



# Release Notes for Cisco ONS 15530 for Cisco IOS Release 12.2(18)SV3

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This document describes caveats for Cisco IOS Release 12.2(18)SV23 for the Cisco ONS 15530.

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## Introduction

The Cisco ONS 15530 is a DWDM multiservice aggregation platform that maximizes the carrying capacity of fiber by performing service aggregation of protocols such as ESCON, Fibre Channel, FICON, and Gigabit Ethernet. With the Cisco ONS 15530, users can take advantage of the availability of dark fiber to build a common infrastructure that supports data, SAN (storage area networking), and



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TDM (time-division multiplexing) traffic. For more information about DWDM technology and applications, refer to the [Introduction to DWDM Technology](#) publication and the [Cisco ONS 15530 Planning Guide](#).

## System Requirements

This section describes the system requirements for Cisco ONS 15530 IOS Release 12.2(18)SV2 and includes the following sections:

- [Memory Requirements, page 2](#)
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## Memory Requirements

The DRAM memory configuration is 64 MB, which is the default for the Cisco ONS 15530.

## Hardware Supported

[Table 1](#) lists the hardware components supported on the Cisco ONS 15530 and the minimum software version required. See the [“Determining the Software Version” section on page 12](#).

**Table 1** Cisco ONS 15530 Supported Hardware and Minimum Software Requirements

Component	Part Number	Description	Minimum Software Version Required
Chassis	15530-CHAS-N	15530-CHAS-N chassis, NEBS version	12.1(10)EV1
	15530-CHAS-E	15530-CHAS-E chassis, ETSI version	12.1(10)EV1
Power supplies	15530-PWR-AC	120 to 240 VAC power supply	12.1(10)EV1
	15530-PWR-DC	Power supply –48 VDC	12.1(10)EV1
CPU switch module	15530-CPU	ONS 15530 CPU switch module	12.1(10)EV1
Carrier motherboard	15530-LCMB-0100	Carrier motherboard (supports OSC, WB-VOA, and PB-OE modules)	12.1(10)EV1
OADM modules without OSC	15530-MDXA-04A0	4-channel Band A	12.1(10)EV1
	15530-MDXA-04B0	4-channel Band B	12.1(10)EV1
	15530-MDXA-04C0	4-channel Band C	12.1(10)EV1
	15530-MDXA-04D0	4-channel Band D	12.1(10)EV1
	15530-MDXA-04E0	4-channel Band E	12.1(10)EV1
	15530-MDXA-04F0	4-channel Band F	12.1(10)EV1
	15530-MDXA-04G0	4-channel Band G	12.1(10)EV1
	15530-MDXA-04H0	4-channel Band H	12.1(10)EV1
OADM modules with OSC	15530-MDXB-04A0	4-channel Band A	12.1(10)EV1
	15530-MDXB-04B0	4-channel Band B	12.1(10)EV1
	15530-MDXB-04C0	4-channel Band C	12.1(10)EV1
	15530-MDXB-04D0	4-channel Band D	12.1(10)EV1
	15530-MDXB-04E0	4-channel Band E	12.1(10)EV1
	15530-MDXB-04F0	4-channel Band F	12.1(10)EV1
	15530-MDXB-04G0	4-channel Band G	12.1(10)EV1
	15530-MDXB-04H0	4-channel Band H	12.1(10)EV1

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
MM transponder line cards with splitter	15530-TSP1-0111	Ch 1-2—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0311	Ch 3-4—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0511	Ch 5-6—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0711	Ch 7-8—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0911	Ch 9-10—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1111	Ch 11-12—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1311	Ch 13-14—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1511	Ch 15-16—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1711	Ch 17-18—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1911	Ch 19-20—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2111	Ch 21-22—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2311	Ch 23- 24—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2511	Ch 25-26—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2711	Ch 27-28—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2911	Ch 29-30—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
15530-TSP1-3111	Ch 31-32—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1	
MM transponder line cards without splitter	15530-TSP1-0121	Ch 1-2—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0321	Ch 3-4—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0521	Ch 5-6—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0721	Ch 7-8—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-0921	Ch 9-10—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1121	Ch 11-12—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1321	Ch 13-14—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1521	Ch 15-16—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1721	Ch 17-18—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-1921	Ch 19-20—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2121	Ch 21-22—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2321	Ch 23- 24—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2521	Ch 25-26—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2721	Ch 27-28—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
	15530-TSP1-2921	Ch 29-30—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1
15530-TSP1-3121	Ch 31-32—1310-nm MM 16 to 622 Mbps with SC	12.1(10)EV1	

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
SM transponder line cards with splitter	15530-TSP1-0112	Ch 1-2—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0312	Ch 3-4—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0512	Ch 5-6—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0712	Ch 7-8—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0912	Ch 9-10—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1112	Ch 11-12—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1312	Ch 13-14—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1512	Ch 15-16—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1712	Ch 17-18—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1912	Ch 19-20—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2112	Ch 21-22—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2312	Ch 23-24—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2512	Ch 23-24—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2712	Ch 25-26—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
15530-TSP1-2912	Ch 27-28—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1	
15530-TSP1-3112	Ch 29-30—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1	

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
SM transponder line cards without splitter	15530-TSP1-0122	Ch 1-2—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0322	Ch 3-4—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0522	Ch 5-6—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0722	Ch 7-8—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-0922	Ch 9-10—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1122	Ch 11-12—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1322	Ch 13-14—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1522	Ch 15-16—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1722	Ch 17-18—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-1922	Ch 19-20—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2122	Ch 21-22—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2322	Ch 23- 24—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2522	Ch 23- 24—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2722	Ch 25-26—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
	15530-TSP1-2922	Ch 27-28—1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1
15530-TSP1-3122	Ch 29-30 —1310-nm SM 16 Mbps to 2.5 Gbps with SC	12.1(10)EV1	
Aggregation cards	15530-LCMB-0200	ONS 15530 10-port ESCON aggregation card	12.1(10)EV1
	15530-FCGE-8P	ONS 15530 8-port Fibre Channel/Gigabit Ethernet aggregation card	12.1(12c)EV

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
2.5-Gbps ITU trunk cards	15530-ITU3-0110	ONS 15530 Ch 1/2 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-0310	ONS 15530 Ch 3/4 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-0510	ONS 15530 Ch 5/6 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-0710	ONS 15530 Ch 7/8 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-0910	ONS 15530 Ch 9/10 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-1110	ONS 15530 Ch 11/12 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-1310	ONS 15530 Ch 13/14 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-1510	ONS 15530 Ch 15/16 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-1710	ONS 15530 Ch 17/18 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-1910	ONS 15530 Ch 19/20 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-2110	ONS 15530 Ch 21/22 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-2310	ONS 15530 Ch 23/24 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
	15530-ITU3-2510	ONS 15530 Ch 25/26 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-2710	ONS 15530 Ch 27/28 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-2910	ONS 15530 Ch 29/30 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-3110	ONS 15530 Ch 31/32 2.5-Gbps ITU trunk card MU with splitter	12.1(12c)EV
	15530-ITU3-0120	ONS 15530 Ch 1/2 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-0320	ONS 15530 Ch 3/4 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-0520	ONS 15530 Ch 5/6 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-0720	ONS 15530 Ch 7/8 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-0920	ONS 15530 Ch 9/10 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-1120	ONS 15530 Ch 11/12 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-1320	ONS 15530 Ch 13/14 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-1520	ONS 15530 Ch 15/16 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-1720	ONS 15530 Ch 17/18 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-1920	ONS 15530 Ch 19/20 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-2120	ONS 15530 Ch 21/22 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-2320	ONS 15530 Ch 23/24 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-2520	ONS 15530 Ch 25/26 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-2720	ONS 15530 Ch 27/28 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-2920	ONS 15530 Ch 29/30 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV
	15530-ITU3-3120	ONS 15530 Ch 31/32 2.5-Gbps ITU trunk card MU without splitter	12.1(12c)EV



**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
10-Gbps ITU trunk cards with splitter (1550 nm)	15530-ITU2-0110	CH 1—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0210	CH 2—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0310	CH 3—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0410	CH 4—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0510	CH 5—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0610	CH 6—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0710	CH 7—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0810	CH 8—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-0910	CH 9—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1010	CH 10—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1110	CH 11—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1210	CH 12—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1310	CH 13—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1410	CH 14—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1510	CH 15—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1610	CH 16—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1710	CH 17—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1810	CH 18—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-1910	CH 19—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2010	CH 20—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2110	CH 21—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2210	CH 22—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2310	CH 23—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2410	CH 24—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2510	CH 25—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2610	CH 26—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2710	CH 27—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2810	CH 28—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-2910	CH 29—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-3010	CH 30—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-3110	CH 31—10-Gbps ITU trunk card with splitter	12.1(10)EV1
	15530-ITU2-3210	CH 32—10-Gbps ITU trunk card with splitter	12.1(10)EV1

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
10-Gbps ITU trunk cards without splitter (1550 nm)	15530-ITU2-0120	CH 1—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0220	CH 2—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0320	CH 3—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0420	CH 4—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0520	CH 5—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0620	CH 6—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0720	CH 7—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0820	CH 8—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-0920	CH 9—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1020	CH 10—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1120	CH 11—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1220	CH 12—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1320	CH 13—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1420	CH 14—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1520	CH 15—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1620	CH 16—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1720	CH 17—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1820	CH 18—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-1920	CH 19—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2020	CH 20—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2120	CH 21—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2220	CH 22—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2320	CH 23—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2420	CH 24—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2520	CH 25—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2620	CH 26—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2720	CH 27—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2820	CH 28—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-2920	CH 29—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-3020	CH 30—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-3120	CH 31—10-Gbps ITU trunk card without splitter	12.1(10)EV1
	15530-ITU2-3220	CH 32—10-Gbps ITU trunk card without splitter	12.1(10)EV1
10-GE uplink card	15530-10GE-UPLINK	ONS 15530 10-Gbps uplink, 1310nm with SC	12.1(10)EV1
WB-VOA module	15500-VOA-0100	Single wide-band variable optical attenuator	12.1(10)EV1
	15500-VOA-0200	Dual wide-band variable optical attenuator	12.1(10)EV1

**Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)**

Component	Part Number	Description	Minimum Software Version Required
Single-band PB-OE module	15500-PEQ-01A0	Single-band optical equalizer Band A	12.1(10)EV1
	15500-PEQ-01B0	Single-band optical equalizer Band B	12.1(10)EV1
	15500-PEQ-01C0	Single-band optical equalizer Band C	12.1(10)EV1
	15500-PEQ-01D0	Single-band optical equalizer Band D	12.1(10)EV1
	15500-PEQ-01E0	Single-band optical equalizer Band E	12.1(10)EV1
	15500-PEQ-01F0	Single-band optical equalizer Band F	12.1(10)EV1
	15500-PEQ-01G0	Single-band optical equalizer Band G	12.1(10)EV1
	15500-PEQ-01H0	Single-band optical equalizer Band H	12.1(10)EV1
Dual-band PB-OE module	15500-PEQ-02AB	Dual band optical equalizer Band AB	12.1(10)EV1
	15500-PEQ-02CD	Dual band optical equalizer Band CD	12.1(10)EV1
	15500-PEQ-02EF	Dual band optical equalizer Band EF	12.1(10)EV1
	15500-PEQ-02GH	Dual band optical equalizer Band GH	12.1(10)EV1
Protection switch module	15530-PSM-01	ONS 15530 protection switch module	12.1(12c)EV
Pluggable variable rate SFP optics	15500-XVRA-10A1	Low band (16 to 200 Mbps) variable rate, MM (1310 nm) with LC	12.1(12c)EV3
	15500-XVRA-10B1	Low band (16 to 200 Mbps) variable rate, SM (1310 nm) with LC	12.1(12c)EV3
	15500-XVRA-11B1	Mid band (200 to 1250 Mbps) variable rate, SM (1310 nm) with LC	12.1(12c)EV3
	15500-XVRA-12B1	High band (1.062 Gbps to 2.5 Gbps) variable rate, SM (1310 nm) with LC	12.1(12c)EV3
AC cables	15500-CAB-AC=	AC North America (spare)	12.1(10)EV1
	15500E-CAB-ACA=	ONS 15530 ETSI AC cable, Australia (spare)	12.1(10)EV1
	15500E-CAB-ACE=	ONS 15530 ETSI AC cable, Europe (spare)	12.1(10)EV1
	15500E-CAB-ACU=	ONS 15530 ETSI AC cable, UK (spare)	12.1(10)EV1
	15500E-CAB-ACI=	ONS 15530 ETSI AC cable, Italy (spare)	12.1(10)EV1
	15500E-CAB-ACR=	ONS 15530 ETSI AC cable, Argentina (spare)	12.1(10)EV1
Blank panel cover	15530-COV-MUX=	OADM blank panel cover	12.1(10)EV1
	15530-COV-SLOT=	Full slot panel cover	12.1(10)EV1
	15530-COV-PWR=	Power supply blank panel cover	12.1(10)EV1
	15530-COV-OSC=	OSC blank panel cover	12.1(10)EV1
Fan assembly	15530-FT01=	Fan assembly (spare)	12.1(10)EV1
Air ramp baffle	15530-BAF-E=	Air baffle (spare) for 15530-CHAS-E chassis	12.1(10)EV1
CompactFlash card	MEM-15530FLC32M=	CompactFlash card 32 MB	12.1(10)EV1

Table 1 Cisco ONS 15530 Supported Hardware and Minimum Software Requirements (Continued)

Component	Part Number	Description	Minimum Software Version Required
Rack mount kit	15530-RKMT-E=	Chassis rack mount kit for 15530-CHAS-E	12.1(10)EV1
	15530-RKMT-N23=	Chassis rack mount kit for 15530-CHAS-N (23 inch rack)	12.1(10)EV1
	15530-RKMT-N19=	Chassis rack mount kit for 15530-CHAS-N (19 inch rack)	12.1(10)EV1

## Determining the Software Version



### Note

We strongly recommend that you use the latest available software release for all Cisco ONS 15530 hardware.

To determine the version of Cisco IOS software currently running on a Cisco ONS 15530 system, log in to the system and enter the **show version EXEC** command. The following sample output is from the **show version** command. The software version number is shown on the second line of the sample output.

```
Switch# show version
Cisco Internetwork Operating System Software
IOS (tm) ONS-15530 Software (ONS15530-I-M), Version 12.2(18)SV2
<Information deleted>
```

## Upgrading the System Image

To ensure proper system functioning, follow the system image upgrading procedure described in the *Cisco ONS 15530 Software Upgrade Guide*.

You can find the system images for the Cisco ONS 15530 at the following URL:

<http://www.cisco.com/kobayashi/sw-center/sw-optical.shtml>



### Note

Always set the configuration register to 0x2102 when upgrading the system image using the **config-reg 0x2102** command in configuration mode.



### Caution

Improper system image upgrades can affect system functioning and redundancy. Always follow the recommended upgrade procedures.

## Feature Set Table

The Cisco IOS Release software is packaged in feature sets (also called software images) depending on the platform. Each feature set contains a specific set of Cisco IOS features. Table 2 lists the Cisco IOS software feature sets available for the Cisco ONS 15530.

**Table 2 Feature Sets Supported by the Cisco ONS 15530**

Feature Set	Introduced in This Release
Inband message channel	12.1(10)EV2
Gigabit Ethernet	12.1(10)EV2
Fast Ethernet	12.1(10)EV2
Ethernet	12.1(10)EV2
ATM OC-3/STM-1, OC-12/STM-4, and OC-48/STM-16	12.1(10)EV2
SONET <sup>1</sup> /SDH <sup>2</sup>	12.1(10)EV2
POS <sup>3</sup>	12.1(10)EV2
IBM Sysplex coupling link	12.1(10)EV2
Fibre Channel (1 Gbps)	12.1(10)EV2
Fibre Channel (2 Gbps)	12.1(10)EV2
FDDI <sup>4</sup>	12.1(10)EV2
ESCON <sup>5</sup> aggregation (2.5 Gbps)	12.1(10)EV2
FICON <sup>6</sup> (800 Mbps)	12.1(10)EV2
FICON (1 Gbps)	12.1(12c)EV3
Token ring	12.1(10)EV2
SNMP	12.1(10)EV2
CiscoView	12.1(10)EV2
Cisco Transport Manager	12.1(10)EV2
IP packets	12.1(10)EV2
OSCP <sup>7</sup>	12.1(10)EV2
APS <sup>8</sup> channel protocol	12.1(10)EV2
Point-to-point	12.1(10)EV2
Hubbed ring	12.1(10)EV2
Meshed ring	12.1(10)EV2
IBM Sysplex ETR/CLO <sup>9</sup>	12.1(10)EV2
1 Gbps Fibre Channel/FICON aggregation into 2.5 Gbps	12.1(12c)EV
1 Gbps IBM Sysplex Coupling Link aggregation into 2.5 Gbps	12.2(18)SV
Gigabit Ethernet aggregation (2.5 Gbps)	12.1(12c)EV
Buffer credits for 8-port FC/GE aggregation card	12.2(18)SV
2-Gbps Fibre Channel protocol monitoring on transparent transponder	12.2(18)SV
2-Gbps FICON protocol monitoring	12.2(18)SV
Functional image version diagnostics	12.2(18)SV
Autonegotiation for Gigabit Ethernet between the 8-port FC/GE aggregation card and the client equipment	12.2(18)SV
ISC links compatibility mode aggregation (2.5 Gbps)	12.2(18)SV

1. SONET = Synchronous Optical Networking

2. SDH = Synchronous Digital Hierarchy
3. POS = Packet over SONET
4. FDDI = Fiber Distributed Data Interface
5. ESCON = Enterprise Systems Connection
6. FICON = Fiber Connection
7. OSCP = Optical Supervisory Channel Protocol
8. APS = Automatic Protection Switching
9. ETR/CLO = external timer reference/control link oscillator

## New and Changed Information

This section lists new features that appear in this and previous releases of Cisco IOS Release 12.2. The new features are sorted by release number.

### New Features in Release 12.2(18)SV2

No new features are available for this release.

### New Features in Release 12.2(18)SV1

No new features are available for this release.

### New Features in Release 12.2(18)SV

The following new software features are available for the Cisco ONS 15530 in Cisco IOS Release 12.2(18)SV:

- Autonegotiation between the 8-port FC/GE aggregation card and the client equipment for Gigabit Ethernet traffic



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**Note** The 8-port FC/GE aggregation card does not support end-to-end pass through of autonegotiation parameters in the current release.

---

- ISC links compatibility mode aggregation (2.5 Gbps)
- Buffer credits for Fibre Channel distance extension
- 2-Gbps Fibre Channel protocol monitoring



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**Note** 2-Gbps Fibre Channel protocol monitoring requires transponder functional image release 1.A3.

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- 2-Gbps FICON protocol monitoring
- Data file with upgrade information for the ROMMON and functional images
- **show upgrade-info functional-image** command

- **negotiation auto** command
- **flow control** command

## Caveats

This section describes open and resolved severity 1 and 2 caveats and some severity 3 caveats. The “Open Caveats” section lists open caveats that apply to the current release and may apply to previous releases. The “Resolved Caveats” sections list caveats resolved in a particular release, but open in previous releases.

### Resolved Caveats in Release 12.2(18)SV3

- CSCef68324

Cisco Internetwork Operating System (IOS) software is vulnerable to a Denial of Service (DoS) and potentially an arbitrary code execution attack from a specifically crafted IPv6 packet. The packet must be sent from a local network segment. Only devices that have been explicitly configured to process IPv6 traffic are affected. Upon successful exploitation, the device may reload or be open to further exploitation.

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

More details can be found in the security advisory that is posted at <http://www.cisco.com/warp/public/707/cisco-sa-20050729-ipv6.shtml>.

### Open Caveats in Release 12.2(18)SV2

- CSCdz59146

**Symptom:** The ethernetdcc interface loses connectivity when splitter protection is configured and the waveethernetphy interface is shut down while the protection wavepatch interface is active and the working wavepatch interface is down.

**Workaround:** Do not shut down the waveethernetphy interface when the working wavepatch interface is down.

- CSCea52092

**Symptom:** After booting the system, power coming out of the OSC module seems to be null even though the laser is enabled.

**Workaround:** Perform an online removal and insertion of the OSC module or carrier motherboard.

- CSCeb18103

**Symptom:** The OSC wave interface does not come back up after resolving a trunk fiber break if laser safety control was configured after the trunk fiber break occurred.

**Workaround:** Disable and then enable laser safety control again to bring up the OSC wave interface.

- CSCec14447

**Symptom:** The 8-port GE/FC aggregation card laser is not in the proper state when a Tx-CRC threshold has been exceeded and FLC is configured.

**Workaround:** Issue the **shutdown/no shutdown** command sequence on the affected interface.

- CSCec42573

**Symptom:** In a y-cable APS configuration, interfaces on the 8-port GE/FC aggregation card configured for FICON encapsulation change to GE encapsulation when the saved configuration file is copied to the running configuration.

**Workaround:** Change the encapsulation back to FICON.

- CSCed33451

**Symptom:** After configuring a patch between a wavepatch interface and a wdmrelay interface, issuing a **show connect intermediate** command will result in spurious memory access.

**Workaround:** Do not issue the **show connect intermediate** command when a patch between a wavepatch interface and a wdmrelay interface is configured.



- CSCin78329

**Symptom:** Power-on diagnostics may fail the credit-buffer-memory test for the 8-port FC/GE aggregation card on the first boot after power cycling the box. Subsequent reboots without power cycling pass the test. These test failures are spurious and can be ignored.

**Workaround:** Upgrade you Cisco ONS 15530 software to Cisco IOS Release 12.2(23)SV or later.

## Resolved Caveats in Release 12.2(18)SV2

- CSCeb87507

**Symptom:** In some instances the system crashes when it attempts to parse IP SNMP related commands.

**Workaround:** None.

- CSCed05346

**Symptom:** Bidirectional APS fails when the ethernetcc interface is used as a message channel for trunk based protection if the PSM is connected directly to a wavepatch interface on an ITU trunk card or transponder line card rather than to the wdm interface on an OADM module.

**Workaround:** None.

- CSCed22589

**Symptom:** Link initialization failure due to Loss of Lock might occur for ESCON traffic on some transponder line cards due to a transient failure of the clock recovery unit. Only some transponder line cards are susceptible to this failure and not all. This is an initialization failure and not a run-time failure.

**Workaround:** None.

## Resolved Caveats in Release 12.2(18)SV1

- CSCdu53656

A Cisco device running IOS and enabled for the Border Gateway Protocol (BGP) is vulnerable to a Denial of Service (DOS) attack from a malformed BGP packet. The BGP protocol is not enabled by default, and must be configured in order to accept traffic from an explicitly defined peer. Unless the malicious traffic appears to be sourced from a configured, trusted peer, it would be difficult to inject a malformed packet. BGP MD5 is a valid workaround for this problem.

Cisco has made free software available to address this problem. For more details, please refer to this advisory, available at <http://www.cisco.com/warp/public/707/cisco-sa-20040616-bgp.shtml>.

- CSCdz64021

**Symptom:** While performing an online removal and insertion of a protection card in a y-cable configuration, the local and remote working ports are flooded with CRC errors.

**Workaround:** Disconnect the standby branch of the y-cable configuration during the insertion of the standby line card or SFP optics.

- CSCea28131

A Cisco device running IOS and enabled for the Border Gateway Protocol (BGP) is vulnerable to a Denial of Service (DOS) attack from a malformed BGP packet. The BGP protocol is not enabled by default, and must be configured in order to accept traffic from an explicitly defined peer. Unless the malicious traffic appears to be sourced from a configured, trusted peer, it would be difficult to inject a malformed packet. BGP MD5 is a valid workaround for this problem.

Cisco has made free software available to address this problem. For more details, please refer to this advisory, available at <http://www.cisco.com/warp/public/707/cisco-sa-20040616-bgp.shtml>.

- CSCec28182

**Symptom:** Tracebacks related to CPU hog issues are seen when reprogramming the 2.5-Gbps transponder line card functional image.

**Workaround:** None.

- CSCec36614

**Symptom:** Performing an online removal and insertion on a tengigethernetphy interface or waveethernetphy interface when loopback is configured causes a loss of the loopback information on the hardware. However, the loopback CLI configuration is still present in the software.

**Workaround:** Remove and reinsert the line card, and then issue the **loopback** command.

- CSCec59409

**Symptom:** Issuing a **Ctrl-U** when connected to a raw TL1 port causes the system to crash.

**Workaround:** If a TL1port is unused, apply an IP ACL to the management Ethernet interface that blocks the incoming TCP connections to ports 3082 and 3083.

- CSCec88050

**Symptom:** Power-on diagnostics fail on the CPU switch module if a 2.5-ITU trunk card is installed in slot 1.

**Workaround:** None.

## Resolved Caveats in Release 12.2(18)SV

- CSCdu53656

A Cisco device running IOS and enabled for the Border Gateway Protocol (BGP) is vulnerable to a Denial of Service (DOS) attack from a malformed BGP packet. The BGP protocol is not enabled by default, and must be configured in order to accept traffic from an explicitly defined peer. Unless the malicious traffic appears to be sourced from a configured, trusted peer, it would be difficult to inject a malformed packet. BGP MD5 is a valid workaround for this problem.

Cisco has made free software available to address this problem. For more details, please refer to this advisory, available at <http://www.cisco.com/warp/public/707/cisco-sa-20040616-bgp.shtml>.

- CSCdz89270

**Symptom:** OFC (open fibre control) is not supported with Fibre Channel on the 8-port FC/GE aggregation card. The link might not initialize if an 8-port FC/GE aggregation card is used with older Fibre Channel equipment that employ OFC laser safety mechanisms.

**Workaround:** None.

- CSCea28131

A Cisco device running IOS and enabled for the Border Gateway Protocol (BGP) is vulnerable to a Denial of Service (DOS) attack from a malformed BGP packet. The BGP protocol is not enabled by default, and must be configured in order to accept traffic from an explicitly defined peer. Unless the malicious traffic appears to be sourced from a configured, trusted peer, it would be difficult to inject a malformed packet. BGP MD5 is a valid workaround for this problem.

Cisco has made free software available to address this problem. For more details, please refer to this advisory, available at <http://www.cisco.com/warp/public/707/cisco-sa-20040616-bgp.shtml>.

- CSCeb19410

**Symptom:** An 8-port FC/GE aggregation card client interface laser may be off when it is configured in a disabled y-cable APS group.

**Workaround:** Enable and then disable the APS group. This activates the client interface laser.

- CSCec03715

**Symptom:** If the flow identifier on an esconphy interface is changed without deleting the old flow identifier, both the old and the new flow identifiers are present in the lookup table of the ESCON aggregation card. As a result, the old flow identifier cannot be reused on this ESCON aggregation card.

**Workaround:** Perform an online removal and insertion of the ESCON aggregation card or issue the following sequence of commands in interface configuration mode:

1. **no cdl flow identifier**
2. **cdl flow identifier** [OLD IDENTIFIER]
3. **no cdl flow identifier**
4. **cdl flow identifier** [NEW IDENTIFIER]

- CSCec34628

**Symptom:** Continuous optical power monitoring alarms cause memory leaks that lead to bus error exceptions and an unexpected reload.

**Workaround:** None.

## Limitations and Restrictions

This section provides limitations and restrictions for Cisco ONS 15530 hardware and software.

### Transponder Line Cards

This section contains limitations and restrictions that apply to transponder line cards.

- CRC errors might occur with 2-Gbps Fibre Channel on single-mode transponders when high input power levels are received from the client laser sources.

Data errors or link-down conditions for 2-Gbps Fibre Channel might occur when used with certain client laser sources. Transmitters in some client GBIC and SFP transceiver units might send large overshoots in optical power with signal bit transitions, causing momentary overload conditions on the transponder client side receiver. The average transmitted power level from the GBIC does not violate the overload specification of the transponder client side receiver, so a power meter does not detect the overload.

The workaround is to attenuate the signal from the client equipment to a recommended level of -12 dBm when transmitting 2-Gbps Fibre Channel services.

- Error-free transmission of some D1 video signals (defined by the SMPTE 259M standard) and test patterns (such as Matrix SDI) cannot be guaranteed by the Cisco 15500 Series because of the pathological pattern in D1 video. This well-known limitation is usually overcome by the D1 video equipment vendor, who uses a proprietary, second level of scrambling. No standards exist at this time for the second level of scrambling.

## CPU Switch Modules

This section contains limitations and restrictions that apply to CPU switch modules.

- If both CPU switch modules are removed, all aggregation cards, OSC modules, transponder line cards, ITU trunk cards, and uplink cards are shut down.



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**Note** Traffic on pass through optical channels (which passively pass through the OADM modules) are not affected by the removal of the processor cards.

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## Related Documentation

Refer to the following documents for more information about the Cisco ONS 15530:

- [Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series](#)
- [Cisco ONS 15530 Planning Guide](#)
- [Cisco ONS 15530 Hardware Installation Guide](#)
- [Cisco ONS 15530 Optical Transport Turn-Up and Test Guide](#)
- [Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections](#)
- [Cisco ONS 15530 Configuration Guide](#)
- [Cisco ONS 15530 Command Reference](#)
- [Cisco ONS 15530 System Alarms and Error Messages](#)
- [Cisco ONS 15530 Troubleshooting Guide](#)
- [Network Management for the Cisco ONS 15530](#)
- [Cisco ONS 15530 TLI Commands](#)
- [MIB Quick Reference for the Cisco ONS 15500 Series](#)
- [Cisco ONS 15530 Software Upgrade Guide](#)

## Obtaining Documentation

Cisco provides several ways to obtain documentation, 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](http://www.cisco.com/public/countries_languages.shtml)

## Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

[http://www.cisco.com/en/US/partner/ordering/ordering\\_place\\_order\\_ordering\\_tool\\_launch.html](http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html)

All users can order annual or quarterly subscriptions through the online Subscription Store:

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

Click Subscriptions & Promotional Materials in the left navigation bar.

## Ordering Documentation

You can find instructions for ordering documentation at this URL:

[http://www.cisco.com/univercd/cc/td/doc/es\\_inpck/pdi.htm](http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm)

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<http://www.cisco.com/en/US/partner/ordering/index.shtml>
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## Documentation Feedback

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170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

## 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 TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

### Cisco TAC Website

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

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

Accessing all the tools on the Cisco TAC 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.

## Obtaining Additional Publications and Information

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

- 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://www.cisco.com/en/US/products/products\\_catalog\\_links\\_launch.html](http://www.cisco.com/en/US/products/products_catalog_links_launch.html)
- 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/en/US/about/ac123/ac147/about\\_cisco\\_the\\_internet\\_protocol\\_journal.html](http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html)
- 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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