Using the setup Command Facility

This chapter describes how to use the setup command facility to configure your Cisco integrated access device (IAD). The setup command facility prompts you to enter information needed to start a router functioning quickly. The facility steps you through a basic configuration, including LAN and WAN interfaces.

This chapter presents the following major topics:

- Before Powering On Your Cisco IAD, page 2-1
- The setup Command Facility, page 2-2
- Configuring Global Parameters, page 2-2
- Configuring Controller and Interface Parameters, page 2-5
- Completing the Configuration, page 2-13

If you prefer to configure the router manually or if you wish to configure a module or interface that is not included in the setup command facility, proceed to “Chapter 3, “Configuring with the Command-Line Interface,” for step-by-step instructions.

If you prefer to configure the router by using AutoInstall, see the Using AutoInstall to Remotely Configure Cisco Networking Devices document.

Before Powering On Your Cisco IAD

Before you power on your Cisco IAD and begin to use the setup command facility, follow these steps:

Step 1 Set up the hardware as described in the hardware installation documents for your Cisco IAD.
Step 2 Configure your PC terminal emulation program for 9600 baud, 8 data bits, no parity, and 1 stop bit.
Step 3 Determine which network protocols you are supporting.
Step 4 Determine the following for each network protocol:
   - Addressing plan
   - Which WAN protocols you will run on each interface (for example, Frame Relay [FR], High-Level Data Link Control [HDLC], X.25, and so on)
The setup Command Facility

The setup command facility is displayed in your PC terminal emulation program window.

To create a basic configuration for your Cisco IAD, do the following:

- Complete the steps in the “Configuring Global Parameters” section on page 2-2.
- Complete the steps in the “Configuring Controller and Interface Parameters” section on page 2-5 that apply to your Cisco IAD and network.
- Complete the steps in the “Completing the Configuration” section on page 2-13.

Note

If you make a mistake while using the setup command facility, you can exit and run the facility again. Press Ctrl-C, and enter setup at the enable mode prompt (Router#).

Configuring Global Parameters

Step 1

Power on the Cisco IAD.

Note

To power on the Cisco IAD2435 IAD, plug in the external power supply.

Messages begin to appear in your terminal emulation program window.

Caution

Do not press any keys on the keyboard until the messages stop. Any keys pressed during this time are interpreted as the first command typed when the messages stop, which might cause the Cisco IAD to power off and start over. It takes a few minutes for the messages to stop.

The messages look similar to the following example.

Note

Much of the following example is largely for a Cisco IAD2431-1T1E1 IAD. The messages vary, depending on the Cisco IOS software release, the interface modules in your Cisco IAD, and the feature set you select. In addition, the word “Router” is the default prompt, and may appear elsewhere; interpret this word as meaning “Cisco IAD.” The screen displays in this section are for reference only and might not exactly match the messages on your console.

Also, although you see the interfaces of onboard and installed T1 controllers and installed serial interface cards (such as the WIC-2T), you do not see the interfaces of installed voice interface cards.

Note

The Cisco IAD2435 router is a fixed-configuration router and does not support interface cards.
Chapter 2  Using the setup Command Facility

Configuring Global Parameters

Upgrade ROMMON initialized
program load complete, entry point: 0x80020000, size: 0x18d54b8
Self decompressing the image :
##########################################################################################
##########################################################################################
################################# [OK]####################################################

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cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Cisco IOS Software, C2435 Software (C2435-ADVIPSERVICESK9-M), Version 12.4(IAD_APRIL18_POST_SYNC_BUILD.2008-04-17) UBUILDIT Image, CISCO DEVELOPMENT TEST VERSION
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Fri 18-Apr-08 01:58 by gopasaha

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A summary of U.S. laws governing Cisco cryptographic products may be found at: http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to export@cisco.com.

Cisco IAD2435 (MPC8323E) processor (revision 0x100) with 249856K/12288K bytes of memory.
Processor board ID FOC11375MBF
MPC8300 CPU Rev: Part Number 0x8062, Revision ID 0x11
2 FastEthernet interfaces
8 Voice FXS interfaces
256K bytes of non-volatile configuration memory.
126000K bytes of ATA Flash (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: y

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

--- System Configuration Dialog ---
Step 2  When the following message appears, enter **yes** to begin the initial configuration dialog:

Would you like to enter the initial configuration dialog? [yes/no]:

---

**Note**  If you answer **no** to this message, you are prompted to terminate AutoInstall. AutoInstall is a procedure that configures a new Cisco IAD based on the configuration of an existing Cisco IAD.

If you terminate AutoInstall, you enter the Cisco IOS software CLI.

---

**Note**  The number of interfaces shown depends on the Cisco IAD2430 series model.

Step 3  When the following message appears, press **Enter** to see the current interface summary:

First, would you like to see the current interface summary? [yes]:

Any interface listed with OK? value "NO" does not have a valid configuration

<table>
<thead>
<tr>
<th>Interface</th>
<th>IP-Address</th>
<th>OK? Method</th>
<th>Status</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>FastEthernet0/0</td>
<td>unassigned</td>
<td>NO unset</td>
<td>up</td>
<td>up</td>
</tr>
<tr>
<td>FastEthernet0/1</td>
<td>unassigned</td>
<td>NO unset</td>
<td>up</td>
<td>down</td>
</tr>
</tbody>
</table>

Step 4  Enter a hostname for the Cisco IAD:

Configuring global parameters:

Enter hostname [Router]: **IAD2435**

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.

Step 5  Enter an enable secret password. This password is encrypted (more secure) and cannot be seen when viewing the configuration:

Enter enable secret: **xxxx**

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.

Step 6  Enter an enable password that is different from the enable secret password. This password is *not* encrypted (less secure) and can be seen when viewing the configuration:

Enter enable password: **guessme**

The virtual terminal password is used to protect access to the router over a network interface.

Step 7  Enter the virtual terminal password, which prevents unauthenticated access to the router through ports other than the console port:

Enter virtual terminal password: **guessagain**

Step 8  Respond to the following prompts as appropriate for your network:

Configure SNMP Network Management? [yes]: n
Configure bridging? [no]:
Configure IP? [yes]:
Configure RIP routing? [yes]: n
Configure CLNS? [no]:
Configuring Controller and Interface Parameters

From this point on in the setup process, the prompts you see vary, depending on the interface cards installed in your Cisco IAD.

Note

The Cisco IAD2435 router is a fixed-configuration router and does not support interface cards.

The following sections provide examples of the setup steps for cards. See the sections appropriate to your Cisco IAD.

Configuration examples include the following:

- Configuring Controller Parameters, page 2-5
- Configuring Fast Ethernet and Serial Interface Parameters, page 2-5
- Configuring a 1-Port, 4-Wire 56-kbps DSU/CSU Card, page 2-11

When you complete the setup steps for your interface modules, go to the “Completing the Configuration” section on page 2-13 for directions on saving your configuration.

Configuring Controller Parameters

Controllers can be either built in or on an interface module.

Configuring controller parameters. Controllers are hardware on the router that you connect directly to a T1 or E1 line from your Telco. Configure controllers for such purposes as Primary Rate ISDN (PRI) and/or Channelized T1 or Channelized E1.

Note: J1 controllers are not configurable in setup mode.

Configuring controller T1 1/0 in pri or channelized mode
Do you want to configure this controller? [yes]: no

Configuring Fast Ethernet and Serial Interface Parameters

This section provides examples for the following:

- Fast Ethernet WAN Interface Configuration
- Serial Interface Configuration
Fast Ethernet WAN Interface Configuration

This section provides sample steps and configuration for the Fast Ethernet WAN interface.

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `interface type/number`
4. `ip address ip address/subnet mask`
5. `no shutdown`
6. `end`

DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enters privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Router# enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> <code>configure terminal</code></td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> <code>interface type/number</code></td>
<td>Enters the configuration mode for a Fast Ethernet WAN interface on the router.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Router(config)# interface fastethernet 2</td>
<td></td>
</tr>
<tr>
<td>Router(config-if)#</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> <code>ip address ip address/subnet mask</code></td>
<td>Sets the IP address and subnet mask for the specified Fast Ethernet interface.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Router(config-if)# ip address 192.168.12.2</td>
<td></td>
</tr>
<tr>
<td>255.255.255.0</td>
<td></td>
</tr>
<tr>
<td>Router(config-if)#</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 2  Using the setup Command Facility

Configuring Controller and Interface Parameters

Serial Interface Configuration

This section provides a sample configuration for the 1- or 2-port serial interface on a WAN interface card (WIC) when it is installed. Enter the values appropriate for your interface card and network.

Note

The Cisco IAD2435 router is a fixed-configuration router and does not support interface cards.

The messages you see may vary.

Do you want to configure Serial0/0 interface? [yes]:

Some encapsulations supported are

ppp/hdlc/frame-relay/lapb/atm-dxi/smds/x25

Choose encapsulation type [ppp]:

The “Frame Relay Encapsulation” section on page 2-8 through “SMDS Encapsulation” section on page 2-9 show the prompts for each encapsulation type. For PPP and High-Level Data Link Control (HDLC) encapsulation, no further configuration is needed.

No serial cable seen.

Choose mode from (dce/dte) [dte]:

If no cable is plugged into your interface card, you must indicate whether the interface is to be used as DTE or DCE. If a cable is present, the setup command facility determines the DTE/DCE status. If the serial cable is DCE, you see the following prompt:

Serial interface needs clock rate to be set in dce mode.

The following clock rates are supported on the serial interface.

0
1200, 2400, 4800, 9600, 19200, 38400
56000, 64000, 72000, 125000, 148000, 500000
800000, 1000000, 1300000, 2000000, 4000000, 8000000

Choose clock rate from above: [2000000]:

Configure IP on this interface? [yes]:

IP address for this interface: 2.0.0.1
Subnet mask for this interface [255.0.0.0]: 255.255.255.0
Class A network is 9.0.0.0, 24 subnet bits; mask is /24

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 5 no shutdown</td>
<td>Enables the Fast Ethernet interface, changing its state from administratively down to administratively up.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Step 6 exit</td>
<td>Exits configuration mode for the Fast Ethernet interface and returns to global configuration mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
</tbody>
</table>
Sample configurations for the following encapsulation types are provided in this section:

- Frame Relay Encapsulation
- LAPB Encapsulation
- X.25 Encapsulation
- SMDS Encapsulation

Frame Relay Encapsulation

The following is an example of a typical Frame Relay encapsulation configuration:

The following lmi-types are available to be set, when connected to a frame relay switch:

[0] none
[1] ansi
[2] cisco
[3] q933a

Enter lmi-type [2]:

Note

The setup command facility prompts for the data-link connection identifier (DLCI) number only if you specify none for the Local Management Interface (LMI) type. If you accept the default or specify another LMI type, the DLCI number is provided by the specified protocol.

Enter the DLCI number for this interface [16]:

Do you want to map a remote machine’s IP address to dlci? [yes]:
    IP address for the remote interface: 2.0.0.2
Do you want to map a remote machine’s IPX address to dlci? [yes]:
    IPX address for the remote interface: 40.1234.5678

Serial interface needs clock rate to be set in dce mode.
The following clock rates are supported on the serial interface.

0
1200, 2400, 4800, 9600, 19200, 38400
56000, 64000, 72000, 125000, 148000, 500000
800000, 1000000, 1300000, 2000000, 4000000, 8000000

choose speed from above: [2000000]: 1200
Configure IP on this interface? [yes]:
    IP address for this interface: 2.0.0.1
Subnet mask for this interface [255.0.0.0]:
    Class A network is 2.0.0.0, 8 subnet bits; mask is /8

LAPB Encapsulation

The following is an example of a typical LAPB configuration:

lapb circuit can be either in dce/dte mode.
Choose either from (dce/dte) [dte]:


X.25 Encapsulation

The following is an example of a typical X.25 encapsulation configuration:

x25 circuit can be either in dce/dte mode.
Choose from either dce/dte [dte]:
Enter local x25 address: 1234

We will need to map the remote x.25 station’s x25 address
to the remote station’s IP/IPX address
Enter remote x25 address: 4321

Do you want to map the remote machine’s x25 address to IP address? [yes]:
IP address for the remote interface: 2.0.0.2
Do you want to map the remote machine’s x25 address to IPX address? [yes]:
IPX address for the remote interface: 40.1234.5678

Enter lowest 2-way channel [1]:
Enter highest 2-way channel [64]:
Enter frame window (K) [7]:
Enter Packet window (W) [2]:
Enter Packet size (must be powers of 2) [128]:

SMDS Encapsulation

The following is an example of a typical SMDS configuration:
Enter smds address for the local interface: c141.5556.1415

We will need to map the remote smds station’s address
to the remote station’s IP/IPX address
Enter smds address for the remote interface: c141.5556.1414

Do you want to map the remote machine’s smds address to IP address? [yes]:
IP address for the remote interface: 2.0.0.2
Do you want to map the remote machine’s smds address to IPX address? [yes]:
IPX address for the remote interface: 40.1234.5678

Serial Cisco IOS Commands Generated

The following is an example of the Cisco IOS commands generated by a typical serial configuration:

```
interface Serial0/0
encapsulation ppp
clock rate 2000000
ip address 2.0.0.1 255.0.0.0
```

T1/E1 Channelized Mode

The following is an example of a T1 channelized mode configuration using the setup command facility:

The following framing types are available:
esf | sf
Enter the framing type [esf]:

The following line code types are available:
aml | b8zs
Enter the line code type [b8zs]:
Chapter 2      Using the setup Command Facility

Configuring Controller and Interface Parameters

T1 is capable of being configured for channel 1-24
Enter number of time slots [24]: 3
Configure more channel groups? [no]: y
Enter number of time slots [21]: 3
Configure more channel groups? [no]: y
Enter number of time slots [18]: 3
Configure more channel groups? [no]: y
Enter number of time slots [15]:
Configure more channel groups? [no]:

The “PPP Encapsulation” section on page 2-10 through the “SMDS Encapsulation” section on page 2-11 show the prompts and provide examples for configuring each encapsulation type. No further configuration is needed for HDLC encapsulation.

Sample configuration for the following encapsulation types are provided in this section:
- PPP Encapsulation
- Frame Relay Encapsulation
- LAPB Encapsulation
- SMDS Encapsulation

PPP Encapsulation

The following is an example of a typical PPP encapsulation configuration:

Would you like to enable multilink PPP [yes]:
Enter a remote hostname for PPP authentication [Router]:
Enter a password for PPP authentication:

Note
The password, which is used by the Challenge Handshake Authentication Protocol (CHAP) authentication process, is case sensitive and must exactly match the remote router’s password.

Frame Relay Encapsulation

The following is an example of a typical Frame Relay encapsulation configuration:

The following lmi-types are available to be set, when connected to a frame relay switch
[0] none
[1] ansi
[2] cisco
[3] q933a
Enter lmi-type [2]:

Note
The setup command facility prompts for the data-link connection identifier (DLCI) number only if you specify none for the Local Management Interface (LMI) type. If you accept the default or specify another LMI type, the DLCI number is provided by the specified protocol.

Enter the DLCI number for this interface [16]:

Do you want to map a remote machine’s IP address to dlci? [yes]:
IP address for the remote interface: 2.0.0.2
Do you want to map a remote machine’s IPX address to dlci? [yes]:
IPX address for the remote interface: 40.1234.5678

Serial interface needs clock rate to be set in dce mode.
Chapter 2  Using the setup Command Facility

Configuring Controller and Interface Parameters

The following clock rates are supported on the serial interface:
0
1200, 2400, 4800, 9600, 19200, 38400
56000, 64000, 72000, 125000, 148000, 500000
800000, 1000000, 1300000, 2000000, 4000000, 8000000

choose speed from above: [2000000]: 1200
Configure IP on this interface? [yes]:
IP address for this interface: 2.0.0.1
Subnet mask for this interface [255.0.0.0]:
Class A network is 2.0.0.0, 8 subnet bits; mask is /8

LAPB Encapsulation

The following is an example of a typical LAPB encapsulation configuration:

lapb circuit can be either in dce/dte mode
Choose either from (dce/dte) [dte]:

SMDS Encapsulation

The following is an example of a typical SMDS encapsulation configuration:
Enter smds address for the local interface: c141.5556.1415

We will need to map the remote smds station’s address to the remote stations IP address
Enter smds address for the remote interface: c141.5556.1414

Do you want to map the remote machine’s smds address to IP address? [yes]:
IP address for the remote interface: 2.0.0.1
Do you want to map the remote machine’s smds address to IP address? [yes]:
IPX address for the remote interface: 40.0060.34c6.90ed

Configuring a 1-Port, 4-Wire 56-kbps DSU/CSU Card

This section describes using the setup command facility to configure a 1-port, 4-wire 56-kbps DSU/CSU WAN interface card (for example, the WIC-1DSU-T1/E1).

Note

The Cisco IAD2435 router is a fixed-configuration router and does not support interface cards.

Choosing Circuit-Switched or Dedicated-Line Service

The switched-56 WAN interface card is configured for dedicated, or leased-line, service by default, but it can also be configured for circuit-switched service. Depending on the type of data transmissions you typically use, you can configure the switched-56 WAN interface card for circuit-switched or dedicated-line service.

Generally, circuit-switched service is ideal for short-duration data transmissions or as an alternative route if a dedicated line fails. For example, circuit-switched service is ideal for sending electronic mail messages or doing such tasks as updating inventory and ordering records from one network database to another at the end of each day.

Dedicated service is ideal for heavy network traffic. Dedicated service is ideal if you need a constant network connection or you need connection for more than eight hours per day.
Switched Mode

The following is an example of a 1-port, 4-wire 56-kbps DSU/CSU switched-mode configuration using the setup command facility:

Do you want to configure Serial0/0 interface? [yes]:
   Some encapsulations supported are
       ppp/hdlc/frame-relay/lapb/atm-dxi/smds/x25
   Choose encapsulation type   [ppp]:

   Switched 56k interface may either be in switched/Dedicated mode
   Choose from either (switched/dedicated)  [switched]:

   The following switched carrier types are to be set when in switched mode
   (at&t, sprint or other)
   Choose carrier (at&t/sprint/other)  [other]:

   Do you want to map the remote machine's ip address in dialer map? [yes]:
      IP address for the remote interface : 1.0.0.2

   Note
   The setup command facility asks for only one telephone number for both IP and IPX (if IPX is enabled).
   Please enter the phone number to call : 1234567890
   Configure IP on this interface? [yes]:
      IP address for this interface: 1.0.0.1
      Subnet mask for this interface [255.0.0.0] :
      Class A network is 1.0.0.0, 8 subnet bits; mask is /8

Dedicated Mode

The following is an example of a 1-port, 4-wire 56-kbps DSU/CSU dedicated-mode configuration using the setup command facility:

Do you want to configure Serial0/0 interface? [yes]:
   Some encapsulations supported are
       ppp/hdlc/frame-relay/lapb/atm-dxi/smds/x25
   Choose encapsulation type   [ppp]:

   Switched 56k interface may either be in switched/Dedicated mode
   Choose from either (switched/dedicated)  [switched]:

   When in dds mode, the clock for sw56 module can either from line/internal.
   Choose clock from (line/internal)  [line]:

   Note
   If internal is selected, speed cannot be set to “auto.” Autosensing is allowed only when the clock source
   is line.

   When in dds mode, the clock for sw56 module can either be from line/internal.
   Choose clock from (line/internal)  [line]: internal
   Warning: internal can be choose only when connected back to back.

   Serial interface needs clock rate to be set in dce mode.
   The following clock rates are supported on the serial interface.
       auto, 2.4, 4.8, 9.6, 19.2, 38.4
Completing the Configuration

When you have all the information that the setup command facility has prompted you for, the configuration appears.

---

**Note**

For sample configurations, see Appendix A, “Cisco IAD2430 Series Configuration Examples.”

---

To complete your configuration, follow these steps:

**Step 1**
A setup command facility prompt asks if you want to save this configuration, with the following options:

- [0] Go to the IOS command prompt without saving this config.
- [1] Return back to the setup without saving this config.
- [2] Save this configuration to nvram and exit.

If you answer 0, the configuration information you entered is not saved, and you return to the Cisco IAD enable prompt (Router#). Enter setup to return to the System Configuration Dialog.

If you answer 1, you return to setup without saving the configuration.

If you answer 2, the configuration is saved and you are returned to the user EXEC prompt (Router>).

**Step 2**
When the messages stop appearing on your screen, press Enter to get the Router> prompt.

**Step 3**
The Router> prompt indicates that you are now at the command-line interface (CLI) and you have just completed a basic Cisco IAD configuration. However, this is not a complete configuration. At this point you have two choices:

- Run the setup command facility again and create another configuration. Enter the following:
  
  ```
  Router> enable
  Password: password
  Router# setup
  ```

- Modify the existing configuration or configure additional features with the CLI as described in Chapter 3, “Configuring with the Command-Line Interface.”