



Release Notes for Cisco Aironet 1100, 1130, 1200, 1230, 1240, and 1300 Series Access Points for Cisco IOS Release 12.3(11)JX1

July 14, 2006

These release notes describe features, enhancements, and caveats for Cisco IOS Release 12.3(11)JX1.



Note

This release must only be loaded onto access points at the factory or by using the Autonomous to Lightweight Mode upgrade tool. **Your access point might become inoperable if you install this software without using the upgrade tool.**

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Introduction

Cisco IOS Release 12.3(11)JX provides support for the lightweight access point protocol (LWAPP) for 1100, 1130, 1200, 1230, 1240, and 1300 series access points. When you use the Autonomous to Lightweight Mode upgrade tool to upgrade one of these access points to this release, the access point communicates with a Cisco wireless LAN controller and receives a full LWAPP configuration and software image from the controller. This release also functions as a recovery image if the access point fails to receive a full image from the controller.

**Note**

This release must only be loaded onto access points at the factory or by using the Autonomous to Lightweight Mode upgrade tool. **Your access point might become inoperable if you install this software without using the upgrade tool.**

System Requirements

You can use the Autonomous to Lightweight Mode upgrade tool to install Cisco IOS Release 12.3(11)JX on these access points:

- All 1100 series access points containing MP21G (802.11g) radios
- All 1130, 1230, and 1240 series access points
- All modular 1200 series access points running Cisco IOS software and containing these supported radios:
 - 802.11g: MP21G, MP31G
 - 802.11a: AIR-RM21A-x-K9, AIR-RM22A-x-K9
- All 1300 series access points in access point mode

**Note**

Access points must run Cisco IOS Release 12.3(7)JA or later before you use the upgrade tool to install this release.

**Note**

After you use the upgrade tool to install this release, the upgraded access point must connect to a wireless LAN controller to download a full LWAPP image and begin sending and receiving data.

Upgrading to this Software Release

For instructions on using the Autonomous to Lightweight Mode upgrade tool to install this software, refer to *Upgrading Autonomous Cisco Aironet Access Points to Lightweight Mode* at this URL:

http://www.cisco.com/en/US/products/hw/wireless/ps430/prod_technical_reference_list.html

These are the main steps in the autonomous to lightweight mode upgrade:

1. Prepare your network infrastructure so that converted access points can connect to a wireless LAN controller after the upgrade.
2. Find the Autonomous to Lightweight Mode upgrade tool and Cisco IOS release 12.3(11)JX at the Software Center on Cisco.com. Click this link to browse to the Cisco IOS Software Center:

<http://www.cisco.com/public/sw-center/sw-ios.shtml>

In the menu on the left, click **Wireless Software** and log into Cisco.com to view the Cisco Wireless Software Display Tables.

3. Make sure that the access points that you want to upgrade to LWAPP mode are running Cisco IOS release 12.3(7)JA or later.
4. Prepare the wireless LAN controller for the upgrade.
5. Use the upgrade tool to upgrade the access points.

Refer to *Upgrading Autonomous Cisco Aironet Access Points to Lightweight Mode* for detailed instructions.

Reverting from Lightweight Mode to Autonomous Mode

After you use the upgrade tool to load Cisco IOS release 12.3(11)JX on an access point, you can convert the access point from a lightweight unit back to an autonomous unit by loading a Cisco IOS release that supports autonomous mode (for example, Cisco IOS release 12.3(7)JA). If the access point is associated to a controller, you can use the controller to load the Cisco IOS release. If the access point is not associated to a controller, you can load the Cisco IOS release using TFTP.

Using a Wireless LAN Controller to Return to a Previous Release

Follow these steps to revert from lightweight mode to autonomous mode using a wireless LAN controller:

Step 1 Log into the CLI on the controller to which the access point is associated.

Step 2 Enter this command:

```
config ap tftp-downgrade tftp-server-ip-address filename access-point-name
```

Using a TFTP Server to Return to a Previous Release

Follow these steps to revert from lightweight mode to autonomous mode by loading a Cisco IOS release using a TFTP server:

Step 1 The PC on which your TFTP server software runs must be configured with a static IP address in the range of 10.0.0.2 to 10.0.0.30.

Step 2 Make sure that the PC contains the access point image file (such as *c1200-k9w7-tar.122-15.JA.tar* for a 1200 series access point) in the TFTP server folder and that the TFTP server is activated.

Step 3 Rename the access point image file in the TFTP server folder to **c1200-k9w7-tar.default** for a 1200 series access point.

- Step 4** Connect the PC to the access point using a Category 5 (CAT5) Ethernet cable.
- Step 5** Disconnect power from the access point.
- Step 6** Press and hold the **MODE** button while you reconnect power to the access point.
- Step 7** Hold the **MODE** button until the status LED turns red (approximately 20 to 30 seconds), and release the **MODE** button.
- Step 8** Wait until the access point reboots as indicated by all LEDs turning green followed by the Status LED blinking green.
- Step 9** After the access point reboots, reconfigure the access point using the GUI or the CLI.

New Features

This section lists new features in Cisco IOS Release 12.3(11)JX. [Table 1](#) lists the features that are supported on the devices that support this release.

Table 1 *New Features Introduced for Access Points in Cisco IOS Release 12.3(11)JX*

Feature	1100 Series	1130 Series	1200 Series	1230 Series	1240 Series	1300 Series
Lightweight Upgrade and Recovery Support ¹	x	x	x	x	x	x
Pre-stage Configuration for LWAPP Access Points	x	x	x	x	x	x

1. This release provides, for the first time, lightweight upgrade and recovery support for 1100 and 1300 series access points. Lightweight support for the other access points listed in this table is provided by both this release and by Cisco IOS Release 12.3(7)JX.

Lightweight Upgrade and Recovery Support

This feature allows a Cisco autonomous access point to communicate with a Cisco Wireless LAN Controller in order to receive a full LWAPP image. Access points shipping with LWAPP or selected autonomous access points upgraded from autonomous to lightweight mode use the LWAPP Upgrade and Recovery Support feature to receive their full LWAPP image from the controller. The LWAPP Upgrade and Recovery Support feature is also used as a recovery image if the full LWAPP image becomes corrupted. Access points using this feature have limited functionality and their radios are disabled until the Cisco Wireless LAN Controller sends them the full LWAPP image.

Pre-stage Configuration for LWAPP Access Points

This feature simplifies the deployment of LWAPP access points in remote locations by adding a new set of CLI's to the Recovery IOS image. The static IP address, Netmask, Default gateway, and Primary Controller IP address may now be configured on the access point. Configuring the Primary Controller IP address will help the access point discover and register a specific Controller over the WAN links. In a deployment scenario where a DHCP server is not available in remote locations the CLIs may be used to configure the static IP address and the initial LWAPP controller information.

The new pre-stage CLI commands are listed and described in *Upgrading Autonomous Cisco Aironet Access Points to Lightweight Mode*. Click this link to browse to that document:

http://www.cisco.com/en/US/products/hw/wireless/ps430/prod_technical_reference09186a00804fc3dc.html

Special Notes

The following are special notes about Cisco IOS Release 12.3(11)JX upgrade and recovery software image:

- Autonomous access points that have already been upgraded to lightweight mode may update to the 12.3(11)JX image using the standard upgrade procedure.
- Use the Autonomous To Lightweight Mode upgrade tool to load this image onto Cisco Aironet autonomous access points currently running Cisco IOS Release 12.3(11)JA or later.
- This release only contains a partial LWAPP image. The full LWAPP software image must be downloaded from the Cisco Wireless LAN Controller to the access point after it has been converted in order for it to operate as a Cisco Aironet lightweight access point. A connection between the access point and Cisco Wireless LAN Controller is required to download the full LWAPP image.
- This image is also shipping with orderable Cisco Aironet lightweight access points.

Installation Notes

This section contains information you should keep in mind when installing access points.

Installation in Environmental Air Space

This section provides information on installing 1100 and 1200 series access points in environmental air space, such as above suspended ceilings.

Cisco Aironet 1100, 1130, 1200, and 1240 series access points provide adequate fire resistance and low smoke-producing characteristics suitable for operation in a building's environmental air space, such as above suspended ceilings, in accordance with Section 300-22(C) of the *National Electrical Code (NEC)* and Sections 2-128, 12-010(3) and 12-100 of the *Canadian Electrical Code, Part 1, C22.1*.



Caution

The power injector does not provide fire resistance and low smoke-producing characteristics and is not intended for use in extremely high or low temperatures or in environmental air spaces such as above suspended ceilings.



Note

If you plan to mount a 1200 series access point with a 5-GHz radio in an area subject to environmental air space, Cisco recommends that you mount the access point horizontally so that its antennas point down. Doing so ensures that the access point complies with regulatory requirements for environmental air space with the 5-GHz radio installed.

Power Considerations

This section describes issues you should consider before applying power to an access point.



Caution

The operational voltage range for 1100 series access points is 35 to 57 VDC, and the nominal voltage is 48 VDC. Voltage higher than 60 VDC can damage the equipment.



Caution

The nominal voltage for 1200 series access points is 48 VDC, and the access point is operational up to 60 VDC. Voltage higher than 60 VDC can damage the equipment.



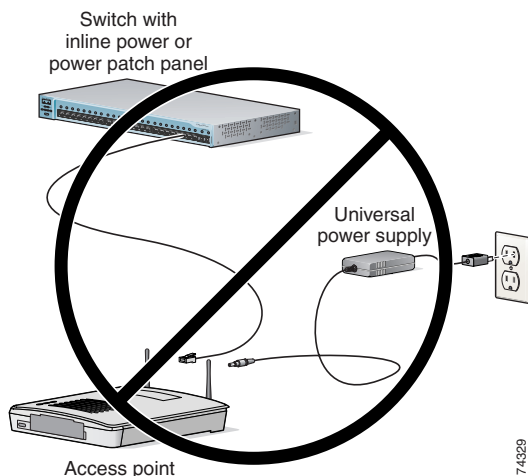
Caution

Cisco Aironet power injectors are designed for use with Cisco Aironet access points and bridges only. *Do not use the power injector with any other Ethernet-ready device.* Using the power injector with other Ethernet-ready devices can damage the equipment.

Use Only One Power Option

You cannot provide redundant power to 1100, 1130AG, and 1200 series access points with both DC power to its power port and inline power from a patch panel or powered switch to the access point's Ethernet port. If you apply power to the access point from both sources, the switch or power patch panel might shut down the port to which the access point is connected. [Figure 1](#) shows the power configuration that can shut down the port on the patch panel or powered switch.

Figure 1 *Improper Power Configuration Using Two Power Sources*



Configuring Power for 1130, 1230, and 1240 Access Points

The 1130, 1230, and 1240 access points disable the radio interfaces when the unit senses that the power source to which it is connected does not provide enough power. Depending on your power source, you might need to enter the power source type in the access point configuration. Use the System Software: System Configuration page on the web-browser interface to select a power option. [Figure 2](#) shows the System Power Settings section of the System Configuration page.

Figure 2 Power Options on the System Software: System Configuration Page

System Power Settings	
Power State:	FULL POWER
Power Source:	AC_ADAPTOR
Power Settings:	<input type="radio"/> Power Negotiation <input checked="" type="radio"/> Pre-standard Compatibility
Power Injector:	<input type="checkbox"/> Installed on Port with MAC Address: <input type="text" value="DISABLED"/> (HHHH.HHHH.HHHH)
<input type="button" value="Apply"/>	

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Using the AC Power Adapter

If you use the AC power adapter to provide power to the access point, you do not need to adjust the access point configuration.

Using a Switch Capable of IEEE 802.3af Power Negotiation

If you use a switch to provide Power over Ethernet (PoE) to the access point and the switch supports the IEEE 802.3af power negotiation standard, select **Power Negotiation** on the System Software: System Configuration page.

Using a Switch That Does Not Support IEEE 802.3af Power Negotiation

If you use a switch to provide Power over Ethernet (PoE) to the access point and the switch does not support the IEEE 802.3af power negotiation standard, select **Pre-Standard Compatibility** on the System Software: System Configuration page.

Using a Power Injector

If you use a power injector to provide power to the access point, select **Power Injector** on the System Software: System Configuration page and enter the MAC address of the switch port to which the access point is connected.

Operating 5-GHz Radio Requires Power Injector, Power Module, or Catalyst 3550-24 PWR Switch

The 1200 series power injector and the 1200 series power module support operation of the 5-GHz radio in the access point. Currently, the Catalyst 3550-24 PWR switch supports power for both the 2.4-GHz radio and the 5-GHz radio. Other switches and power patch panels might not provide enough power for the 5-GHz radio.

Access Point Requires 1200 Series Universal Power Supply and Power Injector

If you use a power injector or a power module to provide power to a 1200 series access point, you must use a 1200 series universal power supply. If you need to use a power injector to inject power into the access point's Ethernet port, you must use a 1200 series power injector. The 350 series universal power supply and power injector are not compatible with the 1200 series access point.

Unpowered 1100 Series Access Points Cause Loopback When Connected to Switches Without Loopback Detection

When you connect an unpowered 1100 series access point to a switch without loopback detection, the access point causes a loopback. To avoid this problem, make sure loopback detection is enabled on the switch to which the access point is connected. If your switch does not have loopback detection, disconnect the access point from the switch when the access point power is off.

Antenna Installation

For instructions on the proper installation and grounding of external antennas for 1200 series access points, refer to the National Fire Protection Association's *NFPA 70, National Electrical Code*, Article 810, and the Canadian Standards Association's *Canadian Electrical Code*, Section 54.



Warning

Do not install the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death.

Important Notes

This section describes important information about the access point.

CCKM and Fast Roaming on Cisco 7921/7925 IP Phones

When a 7921 or 7925 wireless associates to an access point in a WDS with CCKM, it cannot fast roam because call admission control is not enabled. To work around this issue you must enable admission control by issuing the **admit-traffic** command in the access point SSID configuration as shown in the following example:

```
dot11 ssid voice
vlan 21
authentication open eap eap_methods
authentication network-eap eap_methods
authentication key-managemenet wpa cckm
admit-traffic
```

CCKM and Fast Roaming on Cisco 7921/7925 IP Phones

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```
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vlan 21
authentication open eap eap_methods
authentication network-eap eap_methods
authentication key-management wpa cckm
admit-traffic
```

Default Username and Password Are *Cisco*

You must enter a username and password when you log into an access point interface. The default username for administrator login is *Cisco*, and the default password is *Cisco*. Both the username and password are case sensitive.

Cisco IOS Release 12.3(11)JX Supports 2006 and 4400 Controllers Only

When you load this release on an access point, the access point can communicate with Cisco 2006 series wireless LAN controllers or 4400 series controllers only. Cisco 4100 series, AireSPACE 4012 series, and AireSPACE 4024 series controllers are not supported because they lack the memory required to support access points running Cisco IOS software.

Access Points Converted to Lightweight Mode do not Support WDS

Access points converted to lightweight mode communicate only with Cisco wireless LAN controllers and cannot communicate with WDS devices. However, the controller provides functionality equivalent to WDS when the access point associates to it.

Access Points Converted to Lightweight Mode Support 8 BSSIDs per Radio

Access points converted to lightweight mode support 8 BSSIDs per radio and a total of 8 wireless LANs per access point. (Cisco 1000 series access points support 16 BSSIDs per radio and 16 wireless LANs per access point.) When a converted access point associates to a controller, only wireless LANs with IDs 1 through 8 are pushed to the access point.

Access Points Converted to Lightweight Mode do not Support Layer 2 LWAPP

Access Points converted to lightweight mode must get an IP address and discover the controller using DHCP, DNS, or IP subnet broadcast.

Access Points Converted to Lightweight Mode Provide Read-Only Console Port

After you convert an access point to lightweight mode, the console port provides read-only access to the unit.

Caveats

This section lists open and resolved caveats.

Open Caveats

There are no open caveats in Cisco IOS Releases 12.3(11)JX1 and 12.3(11)JX.

Resolved Caveats in Cisco IOS Release 12.3(11)JX1

- CSCse64027—LWAPP-enabled IOS access points joined to a controller running software release 3.2.150.6 or 4.0.155.0 may disconnect and reconnect every 120 hours when the access point's heartbeat timer is set to the default value of 30 seconds. When the heartbeat timer is set to a smaller value (such as 10 seconds), the disconnect occurs more frequently (such as every 40 hours). While the access point is disconnected from the controller, clients are unable to associate to this access point.

Resolved Caveats in Cisco IOS Release 12.3(11)JX

- CSCek26492—Symptoms: A router may crash if it receives a packet with a specific crafted IP option as detailed in Cisco Security Advisory: Crafted IP Option Vulnerability:
<http://www.cisco.com/warp/public/707/cisco-sa-20070124-crafted-ip-option.shtml>
Conditions: This DDTs resolves a symptom of CSCec71950. Cisco IOS with this specific DDTs are not at risk of crash if CSCec71950 has been resolved in the software.
Workaround: Cisco IOS versions with the fix for CSCec71950 are not at risk for this issue and no workaround is required. If CSCec71950 is not resolved, see the following Cisco Security Advisory: Crafted IP Option Vulnerability for workaround information:
<http://www.cisco.com/warp/public/707/cisco-sa-20070124-crafted-ip-option.shtml>
- CSCek37177—The Cisco IOS Transmission Control Protocol (TCP) listener in certain versions of Cisco IOS software is vulnerable to a remotely-exploitable memory leak that may lead to a denial of service condition.

This vulnerability only applies to traffic destined to the Cisco IOS device. Traffic transiting the Cisco IOS device will not trigger this vulnerability.

Cisco has made free software available to address this vulnerability for affected customers.

This issue is documented as Cisco bug ID [CSCek37177](http://www.cisco.com/warp/public/707/cisco-sa-20070124-crafted-tcp.shtml).

There are workarounds available to mitigate the effects of the vulnerability.

This advisory is posted at

<http://www.cisco.com/warp/public/707/cisco-sa-20070124-crafted-tcp.shtml>

- CSCsd85747—When an access point sends out a discovery broadcast and receives responses from two controllers, it now attempts to join the second controller if it fails to join the first.

If You Need More Information

If you need information about a specific caveat that does not appear in these release notes, you can use the Cisco Bug Toolkit to find select caveats of any severity. Click this URL to browse to the Bug Toolkit: http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

(If you request a defect that cannot be displayed, the defect number might not exist, the defect might not yet have a customer-visible description, or the defect might be marked Cisco Confidential.)

Troubleshooting

For the most up-to-date, detailed troubleshooting information, refer to the Cisco TAC website at <http://www.cisco.com/tac>. Click **Technology Support**, choose **Wireless** from the menu on the left, and click **Wireless LAN**.

Related Documentation

This section lists documents related to 1130AG, 1200 series, and 1240AG access points.

- *Cisco Aironet Conversion Tool for Cisco IOS Software, 2.0 Administrator Guide for Windows*
- *Quick Start Guide: Cisco Aironet 1200 Series Access Points*
- *Quick Start Guide: Cisco Aironet 1240AG Access Points*
- *Cisco IOS Software Configuration Guide for Cisco Aironet Access Points*
- *Cisco IOS Command Reference for Cisco Aironet Access Points and Bridges*
- *Installation Instructions for Cisco Aironet Power Injectors*

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 at this URL:

<http://www.cisco.com/techsupport>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

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

Product Documentation DVD

Cisco documentation and additional literature are available in the Product Documentation DVD package, which may have shipped with your product. The Product Documentation DVD is updated regularly and may be more current than printed documentation.

The Product Documentation DVD is a comprehensive library of technical product documentation on portable media. The DVD enables you to access multiple versions of hardware and software installation, configuration, and command guides for Cisco products and to view technical documentation in HTML. With the DVD, you have access to the same documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .pdf versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD=) from Cisco Marketplace at this URL:

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

Ordering Documentation

Beginning June 30, 2005, registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

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

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at tech-doc-store-mkpl@external.cisco.com or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can send comments about Cisco 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.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- Nonemergencies—psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532



Tip

We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

The link on this page has the current PGP key ID in use.

Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

Cisco Technical Support & Documentation Website

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

<http://www.cisco.com/techsupport>

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

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

**Note**

Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request 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 list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—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.

Severity 2 (S2)—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.

Severity 3 (S3)—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.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

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, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:
<http://www.cisco.com/go/marketplace/>
- *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 at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:
<http://www.cisco.com/packet>
- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

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

or view the digital edition at this URL:

<http://ciscoiq.texterity.com/ciscoiq/sample/>

- *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>
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<http://www.cisco.com/en/US/products/index.html>
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