



## Attaching the PA-8T-X21 Interface Cables

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To continue your Cisco PA-8T-X21 synchronous serial port adapter installation, you must install the port adapter cables. The instructions that follow apply to all supported platforms. This chapter contains the following sections:

- [Connecting a PA-8T-X21 Compact Serial Cable, page 4-1](#)
- [Determining the Port Mode, page 4-3](#)

### Connecting a PA-8T-X21 Compact Serial Cable

On a single PA-8T-X21, you can use only one compact serial cable. PA-8T-X21 compact serial cables are available *only* from Cisco Systems; they are *not* available from commercial cable vendors.



#### Caution

Only attach an X.21 compact serial cable to the PA-8T-X21 installed in your router. Attaching a compact serial cable of another interface type to the port adapter could damage your router or the hardware at the network end of the cable.

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Use the following procedure to connect a compact serial cable to a PA-8T-X21:

#### Step 1

Attach the compact serial cable directly to the receptacle on the PA-8T-X21 and tighten the strain-relief screws. (See [Figure 4-1 on page 4-2](#).)



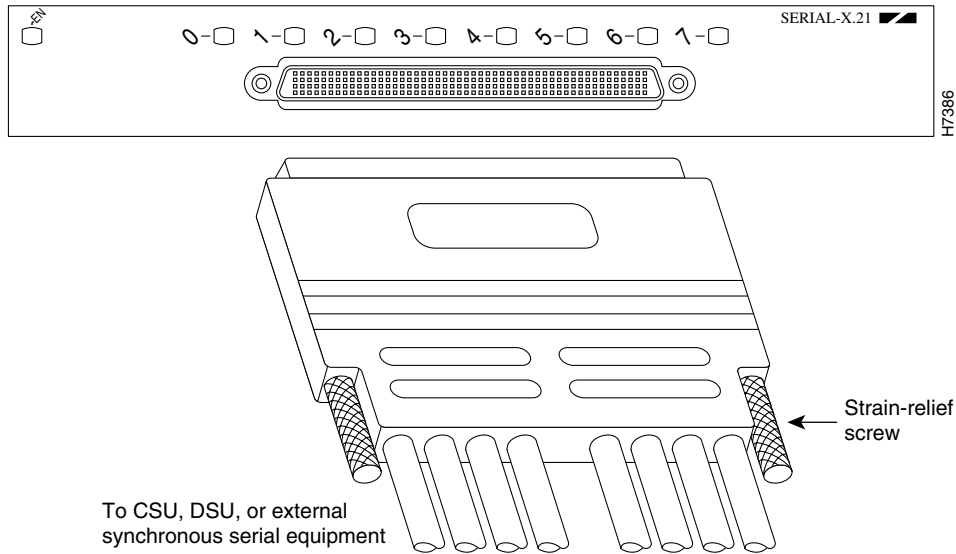
#### Note

Port adapters have a handle attached, but this handle is not shown to allow a full detailed view of each port adapter's faceplate.

When attaching the cable receptacle on the PA-8T-X21, use the cable-management bracket that shipped with your router for extra strain relief.

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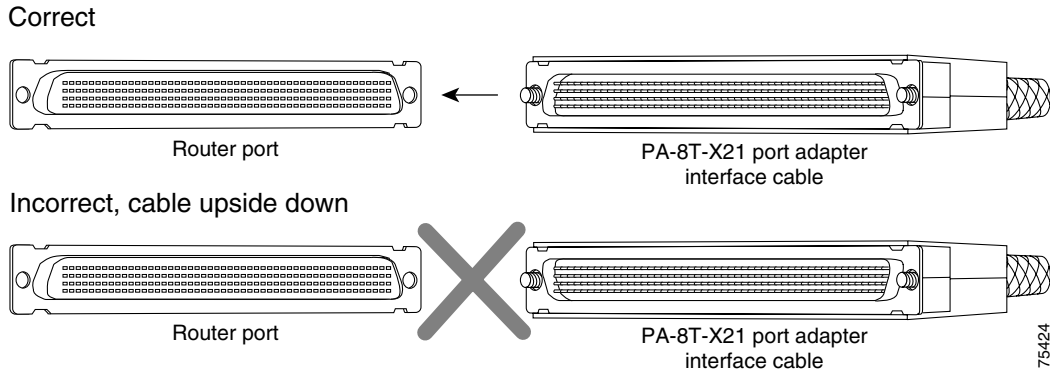
Figure 4-1 Connecting a PA-8T-X21 Compact Serial Cable—Front View (Shown without Handle)



**Caution**

Compact serial cables must be attached correctly or damage to the cable plug will result. Attempting to force a cable plug on the 200-pin receptacle can damage the plug. (See [Figure 4-2.](#))

Figure 4-2 Connecting the Compact Serial Cable



**Step 2** Attach the network end of your serial cable to your data service unit (DSU), channel service unit (CSU), data terminal equipment (DTE), or other external synchronous-serial equipment and tighten the strain-relief screws.

This completes the procedure for attaching a PA-8T-X21 compact serial cable to the PA-8T-X21. If you need to replace a PA-8T-X21 compact serial cable, proceed to the [“Determining the Port Mode”](#) section on page 4-3; otherwise, proceed to [Chapter 5, “Configuring the PA-8T-X21 Interfaces.”](#)

## Determining the Port Mode

The compact serial cable connected to each port determines the mode of the ports (the electrical interface type is always X21). The default mode of the ports is data communication equipment (DCE), which allows you to perform a loopback test on any port without having to attach a port adapter cable. For information related to the **loopback** command, see the “Using loopback Commands” section on page 5-28. Although DCE is the default, there is no default clock rate set on the interfaces. On Cisco 7100 series, Cisco 7200 series, Cisco uBR7200 series routers, Cisco 7301 router, or Cisco 7401ASR routers when there is no cable attached to a port, the software actually identifies the port as *cable type: None present* rather than either a DTE or DCE interface. On a Cisco 7304 PCI Port Adapter Carrier Card, Catalyst RSM/VIP2, Catalyst 6000 family FlexWAN module, or VIP when there is no cable attached to a port, the software actually identifies the port as *Universal (cable unattached)* rather than either a DTE or DCE interface.



### Caution

You can attach only an EIA/TIA-X.21 compact serial cable to the PA-8T-X21 installed in your router. Attaching a compact serial cable of another interface type to the port adapter could damage your router or the hardware at the network end of the cable.

Following is an example of the **show controllers cbus** command that shows a Cisco 7100 series router, Cisco 7200 series router, Cisco uBR7200 series router, or Cisco 7401ASR router interface port (1/0) that has an X.21 DTE cable attached:

```
Router# show controllers serial 1/0

M8T-X.21: show controllers:
PAS unit 0, subunit 0, f/w version 1-19, Rev id 0x2800001, version 2
idb = 0x60942688, ds = 0x608A6570, ssb=0x608C6CF0
Clock mux=0x0, ucmd_ctrl=0x1C, port_status=0xC
maxdgram=1524, bufpool=32Kb, 64 particles
      DCD=up DSR=up DTR=down RTS=down CTS=up
line state: down
cable type : X.21 DCE cable, received clockrate 123984
[display text omitted]
```

Following is an example of the **show controllers cbus** command that shows a VIP interface port (2/1/0) that has an X.21 DTE cable attached:

```
Router# show controllers cbus

slot2: VIP2, hw 2.2, sw 21.40, ccb 5800FFA0, cmdq 480000C0, vps 8192
software loaded from flash slot0:muck/amcrae/vip2_21-40.mxt
FLASH ROM version 255.255
Mueslix Serial(8), HW Revision 0x1, FW Revision 1.20
Serial2/1/0, applique is X.21 DTE
  gfreeq 48000140, lfreeq 480001B0 (1536 bytes), throttled 0
  rxlo 4, rxhi 90, rxcurr 0, maxrxcurr 0
txq 48001A80, txacc 48001A82 (value 58), txlimit 58
[display text omitted]
```

Following is an example of the **show controllers cbus** command that shows a Catalyst RSM/VIP2 interface port (1/0) that has an X.21 DTE cable attached:

```
Router# show controllers cbus

slot2: VIP2, hw 2.2, sw 21.40, ccb 5800FFA0, cmdq 480000C0, vps 8192
software loaded from flash slot0:muck/amcrae/vip2_21-40.mxt
FLASH ROM version 255.255
Mueslix Serial(8), HW Revision 0x1, FW Revision 1.20
```

```

Serial1/0, applique is X.21 DTE
  gfreeq 48000140, lfreeq 480001B0 (1536 bytes), throttled 0
  rxlo 4, rxhi 90, rxcurr 0, maxrxcurr 0
txq 48001A80, txacc 48001A82 (value 58), txlimit 58
[display text omitted]

```

**Note**

The slot values displayed by some commands (such as **show diag** and **show cont cbus**) are not relevant to any physical connection; disregard these slot values for the Catalyst RSM/VIP2.

To change the mode of a port online, use software commands to shut down the interface, replace the compact serial cable, restart the interface and, if necessary, reconfigure the port for the new interface. At system startup or restart, the system polls the interfaces and determines the electrical interface type of each port (according to the type of compact serial cable attached). However, the system does not necessarily re poll an interface when you change the adapter cable online. To ensure that the system recognizes the new interface type, shut down and re enable the interface after changing the cable.

If you are replacing a cable with a cable that has the same mode, these steps are not necessary (simply replace the cable without interrupting operation).

- Step 1** Enter configuration mode and at the privileged level of the EXEC, specify the port address, shut down the interface, and write the configuration to nonvolatile random-access memory (NVRAM). (See the [“Using the EXEC Command Interpreter”](#) section on page 5-1, for an explanation of the privileged level of the EXEC.) Add additional configuration commands, if needed, before you exit from configuration mode (before you press **Ctrl-Z** or enter **end**).

For Cisco 7200 series, Cisco uBR7200 series, Cisco 7100 series routers, Cisco 7301 router, or Cisco 7401ASR routers use the following example:

```

Router> enable
Password:
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 1/0
Router(config-if)# shutdown
Ctrl-Z
Router#

```

For a VIP, use the following example:

```

Router> enable
Password:
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 3/1/0
Router(config-if)# shutdown
Ctrl-Z
Router#

```

For a Catalyst RSM/VIP2, use the following example:

```

Router> enable
Password:
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 1/0
Router(config-if)# shutdown
Ctrl-Z
Router#

```

- Step 2** Locate and remove the adapter cable to be replaced.

- Step 3** Connect the new cable between the PA-8T-X21 and the network connection. Tighten the thumbscrews at both ends of the cable to secure it in the ports.
- Step 4** Enter configuration mode again, bring the port back up, and save the running configuration to NVRAM.
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For Cisco 7100 series, Cisco 7200 series, Cisco uBR7200 series routers, Cisco 7301 router, or Cisco 7401ASR routers use the following example:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 1/0
Router(config-if)# no shutdown
Ctrl-Z
Router#

Router# copy running-config startup-config
```

For a VIP, use the following example:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 3/1/0
Router(config-if)# no shutdown
Ctrl-Z
Router#

Router# copy running-config startup-config
```

For a Catalyst RSM/VIP2, use the following example:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface serial 1/0
Router(config-if)# no shutdown
Ctrl-Z
Router#

Router# copy running-config startup-config
```

These steps will prompt the system to poll the interface and recognize the new interface immediately.

When you configure a port for a DCE interface for the first time, or when you set up a loopback test, you must set the clock rate for the port. When you connect a DCE cable to a port, the interface remains down, and the interface does not function until you set a clock rate (regardless of the DCE mode default).

If you are changing the mode of the interface from DCE to DTE, you do not need to change the clock rate for the port. After you replace the DCE cable with a DTE cable, and the system recognizes the interface as a DTE, it uses the external clock signal from the remote DCE device and ignores the internal clock signal that the DCE interface normally uses. Therefore, when you configure the clock rate on a port for either a DCE interface or loopback, you can leave the clock rate configured and still use that port as a DTE interface.

This completes the procedure for replacing a PA-8T-X21 compact serial cable on the PA-8T-X21. Proceed to [Chapter 5, “Configuring the PA-8T-X21 Interfaces,”](#) to configure your port adapter.

