Contents

Overview

This Wiki is meant to be a starting point for expanding upon the Troubleshooting Cisco 3900 Series, 2900 Series, and 1900 Series ISRs document. It starts at a very high-level of troubleshooting, mainly as a resource to other online sources of information. It's hoped that over time, the granularity of information will increase.

General Problem Solving

The key to problem solving is to isolate the problem to a specific subsystem by comparing what the router is doing to what it should be doing. The LEDs on the router aid you in determining router performance and operation. When solving problems, consider the following router subsystems:

- Power and cooling systems?External power source, power cable, router power supply, circuit breaker, and router fan. Also check for inadequate ventilation or air circulation.

- Interface cards?LEDs on the interface cards help identify a failure. (3900 and 2900 LEDs 1900 LEDs).
- Cables?External cables that connect the router to the network.

Troubleshooting the Power and Cooling Systems

Both the system LED and the fans can help you troubleshoot a power problem. Check the following items to help isolate the problem:

Normal Indications

With the power switch on, the normal indications are:

- SYS LED on, green, and continuous
- Fan operating

Fault Indications

This is a condensed listing of LED states. For the complete listing see ?Chassis LED Indicators? (3900 and 2900 LEDs 1900 LEDs).

Check the following symptoms to locate or eliminate faults in the power and cooling systems:

- With the power switch on, is the SYS LED on green?
    - ♦ If the LED is green and continuous, the router has booted and the software is functional.
    - ♦ If the LED is blinking green the system is booting or in ROM monitor mode.
    - ♦ If the LED is off the system board is faulty.
    - ♦ If the LED is amber, check for a system error.
- With the power switch on and the SYS LED on and green, does the fan operate?
    - ♦ If no, check the fan.
    - ♦ If yes, the power system is functioning.
- With the power switch on and the SYS LED off, does the fan operate?
    - ♦ If yes, the router is receiving power. The fan is connected directly to the DC outputs of the power supply.
    - ♦ If no, check the power source and power cable.
- Does the router shut down after being on a short time?
    - ♦ Check for an environmentally induced shutdown.
    - ♦ Check the environmental site requirements in the "Router Environmental Requirements" (Cisco 3900/2900), and "Site Environment" (Cisco 1900).
- Router partially boots
    - ♦ Check for a power supply failure by inspecting the SYS LED on the front panel of the router. If the SYS LED is blinking or continuously green, the power supply is functional.
    - ♦ If the SYS LED is not on, refer to the ?Submitting a Service Request? for warranty information, or contact customer service.
- SYS LED on, green, and continuous
- Fan operating

Environmental Issues

If the router is operating at an abnormally high temperature, consider the following causes:

- Fan failure

- Air conditioner failure in the room
- Air blockage to cooling vents. See the "Airflow Diagrams and Chassis Ventilation" (Cisco 3900/2900, Cisco 1900).

Take steps to correct the problem. Refer to Refer to "Preparing for the Installation" (Cisco 3900 and 2900 Series Routers) and "Preinstallation Requirements and Planning" (Cisco 1900 Series Routers)

Troubleshooting Cables, Connections, and Interface Cards

Network problems can be caused by cables, cable connections, or interface cards, or by external devices such as a modem, transceiver, hub, wall jack, WAN interface, or terminal. Check for the following symptoms to help isolate the problem.

- Card is not recognized by the router.
    - ♦ Make sure that the card is firmly seated in its slot.
    - ♦ Check the LEDs on the card. Each card has its own set of LEDs. For information on these LEDs, refer to Cisco.com online support for the individual card.
    - ♦ Make sure that you have a version of Cisco IOS software that supports the card. Check the Cisco.com online support document for software requirements for the interface card.
- Card is recognized, but interface ports do not initialize.
    - ♦ Make sure that the card is firmly seated in its slot.
    - ♦ Check external cable connections.
    - ♦ Make sure that you have a version of Cisco IOS software and feature license that supports the card. Check the software requirements for the affected card, which can be found in the configuration note for the card.
- Router does not boot properly, or constantly or intermittently reboots.
    - ♦ Make sure that the card is firmly seated in its slot.
    - ♦ Check the router chassis or software.
- Router boots, but the console screen is frozen.
    - ♦ Check the external console connection.
    - ♦ Verify that the parameters for your terminal are set as follows:
        - ◊ (a) The same data rate as configured for the router (9600 baud is the default)
        - ◊ (b) 8 data bits
        - ◊ (c) 1 stop bit
        - ◊ (d) No parity generated or checked
- Router powers on and boots only when a particular card is removed.
    - ♦ Refer to ?Submitting a Service Request? for warranty information, or contact customer service.
- Router powers on and boots only when a particular cable is disconnected.
    - ♦ There may be a problem with the card or cable. Refer to ?Submitting a Service Request? for warranty information, or contact customer service.
    - ♦ Check that only one console cable is connected. Either a USB console or RJ-45, but not both.

ROM Monitor Jumper Settings

If a ROM monitor failure occurs, you may need to change a jumper setting on the motherboard so the router can boot for troubleshooting. Procedures for accessing the motherboard are described in "Replacing and Removing the Services Performance Engine" (Cisco 2900 and 3900 Series Routers). You may need to set one of the following jumpers on Cisco 3900 and Cisco 2900 ISRs:

- DUART DFLT?Sets the console connection data rate to 9600 regardless of user configuration

Change this setting if the console displays garbage characters. The jumper forces the data rate to a known good value.

- BOOT DFLT?Boots from the read-only boot image in case an upgrade is corrupted

Change this setting if the router consistently hangs or crashes after a ROM monitor upgrade. If you change either of the first two settings as shown, the router stays in the new configuration during subsequent power cycles and the jumper can be removed.

Note: The jumpers are not needed to troubleshoot Cisco IOS problems. If the Cisco IOS software becomes corrupted, remove the CompactFlash memory card to force the router to boot in ROM monitor mode.

Change these settings only after consulting with your service representative or Cisco technical support.

Console Port Baud Reset

When the Baud Reset button on Cisco models 1905/1921 is pressed during power on, ROMMON resets the router to the default console port configuration. The default console port configuration is 9600 baud, 8 data bits, 1 stop bit, no parity, and flow control is set to none.

Wireless Reception

Wireless communication is dependent upon the propagation of radio waves. Many environmental factors influence radio waves. The Cisco Multiband Swivel-Mount Dipole Antenna document Installation Notes section describes factors affecting this.

http://www.cisco.com/en/US/docs/routers/access/wireless/hardware/notes/antdip.html#wp1009743

LED Indicators

The LEDs enable you to determine router performance and operation. There are chassis, service module, network module, and network module adapter LEDs.

Chassis LEDs

(3900 and 2900 LEDs 1900 LEDs).

Service Module, Network Module, and Network Module Adapter LEDs

Service Module, Network Module, and Network Module Adapter LED Indicators.

System Messages

This section describes system error and recovery messages that may appear when a Cisco 1941 router is operated. The Cisco IOS software displays system error and recovery messages on an external device console

terminal screen.

The terminal should display one of the following prompts:

Router> (indicates the user EXEC command mode)

or

Router# (indicates the privileged EXEC command mode)

The Cisco IOS software checks the system condition once every 30 seconds. If a condition still exists, the error message is displayed again; if the error condition has cleared, a recovery message is displayed.

Table 1 Common System Error and Recovery Messages

Error Message	Explanation
%ENVMON-3-FAN_OK: Fan <fan-number> functional now	Explanation: The cooling fan within the chassis is working.
%ENVMON-3-FAN_FAIL: Fan <fan-number> is malfunctioning	Explanation: The cooling fan within the chassis is not working.
%CFG-3-CARD_NOT_SUPPORTED: Slot <n>. <Card identification from cookie, including at least card type, version, revision, and serial number>	Explanation: The card found is not recognized or is not supported in the specified slot. Check the feature license to be sure it is enabled.

Cisco.com Technical Support Web Site

The Cisco Technical Support Web site (http://www.cisco.com/techsupport) provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco Technical Support Web site is available 24 hours per day, 365 days per year.

For a complete overview of services go to:

http://www.cisco.com/web/services/ts/access/index.html

In addition to the overview, you may wish to learn more about using the Technical Support and Documentation web site by viewing online presentations:

http://www.cisco.com/web/learning/le31/le47/learning_tac_e-learning_tool_launch.html

Network Professionals Connection (Net Pro)

Access Net Pro on Cisco.com to exchange your questions, suggestions, and information with other networking professionals about networking solutions, products, and technologies. Table 2 lists only a few of the user forums available on Net Pro Support Community. If you do not have a Cisco.com account or have forgotten your username or password, click Register to create a free account.

Table 2 NetPro Forums

Forum	URL on Cisco.com
	http://forum.cisco.com/eforum/servlet/NetProf?page=Network_Infrastructure_discussion

Network Infrastructure	
Collaboration, Voice, and Video Forum	http://forum.cisco.com/eforum/servlet/NetProf?page=Unified_Communications_and_Video_discussion
Virtual Private Networks	https://supportforums.cisco.com/community/netpro/security/vpn
Security Forum	https://supportforums.cisco.com/community/netpro/security
Wireless Mobility	http://forum.cisco.com/eforum/servlet/NetProf?page=Wireless_-_Mobility_discussion
Service Providers	http://forum.cisco.com/eforum/servlet/NetProf?page=Service_Providers_discussion

Your Personalized Portal - My Technical Support

Create your own personalized technical support portal with technical alerts, notifications, and technical information at: http://tools.cisco.com/Support/mytechsupport/

Technical Services News

View news online, or subscribe to a free monthly e-newsletter.

http://www.cisco.com/web/services/news/ts_newsletter/cte/archives/200903.html

Technical Notes for Troubleshooting

Use the following technical notes in Table 3 to troubleshoot system issues.

Table 3 Technical Notes on Cisco.com

Topic	URL on Cisco.com
Password Recovery	http://www.cisco.com/en/US/customer/products/sw/iosswrel/ps1831/products_tech_note09186a00801746e6.s
Router Crashes	http://www.cisco.com/en/US/products/hw/iad/ps397/products_tech_note09186a00800b4447.shtml
Router Hangs	http://www.cisco.com/en/US/products/hw/routers/ps359/products_tech_note09186a0080106fd7.shtml
Memory Problems	http://www.cisco.com/en/US/products/sw/iosswrel/ps1831/products_tech_note09186a00800a6f3a.shtml
High CPU Utilization	http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a00800a70f2.shtml

Troubleshooting Toolkits

Use your account on Cisco.com to access the following tools in Table 4. If you do not have an account or have forgotten your username or password, click Register to create a free account.

Table 4 Troubleshooting Toolkits

Tool	Function	URL on Cisco.com
Technical Assistance Center (TAC) Case Collection	Troubleshooting Assistant	http://www.cisco.com/en/US/partner/support/tsd_tac_case_collection.html
Error Message Decoder	Research and identify error messages	http://www.cisco.com/pcgi-bin/Support/Errordecoder/index.cgi
Output Interpreter	Generate output analysis of show commands	https://www.cisco.com/cgi-bin/Support/OutputInterpreter/home.pl
Bug Toolkit	Search known caveats by software version, feature set, and keyword	http://www.cisco.com/pcgi-bin/Support/Bugtool/launch_bugtool.pl
Software Adviser	Choose appropriate software for your network device by matching software features to Cisco IOS and CatOS releases, comparing Cisco IOS releases, or determining which software releases support your hardware.	http://tools.cisco.com/Support/Fusion/FusionHome.do
Command Lookup Tool	Look up a detailed description for a particular Cisco IOS, Catalyst, or PIX/ASA command.	http://tools.cisco.com/Support/CLILookup/cltSearchAction.do

Podcasts

Table 5 Cisco Podcasts

Podcast	Language	Podcast URL on Cisco.com
Unified Communications Podcasts - Contact Center Solutions?audio	English	http://www.cisco.com/en/US/prod/voicesw/product_generic_contact_center_solutions
Government Podcasts?audio	English	https://www.cisco.com/web/strategy/government/usfed_podcast.html
SSL VPN Podcast Series?audio	English	http://www.cisco.com/en/US/prod/vpndevc/networking_solutions_products_genericco
Cisco Security Podcast Series?audio	English	http://www.cisco.com/en/US/prod/netmgtsw/networking_solutions_products_genericc

Cisco Network Management Podcast Series?audio	English	http://tools.cisco.com/Support/CLILookup/cltSearchAction.do
BizWise Podcasts?audio/video	English	http://www.cisco.com/en/US/netsol/ns752/networking_solutions_program_home.html

Text Messaging

Stay current with Cisco field notices, product updates, security advisories, security news, security responses, and more. Get a text message as soon as new content is posted. US and Canadian short code is 24726. Outside the US our code is 447797801642. These codes allow you to validate that a text message is from Cisco and not a third party. You can also send a text message to 24726 with the word "stop" and you will be unsubscribed from the service.

To register

http://www.cisco.com/web/about/facts_info/sms_reg_info.html

SMS Frequently Asked Questions (including supported countries)

http://www.cisco.com/web/about/facts_info/sms_faq.html

RSS Feeds

Product launches, field notices, security advisories, product documentation

http://www.cisco.com/en/US/support/tsd_technical_support_rss_feeds.html

Cisco Press

http://www.ciscopress.com/rss/

Social Networking

Second Life

Cisco has a large community on Second Life?Secondlife.com and
http://world.secondlife.com/group/8cb4182c-f17d-8fcf-196d-32eea3ab0e37

Blogs

Select from popular tags, or choose your own tag to search for specific blog posts that may help you.

http://blogs.cisco.com/

Support Wiki

A dynamic knowledge base where you can collaborate, create and access the latest technical content. Solve real-world IT problems in real time.

Watch a video overview of the Support Wiki here:

http://www.cisco.com/web/tsweb/flash/wiki/promo/cisco_wiki_promo.html

Twitter Feeds

Cisco Data Center Documentation Twitter Feed for daily updates on Cisco NX-OS features, documentation, and provide feedback about the documentation. Go to CiscoDCDocs.

Documentation Wikis

DocWiki uses wiki technology to improve collaboration with our customers and partners on Cisco documentation.

DocWiki

Expert VLOGS

Cisco's technical support experts and Distinguished Support Engineers share their knowledge and perspectives with fellow Cisco Support Community members in video blogs.

Support VODs and Webcast Listings

https://supportforums.cisco.com/docs/DOC-10443/

Technical Services

Support services designed to meet your business needs:

http://www.cisco.com/en/US/products/svcs/ps3034/ps2827/serv_category_home.html

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