
	TX/RX	Green	On	Network traffic
			Off	No network traffic
Diag	Diag	Red	Blinking 1-1-1	Starting the EOS
			Blinking 1-3-1	Starting the TFTP process
			Blinking 1-5-1	Configuration returned to factory defaults
			Steady blinking	Device seeking an IP address from a DHCP server
Serial	Tx/Rx	Green	On	Serial port activity
			Off	No serial port activity
	RTS	Green	On	RTS is on
			Off	RTS is off
	CTS	Green	On	CTS is on
			Off	CTS is off
	DTR	Green	On	DTR is on
			Off	DTR is off
	DSR	Green	On	CSR is on
			Off	CSR is off
	DCD	Green	On	DCD is on
			Off	DCD is off

Digi One IA Specifications

Attribute	Value
Main Power Connector	9-30 VDC screw connector
Ambient Temperature	0 to 60 °C
Relative humidity	5 to 90% non-condensing
Length	4.7 in (12 cm)
Width	0.9 in (2.3 cm)
Depth	4 in (10.1 cm)

FCC Class A Statement: Digi One IA

These devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) These devices must accept any interference received, including interference that may cause harmful operation.

Digi One IA Emissions

- Class 1 Div 2
- FCC Part 15 Subpart B, Class A
- EN 55022, Class A: 1998
- ICES-003, Class A
- VCCI, V-3/99.05
- AS/NZS5 3548

Digi One IA Immunity

- EN 55024:1998
- EN61000-6-2:1999

Digi One IA Safety

- UL 60950 3rd Ed.
- EN 60950 (European Union)
- CSA C22.2, No. 60950 3rd Ed. (Canada)

Digi One SP LEDs

LED	Color	State	Indicates
Power	Red (labeled PWR)	On	Power detected
		Steady blinking	Waiting for an IP address
		Blinking 1-1-1	Starting the EOS
		Blinking 1-3-1	Starting the TFTP process
		Blinking 1-5-1	Configuration returned to factory defaults
		Off	No power detected
Link	Green	On	Physical network detected
		Off	No physical network detected
ACT	Yellow	On	Bad initialization
		Off	Ready
		Blinking	Network activity

Digi One SP Specifications

Attribute	Value
Main Power Connector	9-30 VDC barrel connector
Ambient Temperature	10 to 45°C
Relative humidity	5 to 90% non-condensing
Length	3.7 in. (9.4 cm)
Width	1.72 in. (4.3 cm)
Depth	0.93 in. (2.3 cm)

FCC Class A Statement: Digi One SP

These devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) These devices must accept any interference received, including interference that may cause harmful operation.

Digi One SP Emissions

- FCC Part 15 Subpart B, Class A
- EN 55022, Class A: 1998
- ICES-003, Class A
- VCCI, V-3/99.05
- AS/NZS5 3548

Digi One SP Immunity

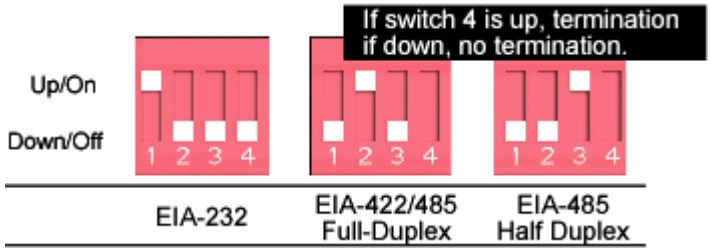
- EN 55024:1998
- EN61000-6-2:1999

Digi One SP Safety

- UL 60950 3rd Ed.
- EN 60950 (European Union)
- CSA C22.2, No. 60950 3rd Ed. (Canada)

Device Server EIA 232/422/485 Switch Settings

Function	Switch Settings			
	1	2	3	4
EIA-232	Up	Down	Down	Down
EIA-422/485 Full-duplex	Down	Up	Down	If up, termination. If down, no termination
EIA-485 half-duplex	Down	Down	Up	



DB9 and Screw Terminal Pinouts

DB9 Pin	EIA-232	EIA-422/485 Full-Duplex	EIA-485 Half-Duplex	Screw Terminal
1	DCD	CTS-	Not used	9
2	RxD	RxD+	RxD+	6
3	TxD	TxD+	TxD+	3
4	DTR	RTS-	Not used	2
5	GND	GND	GND	5
6	DSR	RxD-	RxD-	7
7	RTS	RTS+	Not used	1
8	CTS	CTS+	Not used	8
9	NA	TxD-	TxD-	4

Important Safety Information

To avoid contact with electrical current:

Never install electrical wiring during an electrical storm.

To reduce the risk of fire, use only 26 AWG or larger telecommunication line cord.

Never install telephone jacks in wet locations unless that jack is specifically designed for wet locations.

Use caution when installing or modifying telephone lines.

Use a screwdriver and other tools with insulated handles.

You and those around you should wear safety glasses or goggles.

Do not place telephone wiring or connections in any conduit, outlet or junction box containing electrical wiring.

WARNING

Do not work on your telephone wiring if you wear a pacemaker. Telephone lines carry electrical current.

Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities.

Telephone wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.

Before working with existing inside wiring, check all electrical outlets for a square telephone dial light transformer and unplug it from the electrical outlet. Failure to unplug all telephone transformers can cause electrical shock.

Do not place a jack where it would allow a person to use the

telephone while in a bathtub, shower, swimming pool, or similar hazardous location. Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer.

Do not touch uninsulated telephone wiring if lightning is likely!

External Wiring
Any *external* communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

Digi Contact Information

Digi International
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Minnetonka, MN 55343
U.S.A.

Customer Service and Support	
World Wide Web:	http://support.digi.com
email	support@digi.com
Telephone (U.S.)	(952) 912-3169
Telephone (other locations)	+1 (952) 912-3444

Chapter 8

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