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Digi ConnectPort X Family

User Guide

Revision history—90000832

Revision	Date	Description
H	October 2012	Added ConnectPort X2e 3G products.
J	September 2013	Updated all strings in text, screen captures, command options, and command output. Deleted references to obsolete ConnectPort WAN VPN device family.
K	February 2017	Rebranded with minor updates.

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About this guide

This guide describes how to install, provision, configure, monitor, and administer Digi ConnectPort X Family devices. The guide covers the following products:

- Digi ConnectPort X2
- Digi ConnectPort X2 XTend®/XStream® variants
- Digi ConnectPort X4
- Digi ConnectPort X4 H

Note For information about ConnectPort X2e SE products, see the [Smart Energy Gateway User Guide](#).

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Important safety information

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install an Ethernet connection in wet locations unless that connector is specifically designed for wet locations.
- Use caution when installing or modifying lines.
- Use a screwdriver and other tools with insulated handles.
- Wear safety glasses or goggles.
- Do not place Ethernet wiring or connections in any conduit, outlet or junction box containing electrical wiring.
- 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. Avoid contact with all such facilities.
- Ethernet 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.
- Do not place an Ethernet connection where it would allow a person to use an Ethernet device 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 Ethernet wiring if lightning is likely.
- External wiring: Any *external* communications wiring installed 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.
- For ConnectPort X4 H only: the plug serves as a disconnect device, and must be easily accessible after the device is installed.



Where to find information

In addition to this guide, you can find additional product and feature information in these documents:

- *RealPort® Installation Guide*

For product support resources visit the following support pages:

- [Digi ConnectPort X2 product support](#)
- [Digi ConnectPort X4 product support](#)

For additional information, see the following resources:

- Online help and tutorials in the web interface for the Digi device
- [Digi Wiki for Developers](#)

- Product information available on the Digi website, www.digi.com, and the Digi [support site](#), including:
 - [Support forum](#)
 - [Knowledge Base](#)
 - Datasheets/product briefs
 - Application/solution guides
 - Carrier-specific documents

Introduction

This section introduces Digi devices and product families, types of connections and data paths in which you can use Digi devices, and the interface options available for configuring, monitoring, and administering devices.

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Digi ConnectPort X Family features

This section provides an overview of Digi ConnectPort X Family features.

ConnectPort X products

The Digi ConnectPort X Family of products provides gateway functionality between various network technologies such as Ethernet, cellular, Wi-Fi, and XBee. In addition to providing IP network connectivity between cellular, Wi-Fi and Ethernet networks and devices; Digi International Inc. products provide remote connectivity to XBee networks as well as other devices connected to local ports: USB, 1-Wire, RabbitNet, and asynchronous serial. Digi ConnectPort X Family products act as a coordinator for a mesh network. As with the Connect and Cellular product families, Digi Remote Manager® supports Digi ConnectPort X Family products, which you can use to remotely manage gateway devices and mesh networks.

Key features of ConnectPort X Family include:

- Network flexibility: gateway functionality for a variety of networks
- XBee-PRO radio
- Currently Freescale-based, primarily 802.15.4
- Ember-250/XBee-based
- Commercial/Industrial Grade
- Device Manager™: High-level and detailed views of XBee networks and nodes
- Personal Area Network (PAN) connectivity and management
- Support of Python™ programming language, for creating a variety of embedded programs and applications
- Remote help desk support through a WatchPort® Camera connection to a USB host port
- Security
- For some models, an internal GPS

User interfaces

You can use the following user interfaces to configure, monitor, and administer Digi devices:

- Digi Remote Manager
- Web-based interface

For Digi devices that ship with a default IP address, connecting a laptop computer to the Ethernet port of these products allows direct access to the web interface for configuration.

- Command-line interface available via local serial port, telnet or SSH
- Simple Network Management Protocol (SNMP)

Network services

You can enable or disable access to network services. This means that you can restrict a device's use of network services to those strictly needed by the device. To improve device security, you can disable non-secure services. You can enable or disable the following network services:

- Advanced Digi Discovery Protocol (ADDP)
- RealPort
- Encrypted RealPort
- HTTP/HTTPS
- Line Printer Daemon (LPD)
- Remote login (rlogin)
- Remote shell (rsh)
- SNMP
- Telnet

You can enable or disable access to network services from the **Network Services Settings** page in the web interface. For more information, see [Network Services Settings](#).

You can use the **set service** command to enable and disable network services from the command-line interface. See the *Digi Connect® Family Command Reference* on www.digi.com for a description of the **set service** command.

IP protocol support

All Digi ConnectPort X Family devices include an on-board TCP/IP stack with a built-in web server. Supported protocols vary by specific product and include, unless otherwise noted:

- Transmission Control Protocol (TCP)
- User Datagram Protocol (UDP)
- Dynamic Host Configuration Protocol (DHCP)
- Simple Network Management Protocol (SNMP)
- Secure Sockets Layer (SSL)/Transport Layer Security (TLS)
- Remote login (rlogin)
- Line Printer Daemon (LPD)
- HyperText Transfer Protocol (HTTP)/HyperText Transfer Protocol over Secure Socket Layer (HTTPS)
- Simple Mail Transfer Protocol (SMTP)
- Internet Control Message Protocol (ICMP)
- Internet Group Management Protocol (IGMP)
- Address Resolution Protocol (ARP)
- Advanced Digi Discovery Protocol (ADDP)
- Point-to-Point Protocol (PPP)
- Network Address Translation (NAT)/Port Forwarding (only some products have NAT)
- Secure Shell (SSHv2)
- Generic Routing Encapsulation (GRE) passthrough
- IPsec Encapsulating Security Payload (ESP) on most models
- ESP passthrough

Serial data communication over TCP and UDP

Digi ConnectPort X products support serial data communication over TCP and UDP. The key features include:

- Serial data communication over TCP can automatically perform the following functions:
 - Establish bi-directional TCP connections, known as autoconnections, between the serial device and a server or other network device. Autoconnections are based on data and/or serial hardware signals.
 - Control forwarding characteristics based on size, time, and pattern.
 - Allow incoming raw, telnet, and SSL/TLS (secure-socket) connections.
 - Support RFC 2217, an extension of the telnet protocol.
- Serial data communication over UDP can automatically perform the following functions:
 - Digi Connect products can automatically send serial data to one or more devices or systems on the network using UDP sockets. Options for sending data include whether specific data is on the serial line, a specific time period has elapsed, or after the specified number of bytes has been received on the serial port.
 - Control forwarding characteristics based on size, time, and patterns.
 - Support incoming datagrams from multiple destinations.
 - Support outgoing datagrams sent to multiple destinations.
- TCP/UDP forwarding characteristics.
- Extended communication control on TCP/UDP data paths.
 - Timeout
 - Hangup
 - User-configurable Socket ID string (text string identifier on autoconnect only)

Dynamic Host Configuration Protocol (DHCP)

You can use Dynamic Host Configuration Protocol (DHCP) to automatically assign IP addresses, deliver IP stack configuration parameters such as the subnet mask and default router, and provide other configuration information. For more details, see [Assign an IP address using DHCP](#).

Auto IP

The Auto-IP protocol automatically assigns an IP address from a reserved pool of standard Auto-IP addresses to the computer on which it is installed. Digi devices automatically obtain their IP addresses from a DHCP server. If the DHCP server is unavailable or nonexistent, Auto-IP assigns the device an IP address. For more details, see [Assign an IP address using Auto-IP](#).

Simple Network Management Protocol (SNMP)

Simple Network Management Protocol (SNMP) manages and monitors network Digi ConnectPort X Family devices. The SNMP architecture enables a network administrator to manage:

- Nodes—servers, workstations, routers, switches, and hubs—on an IP network.
- Network performance, such as finding and solving network problems, and planning for network growth.

Digi devices support SNMP Versions 1 and 2.

For a list of SNMP-related of supported Request for Comments (RFCs) and Management Information Bases (MIBs), see [Supported RFCs and MIBs](#).

Secure Sockets Layer (SSL)/Transport Layer Security (TLS)

Secure Sockets Layer (SSL)/Transport Layer Security (TLS) provides authentication and encryption for Digi ConnectPort X Family products. For more information, see [Security features in Digi devices](#).

Telnet

Digi ConnectPort X devices support the following types of telnet connections:

- Telnet client
- Telnet server
- Reverse telnet, often used for console management or device management
- Telnet autoconnect
- RFC 2217, Telnet Com Port Control Option, an extension of the telnet protocol

For more information on these connections, see [Network connections and data paths](#). You can enable or disable access to telnet network services.

Remote login (rlogin)

You can enable or disable access to rlogin service. When enabled, users can use rlogin to remotely sign in to systems.

Line Printer Daemon (LPD)

The Line Printer Daemon (LPD) allows network printing over a serial port. Each serial port has a dedicated LPD server that is independently configurable. You can enable or disable access to LPD service.

HyperText Transfer Protocol (HTTP)/HyperText Transfer Protocol over Secure Socket Layer (HTTPS)

Digi provides web pages that you can use to configure the Digi ConnectPort X Family product. You can secure these web pages by requiring a user login.

Internet Control Message Protocol (ICMP)

You can display ICMP statistics, including the number of:

- Messages received
- Bad messages received
- Destination unreachable messages received

Point-to-Point Protocol (PPP)

The Point-to-Point Protocol (PPP) transports multi-protocol packets over point-to-point links. PPP is responsible for:

- Encapsulating the data packet
- Allowing the server to inform the dial-up client of its IP address (or client to request the IP address)
- Authenticating the exchange
- Negotiating multiple protocols
- Reassembling the data packet for network communication

Digi ConnectPort X devices support PPP as the connection protocol from the Digi device to the cellular IP network with NAT (Network Address Technology).

Network Address Translation (NAT)/port forwarding

Network Address Translation (NAT) reduces the need for a large amount of publicly known IP addresses by creating a separation between publicly known and privately known IP addresses.

Advanced Digi Discovery Protocol (ADDP)

The ADDP runs on any operating system capable of sending multicast IP packets on a network. ADDP allows the system to identify all ADDP-enabled Digi ConnectPort X Family products attached to a network by sending out a multicast packet. The Digi ConnectPort X Family products respond to the multicast packet and identify themselves to the client sending the multicast.

ADDP communicates with the IP stack using UDP. The IP stack can receive multicast packets and transmit datagrams on a network.

You can enable or disable access to ADDP service, but you cannot change the network port number for ADDP from its default.

Secure Shell (SSH)

Digi ConnectPort X Family products support Secure Shell (SSH) as a connection method and the following types of SSH connections: Reverse SSH and SSH Autoconnect. Limited use of SSH via SSH client is available from the Linux command line/bash shell. For more information on these connections, see [Network connections and data paths](#). You can enable or disable access to Secure Shell network services.

Generic Routing Encapsulation (GRE passthrough/Encapsulating Security Payload (ESP) passthrough

GRE and ESP are routing protocols that route (tunnel) various types of information between networks. GRE applies to the encapsulation of IP datagrams tunneled through the Internet. The encapsulation includes security, typically in the form of IPsec (IP security), and is most commonly found in VPN (Virtual Private Network) implementation. RFC (Request For Comment) 1701 and 1702 define these standards. Similarly, you can use ESP in conjunction with IPsec as a possible way of carrying IP packets for a Virtual Private Network (VPN) setup. ESP is defined in RFC 2406.

In ESP passthrough and GRE passthrough, inbound IPsec ESP or GSP protocol traffic is forwarded to a VPN device connected to the Digi device's Ethernet port.

Note If you are using an Auto-key Internet Key Exchange (IKE)-based VPN, UDP port 500 must also be forwarded.

Mobile/cellular features and protocol support

Key cellular features in cellular-enabled Digi devices include:

- GSM: GPRS, EDGE, UMTS, HSPA, SMS
- CDMA: 1xRTT, EV-DO (Revs 0 and A)
- IPsec ESP / IKE
- IP passthrough, also known as bridge mode
- 3-5 volt SIM card
- Signal-strength LEDs

Provisioning wizard

For Digi devices equipped with a Code-Division Multiple Access (CDMA)-based cellular modem, the Mobile Device Provisioning Wizard is available in the web interface to properly configure the Digi device with the required configuration used to access the mobile network. The wizard allows for both automatic and manual provisioning for a variety of mobile service providers.

Digi SureLink™

Digi ConnectPort X Family support the Digi SureLink feature. Digi SureLink provides an “always-on” mobile network connection to ensure that a Digi device is in a state where it can connect to the network. It does this through hardware reset thresholds and periodic tests of the connection.

Mobile/cellular protocols

Mobile/cellular protocols supported include, unless otherwise noted:

- Global System for Mobile communication (GSM).
- General Packet Radio Service (GPRS).
- Enhanced Data Rates for GSM Evolution (EDGE).
- Universal Mobile Telecommunications Service (UMTS).
- High Speed Packet Access (HSPA).
- Code-Division Multiple Access (CDMA).
- Evolution-Data Optimized (EV-DO, EVDO, or 1xEV-DO).
- Short Message Service (SMS), currently for GSM cellular products only. Digi cellular gateways implement an SMS-based protocol that allows managing devices by sending SMS commands from anywhere SMS messages can be sent. See [Short Message Service \(SMS\) settings](#).
- Wi-MAX.

RealPort software

Digi's RealPort software leverages the TCP/IP network infrastructure to provide a virtual connection to serial devices. The software is installed directly on the server and allows applications to talk to devices via a Digi device server or terminal server over a network.

RealPort software is a COM port redirector that allows multiple connections to multiple ports over a single TCP/IP connection. This means RealPort supports the maximum number of remote devices. The number is restricted only by the operating system and server processing power.

Other unique features include full hardware and software flow control, as well as tunable latency and throughput. With these, RealPort ensures optimum performance since data transfer is adjusted according to specific application requirements. It also provides connection recovery—after a network interruption RealPort automatically reconnects the device to the COM port without the application knowing there was a failure.

Encrypted RealPort

Digi ConnectPort X Family devices also support RealPort software with encryption. Encrypted RealPort offers a secure Ethernet connection between the COM or TTY port and a device server or terminal server. Encryption prevents internal and external snooping of data across the network by encapsulating the TCP/IP packets in an SSL connection and encrypting the data using Advanced Encryption Standard (AES).

Digi's RealPort with encryption driver has earned Microsoft's Windows Hardware Quality Lab (WHQL) certification.

Drivers are available for a wide range of operating systems, including Microsoft Windows and Linux x32 and x64 based operating systems, as well as other versions of Unix. See the [RealPort Compatibility OS List](#) in the Digi Knowledge Base for a detailed list of supported operating systems. It is ideal for financial, retail/point-of-sale, government, or any application requiring enhanced security to protect sensitive information.

Alarms

You can configure Digi ConnectPort X Family products to issue alarms, in the form of email messages or SNMP traps, when certain device events occur, including:

- Data patterns detected in the data stream
- Cellular alarms for signal strength and amount of cellular traffic for a given period of time

Configuring Digi devices to issue alarms allows you to know when events occur. For more information on configuring alarms, see [Alarms Configuration](#).

Modem emulation

Digi ConnectPort X Family devices include a configuration profile that allows the device to emulate a modem. Modem emulation sends and receives modem responses to a serial device over TCP/IP (including Ethernet and cellular) instead of Public Switched Telephone Network (PSTN). The modem emulation profile allows you to maintain a current software application but using it over the less expensive Ethernet network. In addition, you can enable or disable telnet processing on the incoming and outgoing modem-emulation connections. For information on the modem-emulation commands that Digi ConnectPort X Family products support, see the *Digi Connect® Family Command Reference*. See [Select Port Profile](#) for more information.

Security features in Digi devices

This section covers Digi ConnectPort X Family security features.

Secure access and authentication

Security features include the following:

- Provide customized permissions controls to locally defined users. The local definitions apply irrespective of whether Radius is used for authentication.
- Issue passwords for device users.

- Selectively enable/disable network services such as ADDP, RealPort, Encrypted RealPort, HTTP/HTTPS, LPD, remote login, remote shell, SNMP, and telnet.
- Control access to inbound ports.
- Control access to specific devices, IP addresses, or networks through IP filtering.
- Secure sites for configuration: HTML pages for configuration have appropriate security.

Encryption

Encrypted RealPort offers encryption for the Ethernet connection between the COM/TTY port and the Digi ConnectPort X Family product. Encryption prevents internal and external snooping of data across the network by encapsulating the TCP/IP packets in an SSL connection and encrypting the data using the Advanced Encryption Standard (AES) security algorithm.

Encryption methods are as follows:

- Strong TLS V1.0-based encryption:
 - DES (64-bit)
 - 3DES (192-bit)
 - AES (128/192/256-bit)
 - IPsec ESP: DES, 3DES, AES
- Wireless Digi Connect products provide Wi-Fi Protected Access (WPA/WPA2—/802.11i) and Wired Equivalent Privacy (WEP) encryption (64-/128-bit). Supported WPA/WPA2—/802.11i authentication methods include:

Supported WPA authentication methods		
EAP-TLS	PEAP	EAP/TTLS
LEAP (WEP only)	EAP-PEAP/MSCHAPv2 (both PEAPv0 and PEAPv1)	EAP-TTLS/EAP-MD5-Challenge
	EAP-PEAP/TLS (both PEAPv0 and PEAPv1)	EAP-TTLS/EAP-GTC
	EAP-PEAP/GTC (both PEAPv0 and PEAPv1)	EAP-TTLS/EAP-OTP
	EAP-PEAP/OTP (both PEAPv0 and PEAPv1)	EAP-TTLS/EAP-MSCHAPv2
	EAP-PEAP/MD5-Challenge (both PEAPv0 and PEAPv1)	EAP-TTLS/EAP-TLS
		EAP-TTLS/MSCHAPv2
		EAP-TTLS/MSCHAP
		EAP-TTLS/PAP
		EAP-TTLS/CHAP

SNMP security

You can configure SNMP **set** commands to use SNMP read-only. Digi recommends changing the public and private community names to prevent unauthorized access to the Digi device.

Network Port Scan Cloaking

The Network Port Scan Cloaking feature allows you to configure this Digi device to ignore (discard) received packets for services that are hidden or not enabled and network ports that are not open. You can use this feature to protect your Digi device from malicious software or denial of service attacks. For more information, see [Network Port Scan Cloaking](#).

Configuration management

Once a Digi ConnectPort X device is configured and running, you may need to periodically perform the following configuration-management tasks:

- Copy configurations to and from a remote host
- Perform the following on the Digi device:
 - Update the firmware
 - Reset the factory settings
 - Manage the device files and memory
 - Reboot the device

For more information on these configuration-management tasks, see [Administration](#).

Customization capabilities

You can customize several aspects of Digi devices. For example, you can:

- Customize the appearance of the device interface by changing the company logo or screen colors.
- Run custom Python applications.
- Define the custom factory defaults that the devices use to restore factory default settings.

Network connections and data paths

Digi ConnectPort X Family devices allow for several kinds of connections and paths for data flow between Digi ConnectPort X Family devices and other entities. You can group these connections into two main categories:

- **Network services**, in which a remote entity initiates a connection to a Digi device.
- **Network/serial clients**, in which a Digi device initiates a network connection or opens a serial port for communication.

The following topics describe the effects of enabling features and selecting settings when configuring Digi ConnectPort X Family devices.

Network services

A network service connection occurs when a remote entity initiates a connection to a Digi device. There are several categories of network services:

- [Network services associated with specific ports](#)
- [Network services associated with serial ports in general](#)
- [Network services associated with the command-line interface](#)

Network services associated with specific ports

The following list details network services associated with specific ports.

- **Reverse telnet:** A remote entity establishes a telnet connection to a Digi serial port. Data passes transparently between the telnet connection and a named serial port.
- **Reverse raw socket:** A remote entity establishes a raw TCP socket connection to a Digi serial port. Data passes transparently between the socket and a named serial port.
- **Reverse TLS socket:** A remote entity establishes an encrypted raw TCP socket connection to a Digi serial port. Data passes transparently to and from a named serial port.
- **LPD:** A remote entity establishes a TCP connection to a named serial port. The Digi device interprets the LPD protocol and sends a print job out of the serial port.
- **Modem emulation**, also known as **pseudo-modem (pmodem):** A remote entity establishes a TCP connection to a named serial port. This connection is “interpreted” as an incoming call to the pseudo-modem.

Network services associated with serial ports in general

The following list details network services associated with serial ports in general.

- **RealPort:** A single TCP connection manages (potentially) multiple serial ports.
- **Modem emulation**, also known as **pseudo-modem (pool):** A TCP connection to the “pool” port is interpreted as an incoming call to an available pseudo-modem in the “pool” of available port numbers.
- **rsh:** Digi ConnectPort X Family products support a limited implementation of the remote shell (rsh) protocol, in that a single service listens to connections and allows a command to be executed. Only one class of commands is allowed: a single integer that specifies which serial port to connect to. Otherwise, the resulting connection is somewhat similar to a reverse telnet or reverse socket connection.
- **DialServ:** Connecting a DialServ device to the serial port. DialServ simulates a public switched telephone network (PSTN) to a modem and forwards the data to the serial port. The Digi device sends and receives the data over an IP network.
- **Reverse SSH:** An encrypted TCP socket is available for each port that provides a direct connection to the designated serial port.

Network services associated with the command-line interface

The following list details network services associated with the command line interface (CLI).

- **Telnet:** Use telnet to directly access a Digi ConnectPort X command-line interface.
- **Rlogin:** Perform a remote login (rlogin) to a Digi ConnectPort X command-line interface.

Network/serial clients

A network/serial client connection occurs when a Digi ConnectPort X product initiates a network connection or opens a serial port for communication. There are several categories of network/serial client connections:

- [Autoconnect behavior client connections](#)
- [Command-line interface \(CLI\)-based client connections](#)
- [Modem emulation \(pseudo-modem\) client connections](#)

Autoconnect behavior client connections

In client connections that involve autoconnect behaviors, a Digi ConnectPort X Family product initiates a network connection based on timing, serial activity, or serial modem signals. Autoconnect-related client connections include:

- **Raw TCP connection:** The Digi ConnectPort X Family initiates a raw TCP socket connection to a remote entity.
- **Telnet connection:** The Digi ConnectPort X Family initiates a TCP connection using the telnet protocol to a remote entity.
- **Raw TLS encrypted connection:** The Digi ConnectPort X Family initiates an encrypted raw TCP socket connection to a remote entity.
- **Rlogin connection:** The Digi ConnectPort X Family initiates a TCP connection using the rlogin protocol to a remote entity.

Command-line interface (CLI)-based client connections

CLI-based client connections are available for use when you establish a session with the Digi ConnectPort X Family product's CLI. CLI-based client connections include:

- **ssh:** Allows you to connect to a remote entity using the ssh protocol.
- **telnet:** Allows you to connect to a remote entity using the telnet protocol.
- **rlogin:** Allows you to connect to remote entity using the rlogin protocol (bash only).
- **scp:** Allows you to transfer files (bash only).
- **connect:** Begin communicating with a local serial port.

Note Additional communication methods include using a bash shell such as scp, tftp, nc, or using Python.

Modem emulation (pseudo-modem) client connections

When a port is in the modem-emulation or pseudo-modem mode, it can initiate network connections based on AT command strings received on the serial port. See the *Digi Connect® Family Command Reference* on www.digi.com for modem emulation AT commands.

Getting started with Digi ConnectPort X Family products

This section walks you through configuring an IP address and signing in to your Digi ConnectPort X device.

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Assign an IP address

This section describes how to assign an IP address to Digi ConnectPort X products and manage that IP address.

Default IP address and DHCP settings

All products that have a cellular (WAN) interface ship with a static IP address for the Ethernet port of 192.168.1.1 and DHCP *server* enabled by default. Therefore, simply connecting a laptop computer to the Ethernet port of these products allows direct access to the web interface for configuration. Configure the Ethernet port on the laptop to automatically receive an IP address and DNS server address.

All products that only have an Ethernet or Wi-Fi (LAN) interface ship with DHCP *client* enabled by default. Accessing the web interface on these products is most easily done by connecting it to a LAN that has a DHCP server.

To discover the IP address assigned to the device, use the Device Discovery Utility for Windows. See [Use Digi Device Discovery utility to sign in to the web interface](#) for more information.

Configuring IP addresses

There are several alternate methods to assign an IP address to a Digi device:

- Use Dynamic Host Configuration Protocol (DHCP) from the web interface.
- Use the command-line interface.
- Use Automatic Private IP Addressing (APIPA), also known as Auto-IP.

Digi ConnectPort X Family devices have two IP addresses: one for Ethernet and one for cellular. The pre-defined default Ethernet Port IP address is **192.168.1.1**.

Assign an IP address using DHCP

You can assign an IP address using Dynamic Host Configuration Protocol (DHCP). DHCP is an Internet protocol for automating the configuration of computers that use IP. You can use DHCP to automatically assign IP addresses and deliver IP stack configuration parameters.

All products that have a cellular (WAN) interface ship with static IP address for the Ethernet port of 192.168.1.1 and DHCP server enabled by default. All products that only have an Ethernet or Wi-Fi (LAN) interface ship with DHCP *client* enabled by default.

If desired, set up a permanent entry for the Digi device on a DHCP server. While this is not necessary to obtain an IP address via DHCP, setting up a permanent entry saves the IP address when the device is rebooted.

For more information on DHCP server configuration, see [DHCP server settings](#).

Assign an IP address using Auto-IP

The standard Automatic Private IP Addressing (APIPA or Auto-IP) protocol automatically assigns the IP address from a group of reserved IP addresses to the device on which Auto-IP is installed. Use Digi Device Discovery or ADDP to find the Digi device and assign it a new IP address that is compatible with your network. When you plug in the device, Auto-IP automatically assigns the IP address. Auto-IP addresses are typically in the 169.254.x.x address range. See [Use Digi Device Discovery utility to sign in to the web interface](#) for instructions on using Digi Device Discovery.

Assign an IP address from the command-line interface

Use the **set network** command to configure an IP address from the command line. The **set network** command includes the following parameters:

- **ip=device ip**: The IP address for the device.
- **gateway=gateway**: The network gateway IP address.
- **garp=seconds**: The frequency of Gratuitous ARP (GARP) announcements, in seconds, which are a broadcast announcement to the network of a device's MAC address and the IP address.
- **submask=device submask**: The device subnet mask for the IP address.
- **dhcp=off**: Turns off use of the Dynamic Host Configuration Protocol (DHCP), so that the IP address assigned is permanent.
- **static=on**: Specifies that the IP address is static, and will remain as the specified IP address, gateway, and submask.

For example:

```
set network ip=10.0.0.100 gateway=10.0.0.1 submask=255.255.255.0 dhcp=off
static=on
```

Assign an IP address from the web interface

Normally, you assign IP addresses to Digi ConnectPort X Family devices through DHCP. This procedure assumes that the Digi ConnectPort X Family device already has an IP address and you simply want to change it.

To change the IP address from the web interface:

1. Open a web browser and type the current IP address of the Digi ConnectPort X Family device in the address bar.
2. Type the user name and password for the device. The default user name is **root** and the default password is **dbps**. If these defaults do not work, contact the system administrator who set up the device.
3. Click **Network** to access the **Network Configuration** page.
4. On the **IP Settings** page, select **Use the following IP address**.
5. Type the IP address, subnet mask, and gateway settings.
6. Click **Apply** to save the configuration.

IP addresses and Remote Manager

From the Remote Manager interface, you can only change the Ethernet/LAN address for a Digi device; you cannot assign an address. The mobile/cellular device is typically provided by the mobile service provider; check with your mobile service provider on how they handle addresses. To change the IP address, open the web interface for based on the IP address the device has and go **Configuration > Network > IP Settings**. On the IP Settings page, type the new IP address, subnet mask, and gateway.

Test the IP address assignment

To verify the IP address works as configured:

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

```
ping ip-address
```

where *ip-address* is the IP address assigned to the Digi device. For example:

```
ping 192.168.2.2
```

Configuration through Digi Remote Manager

Remote Manager (formerly Device Cloud) is an on-demand service. After creating a Remote Manager account, you can connect to Remote Manager. There are no infrastructure requirements. Remote devices and enterprise business applications connect to Remote Manager via standards-based Web Services.

See the [Remote Manager User Guide](#) for details on:

- Using Remote Manager as a management interface
- Creating a Remote Manager account
- Adding your Digi ConnectPort X Family device to the Remote Manager device list so you can manage it from that interface

Manage Remote Manager through SMS commands

You can configure Digi devices managed by Remote Manager through Short Message Service (SMS) commands. See [Users](#).

Sign in to the web interface

After you successfully assign an IP address to your device, you can sign in to the device's web interface using either of the following:

- Web browser
- Digi Device Discovery utility

Use a web browser to sign in to the web interface

To access the web interface for a Digi device using a browser:

1. In the web browser address bar, type the IP address of the device.
2. If you are prompted for login credentials, type the user name and password for the Digi device. The default user name is **root** and the default password is **dbps**. If the default user name and password do not work, contact the system administrator who set up the Digi device.

The **Home** page appears. See [Home page](#) for an overview of the Home page and other linked pages.

Note If password authentication is enabled, the idle timeout automatically logs users out of the web interface after 5 minutes of inactivity.
