Quick Start Guide

Installing the Cisco uMG9850 QAM Module

1 Purpose

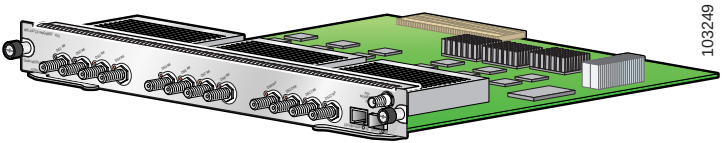
This quick start guide describes how to install a Cisco uMG9850 QAM Module in a Cisco Catalyst 4500 series switch.

Caution For safety information you need to know before installing the Cisco uMG9850, see the *Cisco Catalyst 4500 Series Regulatory Compliance and Safety Information* document that accompanied your Cisco Catalyst 4500 series switch. That document provides translations for each of the warnings found in this guide.

2 Product Description

The Cisco uMG9850 QAM Module (see Figure 1 on page 4) is a switching module for Cisco Catalyst 4500 series switches that allows cable operators to deliver Video-on-Demand (VoD) services to their subscribers. The module receives multiple single-program transport stream (SPTS) MPEG-2 digital video streams over IP. Modulated and upconverted RF signals are then delivered to subscribers' digital set-top boxes.

Figure 1 Cisco uMG9850 QAM Module



The Cisco uMG9850 QAM Module provides 12 downstream dual-QAM RF ports, through three groups of four F-connectors. Other ports on the module include a 10/100/1000 Gigabit Ethernet (GE) port, an SFP-GE port, and an ASI monitor port. Figure 2 and Table 1 on page 5 identify the connectors and LEDs on the front panel of the Cisco uMG9850.

Figure 2 Connectors and LEDs

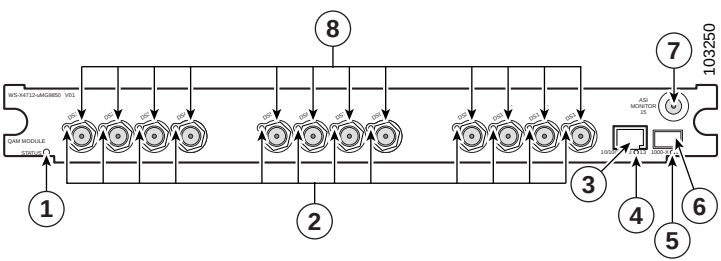


Table 1 Connectors and LEDs

Ref. No.	Description	Function
1	QAM module STATUS LED	Indicates module status: • Green—The module is operational. • Red—The module is not operational (possibly due to a speed or duplex mismatch). • Amber—The module is in power-up mode.
2	QAM port status LEDs	Indicates individual QAM port status: • Green—The port is operational. • Red—The port has experienced an error. • Amber—The port is shut down, or the port is in a transition state during module power-up. • Off—No signal is detected.

Table 1 Connectors and LEDs (continued)

Ref. No.	Description	Function
3	10/100/1000 Ethernet port connector (Port 13)	RJ-45 connector supporting standard crossover and straight-through Category 5 UTP cables: • Use crossover cables when connecting to a hub. • Use straight-through cables when connecting to a PC or other Ethernet device.
4	10/100/1000 Ethernet port status LED	Indicates Ethernet activity: • Green—The port is operational. • Amber—The port is not operational (possibly due to a speed or duplex mismatch). • Off—The port is not physically connected or has been administratively shut down.

Table 1 Connectors and LEDs (continued)

Ref. No.	Description	Function
5	SFP-GE (1000-X) port status LED	Indicates Gigabit Ethernet activity: • Green—The port is operational. • Amber—The port is not operational (possibly due to a speed or duplex mismatch). • Off—The port is not physically connected or has been administratively shut down.
6	SFP-GE (1000-X) port connector (Port 14)	Supports IEEE 802.3z specifications for 1000-Mbps transmission. Uses an industry-standard fiber-optic SFP module for connection to the network.

Table 1 Connectors and LEDs (continued)

Ref. No.	Description	Function
7	ASI monitor connector (Port 15)	Unscrambled DVB-ASI output for system troubleshooting. Output channel can be selected using software.
8	Downstream RF QAM connectors (Ports 1 to 12)	RF output (downstream) cable interface with 75-ohm (F-type) connectors.

3 Installation Requirements

Hardware and Software Configuration

To operate properly with Cisco uMG9850 QAM modules, the Cisco Catalyst 4500 series switch must be equipped with specific hardware and software options. Before installing the Cisco uMG950, review the “Cisco Catalyst 4500 Series Configuration Options” section in the *Cisco uMG9820 QAM Module Release Notes* to verify that your switch is configured with these options.

Equipment and Tools

The following equipment and tools are required to install the Cisco uMG9850:

- Appropriate cables for:
  - RF QAM ports
  - 10/100/1000 Ethernet port
  - ASI monitor port
- Cisco-supplied SFP and appropriate cables
- Number 2 Phillips screwdriver (or 3/16-inch flat-blade screwdriver)
- ESD-preventive wrist strap
- Antistatic mat or antistatic foam

Warning **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

Caution To prevent electrostatic discharge (ESD) damage, handle modules by the carrier edges only.

4 Installing a Cisco uMG9850

To install the Cisco uMG9850 in a Cisco Catalyst 4500 series switch, perform these steps:

Step 1 Use an ESD-preventive wrist strap, grounding the strap to bare metal.

Step 2 Choose a slot for the module (see Table 2 on page 10). Ensure that there is enough clearance for any interface equipment that you connect to the module ports.

Table 2 Chassis and Slot Selections

Cisco Catalyst 4500 Series Chassis	Slot Selections
4507R	Slots 3–7
4506	Slots 2–6

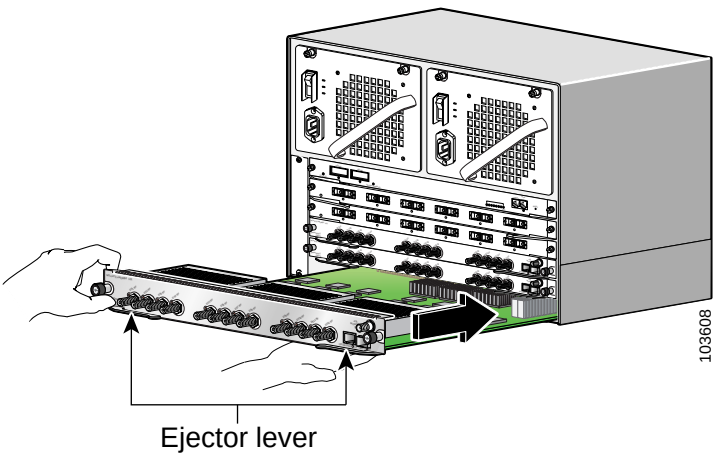
Step 3 Loosen the captive installation screws that secure the module filler plate (or the existing module) to the desired slot.

Step 4 Remove the faceplate (or the existing module).

Note If you are removing an existing module, see Removing a Cisco uMG9850, page 19.

Step 5 To install the module, hold the module front panel with one hand, and place your other hand under the carrier to support the module, as shown in Figure 3 on page 12. Do not touch the printed circuit board or connector pins.

Figure 3 Installing the Module in the Chassis



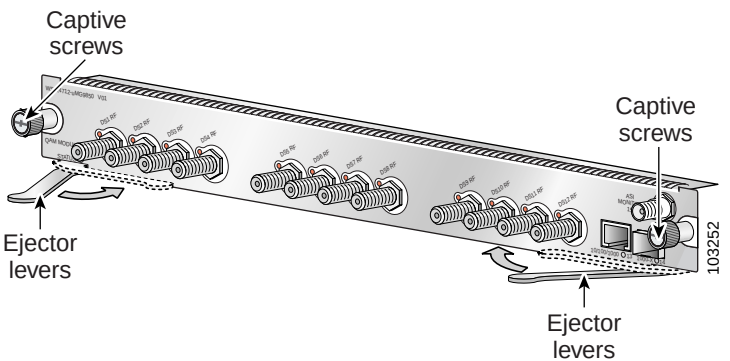
Step 6 Align the edges of the module printed circuit board with the slot card guides on the sides of the switch chassis as shown in Figure 3.

Step 7 Move the two module ejector levers out and away from the faceplate.

Step 8 Carefully slide the module into the slot until the notches on both ejector levers engage the chassis sides.

Step 9 Using the thumb and forefinger of each hand, simultaneously move both ejector levers, as shown in Figure 4, to fully seat the module in the backplane connector.

Figure 4 Using Module Ejector Levers



Caution Always use the ejector levers when installing or removing modules. A module that is only partially seated in the backplane does not function properly.

Note If you perform a hot swap, the console displays the message "Module *n* has been inserted." This message also appears if you are connected to the Cisco Catalyst switch through a Telnet session.

Step 10 Use a screwdriver to tighten the captive installation screws on the faceplate.

Step 11 Attach network interface cables or other devices to the interface ports. See Cabling a Cisco uMG9850.

5 Cabling a Cisco uMG9850

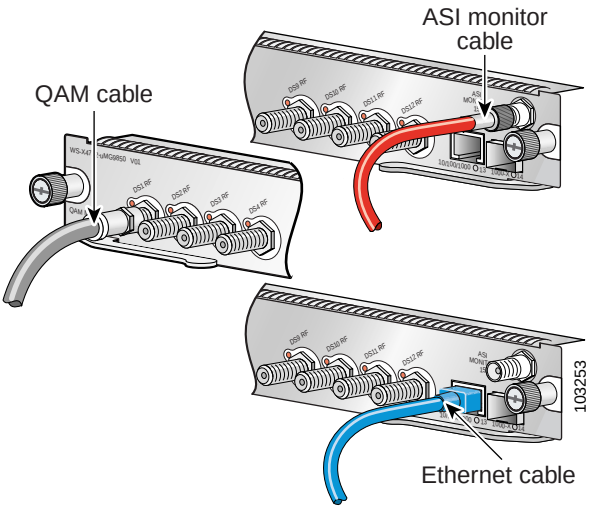
Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Connecting the QAM, ASI, and Ethernet Cables

Connect the QAM, ASI monitor, and Ethernet cables to the module as shown in Figure 5 on page 16.

Note F-connector cables connected to the Cisco uMG9850 should meet the “quarter-quarter” cable preparation convention (1/4-inch braid exposure and 1/4-inch center conductor exposure). Adherence to this convention prevents excessive signal loss if the center conductor is too short, and avoids mating interface damage if the center conductor is too long. (Tools such as the Cable Prep CPT-6590 are available for this purpose.)

Figure 5 Connecting the Cables



Connecting the SFP-Gigabit Ethernet Port

Cables connect to the SFP-GE port using a fiber-optic Small Form-Factor Pluggable (SFP) module.

⚠

Caution Use only SFP modules supplied by Cisco, which have Class 1 Laser Product and FDA CFR certifications. Class 1 Laser Product modules are safe for the eyes when operated within the limits of the device specification. For more information, see the specification of the SFP module that you are installing.

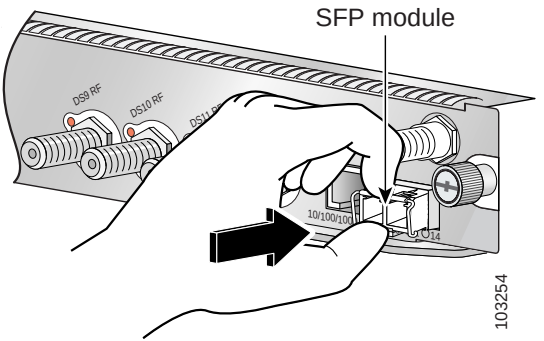
To insert an SFP module into the GE port:

Step 1 Attach an ESD-preventive wrist strap to your wrist, and the other end to a bare metal surface on the chassis.

Step 2 Find the transmit and receive markings that identify the top side of the SFP module.

Step 3 See Figure 6 on page 18. Aligning the back (receive) end of the module in front of the port labeled "1000-X," insert the module into the port until you feel the connector snap into place.

Figure 6 Inserting an SFP Module



Step 4 Remove the dust plugs from the SFP module and store them for later use.

Step 5 Insert fiber-optic cable into the front (transmit) end of the SFP module.

Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

When all interfaces are connected, check all connections then power on the Cisco Catalyst switch and verify that it is operational.

To check the status of the module, perform these steps:

Step 1 Ensure that the STATUS LED is green (module operational).

Step 2 When the switch is online, enter the show module command. Verify that the system acknowledges the new module (identified by the designation “QAM”) and that the module status is good.

Step 3 If the module is not operational, reseat it. If the module is still not operational, contact your customer representative. See Obtaining Technical Assistance, page 30.

6 Removing a Cisco uMG9850

To remove a module from a Cisco Catalyst 4500 series switch, follow these steps:

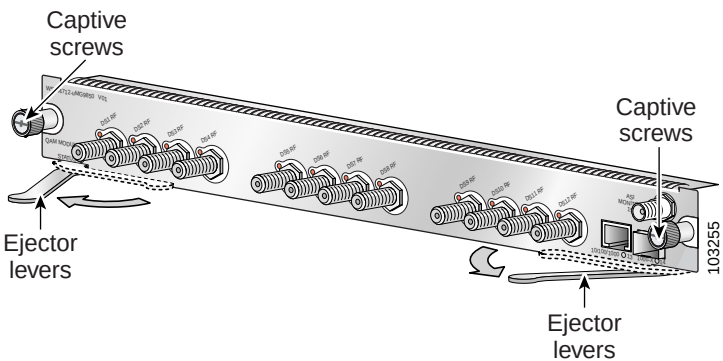
Step 1 Use an ESD-preventive wrist strap, grounding the strap to bare metal.

Step 2 Disconnect any network interface cables attached to the module ports.

Step 3 See Figure 7 on page 20. With a screwdriver, loosen the captive screws at each end of the module.

Step 4 Move the ejector levers outward to release the module from the backplane connector.

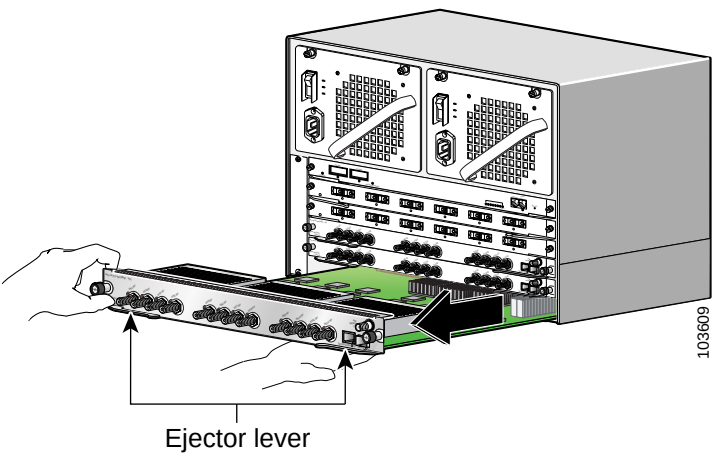
Figure 7 Levers and Captive Installation Screws



Step 5 Hold the module front panel with one hand, and place your other hand under the module to support and guide it out of the slot. Do not touch the printed circuit boards or connector pins.

Step 6 Carefully pull the module straight out of the slot, keeping one hand under the module to guide it. See Figure 8 on page 21.

Figure 8 Removing the Module



Step 7 Place the module on an antistatic mat or in an antistatic bag, or immediately reinstall it in another slot.

Step 8 If the slot is to remain empty, install a faceplate (Cisco part number 800-00299-01).

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

7 Specifications

Table 3 lists environmental, regulatory, and safety specifications for the Cisco uMG9850.

Table 3 Specifications for the Cisco uMG9850

Characteristic	Value
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	–55 to 125°F (–48 to 52°C)
Nonoperational altitude	Sea level to 15,748 ft (4800 m)
EMI standards (Emissions)	CFR47 Part 15:2002 Class A CISPR22: 1997 (EN55022: 1998) Class A EN300386: 2001 EN61000-3-2: 2000 EN61000-3-3: 1995

Table 3 Specifications for the Cisco uMG9850 (continued)

Characteristic	Value
EMI Standards (Immunity)	EN61000-4-11: 1994 (Including amendment 1) EN61000-4-2: 1995 (Including amendment 1 and amendment 2) EN61000-4-3: 1996 (Including amendment 1 and amendment 2) EN61000-4-4: 1995 EN61000-4-5: 1995 EN61000-4-6: 1995 EN61000-4-6: 1996 Including amendment 1)
Safety Standards	Refer to *Regulatory Compliance and Safety Information for Catalyst 4500 Series Switches*.

8 Related Documents

User Documentation

The latest information is always online. To view or print an online document in its original format, click the PDF icon. You can also order printed copies of many documents. See Ordering Documentation, page 29.

To find online user documentation (PDF and HTML formats):

http://www.cisco.com/univercd/home/home.htm

Tip To navigate to the next higher level in the documentation hierarchy, click on CONTENTS in the navigation bar at the top of each page.

Cisco uMG9850 QAM Module Documentation

This Document

You can find this quick start guide at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/cable/vod/umg9850/index.htm

Software Feature Module

The software feature module provides additional detailed configuration information specific to the Cisco uMG9850 QAM Module.

You can find this document at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/cable/vod/umg9850/index.htm

Cisco uMG9850 Release Notes

Product release notes provide the most current information that is specific to a release of the Cisco uMG9850 QAM Module, including important notes, limitations and restrictions, and caveats.

You can find this document at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/cable/vod/umg9850/index.htm

Regulatory Compliance and Safety Information

The Regulatory Compliance and Safety Information document provides essential safety information applicable to your Cisco Catalyst 4500 series switch and Cisco uMG9850 QAM Module. This document contains multiple-language translations of the safety warnings that appear in this quick start guide.

You can find this document at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/hw_doc/78_13233.pdf

Cisco Catalyst 4500 Series Switches

Technical documentation for Cisco Catalyst 4500 series switches provide complete installation and configuration information about the Cisco Catalyst 4500 series switches.

You can find these documents at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/hw_doc/index.htm

Release Notes

Cisco IOS release notes for Cisco Catalyst 4500 series switches provide up-to-date information about Cisco IOS software releases used on Cisco Catalyst 4500 series switches.

You can find these documents at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/relnotes/index.htm

Cisco IOS Software Documentation

Master Index to Software Documentation

The master index provides links to topics and commands for each Cisco IOS software release. This includes configuration guides, command references, release notes, new feature documentation, and system error messages.

You can find master indexes at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/index.htm

9 Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com/

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

10 Documentation Feedback

You can submit e-mail comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

11 Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco Technical Support website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco Technical Support website is available 24 hours a day, 365 days a year. The Cisco Technical Support website is located at this URL:

http://www.cisco.com/tac

Accessing all the tools on the Cisco Technical Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer.

The online TAC Case Open Tool is located at this URL:

http://www.cisco.com/tac/caseopen

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

12 Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:

http://www.cisco.com/go/marketplace/

The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

http://cisco.com/univercd/cc/td/doc/pcat/

Cisco Press publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

http://www.ciscopress.com

Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

http://www.cisco.com/packet

iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

http://www.cisco.com/go/iqmagazine

Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

http://www.cisco.com/ipj

Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

http://www.cisco.com/en/US/learning/index.html

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