



Release Notes for Cisco ONS 15540 ESPx for Cisco IOS Release 12.1(12c)EV1

This document describes caveats for Cisco IOS Release 12.1(12c)EV1 for the Cisco ONS 15540 ESPx.

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Introduction

The Cisco ONS 15540 ESPx is an optical transport platform that employs DWDM (dense wavelength division multiplexing) technology. With the Cisco ONS 15540 ESPx, users can take advantage of the availability of dark fiber to build a common infrastructure that supports data, SANs (storage area networks), and TDM (time-division multiplexing) traffic. The system uses an enhanced chassis with front fiber optic cable access for optical interconnections between transponder modules and optical mux/demux modules. For more information about DWDM technology and applications, refer to the [Introduction to DWDM Technology](#) publication and the [Cisco ONS 15540 ESPx Planning Guide](#).



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System Requirements

This section describes the system requirements for Cisco IOS Release 12.1(12c)EV1 and includes the following sections:

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Memory Requirements

The DRAM memory configuration is 128 MB, which is the default for the Cisco ONS 15540 ESPx.

Hardware Supported

[Table 1](#) lists the hardware components supported on the Cisco ONS 15540 ESPx and the minimum software version required. See the [“Determining the Software Version”](#) section on page 9.

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements

| Component | Part Number | Description | Minimum Software Version Required |
|--|-----------------|--|-----------------------------------|
| Chassis | 15540-CHSB= | Chassis external connection system —19” RM, 14 U, 12 slots | 12.1(10)EV1 |
| Power supplies and spare power supply cables | 15540-PWR-AC | 120 to 240 VAC power supply | 12.1(10)EV1 |
| | 15540-CAB-AC | Custom AC-input power entry cable | 12.1(10)EV1 |
| | 15500-CAB-AC | North America | 12.1(10)EV1 |
| | 15500-CAB-ACA | Australia | 12.1(10)EV1 |
| | 15500-CAB-ACE | Europe | 12.1(10)EV1 |
| | 15500-CAB-CU | UK | 12.1(10)EV1 |
| | 15500-CAB-ACI | Italy | 12.1(10)EV1 |
| | 15500-CAB-ACR | Argentina | 12.1(10)EV1 |
| Blank motherboards and blank modules | 15540-COV-07 | Mux/demux motherboard blank panel | 12.1(10)EV1 |
| | 15540-COV-08 | 4 / 8 Ch. mux/demux blank panel | 12.1(10)EV1 |
| | 15540-COV-09 | Line card motherboard blank panel | 12.1(10)EV1 |
| | 15540-COV-10 | Transponder module blank panel | 12.1(10)EV1 |
| Fans | 15540-FTMP= | Fan tray module populated with eight fans | 12.1(10)EV1 |
| Processor cards | 15540-CPU | Processor card | 12.1(10)EV1 |
| Flash PC Cards | 15500-PCMCIA16= | PCMCIA Memory Card 16Mb | 12.1(10)EV1 |
| | 15500-PCMCIA20= | PCMCIA Memory Card 20Mb | 12.1(10)EV1 |

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)

| Component | Part Number | Description | Minimum Software Version Required |
|-------------------------------|------------------------|--|--|
| Mux/demux motherboards | 15540-MMMB-1100 | Supports mux/demux modules with OSC | 12.1(10)EV1 |
| | 15540-MMMB-1200 | Supports mux/demux modules without OSC | 12.1(10)EV1 |
| Mux/demux modules without OSC | 15540-MDXC-04A0 | 4-channel Band A | 12.1(10)EV1 |
| | 15540-MDXC-04B0 | 4-channel Band B | 12.1(10)EV1 |
| | 15540-MDXC-04C0 | 4-channel Band C | 12.1(10)EV1 |
| | 15540-MDXC-04D0 | 4-channel Band D | 12.1(10)EV1 |
| | 15540-MDXC-04E0 | 4-channel Band E | 12.1(10)EV1 |
| | 15540-MDXC-04F0 | 4-channel Band F | 12.1(10)EV1 |
| | 15540-MDXC-04G0 | 4-channel Band G | 12.1(10)EV1 |
| | 15540-MDXC-04H0 | 4-channel Band H | 12.1(10)EV1 |
| | 15540-MDXC-08A0 | 8-channel Band AB | 12.1(10)EV1 |
| | 15540-MDXC-08B0 | 8-channel Band CD | 12.1(10)EV1 |
| | 15540-MDXC-08C0 | 8-channel Band EF | 12.1(10)EV1 |
| | 15540-MDXC-08D0 | 8-channel Band GH | 12.1(10)EV1 |
| Mux/demux modules with OSC | 15540-MDXD-04A0 | 4-channel Band A | 12.1(10)EV1 |
| | 15540-MDXD-04B0 | 4-channel Band B | 12.1(10)EV1 |
| | 15540-MDXD-04C0 | 4-channel Band C | 12.1(10)EV1 |
| | 15540-MDXD-04D0 | 4-channel Band D | 12.1(10)EV1 |
| | 15540-MDXD-04E0 | 4-channel Band E | 12.1(10)EV1 |
| | 15540-MDXD-04F0 | 4-channel Band F | 12.1(10)EV1 |
| | 15540-MDXD-04G0 | 4-channel Band G | 12.1(10)EV1 |
| | 15540-MDXD-04H0 | 4-channel Band H | 12.1(10)EV1 |
| | 15540-MDXD-08A0 | 8-channel Band AB | 12.1(10)EV1 |
| | 15540-MDXD-08B0 | 8-channel Band CD | 12.1(10)EV1 |
| | 15540-MDXD-08C0 | 8-channel Band EF | 12.1(10)EV1 |
| | 15540-MDXD-08D0 | 8-channel Band GH | 12.1(10)EV1 |
| | 15540-MDXD-32A0 | 32-channel AH | 12.1(10)EV1 |
| | Line card motherboards | 15540-LCMB-1100 | Supports four transponders with protection or four extended range transponders with protection |
| 15540-LCMB-1200 | | Supports four transponders without protection or four extended range transponders without protection | 12.1(10)EV1 |
| 15540-LCMB-1400 | | Supports two 10-GE transponders with protection | 12.1(10)EV2 |
| 15540-LCMB-1401 | | Supports two 10-GE transponders without protection | 12.1(10)EV2 |

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)

| Component | Part Number | Description | Minimum Software Version Required |
|------------------------|--|--|-----------------------------------|
| MM transponder modules | 15540-TSP1-01A3 | Ch 1-2 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-03A3 | Ch 3-4 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-05A3 | Ch 5-6 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-07A3 | Ch 7-8 — 310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-09A3 | Ch 9-10 — 1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-11A3 | Ch 11-12 — 1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-13A3 | Ch 13-14 — 1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-15A3 | Ch 15-16 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-17A3 | Ch 17-18 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-19A3 | Ch 19-20 —1310nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-21A3 | Ch 21-22 —1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-23A3 | Ch 23- 24—1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-25A3 | Ch 25-26—1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-27A3 | Ch 27-28—1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-29A3 | Ch 29-30—1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 |
| 15540-TSP1-31A3 | Ch 31-32—1310-nm MM 16 to 622 Mbps with SC | 12.1(10)EV1 | |
| SM transponder modules | 15540-TSP1-01B3 | Ch 1-2—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-03B3 | Ch 3-4—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-05B3 | Ch 5-6—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-07B3 | Ch 7-8—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-09B3 | Ch 9-10—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-11B3 | Ch 11-12—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-13B3 | Ch 13-14— 1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-15B3 | Ch 15-16—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-17B3 | Ch 17-18—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-19B3 | Ch 19-20—1310nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-21B3 | Ch 21-22—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-23B3 | Ch 23- 24—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-23B3 | Ch 23- 24—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-25B3 | Ch 25-26—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| | 15540-TSP1-27B3 | Ch 27-28—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 |
| 15540-TSP1-29B3 | Ch 29-30 —1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 | |
| 15540-TSP1-31B3 | Ch 31-32—1310-nm SM 16 Mbps to 2.5 Gbps with SC | 12.1(10)EV1 | |

Table 1 *Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)*

| Component | Part Number | Description | Minimum Software Version Required |
|--|--------------------|--------------------|--|
| Extended range transponder modules supporting SFP optics | 15540-TSP2-0100 | Ch 1-2 | 12.1(10)EV1 |
| | 15540-TSP2-0300 | Ch 3-4 | 12.1(10)EV1 |
| | 15540-TSP2-0500 | Ch 5-6 | 12.1(10)EV1 |
| | 15540-TSP2-0700 | Ch 7-8 | 12.1(10)EV1 |
| | 15540-TSP2-0900 | Ch 9-10 | 12.1(10)EV1 |
| | 15540-TSP2-1100 | Ch 11-12 | 12.1(10)EV1 |
| | 15540-TSP2-1300 | Ch 13-14 | 12.1(10)EV1 |
| | 15540-TSP2-1500 | Ch 15-16 | 12.1(10)EV1 |
| | 15540-TSP2-1700 | Ch 17-18 | 12.1(10)EV1 |
| | 15540-TSP2-1900 | Ch 19-20 | 12.1(10)EV1 |
| | 15540-TSP2-2100 | Ch 21-22 | 12.1(10)EV1 |
| | 15540-TSP2-2300 | Ch 23-24 | 12.1(10)EV1 |
| | 15540-TSP2-2500 | Ch 25-26 | 12.1(10)EV1 |
| | 15540-TSP2-2700 | Ch 27-28 | 12.1(10)EV1 |
| | 15540-TSP2-2900 | Ch 29-30 | 12.1(10)EV1 |
| 15540-TSP2-3100 | Ch 31-32 | 12.1(10)EV1 | |

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)

| Component | Part Number | Description | Minimum Software Version Required |
|---|--------------------|--|-----------------------------------|
| Single port 10-Gigabit Ethernet transponder modules | 15540-10GE-03B301 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 1 | 12.1(10)EV2 |
| | 15540-10GE-03B302 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 2 | 12.1(10)EV2 |
| | 15540-10GE-03B303 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 3 | 12.1(10)EV2 |
| | 15540-10GE-03B304 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 4 | 12.1(10)EV2 |
| | 15540-10GE-03B305 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 5 | 12.1(10)EV2 |
| | 15540-10GE-03B306 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 6 | 12.1(10)EV2 |
| | 15540-10GE-03B307 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 7 | 12.1(10)EV2 |
| | 15540-10GE-03B308 | 10-GE 1310nm SM Client with SC and ITU Laser Ch8 | 12.1(10)EV2 |
| | 15540-10GE-03B309 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 9 | 12.1(10)EV2 |
| | 15540-10GE-03B3010 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 10 | 12.1(10)EV2 |
| | 15540-10GE-03B3011 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 11 | 12.1(10)EV2 |
| | 15540-10GE-03B3012 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 12 | 12.1(10)EV2 |
| | 15540-10GE-03B3013 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 13 | 12.1(10)EV2 |
| | 15540-10GE-03B3014 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 14 | 12.1(10)EV2 |
| | 15540-10GE-03B3015 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 15 | 12.1(10)EV2 |
| | 15540-10GE-03B3016 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 16 | 12.1(10)EV2 |
| | 15540-10GE-03B3017 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 17 | 12.1(10)EV2 |
| | 15540-10GE-03B3018 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 18 | 12.1(10)EV2 |
| | 15540-10GE-03B3019 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 19 | 12.1(10)EV2 |
| | 15540-10GE-03B3020 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 20 | 12.1(10)EV2 |
| | 15540-10GE-03B3021 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 21 | 12.1(10)EV2 |
| | 15540-10GE-03B3022 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 22 | 12.1(10)EV2 |
| | 15540-10GE-03B3023 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 23 | 12.1(10)EV2 |
| | 15540-10GE-03B3024 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 24 | 12.1(10)EV2 |
| | 15540-10GE-03B3025 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 25 | 12.1(10)EV2 |
| | 15540-10GE-03B3026 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 26 | 12.1(10)EV2 |
| | 15540-10GE-03B3027 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 27 | 12.1(10)EV2 |
| | 15540-10GE-03B3028 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 28 | 12.1(10)EV2 |
| | 15540-10GE-03B3029 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 29 | 12.1(10)EV2 |
| | 15540-10GE-03B3030 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 30 | 12.1(10)EV2 |
| | 15540-10GE-03B3031 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 31 | 12.1(10)EV2 |
| | 15540-10GE-03B3032 | 10-GE 1310nm SM Client with SC and ITU Laser Ch 32 | 12.1(10)EV2 |

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)

| Component | Part Number | Description | Minimum Software Version Required |
|---|--------------------|--|-----------------------------------|
| Pluggable SFP optics for extended range transponder modules | 15500-XVRA-01A2 | ESCON and OC-3 1310-nm MM MT-RJ | 12.1(10)EV1 |
| | 15500-XVRA-03B1 | Gigabit Ethernet and Fibre Channel (1 Gbps) 1310-nm SM MTLC | 12.1(10)EV1 |
| | 15500-XVRA-03B2 | Fibre Channel (1 Gbps and 2 Gbps) 1310-nm SM MTLC | 12.1(10)EV1 |
| | 15500-XVRA-02C1 | Gigabit Ethernet and Fibre Channel (1 Gbps) 850-nm MM MTLC | 12.1(10)EV1 |
| | 15500-XVRA-02C2 | Fibre Channel (2 Gbps) 850-nm MM MTLC | 12.1(10)EV1 |
| | 15500-XVRA-07B1 | SONET OC-12 1310-nm SM MTLC | 12.1(10)EV1 |
| | 15500-XVRA-07B1 | SONET OC-48 1310-nm SM MTLC | 12.1(10)EV1 |
| Protection switch module | 15540-PSM-01 | ONS 15540 protection switch module | 12.1(12c)EV |
| Optical cross connect | 15500-CCDK01 | ONS 15500 cross connect drawer kit | 12.1(10)EV1 |
| | 15500-CSDK01 | ONS 15500 cable storage drawer kit | 12.1(10)EV1 |
| | 15500-VCGK01 | ONS 15500 vertical cable guide kit | 12.1(10)EV1 |
| | 15500-CAB-MU-ADTR= | ONS 15540 MU-MU insertion adapter | 12.1(10)EV1 |
| | 15500-CAB-TL01= | Cable installation and removal tool. SFP removal tool. | 12.1(10)EV1 |
| Optical cable kits | 15500-CAB-KIT1 | Cable kit 1 - (order 1x for LCMB without splitter, order 2x for LCMB with splitter): 2x MTP-8MU, 2x MU adapter, 8x MU-MU | 12.1(10)EV1 |
| MTP cables | 15500-CAB-MTP-01= | 86" MTP to MTP cable - 2.5-Gbps line card motherboard | 12.1(10)EV1 |
| Optical trunk cables (symplex) | 15500-CAB-MSC01= | 1.0m Tuned Low Loss MU to SC SM Patch Cable | 12.1(10)EV1 |
| | 15500-CAB-MSC02= | 3.0m Tuned Low Loss MU to SC SM Patch Cable | 12.1(10)EV1 |
| | 15500-CAB-MST03= | 1.0m Tuned Low Loss MU to ST SM Patch Cable | 12.1(10)EV1 |
| | 15500-CAB-MST04= | 3.0m Tuned Low Loss MU to ST SM Patch Cable | 12.1(10)EV1 |

Table 1 Cisco ONS 15540 ESPx Supported Hardware Modules and Minimum Software Requirements (continued)

| Component | Part Number | Description | Minimum Software Version Required |
|---|------------------------|---|-----------------------------------|
| Optical OADM and intra chassis cables (symplex) | 15500-CAB-MMU-01= | 0.25m (10") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-02= | 0.35m (14") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-03= | 0.45m (17") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-04= | 0.5m (20") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-05= | 1.0m (40") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-09= | 1.16m (46") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-06= | 1.5m (60") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-07= | 2.0m (79") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| | 15500-CAB-MMU-08= | 2.5m (98") tuned low loss MU to MU SM OADM patch cable | 12.1(10)EV1 |
| Optical client cables (symplex) | 15500-CAB-SC11= | 1.0m SC to SC 62.5/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-SC19= | 1.0m SC to SC 50/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-SC12= | 1.0m SC to SC SM cable | 12.1(10)EV1 |
| | 15500-CAB-SC13= | 3.0m SC to SC 62.5/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-SC20= | 3.0m SC to SC 50/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-SC14= | 3.0m SC to SC SM cable | 12.1(10)EV1 |
| | 15500-CAB-ST15= | 1.0m SC to ST 62.5/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-ST21= | 1.0m SC to ST 50/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-ST16= | 1.0m SC to ST SM cable | 12.1(10)EV1 |
| | 15500-CAB-ST17= | 3.0m SC to ST 62.5/125um MM cable | 12.1(10)EV1 |
| | 15500-CAB-ST22= | 3.0m SC to ST 50/125um MM cable | 12.1(10)EV1 |
| 15500-CAB-ST18= | 3.0m SC to ST SM cable | 12.1(10)EV1 | |
| Optical y-cables | 15500-CAB-YMM-SC= | 50/125um multimode y cable with SC for channel protection | 12.1(10)EV1 |
| | 15500-CAB-YMM2-SC= | 62.5/125um multimode y cable with SC for channel protection | 12.1(10)EV1 |
| | 15500-CAB-YSM-SC= | single mode y cable with SC for channel protection | 12.1(10)EV1 |
| | 15500-CAB-YMM-SC= | 50/125um multimode y cable with SC for channel protection | 12.1(10)EV1 |

Determining the Software Version



Note

We strongly recommend that you use the latest available software release for all Cisco ONS 15540 ESPx hardware.

To determine the version of Cisco IOS software currently running on a Cisco ONS 15540 ESPx system, log in to the system and enter the **show version EXEC** command.

Upgrading the System Image

To ensure proper system functioning, follow the system image upgrading procedure described in the *Cisco ONS 15540 ESPx Software Upgrade Guide*.



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 software features. [Table 2](#) lists the Cisco IOS software feature sets available for the Cisco ONS 15540 ESPx.

Table 2 Feature Sets Supported by the Cisco ONS 15540 ESPx

| Feature Set | 12.1(12c)EV1 | 12.1(12c)EV | 12.1(10)EV3 | 12.1(10)EV2 | 12.1(10)EV1 |
|---|--------------|-------------|-------------|-------------|-------------|
| Gigabit Ethernet | X | X | X | X | X |
| Fast Ethernet | X | X | X | X | X |
| Ethernet | X | X | X | X | X |
| ATM OC-3/STM-1, OC-12/STM-4, and OC-48/STM-16 | X | X | X | X | X |
| SONET ¹ /SDH ² | X | X | X | X | X |
| POS ³ | X | X | X | X | X |
| Fibre Channel (1 Gbps) | X | X | X | X | X |
| Fibre Channel (2 Gbps) | X | X | X | X | X |
| FDDI ⁴ | X | X | X | X | X |
| ESCON ⁵ SM (200 Mbps) | X | X | X | X | X |

Table 2 Feature Sets Supported by the Cisco ONS 15540 ESPx (continued)

| Feature Set | 12.1(12c)EV1 | 12.1(12c)EV | 12.1(10)EV3 | 12.1(10)EV2 | 12.1(10)EV1 |
|---|--------------|-------------|-------------|-------------|-------------|
| FICON ⁶ (800 Mbps) | X | X | X | X | X |
| Token Ring | X | X | X | X | X |
| SNMP | X | X | X | X | X |
| CiscoView | X | X | X | X | X |
| Cisco Transport Manager | X | X | X | X | X |
| CDP ⁷ | X | X | X | X | X |
| IP packets | X | X | X | X | X |
| OSCP ⁸ | X | X | X | X | X |
| APS ⁹ protocol packets | X | X | X | X | X |
| Point-to-point | X | X | X | X | X |
| Hubbed ring | X | X | X | X | X |
| Meshed ring | X | X | X | X | X |
| IBM GDPS ¹⁰ ETR/CL ¹¹ | X | X | X | X | X |
| IBM GDPS ¹⁰ coupling link | X | X | X | X | X |
| Unidirectional path switching | X | X | X | X | X |
| Bidirectional path switching | X | X | X | X | X |
| CDL over 10-GE | X | X | X | X | |

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. CDP = Cisco Discovery Protocol
8. OSCP = Optical Supervisory Channel Protocol
9. APS = Automatic Protection Switching
10. GDPS = Geographically Dispersed Parallel Sysplex
11. ETR/CLO = external timer reference/control link oscillator

New and Changed Information

This section lists new features that appear in Cisco IOS Release 12.1.

New Features in Release 12.1(12c)EV1

The following new feature is available for the Cisco ONS 15540 ESPx in Cisco IOS Release 12.1(12c)EV1:

- Supports TL1 commands

New Features in Release 12.1(12c)EV

The following new feature is available for the Cisco ONS 15540 ESPx in Cisco IOS Release 12.1(12c)EV:

- The Cisco ONS 15540 Protection Switch Module (PSM) allows a customer to protect the entire fiber path by splitting an optical signal from one fiber trunk into two redundant fiber paths. This offers customers a cost-effective protection option and added protection against fiber cuts in the network.

New Features in Release 12.1(10)EV3

No new features are available for the Cisco ONS 15540 ESPx in Cisco IOS Release 12.1(10)EV3.

New Features in Release 12.1(10)EV2

The following new features are available for the Cisco ONS 15540 ESPx in Cisco IOS Release 12.1(10)EV2:

- Hardware:
 - Non-protected dual subslot motherboard for Cisco ONS 15540 ESPx
 - Splitter protected dual subslot motherboard for Cisco ONS 15540 ESPx
 - 10-GE transponder module
- Software:
 - CDL over 10-GE

Caveats

This section lists the caveats and corrected caveats for each release. Use [Table 3](#) to determine the status of a particular caveat. In the tables, “C” indicates a corrected caveat, and “O” indicates an open caveat.

Table 3 *Caveat Matrix for the Cisco ONS 15540 ESPx*

| DDTS Number | 12.1(12c)EV1 | 12.1(12c)EV | 12.1(10)EV3 | 12.1(10)EV2 | 12.1(10)EV1 |
|----------------------------|--------------|-------------|-------------|-------------|-------------|
| CSCea02355 | C | | | | |
| CSCea03957 | C | | | | |
| CSCea04546 | C | | | | |
| CSCea13361 | C | | | | |
| CSCea41710 | C | | | | |
| CSCea50863 | C | O | | | |
| CSCdx07666 | O | O | O | O | O |
| CSCdx32438 | C | O | O | O | O |
| CSCdx37144 | C | C | C | C | C |
| CSCdx42463 | C | C | C | C | C |
| CSCdx70683 | C | C | C | C | C |
| CSCdx80175 | C | C | C | C | C |
| CSCdx80804 | C | C | C | C | C |
| CSCdx85761 | C | C | C | | |
| CSCdx87061 | C | C | C | C | C |
| CSCdx89540 | C | C | C | C | C |
| CSCdy03245 | C | C | C | | |
| CSCdy08228 | C | C | C | | |
| CSCdy20002 | C | C | C | | |
| CSCdy20010 | C | C | C | | |
| CSCdy20022 | C | C | C | | |
| CSCdy20792 | C | C | C | C | |
| CSCdy30497 | C | C | C | | |
| CSCdy40352 | C | C | C | O | O |
| CSCdy40429 | C | C | C | C | C |
| CSCdy40465 | C | C | C | C | C |
| CSCdy40864 | C | C | C | | |
| CSCdy40882 | C | C | C | | |
| CSCdy44129 | C | C | C | O | |
| CSCdy49146 | C | C | C | C | C |
| CSCdy49249 | C | C | C | | |
| CSCdy53288 | C | C | C | | |

Table 3 *Caveat Matrix for the Cisco ONS 15540 ESPx (continued)*

| DDTS Number | 12.1(12c)EV1 | 12.1(12c)EV | 12.1(10)EV3 | 12.1(10)EV2 | 12.1(10)EV1 |
|----------------------------|--------------|-------------|-------------|-------------|-------------|
| CSCdy58197 | C | C | C | O | |
| CSCdy61641 | C | C | C | | |
| CSCdy62752 | C | C | C | | |
| CSCdy63359 | C | C | C | | |
| CSCdy65411 | C | C | C | | |
| CSCdy78546 | C | C | C | | |
| CSCdy79161 | C | C | C | O | |
| CSCdy79659 | C | C | C | | |
| CSCdy79812 | C | C | C | O | |
| CSCdy81888 | C | C | C | O | |
| CSCdy83757 | C | C | C | | |
| CSCdy85563 | C | C | C | | |
| CSCdy87237 | C | C | C | | |
| CSCdy88154 | C | C | C | | |
| CSCdz00116 | C | C | C | | |
| CSCdz02296 | C | C | C | | |
| CSCdz02340 | C | C | C | | |
| CSCdz03989 | C | C | C | | |
| CSCdz06004 | C | C | C | | |
| CSCdz06602 | C | C | C | | |
| CSCdz08774 | C | C | C | | |
| CSCdz12919 | C | C | C | | |
| CSCdz13538 | C | C | C | | |
| CSCdz13673 | C | C | C | | |
| CSCdz14420 | C | C | C | | |
| CSCdz18757 | C | C | C | | |
| CSCdz18815 | C | C | C | | |
| CSCdz19099 | C | C | C | | |
| CSCdz20508 | C | C | C | | |
| CSCdz22455 | C | C | C | | |
| CSCdz25739 | C | C | O | | |
| CSCdz28582 | C | C | C | | |
| CSCdz28903 | C | C | C | | |
| CSCdz29723 | O | O | O | | |
| CSCdz31593 | O | O | O | | |
| CSCdz33752 | C | C | C | | |

Table 3 *Caveat Matrix for the Cisco ONS 15540 ESPx (continued)*

| DDTS Number | 12.1(12c)EV1 | 12.1(12c)EV | 12.1(10)EV3 | 12.1(10)EV2 | 12.1(10)EV1 |
|-------------|--------------|-------------|-------------|-------------|-------------|
| CSCdz36420 | C | C | C | | |
| CSCdz36424 | C | C | O | | |
| CSCdz36823 | C | C | C | | |
| CSCdz37698 | C | C | C | | |
| CSCdz37968 | C | C | C | | |
| CSCdz38075 | C | C | C | | |
| CSCdz38448 | C | C | O | | |
| CSCdz38968 | C | C | C | | |
| CSCdz39112 | C | C | O | | |
| CSCdz39793 | C | C | O | | |
| CSCdz40675 | C | C | | | |
| CSCdz41160 | C | C | O | | |
| CSCdz42547 | C | C | O | | |
| CSCdz42565 | C | C | O | | |
| CSCdz43279 | C | C | O | | |
| CSCdz58866 | C | C | | | |
| CSCdz60081 | C | | | | |
| CSCdz62296 | O | O | | | |
| CSCdz62553 | C | C | | | |
| CSCdz66609 | O | O | | | |
| CSCdz75109 | C | C | | | |
| CSCdz76974 | C | | | | |
| CSCdz77034 | C | | | | |
| CSCdz79336 | O | O | | | |
| CSCdz80042 | O | O | | | |
| CSCdz83169 | C | O | | | |
| CSCdz85458 | C | O | | | |

This section describes the caveats in the Cisco ONS 15540 ESPx.

- [CSCea02355](#)

Symptom: Cisco routers and switches running Cisco IOS software and configured to process Internet Protocol version 4 (IPv4) packets are vulnerable to a Denial of Service (DoS) attack. A rare sequence of crafted IPv4 packets sent directly to the device may cause the input interface to stop processing traffic once the input queue is full. No authentication is required to process the inbound packet. Processing of IPv4 packets is enabled by default. Devices running only IP version 6 (IPv6) are not affected.

Workaround: Cisco has made software available, free of charge, to correct the problem. This advisory is available at <http://www.cisco.com/warp/public/707/cisco-sa-20030717-blocked.shtml>.

- [CSCea03957](#)

Symptom: OPM (optical power monitoring) feature does not work on uncalibrated 2.5-Gbps transponder modules.

Workaround: None.

- [CSCea04546](#)

Symptom: Cannot disable SNMP-server traps for TTY messages on a global basis.

Workaround: Configure traps on a per SNMP-server host basis.

- [CSCea13361](#)

Symptom: An internal error and a traceback result when a threshold group with transmit-CRC failure and transmit-CRC degrade is modified such that the index reaches 63 and the new Tx-CRC threshold is attempted to be added.

Workaround: None.

- [CSCea41710](#)

Symptom: The optical power monitoring alarms and configuration are missing across a 2.5-Gbps transponder module online removal and insertion.

Workaround: None.

- [CSCea50863](#)

Symptom: Both active and standby lasers are on for a few seconds on a y-cable. This condition can cause Brocade ports to be disabled which require a manual intervention to enable the ports.

Workaround: None.

- [CSCdx07666](#)

Symptom: Loss of signal might occur before SD (signal degrade) and SF (signal failure) thresholds are exceeded and traffic may still continue to pass transparently.

The loss of signal detection is taken from the O-E (optical to electrical) conversion subsystem, which is different from the source of the SD and SF counters. The loss of light sensitivity is a characteristic of the OE conversion unit, and it may vary from unit to unit but is always < -30dBm.

Workaround: None.

- [CSCdx32438](#)

Symptom: When the Rx port fiber is removed from the 2.5-Gbps transponder module, ingress alarms are reported and cleared repeatedly. The alarm should not clear and the alarm should be reported only once.

Workaround: None

- [CSCdx37144](#)
Symptom: The processor card is not responsive.
Workaround: None
- [CSCdx42463](#)
Symptom: The processor card is not responsive for an extended period of time, during which time the ACTIVE and STANDBY LEDs might not indicate the correct active and standby state.
Workaround: If the processor card has not been reset by the redundant processor card, the nonresponsive processor card can be removed and re-inserted in the chassis. This may cause a brief disruption to data traffic, but the redundant processor card should take over and bring the system back up.
- [CSCdx70683](#)
Symptom: Reprogramming the standby processor card fails.
Workaround: Run the reprogram on the active processor card, enable the processor switchover after switchover, and then run the reprogram on the new active processor card. Remove and reinsert the processor card for the new functional image to become effective.
- [CSCdx80804](#)
Symptom: The **encapsulation fastethernet** command fails on multimode transponder modules. The **clock rate 100000** command succeeds but then pings over the signal fail intermittently.
Workaround: None.
- [CSCdx80175](#)
Symptom: The **show interfaces** command output for a wave interface displays an UP state, but the Signal Quality shows Loss of Sync.
Workaround: None.
- [CSCdx85761](#)
Symptom: Multiple %METOPT-2-PORTFAIL messages are seen when using the y-cable APS configuration with single auto-failover. However, this does not affect the functionality.
Workaround: None.
- [CSCdx87061](#)
Symptom: CiscoView might display a different receive LED status on 2.5-Gbps transponder modules from what is actually seen on the device.
Workaround: None.
- [CSCdx89540](#)
Symptom: Inserting a transponder module with the client equipment connected and transmission enabled disrupts y-cable clients.
Workaround: Remove client transmit fiber (y-cable leg) from the standby transponder module before reinserting. Connect it back a few seconds after reinsertion of the standby transponder module.
- [CSCdy03245](#)
Symptom: Topology neighbor configuration is lost on mux-demux motherboard online removal and reinsertion.
Workaround: The topology neighbor is viewable after reconfiguring the wdm interface.

- [CSCdy08228](#)
Symptom: Interface reports up/up even when there is no light source connected.
Workaround: Perform a **shutdown /no shutdown** command sequence on the interface.
- [CSCdy20002](#)
Symptom: A transparent interface carrying Gigabit Ethernet traffic and configured with 1-Gbps Fibre Channel encapsulation shows good quality signal on the **show interfaces transparent** command output and does not assert any ingress alarms. The wave interface assert Loss of Lock and Loss of Sync alarms.
Workaround: Removing and reinserting the 2.5-Gbps transponder module will bring it to the correct state.
- [CSCdy20010](#)
Symptom: The LoF alarms do not reassert in the **show facility-alarm status** command output after a **shutdown/no shutdown** command sequence.
Workaround: Disabling and reenabling the monitoring for the transparent interface brings back the alarms.
- [CSCdy20022](#)
Symptom: The **show facility-alarm status** command output does not report existing LoF/LoSync/LoLock alarms after online removal and reinsertion or a **hw-module subslot power off/hw-module subslot power on** command sequence.
Workaround: Disable and enable monitoring back reassert existing alarms in the **show facility-alarm status** command output.
- [CSCdy20792](#)
Symptom: After removing and reinserting (OIR) a 2.5-Gbps transponder module, the laser frequency is not programmed correctly which results in a wavelength filter mismatch and the wavelength not coming out of the filter.
Workaround: Configure the wave interface for the alternate frequency and then program it back to the desired frequency using the **laser frequency** command.
- [CSCdy30497](#)
Symptom: The line card motherboard functional image version in the **show hardware** command output should return the hexadecimal value.
Workaround: None.
- [CSCdy40352](#)
Symptom: The processor card becomes nonresponsive waiting for the console UART TxReady to be set. Normally a watchdog timeout will force recovery, but in some instances the Standby processor card does not recover on its own.
Workaround: Remove and reinsert the standby processor card.

- [CSCdy40429](#)

Symptom: Under some situations the erratas of the system controller used on the processor card (GT64120A) can cause the following conditions:

 - Software forced crash due to memory ECC errors
 - Bus error exception
 - Corruption of data

Workaround: None.
- [CSCdy40465](#)

Symptom: Processor card becomes nonresponsive and does not respond to an NMI.

Workaround: Update processor card functional image to version 1.25 or higher.
- [CSCdy40864](#)

Symptom: A compatibility problem was detected in the released images that caused them to reject communication with the new images with a different cpu_red client version. This will cause the active processor card to reset the peer processor card.

Workaround: Since this problem comes into existence only if the cpu_red client version is different between 2 images, this problem doesn't exist in the old released images. Since the new images with the incremented capered client version contains the fix for compatibility as well, this bug should not cause any impact in the field.
- [CSCdy40882](#)

Symptom: Information appears in **show hardware** command output for processor cards that have been removed.

Workaround: None.
- [CSCdy44129](#)

Symptom: If a client interface is configured for CDL but is connected to a non-CDL device, the CDL message channel is down.

Workaround: Ensure that the client interface is configured correctly.
- [CSCdy49146](#)

Symptom: Under some circumstances, single bit ECC errors occur and are corrected by the system controller, but are not recorded; the user is unaware of these occurrences.

Workaround: None.
- [CSCdy49249](#)

Symptom: If a module is inserted during a processor card switchover, then the module and its interfaces might not come up properly.

Workaround: Remove and reinsert module after switchover is complete.
- [CSCdy53288](#)

Symptom: The system might crash when using the **is_optical_ifstatus_up** command; this is an intermittent problem.

Workaround: None.

- [CSCdy58197](#)

Symptom: In a configuration where a Cisco ONS 15540 ESPx has 10-GE downlinks to two Cisco ONS 15530 systems, the tengigethernetphy interface is administratively shut down and the ESCON ports associated with the first Cisco ONS 15530 are also downed. However, the ESCON ports connected to the second Cisco ONS 15530 are still up.

Workaround: Shut down the tengigethernetphy interface associated with the second Cisco ONS 15530.
- [CSCdy61641](#)

Symptom: Following a processor card crash and switchover, if a **show redundancy** command is issued on the new active processor card, it currently shows “Reported Switchover Reason” as “Not known”. If a **show version** is issued on the Standby processor card that crashed, it shows additional troubleshooting information.

Workaround: None.
- [CSCdy62752](#)

Symptom: The active processor card becomes nonresponsive and cannot be enabled from the standby processor.

Workaround: Remove and reinsert the active processor card.
- [CSCdy63359](#)

Symptom: A **getmany** command on the ifMIB hangs in a loop.

Workaround: None.
- [CSCdy65411](#)

Symptom: Mode-mismatch events or traps are set or generated 15 minutes after the misconfiguration that causes it is configured on the system.

Workaround: None.
- [CSCdy78546](#)

Symptom: From SNMP, **ptopoConnEntry** can be created with **entPhysicalIndex**, which does not correspond to any valid interface on the system.

Workaround: None.
- [CSCdy79161](#)

Symptom: Configuring both the client side and the trunk side for loopback on the 10-GE transponder module disrupts the traffic flow.

Workaround: Reconfigure the 10-GE transponder module with loopback only on the client side or the trunk side, not both. Remove and reinsert the 10-GE transponder module to restore traffic.
- [CSCdy79659](#)

Symptom: Incorrect OPM alarm status information for the standby wavepatch interface displays in the **show interfaces** command output.

Workaround: None.
- [CSCdy79812](#)

Symptom: CDL HEC counters are displayed in the **show interfaces tengigethernetphy** command output when CDL is disabled.

Workaround: None.

- [CSCdy81888](#)

Symptom: Traffic disruption on bootup or switchover will occur if 10-Gbps ITU trunk card client side is CDL disabled but has **cdl defect-indication force hop-endpoint** configured on both the client and trunk.

Workaround: Use the **no cdl defect-indication force hop-endpoint** command on the client side.
- [CSCdy83757](#)

Symptom: Unable to manage a system configured with EIGRP after a processor card switchover.

Workaround: Connect to the console port and remove the passive-interface config in EIGRP configuration.
- [CSCdy85563](#)

Symptom: The DI error message does not indicate DI bit status.

Workaround: None.
- [CSCdy87237](#)

Symptom: Line laser failure is not reported in the **show facility-alarm status** command output when the SFP optics in an extended range transponder module is removed and inserted online.

Workaround: None.
- [CSCdy88154](#)

Symptom: Some interfaces will not be available to the NMS station since the agent does not create them when the module is removed and reinserted.

Workaround: Reload the system after removal and reinsertion of the modules.
- [CSCdz00116](#)

Symptom: APS message channel configured for UDP/IP does not work over more than two IP hops. The UDP/IP packet is dropped at the end of the second hop.

Workaround: None.
- [CSCdz02296](#)

Symptom: The **show patch detail** command output does not reflect the correct patch status for the ITU direct insertion module and the mux/demux module after the online removal and insertion of a 10-GE transponder module.

Workaround: None.
- [CSCdz02340](#)

Symptom: Traceback @optical_idb_wave_ethernet_phy_report.

Workaround: None.
- [CSCdz03989](#)

Symptom: Both active and standby lasers in a bidirectional y-cable APS configuration on modules in sub-slot 0 turn on erroneously.

Workaround: This bug has been fixed by using the correct format for programming the switchover-command register.

- [CSCdz06004](#)
Symptom: The **redundancy reload shelf** command on the Active processor card can cause a switchover if the peer processor card is in ROM monitor mode.
Workaround: Use the **reload** command to reload the active processor card, if the peer processor card is in ROM monitor mode.
- [CSCdz06602](#)
Symptom: All OPM interval entries are not returned by the **getnext** command.
Workaround: None.
- [CSCdz08774](#)
Symptom: ciscoFlashDeviceChangeTrap is not generated when a removable flash device is removed or inserted.
Workaround: None.
- [CSCdz12919](#)
Symptom: When the forward laser control is enabled on the 10-GE transponder module and the waveethernetphy interface laser is shut by this safety feature, the laser soft-start procedure has to be followed when the laser is enabled again.
Workaround: None.
- [CSCdz13538](#)
Symptom: The egress Loss of Signal alarm is not reasserted in the **show facility-alarm status** command output after using a **hw-module subslot power** command to turn the module power off or on.
Workaround: None.
- [CSCdz13673](#)
Symptom: The wave interface remains down when the signal quality is GOOD after using a **hw-module subslot power** command to turn the module power off or on.
Workaround: None.
- [CSCdz14420](#)
Symptom: The Rx power display in some cases is off by +/-4dBm in comparison with the real reading using power meter.
Workaround: Use a calibrated transponder module.
- [CSCdz18757](#)
Symptom: The default laser frequencies of the 2.5-Gbps transponder modules in an odd numbered subslots (for example, x/1 or x/3) are not restored correctly after the second online removal and insertion. The laser frequencies are stored correctly for the first online removal and insertion only.
For example, when inserting a 2.5-Gbps transponder module (channel n and channel n+1) to subslot x/1 the first time, the default laser frequency is n+1 (correct). Remove this 2.5-Gbps transponder module and insert another (channel m and channel m+1), the default laser frequency becomes m (incorrect; it should be m+1).
Workaround: Remove and reinsert the 2.5-Gbps transponder module.

- [CSCdz18815](#)

Symptom: While performing a **aps switch force** command on splitter APS group for 10-GE transponder modules, an erroneous alarm clear message displays for a different slot/subslot card that is not part of the APS group.

Workaround: None.
- [CSCdz19099](#)

Symptom: The Rx power display in some cases is off by +/-4dBm in comparison with the real reading using power meter.

Workaround: Use a calibrated 2.5-Gbps transponder modules.
- [CSCdz20508](#)

Symptom: The wavepatch interfaces are stuck in the down state after using the **shutdown/no shutdown** command sequence on the corresponding wave interface with splitter APS after Loss of Light occurs.

Workaround: None.
- [CSCdz22455](#)

Symptom: System crashes due to PCI Master abort while doing Sandisk removal and insertion.

Workaround: None.
- [CSCdz25739](#)

Symptom: The low warning threshold alarm is not cleared in the **show facility-alarm status** command output.

Workaround: None.
- [CSCdz28582](#)

Symptom: After a fiber cut, the OSC interface remains up with signal quality good.

Workaround: Issue the **shutdown/no shutdown** command.
- [CSCdz28903](#)

Symptom: For the Sysplex protocol, forward laser control does not work after removing and reinserting the 2.5-Gbps transponder module and reprogramming the functional image.

Workaround: Using the **no encapsulation** and **encapsulation sysplex etr** commands on the transparent interface will program it correctly.
- [CSCdz29723](#)

Symptom: When APS communication goes down, and an APS failure is subsequently detected, APS may switchover even though the communication is down. Based on this type of failure, there may be a unidirectional switchover. For IBM sysplex CLO/ETR applications, unidirectional switchover may lead to data corruption.

Workaround: None.

- [CSCdz31593](#)

Symptom: In a point-to-point bidirectional configuration, when the trunk Rx on both NEs are pulled and one of them is later replaced, APS might fluctuate between working and protection. Under certain conditions the driver declares both working and protection as down when the wave interface goes down.

In bidirectional APS this essentially means that the local side may inform the remote side that Working/Protection is down when it is not really down. APS has the ability to settle down on the good side; however, due to the bidirectional message (DO-NOT-REVERT in this case) from the far side; the local side switches away from the good side, and the cycle repeats. Note that this problem does not always happen, and requires certain timing in order for it to happen.

Workaround: Use force switch or lockout to force the receive to the good side or temporarily change the direction from bidirectional to unidirectional after disabling the APS group.

- [CSCdz33752](#)

Symptom: In bidirectional APS, if both NEs have the same priority request, the master/slave determination fails, leading to both claiming the control and resulting in not sending a REVERSE-REQUEST.

Workaround: None.

- [CSCdz36420](#)

Symptom: In a preconfigured APS group (when the interfaces do not exist), if the group is configured for revertive mode, it cannot be enabled.

Workaround: Enable the group after the interfaces are defined in the APS group are created or remove the revertive configuration from the pre-configured APS group and then enable the group.

- [CSCdz36424](#)

Symptom: Attempting to read a flash card formatted on another system causes advisory messages to be continuously printed to the console.

Workaround: None.

- [CSCdz36823](#)

Symptom: Attempting to read a flash device formatted on another system causes advisory messages to be continuously printed to the console.

Workaround: None.

- [CSCdz37698](#)

Symptom: Both working and protection client Tx are active in a y-cable APS configuration.

Workaround: None.

- [CSCdz37968](#)

Symptom: The **hw-module subslot power on/off** command should not be supported for 10-GE transponder modules.

Workaround: None.

- [CSCdz38075](#)

Symptom: Data traffic is disrupted during the processor card switchover when the splitter APS is configured.

Workaround: None.

- [CSCdz38448](#)

Symptom: In y-cable bidirectional APS configuration using 10-GE transponder modules, whenever many CVRD errors are received on the standby trunk due to a bad signal, (but still signal quality is GOOD in **show interfaces** command output) all four FDI-H/E and BDI-H/E bits in the DECCSR register might get latched. This generates interrupts and the console is flooded with messages for that interface such as the following:

```
00:15:17: %APS-3-PORT_FAIL: External Port Fail On WaveEthernetPhy10/1
```

Workaround: Improve the quality of the signal by removing some attenuation and/or cleaning the optical connectors so that CVRD errors are not seen.

- [CSCdz38968](#)

Symptom: Spurious memory access occurs on online removal and reinsertion of a 10-GE transponder module.

Workaround: None.

- [CSCdz39112](#)
Symptom: When an invalid channel number is detected by the OSCP client while it processes the client message received from peer, OSCP does not free the message buffer. This results in buffer starvation over a period of time and connectivity via Network Management interface and backplane Ethernet (IPC and OSCP) interface are lost.
Workaround: None.
- [CSCdz39793](#)
Symptom: The optical alarms are not asserted or cleared correctly when the wave is in the administrative down state.
Workaround: Issue the **shutdown/no shutdown** command sequence on the active wavepatch, or issue the **no shutdown** command on wave interface to clear the false alarms.
- [CSCdz40675](#)
Symptom: Receiver power low alarm and warning are not asserted on the wavepatch interface after switchover from the active wavepatch interface to the standby wavepatch interface.
Workaround: None.
- [CSCdz41160](#)
Symptom: Continuous “SRC poll failure” messages are generated after removing a calibrated 2.5-Gbps transponder module and inserting an uncalibrated 2.5-Gbps transponder module or ITU direct insertion module.
Workaround: None.
- [CSCdz42547](#)
Symptom: Using the **no shutdown** command on the tengigethernetphy or waveethernetphy interfaces (which is DOWN due to Loss of Lock) brings the interface state to UP, even though the Loss of Lock is still asserted.
Workaround: Issue the **shutdown/no shutdown** command sequence on the interface for it to show the DOWN state.
- [CSCdz42565](#)
Symptom: Loss of Sync is not reasserted on a tengigethernetphy interface after a **shutdown/no shutdown** command sequence has been issued on the interface, or on an online removal and reinsertion of the 10-GE transponder module.
Workaround: None.
- [CSCdz43279](#)
Symptom: The ethernetdcc interface for 10-GE transponder module is not in the admin down state on the initial online removal and reinsertion of the module.
Workaround: None.
- [CSCdz58866](#)
Symptom: Threshold group line is missing in the **show interfaces waveethernetphy** command output.
Workaround: None.

- [CSCdz60081](#)

the Sysplex ETR encapsulation after online removal and insertion of the 2.5-Gbps transponder module.

Workaround: Issue a **no encapsulation** command and configure the encapsulation back to Sysplex ETR.
- [CSCdz62296](#)

Symptom: PSMs are incorrectly recognized as a mux/demux module with system images that do not support the PSM.

Workaround: Upgrade software to 12.1(12c)EV.
- [CSCdz62553](#)

Symptom: The tengigEthernetPhy interface is getting BDI_H while the in-band message channel is disabled.

Workaround: None.
- [CSCdz66609](#)

Symptom: Traffic loss of 30 to 45 seconds may occur when a y-cable APS configuration with protection switchover is used with the Catalyst 6000 family.

Workaround: Disable auto-negotiation and enable debounce timer with a 100-ms delay on Catalyst 6000 family using the **set port debounce mod/port enable** command.
- [CSCdz75109](#)

Symptom: When y-cable APS is configured, shutting off the power to the transponder module using the **hw-module subslot power off** command brings the power back on again immediately.

Workaround: Remove the APS configuration and perform power off.
- [CSCdz76974](#)

Symptom: The signal monitoring information is missing for the GE encapsulation in the **show interfaces** command output.

Workaround: None.
- [CSCdz77034](#)

Symptom: When both wavepatch interfaces are in an ADMIN DOWN state, the signal quality is unknown but the **show facility-alarm status** command reports Loss of Signal.

Workaround: None.
- [CSCdz79336](#)

Symptom: APS switchover time (50 ms) is not guaranteed for Loss of Lock, Loss of Sync, or Loss of Frame. It is only guaranteed for Loss of Light.

Workaround: None.
- [CSCdz80042](#)

Symptom: The output of the **show waveethernetphy interface** command sometimes shows a high receive power value when there is no input signal connected to the card.

Workaround: OIR the card.

- [CSCdz83169](#)

Symptom: Could not get a wave interface power reading graph with CiscoView 2.0/2.1 for an uncalibrated transponder module.

Workaround: Use a calibrated transponder module.

- [CSCdz85458](#)

Symptom: When the 10-GE transponder module (waveethernetphy) laser is down due to a forward laser control action, removing the forward laser control configuration does not turn the laser back on.

Workaround: None.

Limitations and Restrictions

This section provides limitations and restrictions for Cisco ONS 15540 ESPx hardware and software.

Transponder Modules

This section contains limitations and restrictions that apply to transponder modules.

- When you insert the standby transponder module in a y-cable protected configuration, remove the cable from the transponder module before inserting the transponder module into the shelf. Failure to remove the cable might result in errors that can affect the performance of the active signal received by the client equipment.
- CRC errors occur with 2-Gbps Fibre Channel on single-mode transponder modules 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 on single-mode transponder modules 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 module client side receiver. The average transmitted power level from the GBIC does not violate the overload specification of the transponder module 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.

- If both processor cards are removed, traffic through the system is affected as follows:
 - For Type 2 extended range transponder modules, traffic is shut down.
 - For 10-GE transponder modules, traffic is shut down.
 - Type 1 SM transponder modules and MM transponder modules do not operate reliably. The traffic might be affected.
 - In the shutdown state, the Status LED on the line card motherboard turns orange.



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

Related Documentation

Refer to the following documents for more information about the Cisco ONS 15540 ESPx:

- [Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series](#)
- [Cisco ONS 15540 ESPx Planning Guide](#)
- [Cisco ONS 15540 ESPx Hardware Installation Guide](#)
- [Cisco ONS 15540 ESPx Optical Transport Turn-Up and Test Guide](#)
- [Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections](#)
- [Cisco ONS 15540 ESPx Configuration Guide](#)
- [Cisco ONS 15540 ESPx Command Reference](#)
- [Cisco ONS 15540 ESPx System Alarms and Error Messages](#)
- [Cisco ONS 15540 ESPx Troubleshooting Guide](#)
- [Network Management for the Cisco ONS 15540 ESPx](#)
- [Cisco ONS 15540 ESPx TLI Commands](#)
- [MIB Quick Reference for the Cisco ONS 15500 Series](#)
- [Cisco ONS 15540 ESPx 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>

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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 monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Registered Cisco.com users can order the Documentation CD-ROM (product number DOC-CONDOCCD=) through the online Subscription Store:

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

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You can find instructions for ordering documentation at this URL:

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

You can order Cisco documentation in these ways:

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<http://www.cisco.com/en/US/partner/ordering/index.shtml>
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<http://www.cisco.com/go/subscription>
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Obtaining Technical Assistance

Cisco provides Cisco.com, which includes the Cisco Technical Assistance Center (TAC) Website, as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from the Cisco TAC website. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC website, including TAC tools and utilities.

Cisco.com

Cisco.com offers a suite of interactive, networked services that let you access Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

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Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The avenue of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

We categorize Cisco TAC inquiries according to urgency:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Cisco TAC Website

You can use the Cisco TAC website to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC website, go to this URL:

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

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

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

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

<http://www.cisco.com/en/US/support/index.html>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC website so that you can describe the situation in your own words and attach any necessary files.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

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

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

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
- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary*, *Internetworking Technology Handbook*, *Internetworking Troubleshooting Guide*, and the *Internetworking Design Guide*. 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 monthly periodical that provides industry professionals with the latest information about the field of networking. You can access *Packet* magazine at this URL:
http://www.cisco.com/en/US/about/ac123/ac114/about_cisco_packet_magazine.html
- *iQ Magazine* is the Cisco monthly periodical that provides business leaders and decision makers with the latest information about the networking industry. You can access *iQ Magazine* at this URL:
http://business.cisco.com/prod/tree.taf%3fasset_id=44699&public_view=true&kbns=1.html
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in the design, development, and operation of 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
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http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html

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