



**Connectware™**

**RealPort**  
**on**  
**HP-UX**

Setup Guide

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## Purpose

Use this guide for the following:

- An introduction to RealPort, how to install, configure and use RealPort and, how to troubleshoot should you encounter a problem
- Configuration examples
- Administration procedures

## Audience

This manual is intended for the person responsible for configuring and administering RealPort. This person should have experience configuring network devices and be familiar with networking concepts.

## Conventions

Following are the conventions used in this document:

### *Special Fonts*

A special font is used for any input you need to enter. For example,

```
set config
```

### *Square Brackets*

Optional parameters are displayed within square brackets. For example,

```
set config [dhcp=on]
```

**Note:** The square brackets themselves are not actually part of the command, and should not be entered.

### *Italics*

Variables are displayed in italics. For example,

```
set config ip=ip-address
```

**Note:** Substitute an appropriate IP address for *ip-address* in the above command.

### *Vertical Bar*

A vertical bar character (|) is used to denote a choice (logical "or"). For example,

```
set flow=on|off
```

**Note:** The above command would be entered as either:

```
set flow=on or set flow=off
```

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## Requirements and Considerations

Read this section before beginning the RealPort driver installation.

- The HP-UX RealPort driver supports versions 10.10 or later of the operating system. It will not work with earlier versions.
- Once the RealPort driver is installed, HP-UX manual pages are available for:

Item	Function
ditty	Sets and displays RealPort device TTY options
drpadmin	The Digi RealPort configuration utility
drpd	The Digi RealPort network driver
drp	The Digi RealPort driver

## Information to Gather

Before you install RealPort, you need to determine:

- The hostname or IP address to assign each unconfigured Digi device.
- The number of ports for each Digi device. Include any Xem PORTS Module ports that are attached to the Digi device.
- Determine the link speed between the host machine and the Digi device if a slow WAN link (for example, a 56K leased line) connects them.

## Configuring a Digi One RealPort, Digi One IA RealPort or PortServer for RealPort

Use this procedure to configure a Digi One RealPort, Digi One IA RealPort or PortServer for use with Digi RealPort drivers.

**Note:** See the appropriate Command Reference or Configuration and Administration Guide for information on how to perform the steps below.

### *Procedure*

1. Access a root prompt on the Digi One RealPort, Digi One IA RealPort or PortServer.
2. Set the Digi device's IP address.
3. Verify that the RealPort TCP port number is set to 771. Change if necessary.
4. For all ports that will be using RealPort, set the device type to rp. The following example configures ports 2 through 16 of a PortServer for RealPort:

```
set ports range=2-16 dev=rp
```



## Configuring EtherLite for RealPort

Use this procedure to install and configure an EtherLite Terminal Server for use with Digi RealPort drivers.

### *Procedure*

1. Attach the EtherLite module to the network using an appropriate cable.
2. Assign an IP address to the EtherLite module (see the following topic).

## Assigning an IP Address

EtherLite IP addresses may be set by either of two methods:

- `dgipserv`, a UNIX utility for setting EtherLite IP addresses (see below)
- EtherLite Boot Console (see the EtherLite Administration Card)

## Using `dgipserv` to Assign an IP Address

`dgipserv` is a Digi utility used to set the IP addresses for Digi devices. It will also set the gateway and subnet mask addresses when needed to upgrade the Digi device's firmware. For more information on `dgipserv` consult the man pages.

**Note:** `dgipserv` will only work with firmware version 7.9 or later.

### *Procedure*

1. Enter the command:

```
dgipserv
```

2. To store an IP addresses in your Digi device enter:

```
dgipserv -store MAC_address(IP_address)
```

where the MAC address and the IP address are the addresses of the Digi device. An example of this command is:

```
dgipserv -store 10:e0:f7:15:20:8g 143.182.5.63
```

## **Related Documentation**

### **PortServer Documentation**

- PortServer Configuration and Reference Guide
- Digi One/PortServer Cable Guide

### **PortServer II Documentation**

- PortServer II Hardware Installation Guide
- PortServer II Command Reference
- PortServer II Configuration and Administration Guide
- Digi One/PortServer Cable Guide
- Digi Port Authority--Remote Device Monitor Setup Guide

### **PortServer TS 8/16 Documentation**

- PortServer TS 8/16 Command Reference
- PortServer TS 8/16 Configuration and Administration Guide
- Digi One/PortServer Cable Guide
- Digi Port Authority--Remote Device Monitor Setup Guide

### **Digi One RealPort/PortServer TS 2/4 Documentation**

- Digi One/PortServer TS 2/4 Quick Reference Card
- Digi One/PortServer TS 2/4 Command Reference
- Digi One/PortServer TS 2/4 Configuration and Administration Guide
- Digi One/PortServer Cable Guide
- Digi Port Authority--Remote Device Monitor Setup Guide

### **Digi One IA RealPort Documentation**

- Digi One/PortServer TS 2/4 Command Reference
- Digi One/PortServer TS 2/4 Configuration and Administration Guide
- Digi One/PortServer Cable Guide
- Digi Port Authority--Remote Device Monitor Setup Guide

### **EtherLite Documentation**

- EtherLite Hardware Information Guide
- EtherLite Administration Card
- EtherLite Cable Guide

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## Master Setup Process

Use this process to install and configure the HP-UX RealPort driver.

1. Read any release notes that may be included with the installation media.
2. Gather information necessary for installation. See Information to Gather, on page 2-2.
3. Install the RealPort driver. See Driver Installation: CD or Driver Installation: Downloaded, below.
4. Configure the Digi One RealPort, Digi One RealPort or PortServer for RealPort. See Configuring a Digi One RealPort, Digi One IA RealPort or PortServer for RealPort, on page 2-2, or Configuring EtherLite for RealPort, on page 2-3.
5. Create RealPort devices. See Adding a Digi Device with drpadmin, on page 3-4.
6. Configure the TTY Devices as necessary. See the TTY configuration topics beginning on page 3-6.

## Installing a Driver: Downloaded

Use this procedure to install the HP-UX RealPort device driver after downloading it.

**Note:** This is an example of an installation of RealPort on HP-UX. Your installation steps may vary depending on your version of HP-UX. Consult your HP-UX documentation for information on installing drivers.

### *Procedure*

1. Log onto the console as root.
2. Copy the driver file to /tmp either from a diskette, or by using ftp.
3. Extract the files from the compressed tar file with this command:  

```
tar xvf filename.tar
```

where *filename.tar* is the name of the downloaded tar file.
4. Now register the installation package with the system by entering the following command:  

```
swreg -l depot /tmp/drp.pkg
```
5. Once the component files have been copied, use the swinstall program to copy the component files to the system.  

```
/usr/sbin/swinstall -s /tmp/drp.pkg
```
6. Choose the DRP line item.
7. Choose Actions > Mark for Install.
8. Choose Actions > Install (analysis)...  
The Install Analysis window appears.
9. Choose OK to proceed.
10. Confirm the prompts that follow.  
Upon successful completion, swinstall will reboot your system.
11. Continue with the procedure Adding a Digi Device with drpadmin, on page 3-4.

## Uninstalling RealPort

Use this procedure to remove a Digi device from HP-UX.

### *Procedure*

1. Delete any configured Digi devices on the HP-UX system. See Deleting a Digi Device with drpadmin, on page 3-4.
2. Enter this command at a Unix root prompt:

swremove

The SD - Remove Software Selection window appears.

3. Choose DRP (Digi RealPort Driver).
4. Choose Actions > Remove (Analysis)...
5. Choose OK to continue at the Remove Analysis window.
6. Choose Yes at the Confirmation windows that appear.
7. Choose Done at the Remove window.
8. Confirm the prompt to reboot the system when it appears. If it does not appear, the system should be rebooted manually.
9. After the system reboots, remove any remaining driver files by entering the command:

```
rm -r /tmp/drp.pkg
```

## Adding a Digi Device with drpadmin

Use this procedure to create RealPort devices and start the RealPort daemons.

### *Procedure*

1. Enter this command at a root prompt:

```
/usr/sbin/drpadmin
```

2. Answer the prompts as appropriate.

<b>When Prompted to:</b>	<b>Action:</b>
Select an option	Choose add.
Enter the node name or IP address for this Digi device	If an IP address is used, make sure it is unique and does not conflict with any other network device.  If a name is entered, the name must be registered in /etc/hosts or with an accessible nameserver.
Enter the number of ports on the Digi device	Enter the number of ports for this Digi device. The installation will prompt to confirm this number.  <b>Note:</b> If PORTS/Xem (EBI) modules will be attached to a PortServer II module, include these ports.
Enter TTY device ID letter(s)	Enter one or two letters. These letters will be used to create the RealPort device names.
Enter WAN speed if the connection between the Digi device and HP-UX system includes a WAN link slower than 1 MB	Enter the WAN speed if this is the case. Otherwise, choose Enter to continue.
Confirm the configuration	Enter y to proceed or n to reenter the information.
Select an option	Enter a to add another Digi device. Enter s to show configured Digi devices. Enter q to exit drpadmin.

## Deleting a Digi Device with drpadmin

Use this procedure to delete a Digi device.

### *Procedure*

1. Enter this command at a root prompt:

```
/usr/sbin/drpadmin
```

2. Enter s to show all installed Digi devices.
3. Note the number of the Digi devices to delete.
4. Choose Enter to make the options prompt reappear.
5. Enter d (delete).
6. Enter the Digi device number to delete.
7. Enter y to confirm the deletion.

## RealPort Devices

The RealPort installation creates three different devices for each port in the /dev directory.

- Standard device
- Modem device
- Transparent print device

### Device Name Format

The devices are named according to the following conventions:

aa-zz	The Digi device letter ID.
01-64	The port number on the individual Digi device.

Following are examples of the devices for the first port of a PortServer with the identification letters "aa":

Device	Path Name Example
Standard Device	/dev/cuaa01
Modem Device	/dev/ttyaa01
Standard Transparent Print Device	/dev/praa01

### Standard Device

**Example:** /dev/cuaa01

A standard Digi device begins with the prefix "cu". The default handshake method is XON/XOFF. Data Carrier Detect (DCD) need not be present to open the device.

Once a connection is established and DCD becomes active, standard devices behave in the same way as modem devices. Subsequent loss of the Data Carrier Detect signal will cause active processes on the port to be killed and the user will be automatically logged off.

### Modem Device

**Example:** /dev/ttyaa01

Digi modem devices begin with the prefix "tty". They are sometimes referred to as "dial-in" devices.

Modem devices are traditional UNIX ports with modem control. They require Data Carrier Detect to be high before they will operate. RTS/CTS handshaking is enabled by default. When used with a modem, the ports will wait for DCD before sending out the login prompt

When used with a terminal or other device, it is usually wise to wire the Digi DCD signal to the terminal's Data Terminal Ready (DTR) line. When the terminal is turned on, the system outputs a login prompt. When the terminal is turned off, any associated jobs are killed, and the user is logged out.

### Transparent Print Device

**Example:** /dev/praa01

The transparent print device can be used with auxiliary printer ports on terminals. Output directed to a "pr" device goes out the auxiliary port of a terminal while you continue to use the terminal normally.

## Configuring a Device for a Terminal

Use this procedure to configure a RealPort device for a terminal. See your operating system documentation for more information on configuring a serial device for a terminal.

### *Procedure*

1. In HP-UX, TTY devices require the carrier detect high. This must either be tied high within the cable or it can be forced high in the driver by entering a ditty command, like the following example, for the port in a startup file:

```
ditty forcedcd ttya12
```

2. Connect a proper cable between the port and terminal.
3. Enable the port by editing the `/etc/inittab` file. Locate the proper RealPort device to enable and change the word off to respawn. This line shows an example of a inittab entry for the first port of a PortServer with a designation letter of "a".

```
Xx01:23:off:/etc/getty ttya12 H
```

4. Change the letter or number at the end of the entry as needed. The last number or letter (H in the previous example) is an entry in the `/etc/gettydefs` file. This sets the speed, data bits, stop bit(s) and parity for the port. Consult your operating system documentation for more information on `/etc/gettydefs`.

5. Enter the following command at a root prompt:

```
init q
```

## Configuring a Device for a Printer

Use this procedure to configure a RealPort device for a printer. See your operating system documentation for more information on configuring a serial device for a printer.

### *Procedure*

1. In HP-UX, TTY devices require Data Carrier Detect to be high. This must either be tied high within the cable, or it can be forced high in the driver by entering this ditty command for the port in a startup file:

```
ditty forcedcd ttya12
```

The device, `ttya01`, is used as an example in this command.

2. Connect a proper cable between the port and printer.

## Configuring a Device for a Modem

Use this procedure to configure a RealPort device for a Dial-in/Dial-out modem connection. Configuring a device for a modem requires familiarity with both the operating system and the modem being used. While the following procedure is sufficient for most cases, it may be necessary to take additional steps to properly configure your modem or to set up the operating system for a specific application.

### *Procedure*

1. Connect a proper cable between the port and modem.
2. On the HP-UX server, use `vi` to enable the new modem entries in the `/etc/inittab` file for dial-in. Here are examples of two entries for Digi RealPort ports:

```
Xx01:23:off:/etc/getty ttya12 H  
Xx02:23:off:/etc/getty ttyb02 H
```

3. Change the word off to respawn for each port you want enabled. For example:

```
Xx01:23:respawn:/etc/getty ttya12 H  
Xx02:23:respawn:/etc/getty ttyb02 H
```

**Note:** The numbers associated with each "tty" represent port number (`ttya01` is Port 1, `ttya08` is Port 8).



The last number or letter (H in the previous example) is an index into the `/etc/gettydefs` file, which may be set to any of the allowable baud rates (check your operating system's manual.). In this case, H specifies 9600 baud, 8 data bits, 1 stop bit, and no parity.

4. Enter the following command at a root prompt:

```
init q
```

5. Modify the file `/usr/lib/uucp/Devices`. Add an entry for the device at the end of the file like this:

```
Direct cua12 - 38400 direct
```

6. Comment out any ACU lines relating to this device until dialin is working properly.

**Note:** An ACU line is necessary for correct operation of the modem in dialout applications. Refer to your modem manual or to the modem manufacturer for the correct initialization string to use for your modem. Refer to your operating system documentation for guidance on setting up an appropriate ACU entry that uses this initialization string.

7. Connect to the modem by entering this command at a root prompt:

```
cu -l /dev/cua12 -s 38400  
at&w [train modem to port speed]
```

**Note:** In HP-UX, the TTY device name is for dial-in, the cu name is for dial-out.

8. To exit cu, enter:

`~.` (a tilde followed by a period)

## Setting TTY Options

RealPort UNIX device driver packages include a command, `ditty`, which is a superset of `stty`, and may be used to set and display the device options for Digi RealPort devices.

The general command format is:

```
ditty [-a] [-n ttyname] [option(s)] [ttyname]
```

With no options, `ditty` displays all Digi special driver settings, modem signals, and all standard parameters displayed by `stty(1)` for the TTY device referenced by standard input.

Command options are provided to change flow control settings, set transparent print options, force modem control lines, and display all TTY settings. Any unrecognized options are passed to `stty(1)` for interpretation.

`ditty` commands may be executed from the command line, or placed in a startup script to be run whenever the system is booted.

The options are:

- a            Display all of the unique Digi option settings, as well as all of the standard TTY settings reported by `stty -a`.
- n *ttyname*    Set and display options for the given TTY device, instead of standard input. This option may be specified multiple times to perform the same operation on multiple TTYs.
- ttyname*       Set and display options for the specified TTY device. Replace *ttyname* with the TTY pathname (such as `/dev/ttya01s`, `/dev/term/a01` or `/dev/dty/a001s`, depending on your operating system). This option may be used on a modem control line when no carrier is present.

The following options specify transient actions to be performed immediately:

- `break`        Send a 250 MS break signal out on the TTY line.
- `flush`        Immediately flush (discard) TTY input and output.
- `flushin`      Flush TTY input only.
- `flushout`     Flush TTY output only.

The following options specify actions which are not sticky, meaning that the changes are cancelled when the device is closed, and that the device will use the default values the next time it is opened.

- `stopout`      Stop output exactly as if an XOFF character were received.
- `startout`     Restart stopped output exactly as if an XON character were received.
- `stopin`       Activate flow control to stop input.
- `startin`      Release flow control to resume stopped input.
- `[-]dtr`       Raise [drop] the DTR modem control line, unless DTR hardware flow control is selected.
- `[-]rts`       Raise [drop] the RTS modem control line, unless RTS hardware flow control is selected.

The following options are sticky—the effects continue until the system is rebooted or until the options are changed.

<code>[-]fastbaud</code>	Alter the baud rate tables to permit the use of data rates that are beyond the range supported by the operating system. See fastbaud Data Rate Mapping, on page 3-10.
<code>[-]rtspace</code>	Enable [disable] RTS hardware input flow control, so RTS drops to pause remote transmission.
<code>[-]ctspace</code>	Enable [disable] CTS hardware output flow control, so local transmission pauses when CTS drops.
<code>[-]dsrpace</code>	Enable [disable] DSR hardware output flow control, so local transmission pauses when DSR drops.
<code>[-]dcdpace</code>	Enable [disable] DCD hardware output flow control, so local transmission pauses when DCD drops.
<code>[-]dtrpace</code>	Enable [disable] DTR hardware input flow control, so DTR drops to pause remote transmission.
<code>[-]forcedcd</code>	Disable [re-enable] carrier sense, so the TTY may be opened and used even when carrier is not present.
<code>startc c</code>	Sets the XON flow control character. The character may be given as a decimal, octal or hexadecimal number. Octal numbers are recognized by the presence of a leading zero, and hexadecimal numbers are denoted by a leading "0x". For example, the standard XON character, <CTRL-Q>, can be entered as "17" (decimal), "021" (octal) or "0x11" (hexadecimal).
<code>stopc c</code>	Sets the XOFF flow control character. The character may be given as a decimal, octal, or hexadecimal number (see startc, above, for format of octal and hexadecimal numbers).
<code>astartc c</code>	Sets auxiliary XON flow control character. The character may be given as a decimal, octal, or hexadecimal number (see startc, above, for format of octal and hexadecimal numbers).
<code>astopc c</code>	Sets auxiliary XOFF flow control character. The character may be given as a decimal, octal, or hexadecimal number (see startc, above, for format of octal and hexadecimal numbers).
<code>[-]aixon</code>	Enables auxiliary flow control, so that two unique characters are used for XON and XOFF. If both XOFF characters are received, transmission will not resume until both XON characters are received.
<code>maxcps n</code>	Sets the maximum Characters Per Second (CPS) rate at which characters are output to the transparent print device. The rate chosen should be just below the average print speed. If the number is too low, printer speed will be reduced. If the number is too high, the printer will resort to flow control, and user entry on the terminal will be correspondingly impaired. Default is 100 CPS.
<code>maxchar n</code>	Sets the maximum number of transparent print characters the driver will place in the output queue. Reducing this number increases system overhead; increasing this number delays operator keystroke echo times when the transparent printer is in use. Default is 50 characters.
<code>bufsize n</code>	Sets the driver's estimate of the size of the transparent printer's input buffer. After a period of inactivity, the driver bursts this many characters to the transparent printer before reducing to the maxcps rate selected above. Default is 100 characters.

- onstr "s"** Defines the terminal escape sequence to direct subsequent data to the transparent printer.
- s* is a string of ASCII characters, enclosed in quotes, that command the terminal to enter transparent printing mode. An arbitrary octal character xxx may be given as \xxx.
- For example, the sequence <Esc>[5i would be entered as: "\033[5i".
- offstr "s"** Defines the terminal escape sequence to stop directing data to the printer.
- s* is a string of ASCII characters, enclosed in quotes, that command the terminal to enter transparent printing mode. An arbitrary octal character xxx may be given as \xxx.
- For example, the sequence <Esc>[5i would be entered as: "\033[5i".
- term *t*** Sets the transparent printer on/off strings to values found in the internal default table. Internal defaults are used for the following terminals: adm31, ansi, dg200, dg210, hz1500, mc5, microterm, multiterm, pterm, tvi, vp-a2, vp-60, vt52, vt100, vt220, wyse30, wyse50, wyse60, or wyse75. If the terminal type is not found in the internal default table, then ditty reads the terminfo entry for the terminal type and sets transparent print on/off strings to values given by the mc5/mc4 attributes found there.

### fastbaud Data Rate Mapping

Use the table below to see how setting fastbaud affects RealPort data rates.

Specified Data Rate:	Data Rate Mapped to:
50	57600
75	76800
110	115200
134	131657
150	153600
200	230400
300	460800