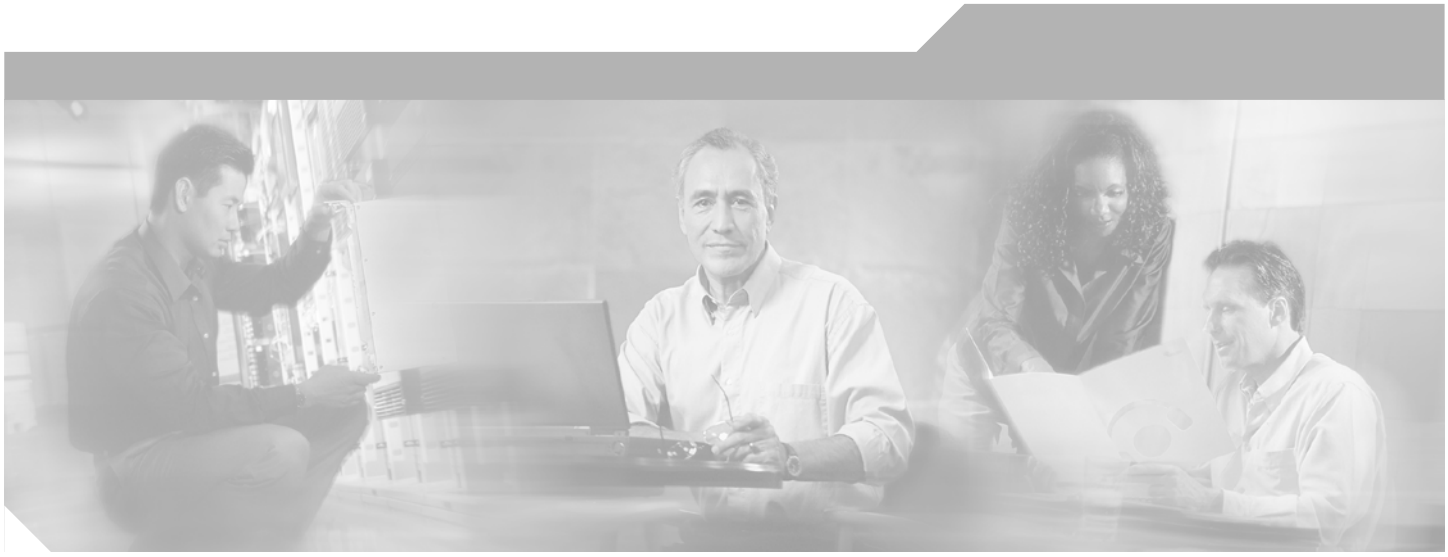

Cisco ONS 15600 Troubleshooting Guide

Product and Documentation Release 6.0
Last Updated: September 04, 2007

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The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco's installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

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You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

• Turn the television or radio antenna until the interference stops.

• Move the equipment to one side or the other of the television or radio.

• Move the equipment farther away from the television or radio.

• Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

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Cisco ONS 15600 Troubleshooting Guide, Release 6.0

CONTENTS

About this Guide

This section explains the objectives, intended audience, and organization of this guide and describes the conventions that convey instructions and other information.

Note The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

Revision History

Date	Notes
03/23/2007	Revision History Table added for the first time
04/09/2007	Updated About this Guide chapter

This section provides the following information:

Document Objectives

The *Cisco ONS 15600 Troubleshooting Guide* provides troubleshooting procedures for SONET alarms and error messages, and provides symptoms and solutions for general troubleshooting problems such as CTC and hardware errors. This guide also contains hardware replacement procedures.

Usethe guide in conjunction with the appropriate publications listed in the Related Documentation section.

Audience

To use this guide you should be familiar with Cisco or equivalent optical transmission equipment.

Document Organization

Table 1 Cisco ONS 15600 Troubleshooting Guide Chapters

Title	Summary
Chapter 1, “General Troubleshooting”	Provides procedures for troubleshooting the most common problems encountered when operating a Cisco ONS 15600.
Chapter 2, “Alarm Troubleshooting”	Provides ONS 15600 alarm and condition severities, descriptions, and when necessary, troubleshooting procedures.
Chapter 3, “Transients Conditions.”	Describes transient (temporary) conditions on the ONS 15600.
Chapter 4, “Error Messages”	Defines error messages for the ONS 15600.
Chapter 5, “Performance Monitoring”	Provides definitions of all performance monitoring parameters for ONS 15600 cards and ports.
Chapter 6, “SNMP”	Describes Simple Network Management Protocol (SNMP) as implemented by the ONS 15600.

Related Documentation

Use this *Cisco ONS 15600 Troubleshooting Guide* in conjunction with the following referenced publications:

- *Cisco ONS 15600 Reference Manual*
  Provides detailed card specifications, hardware and software feature descriptions, network topology information, and network element defaults.
- *Cisco ONS 15600 Procedure Guide*
  Provides installation, turn up, test, and maintenance procedures.
- *Cisco ONS SONET TL1 Command Guide*
  Provides a full TL1 command and autonomous message set including parameters, AIDs, conditions and modifiers for the Cisco ONS 15454, ONS 15327, ONS 15600 and ONS 15310-CL systems.

- *Cisco ONS SONET TL1 Reference Guide*
  Provides general information, procedures, and errors for TL1 in the ONS 15454, ONS 15327, ONS 15600, and ONS 15310-CL systems.
- *Release Notes for the Cisco ONS 15600 Release 6.0*
  Provides caveats, closed issues, and new feature and functionality information.

Document Conventions

This publication uses the following conventions:

Convention	Application
boldface	Commands and keywords in body text.
italic	Command input that is supplied by the user.
[ ]	Keywords or arguments that appear within square brackets are optional.
{ x | x | x }	A choice of keywords (represented by x) appears in braces separated by vertical bars. The user must select one.
Ctrl	The control key. For example, where Ctrl + D is written, hold down the Control key while pressing the D key.
`screen font`	Examples of information displayed on the screen.
`boldface screen font`	Examples of information that the user must enter.
< >	Command parameters that must be replaced by module-specific codes.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

Caution Means *reader be careful*. In this situation, the user might do something that could result in equipment damage or loss of data.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 중요 안전 지침

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이 지시 사항을 보관하십시오.

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES

Advarsel **VIGTIGE SIKKERHEDSANVISNINGER**

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER

تحذير **إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.
قم بحفظ هذه الإرشادات

Upozorenje **VAŽNE SIGURNOSNE NAPOMENE**

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

Upozornění **DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY**

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY

Προειδοποίηση

ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה

הוראות בטיחות חשובות

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה

Opomena

ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie

WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ

Upozornenie

DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD

Where to Find Safety and Warning Information

For safety and warning information, refer to the *Cisco Optical Transport Products Safety and Compliance Information* document that accompanied the product. This publication describes the international agency compliance and safety information for the Cisco ONS 15600 systems. It also includes translations of the safety warnings that appear in the ONS 15600 system documentation.

Obtaining Documentation

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

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/techsupport

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

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

Product Documentation DVD

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

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

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

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General Troubleshooting

This chapter provides procedures for troubleshooting the most common problems encountered when operating a Cisco ONS 15600. To troubleshoot specific ONS 15600 alarms, see Chapter 2, "Alarm Troubleshooting." If you cannot find what you are looking for, contact the Cisco Technical Assistance Center (1 800 553-2447).

This chapter begins with the following sections on network problems:

- 1.1 Network Troubleshooting Tests, page 1-2—Describes loopbacks and hairpin circuits, which you can use to test circuit paths through the network or logically isolate faults.

Note For network acceptance tests, refer to the *Cisco ONS 15600 Procedure Guide*.

- 1.2 Troubleshooting Optical Circuit Paths With Loopbacks, page 1-6—Explains how to perform the tests described in the "1.1 Network Troubleshooting Tests" section on page 1-2 for OC-N ports and cards.
- 1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks, page 1-25—Explains how to perform the tests described in the "1.1 Network Troubleshooting Tests" section on page 1-2 for Gigabit Ethernet (GIGE) ASAP card ports.

The remaining sections describe symptoms, problems, and solutions that are categorized according to the following topics:

- 1.4 Using CTC Diagnostics, page 1-44—Provides procedures for testing LED operation and downloading a machine-readable diagnostic information file to be used by Technical Support.
- 1.5 Restoring the Database to a Previous or Original Configuration, page 1-46—Provides troubleshooting for node operation errors that might require procedures to restore software data or restoring the node to the default setup.
- 1.6 PC Connectivity Troubleshooting, page 1-46—Provides troubleshooting procedures for PC and network connectivity to the ONS 15600.
- 1.7 CTC Operation Troubleshooting, page 1-52—Provides troubleshooting procedures for CTC log-in or operation problems.
- 1.8 Circuits and Timing, page 1-62—Provides troubleshooting procedures for circuit creation, error reporting, and timing reference errors and alarms.
- 1.9 Fiber and Cabling, page 1-65—Provides troubleshooting procedures for fiber and cabling connectivity errors.
- 1.10 Power Supply Problems, page 1-70—Provides troubleshooting information for common power supply issues.

1.1 Network Troubleshooting Tests

Use loopbacks to test newly created circuits before running live traffic or to logically locate the source of a network failure. All ONS 15600 optical (OC-N) cards allow loopbacks.

Caution On optical cards, a loopback can only be applied to a port that is out of service.

1.1.1 Facility Loopbacks

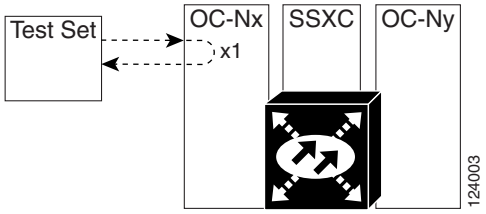
The following sections give general information about facility loopback operations and specific information about ONS 15600 card loopback activity.

1.1.1.1 General Behavior

A facility loopback tests the line interface unit (LIU) of an ASAP card or OC-48 card and related cabling. After applying a facility loopback on a port, use a test set to run traffic over the loopback. A successful facility loopback isolates the LIU or the cabling plant as the potential cause of a network problem. To test an OC-N port or Ethernet port, connect an optical test set to the port and perform a facility loopback. Alternately, use a loopback or hairpin circuit on a card that is farther along the circuit path.

Figure 1-1 shows a facility/payload loopback on an OC-N port.

Figure 1-1 Facility/Payload Loopback Process on an OC-N Port



Caution Before performing a facility loopback on an OC-N port, be sure the ASAP card contains at least two data communications channel (DCC) paths to the node where the card is installed. A second DCC provides a nonlooped path to log into the node after the loopback is applied, enabling you to remove the facility loopback. Ensuring a second DCC is not necessary if you are directly connected to the ONS 15600 containing the loopbacked ASAP card.

1.1.1.2 Card Behavior

Loopbacks either terminate or bridge the loopback signal. When a port terminates a facility loopback signal, the signal only loops back to the originating port and is not transmitted downstream. When a port bridges a loopback signal, the signal loops back to the originating port and is also transmitted downstream.

The loopback itself is listed in the Conditions window. For example, the window would list the LPBKFACILITY condition for a tested port. (The Alarms window will show AS-MT, which means that alarms are suppressed on the facility during loopback.)

In addition to the Conditions window listing, the following behaviors occur:

- If an electrical or optical port is in the Out-of-Service and Management, Disabled (OOS-MA,DSBLD) service state, it injects an AIS signal upstream and downstream.
- When an electrical or optical port is placed in the OOS-MA,MT service state before loopback testing, the port clears the AIS signal upstream and downstream unless there is a service-affecting defect that would also cause an AIS signal to be injected. For more information about placing ports into alternate states for testing, refer to the "Change Card Settings" chapter of the *Cisco ONS 15600 Procedure Guide*.

Caution A lock out of protection must be executed before putting a two-fiber or four-fiber BLSR span into a facility loopback state. That is, a span lockout of one side (such as the east side) of a two-fiber BLSR is required before operating a facility loopback on the same (east) side of the ring. A span lockout of one protection side (such as the east protection side) of a four-fiber BLSR is required before operating a facility loopback on the same (east) side working line of the ring. If you do not execute the lockout prior to creating the loopback, the ring can become stuck in an anomalous state after you release the loopback.

1.1.2 Payload Loopbacks

The payload loopback is similar to a facility loopback but occurs on OC-192 cards. Another difference is that a payload loopback terminates and regenerates section and line overhead; a facility loopback passes section and line overhead through, untouched. The OC-48 card executes a facility loopback by looping the signal back just before the framer chip. The OC-192 card cannot do this because of the differences in the design. To execute a loopback on an OC-192 card, the loopback signal passes through the framer chip and then terminates and regenerates line and section overhead. Since OC-192 card line and section overhead is terminated and regenerated, this type of loopback is called a payload loopback.

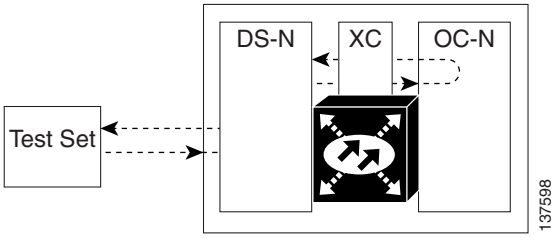
1.1.3 Terminal Loopbacks

The following sections give general information about ASAP card and OC-48 card terminal loopback operations.

1.1.3.1 General Behavior

A terminal loopback tests a circuit path as it passes through the SSXC card and loops back from the card with the loopback. Figure 1-2 shows a terminal loopback on an OC-48 card. The test-set traffic enters the optical or Ethernet port and travels through the cross-connect card to the optical port. A terminal loopback turns the signal around before it reaches the LIU and sends it back through the SSXC card to the card. This test verifies that the SSXC card and terminal circuit paths are valid, but does not test the LIU on the optical card.

Figure 1-2 Terminal Loopback Path on an OC-N Card



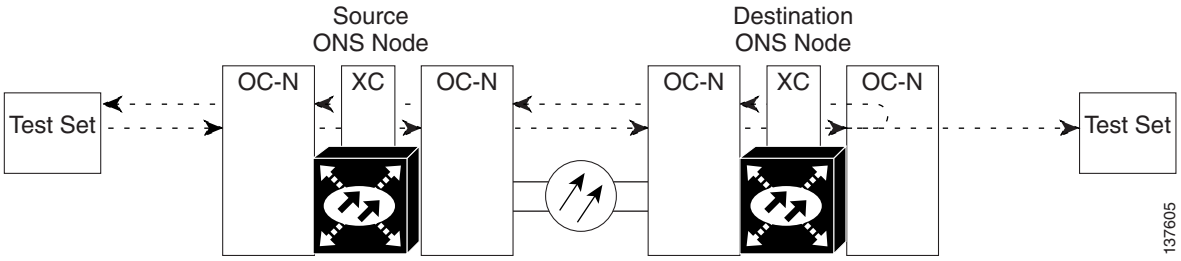
1.1.3.2 Card Behavior

ONS 15600 terminal port loopbacks can either terminate or bridge the signal. (Some ONS 15600 cards bridge the loopback signal, while others terminate it.)

If a port terminates a terminal loopback signal, the signal only loops back to the originating port and is not transmitted downstream. If the port bridges a loopback signal, the signal loops back to the originating port and is also transmitted downstream.

An OC-N terminal loopback example is shown in Figure 1-3.

Figure 1-3 Terminal Loopback on an OC-N Card with Bridged Signal



The loopback is listed in the Conditions window. For example, the window would list the LPBKTERMINAL condition or LPBKFACILITY condition for a tested port. (The Alarms window would show AS-MT, which indicates that all alarms are suppressed on the port during loopback testing.)

In addition to the Conditions window listing, the following behaviors occur:

- If an electrical or optical port is in the OOS-MA,DSBLD service state, it injects an AIS signal upstream and downstream.
- When an optical or Ethernet port is placed in the OOS-MA,MT service state before loopback testing, the port clears the AIS signal upstream and downstream unless there is a service-affecting defect that would also cause an AIS signal to be injected. For more information about placing ports into alternate states for testing, refer to the "Change Card Settings" chapter of the *Cisco ONS 15600 Procedure Guide*.

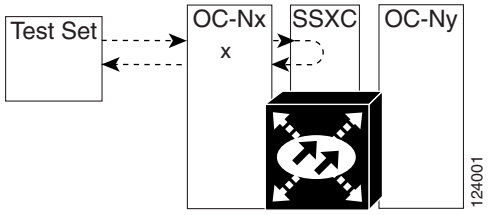
Caution A lock out of protection must be executed before putting a two-fiber or four-fiber BLSR span into a terminal loopback state. That is, a span lockout of one side (such as the east side) of a two-fiber BLSR is required before operating a facility loopback on the same (east) side of the ring. A span lockout of one

protection side (such as the east protection side) of a four-fiber BLSR is required before operating a terminal loopback on the same (east) side working line of the ring. If you do not execute the lockout prior to creating the loopback, the ring can become stuck in an anomalous state after you release the loopback.

1.1.4 Cross-Connect (XC) Loopbacks

An XC loopback tests a SONET STS circuit path as it passes through a single-shelf cross-connect (SSXC) card and loops back to the port being tested without affecting other traffic on the optical port. Cross-connect loopbacks are less invasive than terminal or facility loopbacks. Testing with facility or terminal loopbacks testing often involve taking down the whole line; however, an XC loopback allows you to create a loopback on any embedded channel at supported payloads of STS-1 granularity and higher. For example, you can place a loopback on a single STS-1, STS-3c, STS-6c, etc. on an optical facility without interrupting the other STS circuits. Figure 1-4 shows the XC loopback path.

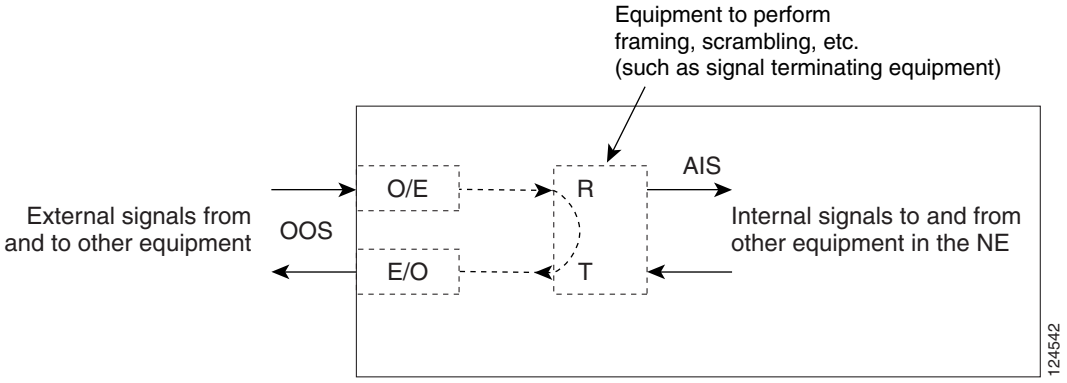
Figure 1-4 Cross-Connect Loopback Path on an OC-N Port



This test can be conducted locally or remotely through the CTC interface without on-site personnel. It takes place on an OC-48, OC-192, or ASAP port and tests the traffic path on that STS (or higher) circuit through the port and SSXC. The signal path is similar to a facility loopback.

The XC loopback breaks down the existing path and creates a new cross-connect—a hairpin—while the source of the original path is set to inject a line-side AIS-P. The signal path and AIS injection are shown in Figure 1-5.

Figure 1-5 Network Element with SONET Cross-Connect Loopback Function



Note If a terminal or facility loopback exists on a port, you cannot create an XC loopback on it.

Note When testing OC-192 signals with jitter analyzers, be sure to verify with the manufacturer that you are using the most current test equipment. Some test equipment has demonstrated false high jitter readings caused by accumulated jitter dependencies within the test equipment.

1.2 Troubleshooting Optical Circuit Paths With Loopbacks

Facility loopbacks or payload loopbacks, terminal loopbacks, and cross-connect (XC) loopback circuits are often used together to test the circuit path through the network or to logically isolate a fault. Performing a loopback test at each point along the circuit path systematically isolates possible points of failure.

The procedures in this section apply to OC-48, OC-192, and ASAP optical ports. (For instructions on ASAP Ethernet ports, go to the "1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks" section on page 1-25.) The example in this section tests an OC-N circuit on a three-node BLSR. Using a series of facility, cross-connect, and terminal loopbacks, the example scenario traces the circuit path, tests the possible failure points, and eliminates them. The logical progression contains seven network test procedures:

Note The test sequence for your circuits will differ according to the type of circuit and network topology.

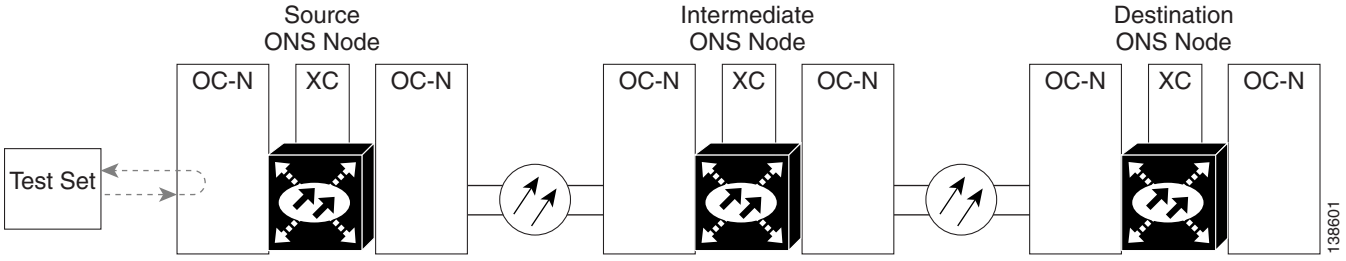
1. A facility (or payload) loopback on the source-node OC-N port
2. A terminal loopback on the source-node OC-N port
3. A cross-connect loopback on the source OC-N port
4. A facility (or payload) loopback on the intermediate-node OC-N port
5. A terminal loopback on the intermediate-node OC-N port
6. A facility (or payload) loopback on the destination-node OC-N port
7. A terminal loopback on the destination-node OC-N port

Note Facility and terminal loopback tests require on-site personnel.

1.2.1 Perform a Facility (Line) Loopback or Payload Loopback on a Source-Node Optical Port

The OC-48 card or ASAP card optical port facility loopback test is performed on the node source port in the network circuit. Likewise for the OC-192 payload loopback. In the testing situation used in this example, the source optical port in the source node. Completing a successful facility loopback on this port isolates the optical port as a possible failure point. Figure 1-6 shows an example of a facility loopback on a circuit source OC-N port.

Figure 1-6 Facility (Line) Loopback on a Circuit Source OC-N Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Facility and payload loopbacks require on-site personnel.

Complete the "Create the Facility (Line) Loopback or Payload Loopback on the Source Optical Port" procedure on page 1-7.

Create the Facility (Line) Loopback or Payload Loopback on the Source Optical Port

Step 1 Connect an optical test set to the port you are testing.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. The Tx and Rx terminals connect to the same port. Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 2 In CTC node view, double-click the card to display the card view.

Step 3 Take the port out of service:

a. Clicking the **Maintenance > Line** (or **Maintenance > Optical > Line**) tabs.

b. Choose **OOS,MT** from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port.

c. Click **Apply**.

Step 4 Create the loopback. On the **Maintenance** tab, click the correct subtab:

- For an OC-48 card or OC-192 card, click the **Loopback > Port** tabs.
- For an ASAP card, click the **Optical > Loopback > Port** tabs.

Step 5 Choose the loopback type:

Note If multiple ports are available, choose the row associated with the correct port and then configure the loopback.

- For an OC-48 card, click **Facility (Line)** in the Loopback Type column.

- For an OC-192 card, click **Payload** in the Loopback Type column.
- For an ASAP card, click **Facility (Line)** in the Loopback Type column.

Step 6 Click **Apply**.

Step 7 Click **Yes** in the confirmation dialog box.

Note It is normal for the "LPBKFACILITY (OCN)" condition on page 2-88 or the "LPBKTERMINAL (GIGE)" condition on page 2-89 to appear during loopback setup. The condition clears when you remove the loopback.

Step 8 Complete the "Test and Clear the Facility (Line) Loopback or Payload Loopback Circuit" procedure on page 1-8.

Test and Clear the Facility (Line) Loopback or Payload Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the loopback:

a. Click the **Maintenance > Loopback > Port** (or **Maintenance > Optical > Loopback > Port**) tabs.

b. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port. (The new admin state will override the loopback.)

c. Click **Apply**.

d. Click **Yes** in the confirmation dialog box.

Step 4 Complete the "Test the Optical Card" procedure on page 1-8.

Test the Optical Card

Step 1 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 2 Resend test traffic on the loopback circuit with a known-good card installed.

Step 3 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 4 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 5 Clear the facility loopback:

Step 6 If the test set indicates a good circuit, no further testing is necessary with the facility or payload loopback. Clear the loopback:

a. Click the **Maintenance > Loopback > Port** (or **Maintenance > Optical > Loopback > Port**) tabs.

b. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port. (The new admin state will override the loopback.)

c. Click **Apply**.

d. Click **Yes** in the confirmation dialog box.

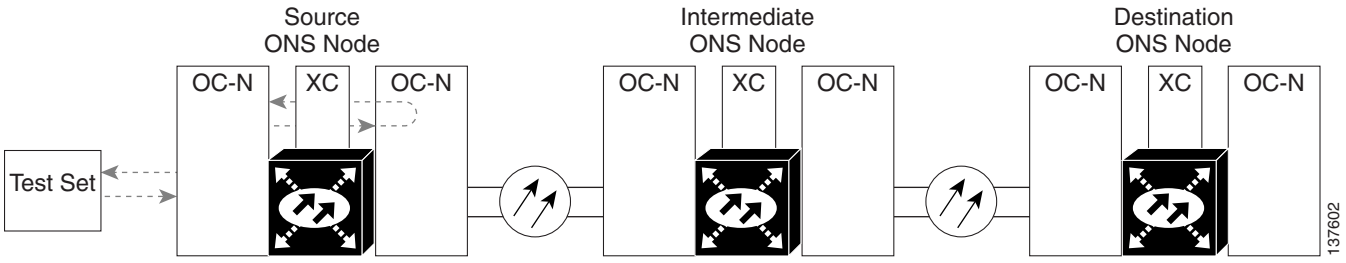
Step 7 Complete the "1.2.2 Perform a Terminal (Inward) Loopback on a Source-Node Optical Port" procedure on page 1-9.

1.2.2 Perform a Terminal (Inward) Loopback on a Source-Node Optical Port

The terminal loopback test is only available on ASAP card optical and Ethernet ports. (This section will only address the optical ports; Ethernet ports are covered in 1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks, page 1-25.) Terminal loopbacks are not available on OC-48 or OC-192 cards.

To create a terminal loopback, create a bidirectional circuit originating on the node source optical port and looping back on the node source optical port. You then proceed with the terminal loopback test. Completing a successful terminal loopback to a node source port verifies that the circuit is good to the source port. Figure 1-7 shows an example of a terminal loopback on a source optical port.

Figure 1-7 Terminal (Inward) Loopback on a Source-Node OC-N Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Terminal loopbacks require on-site personnel.

Complete the "Create the Terminal (Inward) Loopback on a Source-Node Optical Port" procedure on page 1-10.

Create the Terminal (Inward) Loopback on a Source-Node Optical Port

Step 1 Connect an optical test set to the ASAP card optical port you are testing:

Note For specific procedures to use the test set equipment, consult the manufacturer.

a. If you just completed the "1.2.1 Perform a Facility (Line) Loopback or Payload Loopback on a Source-Node Optical Port" procedure on page 1-6 for an ASAP card optical port, leave the optical test set hooked up.

b. If you are starting the current procedure without the optical test set hooked up to the source optical port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

c. Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 2 Use CTC to set up the terminal loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Opt1toOpt2.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 3 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKTERMINAL (OCN)" condition on page 2-89 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 4 Create the terminal loopback on the destination port being tested:

a. In node view, double-click the ASAP card.

b. Click the **Maintenance > Optical > Loopback > Port** tabs.

c. Select **OOS,MT** from the Admin State column. If there are multiple available circuits, select the row appropriate for the desired port.

d. Select **Terminal (Inward)** from the Loopback Type column.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 5 Complete the "Test and Clear the Terminal Loopback Circuit" procedure on page 1-11.

Test and Clear the Terminal Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic being received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary on the loopback circuit. Clear the terminal loopback state on the port:

- **a.** Double-click the ASAP in the source node.
- **a.** Click the **Maintenance > Optical > Loopback > Port** tabs.
- **b.** Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port. (The new admin state will override the loopback.)
- **c.** Click **Apply**.
- **d.** Click **Yes** in the confirmation dialog box.

Step 4 Clear the terminal loopback circuit:

- **a.** Click the **Circuits** tab.
- **b.** Choose the loopback circuit being tested.
- **c.** Click **Delete**.
- **d.** Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the ASAP Card" procedure on page 1-11.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Step 5 Resend test traffic on the loopback circuit with a known-good card.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the defective card.

Step 8 Clear the terminal loopback on the port before testing the next segment of the network circuit path:

a. Double-click the ASAP card in the source node with the terminal loopback.

a. Click the **Maintenance > Optical > Loopback > Port** tabs.

b. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port. (The new admin state will override the loopback.)

c. Click **Apply**.

d. Click **Yes** in the confirmation dialog box.

Step 9 Clear the terminal loopback circuit before testing the next segment of the network circuit path:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 10 Complete the "1.2.3 Perform an XC Loopback on the Source Optical Port" procedure on page 1-12.

1.2.3 Perform an XC Loopback on the Source Optical Port

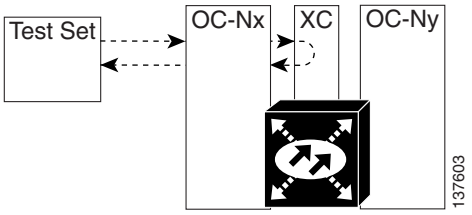
Note This procedure is performed from an OC-N card or ASAP card optical port to test the cross-connect circuit connection.

Note You can perform an XC loopback on either the circuit source working or the protect port of a 1+1 protection group.

Note XC loopbacks do not require on-site personnel.

The XC loopback test is available for OC-48, OC-192, and ASAP cards and occurs on an optical circuit transiting the SSXC card in a network circuit. Completing a successful XC loopback from an optical port through the SSXC card eliminates the SSXC card as the source of trouble for a faulty circuit. Figure 1-8 shows an example of an XC loopback path on a source OC-N port.

Figure 1-8 XC Loopback on a Source OC-N Port



Complete the "Create the XC Loopback on the Source-Node Optical Port" procedure on page 1-13.

Create the XC Loopback on the Source-Node Optical Port

Step 1 Connect an optical test set to the optical port you are testing:

Note For specific procedures to use the test set equipment, consult the manufacturer.

a. If you just completed the "1.2.2 Perform a Terminal (Inward) Loopback on a Source-Node Optical Port" procedure on page 1-9, leave the optical test set hooked up to the source-node port.

b. If you are starting the current procedure without the optical test set hooked up to the source port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. The Tx and Rx terminals connect to the same port.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to put the circuit being tested out of service:

a. In node view, click the **Circuits** tab.

b. Click the circuit and then click **Edit**.

c. In the Edit Circuit dialog box, click the State tab.

d. Choose **OOS,MT** from the Target Circuit Admin State drop-down list.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 4 Use CTC to set up the XC loopback on the circuit being tested:

a. In node view, double-click the OC-N card to display the card view.

b. Click the **Maintenance > Loopback > SONET STS** tabs (or **Maintenance > Optical > Loopback > SONET STS** tabs).

c. Click the check box in the **XC Loopback** column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 5 Complete the "Test and Clear the XC Loopback Circuit" procedure on page 1-14.

Test and Clear the XC Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the cross-connect. Clear the XC loopback:

a. In card view, click the **Maintenance > Loopback > SONET STS** tabs (or **Maintenance > Optical > Loopback > SONET STS** tabs).

b. Uncheck the check box in the **XC Loopback** column for the circuit being tested.

c. Click **Apply**.

d. Click **Yes** in the confirmation dialog box.

Step 4 Complete the "Test the Alternate SSXC Card" procedure on page 1-14.

Test the Alternate SSXC Card

Step 1 Do a manual data copy switch of the SSXC cards before retesting the XC loopback circuit:

a. In node view, select the **Maintenance > Preferred Copy** tabs.

b. In the **Set Preferred** drop-down menu, select the alternate copy. (For example, if Copy B is preferred and in use, select Copy A.)

Note Note CTC Copy A refers to the SSXC card in Slot 6. Copy B refers to the SSXC card in Slot 8. Either copy might be chosen as the preferred copy SSXC. The other SSXC is called the alternate SSXC in this chapter.

c. Click **Apply**.

d. Click **Yes** in the confirmation dialog box.

Note If you attempt a preferred copy switch and the switch is unsuccessful, a problem is present with the alternate SSXC.

e. Click **Refresh** until the tab shows that the alternate copy you selected is now the preferred copy. The Currently Used field will show the newly-selected preferred copy.

Step 2 Resend test traffic on the XC loopback circuit.

The test traffic now travels through the alternate cross-connect card.

Step 3 If the test set indicates a faulty circuit, assume the cross-connect card is not causing the problem. Clear the XC loopback circuit:

a. Click the **Circuits** tab.

b. Choose the XC loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

e. Confirm that the XC loopback circuit is deleted from the Circuits tab list. If the test set indicates a good circuit, the problem might be a defective cross-connect card.

Step 4 To confirm a defective preferred cross-connect card, complete the "Retest the Preferred SSXC Card" procedure on page 1-15.

Retest the Preferred SSXC Card

Step 1 Do a manual data copy switch of the SSXC cards before retesting the loopback circuit:

a. In node view, select the **Maintenance > Preferred Copy** tabs.

b. In the **Set Preferred** drop-down menu, select the alternate copy. (For example, if Copy B is preferred and in use, select Copy A.)

c. Click **Apply**.

d. Click **Yes** on the confirmation dialog box.

Note If you attempt a preferred copy switch and the switch is unsuccessful, a problem is present with the alternate SSXC.

e. Click **Refresh** until the tab shows that the alternate copy you selected is now the preferred copy. The Currently Used field will show the newly-selected preferred copy.

Step 2 Resend test traffic on the loopback circuit.

Step 3 If the test set indicates a faulty circuit, the problem is probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447) and proceed to Step 4. If the circuit is not shown to be faulty and the card is not shown to be defective, you are finished with testing.

Step 4 Complete the "Replace an SSXC Card" procedure on page 2-137 for the defective card. Perform Step 5.

Step 5 If the test set indicates a good circuit, the cross-connect card might have had a temporary problem that was cleared by the side switch. Clear the XC loopback circuit:

a. Click the **Circuits** tab.

b. Choose the XC loopback circuit being tested.

c. Click **Delete**.

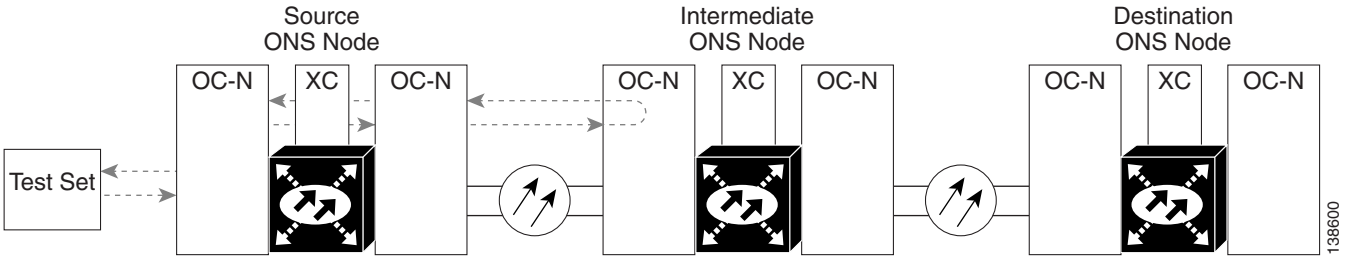
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 6 Complete the "1.2.4 Perform a Facility (Line) Loopback or Payload Loopback on an Intermediate-Node Optical Port" procedure on page 1-16.

1.2.4 Perform a Facility (Line) Loopback or Payload Loopback on an Intermediate-Node Optical Port

Performing an OC-48 or ASAP card optical facility loopback (or OC-192 payload loopback) on an intermediate port isolates whether this node is causing circuit failure. In the situation shown in Figure 1-9, the test is being performed on an intermediate OC-N port.

Figure 1-9 Facility (Line) Loopback Path to an Intermediate-Node OC-N Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Facility and payload loopbacks require on-site personnel.

Complete the "Create a Facility (Line) Loopback or Payload Loopback on an Intermediate-Node Optical Port" procedure on page 1-16.

Create a Facility (Line) Loopback or Payload Loopback on an Intermediate-Node Optical Port

Step 1 Connect an optical test set to the port you are testing. If you are starting the current procedure without the optical test set hooked up to the source port port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

For specific procedures to use the test set equipment, consult the manufacturer.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the facility loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Opt1toOpt3.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKFACILITY (OCN)" condition on page 2-88 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the facility loopback on the intermediate port being tested:

a. Go to the node view of the intermediate node:

- Choose **View > Go To Other Node** from the menu bar.
- Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the intermediate-node card that requires the loopback.

c. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. For an OC-48 card or ASAP card optical port, select **Facility (Line)** from the Loopback Type column. For an OC-192 card, select **Payload**. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Facility (Line) Loopback or Payload Loopback Circuit" procedure on page 1-17.

Test and Clear the Facility (Line) Loopback or Payload Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the facility loopback from the port:

a. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 4 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the Optical Card" procedure on page 1-18.

Test the Optical Card

Step 1 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad OC-N or ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 2 Resend test traffic on the loopback circuit with a known-good card installed.

Step 3 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 4 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 5 Clear the facility loopback from the port:

a. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 6 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

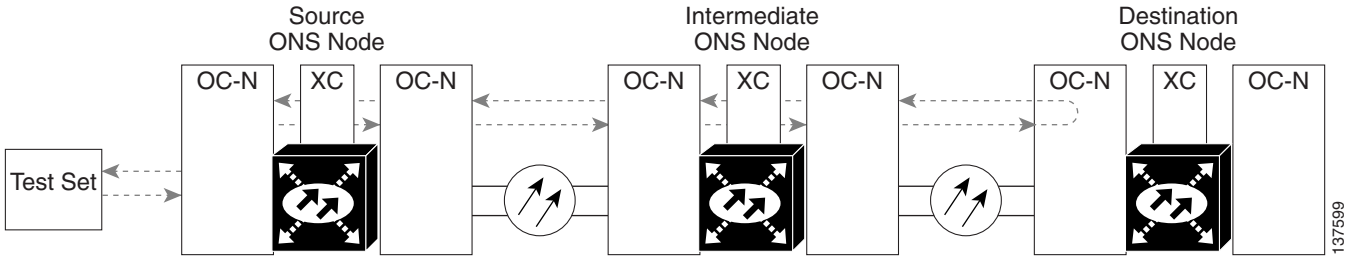
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 7 Complete the "1.2.5 Perform a Facility (Line) Loopback or Payload Loopback on a Destination-Node Optical Port" procedure on page 1-19.

1.2.5 Perform a Facility (Line) Loopback or Payload Loopback on a Destination-Node Optical Port

You perform a facility loopback test at the destination port to determine whether this local port is the source of circuit trouble. The example in Figure 1-10 shows a facility loopback being performed on a destination-node OC-N port.

Figure 1-10 Facility (Line) Loopback Path to a Destination-Node OC-N Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Facility loopbacks require on-site personnel.

Complete the "Create the Facility (Line) Loopback or Payload Loopback on a Destination-Node Optical Port" procedure on page 1-19.

Create the Facility (Line) Loopback or Payload Loopback on a Destination-Node Optical Port

Step 1 Connect an optical test set to the OC-N or ASAP optical port you are testing. If you are starting the current procedure without the optical test set hooked up to the source port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the facility circuit on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Opt1toOpt5.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKFACILITY (OCN)" condition on page 2-88 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the facility loopback on the destination port being tested:

a. Go to the node view of the destination node:

- Choose **View > Go To Other Node** from the menu bar.
- Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the card that requires the loopback.

c. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. For an ASAP card or OC-48 card, select **Facility (Line)** from the Loopback Type column. For an OC-192 card, select **Payload**. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Optical Facility (Line) Loopback or Payload Loopback Circuit" procedure on page 1-20.

Test and Clear the Optical Facility (Line) Loopback or Payload Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the facility loopback from the port:

a. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 4 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the Optical Card" procedure on page 1-21.

Test the Optical Card

Step 1 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad OC-N or ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 2 Resend test traffic on the loopback circuit with a known-good card installed.

Step 3 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 4 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 5 Clear the loopback on the port:

a. Click the **Maintenance > Loopback > Port** tabs (or **Maintenance > Optical > Loopback > Port** tabs).

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 6 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 7 Complete the "1.2.6 Perform a Terminal Loopback on a Destination-Node Optical Port" procedure on page 1-22.

1.2.6 Perform a Terminal Loopback on a Destination-Node Optical Port

The terminal loopback at the destination-node ASAP card optical port is the final local hardware error elimination in the circuit troubleshooting process. If this test is completed successfully, you have verified that the circuit is good up to the destination port.

Caution Performing a loopback on an in-service circuit is service-affecting.

Note OC-48 and OC-192 cards are not capable of terminal loopbacks.

Note Terminal loopbacks require on-site personnel.

Complete the "Create the Terminal Loopback on a Destination-Node Optical Port" procedure on page 1-22.

Create the Terminal Loopback on a Destination-Node Optical Port

Step 1 Connect an optical test set to the ASAP card optical port you are testing: If you are starting the current procedure without the optical test set hooked up to the source port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the terminal loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Opt1toOpt6.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKTERMINAL (OCN)" condition on page 2-89 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the terminal loopback on the destination port being tested:

a. Go to the node view of the destination node:
   - Choose **View > Go To Other Node** from the menu bar.
   - Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the card that requires the loopback.

c. Click the **Maintenance > Optical > Loopback > Port** tab.

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. Select **Terminal (Inward)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Optical Terminal Loopback Circuit" procedure on page 1-23.

Test and Clear the Optical Terminal Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic being received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary on the loopback circuit. Clear the terminal loopback from the port:

a. Double-click the destination-node ASAP card with the terminal loopback.

b. Click the **Maintenance > Optical > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 4 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

The entire circuit path has now passed its comprehensive series of loopback tests. This circuit qualifies to carry live traffic.

Step 5 If the test set indicates a faulty circuit, the problem might be a faulty card.

Step 6 Complete the "Test the ASAP Card" procedure on page 1-24.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the defective card.

Step 8 Clear the terminal loopback on the port:

a. Double-click the source-node card with the terminal loopback.

b. Click the **Maintenance > Optical > Loopback > Port** tabs.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (**IS**; **OOS,DSBLD**; **OOS,MT**; **IS,AINS**) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 9 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

The entire optical circuit path has now passed its comprehensive series of loopback tests. This circuit qualifies to carry live traffic.

1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks

Facility (line) loopbacks and terminal loopbacks are often used together to test the circuit path through the network or to logically isolate a fault. Performing a loopback test at each point along the circuit path systematically isolates possible points of failure.

You can use these procedures only on the ASAP card Ethernet ports in the ONS 15600 system. The example in this section tests an Ethernet circuit on a three-node BLSR. Using a series of facility loopbacks and terminal loopbacks, the example scenario traces the circuit path, tests the possible failure points, and eliminates them. The logical progression contains six network test procedures:

Note The test sequence for your circuits will differ according to the type of circuit and network topology.

1. A facility loopback on the source-node Ethernet port
2. A terminal loopback on the source-node Ethernet port
3. A facility loopback on the intermediate-node Ethernet port
4. A terminal loopback on the intermediate-node Ethernet port
5. A facility loopback on the destination-node Ethernet port
6. A terminal loopback on the destination-node Ethernet port

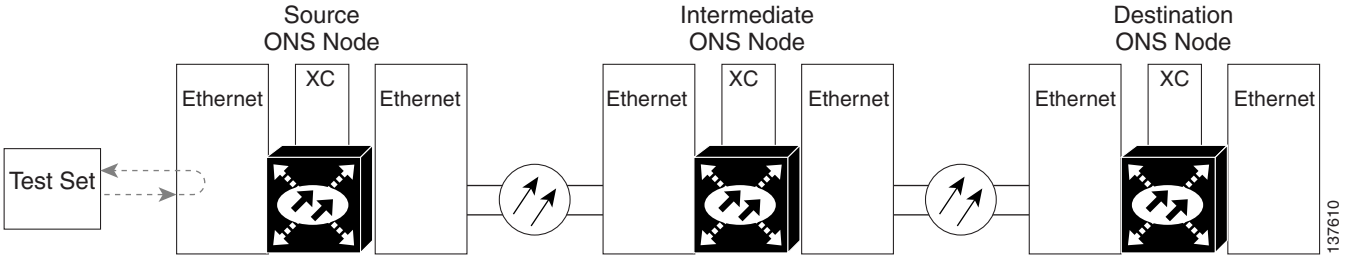
Note Facility and terminal loopback tests require on-site personnel.

1.3.1 Perform a Facility (Line) Loopback on a Source-Node Ethernet Port

The facility loopback test is performed on the node source port in the network circuit. In the testing situation used in this example, the source is an ASAP Ethernet port in the source node. Completing a successful facility loopback on this port isolates the port as a possible failure point. Figure 1-11 shows an example of a facility loopback on a circuit source Ethernet port.

Note Facility loopbacks require on-site personnel.

Figure 1-11 Facility (Line) Loopback on a Circuit Source Ethernet Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Complete the "Create the Facility (Line) Loopback on the Source-Node Ethernet Port" procedure on page 1-26.

Create the Facility (Line) Loopback on the Source-Node Ethernet Port

Step 1 Connect an optical test set to the ASAP Ethernet port you are testing.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. The Tx and Rx terminals connect to the same port.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 In CTC node view, double-click the card to display the card view.

Step 4 Click the **Maintenance > Ethernet > Loopback > Port** tabs.

Step 5 Choose **OOS,MT** from the Admin State column for the port being tested. If multiple ports are available, select the appropriate row for the desired port.

Step 6 Choose **Facility (Line)** from the Loopback Type column for the port being tested. If multiple ports are available, select the appropriate row for the desired port.

Step 7 Click **Apply**.

Step 8 Click **Yes** in the confirmation dialog box.

Note It is normal for the "LPBKFACILITY (GIGE)" condition on page 2-87 to appear during loopback setup. The condition clears when you remove the loopback.

Step 9 Complete the "Test and Clear the Facility (Line) Loopback Circuit" procedure on page 1-26.

Test and Clear the Facility (Line) Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the facility loopback:

a. Click the **Maintenance > Ethernet > Loopback > Port** tab.

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 4 Complete the "Test the ASAP Card" procedure on page 1-27.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card installed.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 8 Clear the facility loopback:

a. Click the **Maintenance > Ethernet > Loopback > Port** tab.

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 9 Complete the "1.3.2 Perform a Terminal (Inward) Loopback on a Source-Node Ethernet Port" procedure on page 1-28.

1.3.2 Perform a Terminal (Inward) Loopback on a Source-Node Ethernet Port

The terminal loopback test is performed on the node source Ethernet port. For the circuit in this example, it is the source Ethernet port in the source node. You first create a bidirectional circuit that starts on the node destination Ethernet port and loops back on the node source Ethernet port.You then proceed with the terminal loopback test. Completing a successful terminal loopback to a node source port verifies that the circuit is good to the source port.

Caution Performing a loopback on an in-service circuit is service-affecting.

Note Terminal loopbacks require on-site personnel.

Complete the "Create the Terminal (Inward) Loopback on a Source-Node Ethernet Port" procedure on page 1-28.

Create the Terminal (Inward) Loopback on a Source-Node Ethernet Port

Step 1 Connect an optical test set to the ASAP card Ethernet port you are testing:

Note For specific procedures to use the test set equipment, consult the manufacturer.

a. If you just completed the "1.3.1 Perform a Facility (Line) Loopback on a Source-Node Ethernet Port" procedure on page 1-25, leave the optical test set hooked up to the Ethernet port in the source node.

b. If you are starting the current procedure without the optical test set hooked up to the source Ethernet port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the terminal loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Eth1toEth2.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKTERMINAL (GIGE)" condition on page 2-89 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the terminal loopback on the destination port being tested:

a. In node view, double-click the card that requires the loopback, such as the ASAP card in the source node.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

d. Select **Terminal (Inward)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Ethernet Terminal Loopback Circuit" procedure on page 1-29.

Test and Clear the Ethernet Terminal Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic being received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary on the loopback circuit. Clear the terminal loopback state on the port:

a. Double-click the ASAP card in the source node with the terminal loopback.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 4 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the ASAP Card" procedure on page 1-30.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the defective card.

Step 8 Clear the terminal loopback on the port before testing the next segment of the network circuit path:

a. Double-click the card in the source node with the terminal loopback.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 9 Clear the terminal loopback circuit before testing the next segment of the network circuit path:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

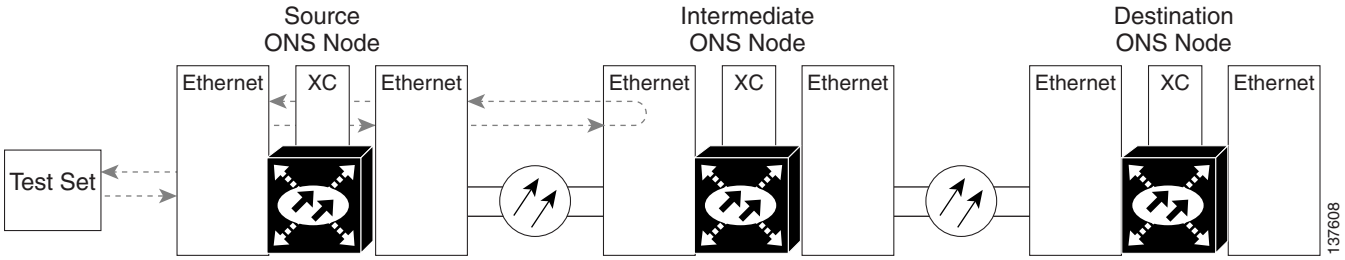
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 10 Complete the "1.3.3 Create a Facility (Line) Loopback on an Intermediate-Node Ethernet Port" procedure on page 1-31.

1.3.3 Create a Facility (Line) Loopback on an Intermediate-Node Ethernet Port

Performing the facility loopback test on an intermediate port isolates whether this node is causing circuit failure. It is shown in Figure 1-12.

Figure 1-12 Facility (Line) Loopback on an Intermediate-Node Ethernet Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Facility loopbacks require on-site personnel.

Complete the "Create a Facility (Line) Loopback on an Intermediate-Node Ethernet Port" procedure on page 1-31.

Create a Facility (Line) Loopback on an Intermediate-Node Ethernet Port

Step 1 Connect an optical test set to the ASAP card Ethernet port you are testing: If you are starting the current procedure without the optical test set hooked up to the source ASAP card Ethernet port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the facility loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Eth1toEth3.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKFACILITY (GIGE)" condition on page 2-87 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the facility loopback on the destination port being tested:

a. Go to the node view of the intermediate node:

- Choose **View > Go To Other Node** from the menu bar.
- Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the intermediate-node card that requires the loopback.

c. Click the or **Maintenance > Ethernet > Loopback > Port** tabs.

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. Select **Facility (Line)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Ethernet Facility (Line) Loopback Circuit" procedure on page 1-32.

Test and Clear the Ethernet Facility (Line) Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the facility loopback from the port:

a. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 4 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the ASAP Card" procedure on page 1-33.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good ASAP card installed.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 8 Clear the facility loopback from the port:

a. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

b. Choose **None** from the Loopback Type column for the ASAP port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 9 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

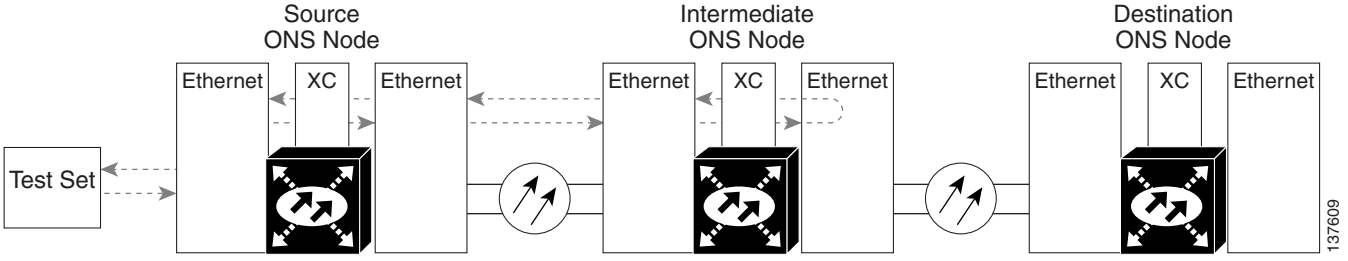
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 10 Complete the "1.3.4 Create a Terminal (Inward) Loopback on an Intermediate-Node Ethernet Port" procedure on page 1-34.

1.3.4 Create a Terminal (Inward) Loopback on an Intermediate-Node Ethernet Port

In the next troubleshooting test, you perform a terminal loopback on the intermediate-node ASAP Ethernet port to isolate whether the destination port is causing circuit trouble. In the example situation in Figure 1-13, the terminal loopback is performed on an intermediate Ethernet port in the circuit. You first create a bidirectional circuit that originates on the source-node Ethernet port and loops back on the intermediate-node port. You then proceed with the terminal loopback test. If you successfully complete a terminal loopback on the node, this node is excluded from possible sources of circuit trouble.

Figure 1-13 Terminal Loopback on an Intermediate-Node Ethernet Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Terminal loopbacks require on-site personnel.

Complete the "Create a Terminal Loopback on an Intermediate-Node Ethernet Port" procedure on page 1-35.

Create a Terminal Loopback on an Intermediate-Node Ethernet Port

Step 1 Connect an optical test set to the intermediate node ASAP card Ethernet port you are testing:

Note For specific procedures to use the test set equipment, consult the manufacturer.

a. If you just completed the "1.3.3 Create a Facility (Line) Loopback on an Intermediate-Node Ethernet Port" procedure on page 1-31 for an ASAP card Ethernet port, leave the optical test set hooked up to the intermediate-node port.

b. If you are starting the current procedure without the optical test set hooked up to the source port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the terminal loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Eth1toEth4.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list and that it is described in the Dir column as a two-way circuit.

Note It is normal for the "LPBKTERMINAL (GIGE)" condition on page 2-89 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the terminal loopback on the intermediate port being tested:

a. Go to the node view of the intermediate node:

- Choose **View > Go To Other Node** from the menu bar.
- Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the card that requires the loopback.

c. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. Select **Terminal (Inward)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Ethernet Terminal Loopback Circuit" procedure on page 1-36.

Test and Clear the Ethernet Terminal Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic being received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary on the loopback circuit. Clear the terminal loopback from the port:

a. Double-click the intermediate-node card with the terminal loopback to display the card view.

b. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 4 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the ASAP Card" procedure on page 1-36.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the defective card.

Step 8 Clear the terminal loopback on the port:

a. Double-click the intermediate-node ASAP card with the terminal loopback.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 9 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

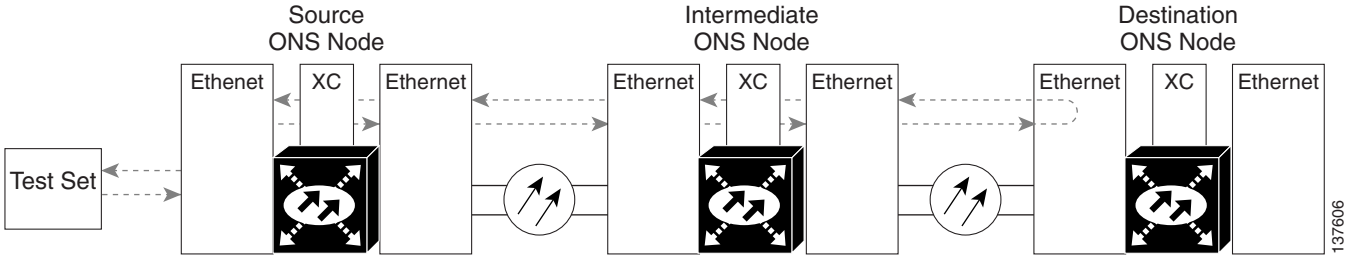
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 10 Complete the "1.3.5 Perform a Facility (Line) Loopback on a Destination-Node Ethernet Port" procedure on page 1-37.

1.3.5 Perform a Facility (Line) Loopback on a Destination-Node Ethernet Port

You perform a facility loopback test for ASAP card Ethernet port at the destination port to determine whether this local port is the source of circuit trouble. The example in Figure 1-14 shows a facility loopback being performed on an Ethernet port.

Figure 1-14 Facility (Line) Loopback on a Destination-Node Ethernet Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Facility loopbacks require on-site personnel.

Complete the "Create the Facility (Line) Loopback on a Destination-Node Ethernet Port" procedure on page 1-38.

Create the Facility (Line) Loopback on a Destination-Node Ethernet Port

Step 1 Connect an optical test set to the destination ASAP card optical port you are testing. If you are starting the current procedure without the optical test set hooked up to the source optical port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Note For specific procedures to use the test set equipment, consult the manufacturer.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the hairpin circuit on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Eth1toEth5.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKFACILITY (GIGE)" condition on page 2-87 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the facility loopback on the destination port being tested:

a. Go to the node view of the destination node:
   - Choose **View > Go To Other Node** from the menu bar.
   - Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the card that requires the loopback.

c. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. Select **Facility (Line)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Ethernet Facility (Line) Loopback Circuit" procedure on page 1-39.

Test and Clear the Ethernet Facility (Line) Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the traffic received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary with the facility loopback. Clear the facility loopback from the port:

a. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 4 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 5 Complete the "Test the ASAP Card" procedure on page 1-40.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card installed.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the faulty card.

Step 8 Clear the facility loopback on the port:

a. Click the **Maintenance > Ethernet > Loopback > Port** tabs.

b. Choose **None** from the Loopback Type column for the port being tested.

c. Choose the appropriate state (IS; OOS,DSBLD; OOS,MT) from the Admin State column for the port being tested.

d. Click **Apply**.

e. Click **Yes** in the confirmation dialog box.

Step 9 Clear the loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

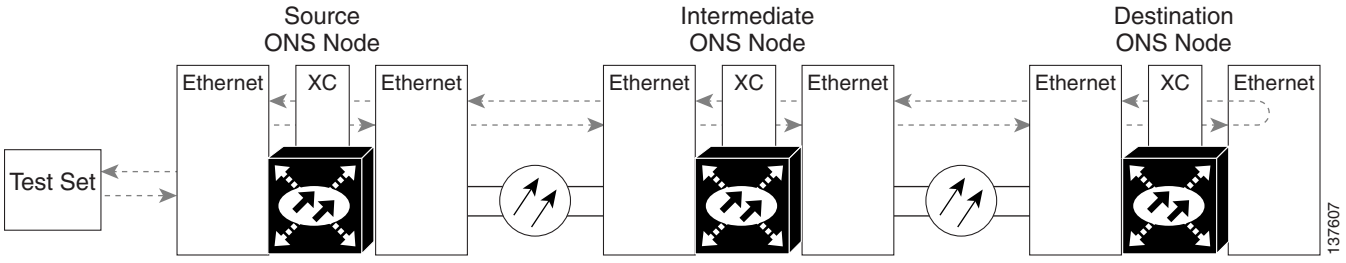
d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

Step 10 Complete the "1.3.6 Perform a Terminal Loopback on a Destination-Node Ethernet Port" procedure on page 1-41.

1.3.6 Perform a Terminal Loopback on a Destination-Node Ethernet Port

The terminal loopback at the destination-node ASAP card Ethernet port is the final local hardware error elimination in the circuit troubleshooting process, and is performed on the destination-node ASAP card Ethernet port. If this test is completed successfully, you have verified that the circuit is good up to the destination port. The example in Figure 1-15 shows a terminal loopback on a destination-node Ethernet port.

Figure 1-15 Terminal Loopback on a Destination-Node Ethernet Port



Caution Performing a loopback on an in-service circuit is service-affecting.

Note Terminal loopbacks require on-site personnel.

Complete the "Create the Terminal Loopback on a Destination-Node Ethernet Port" procedure on page 1-41.

Create the Terminal Loopback on a Destination-Node Ethernet Port

Step 1 Connect an optical test set to the destination node ASAP card Ethernet port you are testing:

Note For specific procedures to use the test set equipment, consult the manufacturer.

a. If you just completed the "1.3.5 Perform a Facility (Line) Loopback on a Destination-Node Ethernet Port" procedure on page 1-37 for an ASAP card Ethernet port, leave the optical test set hooked up to the source port.

b. If you are starting the current procedure without the optical test set hooked up to the source port, use appropriate cabling to attach the Tx and Rx terminals of the optical test set to the port you are testing. Both Tx and Rx connect to the same port.

Step 2 Adjust the test set accordingly. (Refer to manufacturer instructions for test-set use.)

Step 3 Use CTC to set up the terminal loopback on the test port:

a. In node view, click the **Circuits** tab and click **Create**.

b. In the Circuit Creation dialog box, choose the type, such as STS, and number, such as 1.

c. Click **Next**.

d. In the next Circuit Creation dialog box, give the circuit an easily identifiable name such as Eth1toEth6.

e. Leave the **Bidirectional** check box checked.

f. Click **Next**.

g. In the Circuit Creation source dialog box, select the same Node, card Slot, Port, and STS (or VT) where the test set is connected.

h. Click **Next**.

i. In the Circuit Creation destination dialog box, use the same Node, card Slot, Port, and STS (or VT) used for the source dialog box.

j. Click **Next**.

k. In the Circuit Creation circuit routing preferences dialog box, leave all defaults. Click **Finish**.

Step 4 Confirm that the newly created circuit appears on the Circuits tab list as a two-way circuit.

Note It is normal for the "LPBKTERMINAL (GIGE)" condition on page 2-89 to appear during a loopback setup. The condition clears when you remove the loopback.

Step 5 Create the terminal loopback on the destination port being tested:

a. Go to the node view of the destination node:

- Choose **View > Go To Other Node** from the menu bar.
- Choose the node from the drop-down list in the Select Node dialog box and click **OK**.

b. In node view, double-click the card that requires the loopback.

c. Click the **Maintenance > Ethernet > Loopback > Port** tab.

d. Select **OOS,MT** from the Admin State column. If multiple ports are available, select the row appropriate for the desired port.

e. Select **Terminal (Inward)** from the Loopback Type column. If multiple ports are available, select the row appropriate for the desired port.

f. Click **Apply**.

g. Click **Yes** in the confirmation dialog box.

Step 6 Complete the "Test and Clear the Ethernet Terminal Loopback Circuit" procedure on page 1-42.

Test and Clear the Ethernet Terminal Loopback Circuit

Step 1 If the test set is not already sending traffic, send test traffic on the loopback circuit.

Step 2 Examine the test traffic being received by the test set. Look for errors or any other signal information that the test set is capable of indicating.

Step 3 If the test set indicates a good circuit, no further testing is necessary on the loopback circuit. Clear the terminal loopback from the port:

a. Double-click the destination-node ASAP card.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 4 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

The entire circuit path has now passed its comprehensive series of loopback tests. This circuit qualifies to carry live traffic.

Step 5 If the test set indicates a faulty circuit, the problem might be a faulty card.

Step 6 Complete the "Test the ASAP Card" procedure on page 1-43.

Test the ASAP Card

Step 1 Determine whether you are experiencing trouble on a single SFP (PPM), on all PPMs within a 4PIO (PIM), or on all 4PIO used in that ASAP card. If there is only partial failure, you may be able to replace this part rather than the entire card.

Step 2 If the errors are being observed on one port but not all ports of the ASAP, you may only need to replace that SFP (PPM). Remove the errored SFP (PPM) and replace it with a known-good SFP (PPM) by completing the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 3 If all SFPs (PPMs) on a particular 4PIO (PIM) are experiencing problems, the 4PIO (PIM) is indicated. Remove this 4PIO (PIM) and replace it with a known-good one using the procedures for this in the "Install Cards and Fiber-Optic Cable" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the trouble still is not located, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the suspected bad ASAP card and replace it with a known-good one.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the procedures in the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126. For more information, refer to the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

Step 5 Resend test traffic on the loopback circuit with a known-good card.

Step 6 If the test set indicates a good circuit, the problem was probably the defective card. Return the defective card to Cisco through the RMA process. Contact Cisco Technical Support (1 800 553-2447).

Step 7 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the defective card.

Step 8 Clear the terminal loopback on the port:

a. Double-click the destination-node ASAP card.

b. Click the **Maintenance > Ethernet > Loopback > Port** tab.

c. Select **None** from the Loopback Type column for the port being tested.

d. Select the appropriate state (IS; OOS,DSBLD; OOS,MT) in the Admin State column for the port being tested.

e. Click **Apply**.

f. Click **Yes** in the confirmation dialog box.

Step 9 Clear the terminal loopback circuit:

a. Click the **Circuits** tab.

b. Choose the loopback circuit being tested.

c. Click **Delete**.

d. Click **Yes** in the Delete Circuits dialog box. Do not check any check boxes.

The entire circuit path has now passed its comprehensive series of loopback tests. This circuit qualifies to carry live traffic.

1.4 Using CTC Diagnostics

CTC provides diagnostics for the following functions:

- Verification of proper card ASICS function
- Verification of standby card operation
- Verification of proper card LED operation
- Notification of problems detected via alarms
- Provision of a downloaded, machine-readable diagnostic log file to be used by Cisco Technical Support

Some of these functions, such as ASIC verification and standby card operation, are invisibly monitored in background functions. Change or problem notifications are provided in the Alarms and Conditions window. Other diagnostic functions—verifying card LED function or downloading diagnostic files for technical support—are available to the user in the node view Maintenance > Diagnostic tab. The user-operated diagnostic features are described in the following paragraphs.

1.4.1 Card LED Lamp Tests

A card LED lamp test determines whether card-level indication LEDs are operational. This diagnostic test is run as part of the initial ONS 15600 turnup, during maintenance routines, or any time you question whether an LED is in working order. Maintenance or higher-level users can complete the following tasks to verify LED operation.

1.4.1.1 Verify Card LED Operation

Note The LED test must be performed on the physical card. This test is not available in the CTC interface. For typical OC-N, SSXC, and TSC card LED behavior, see the "2.7 LED Behavior" section on page 2-123.

Step 1 Determine the active TSC card using the green ACT /STBY LED on the face of the card.

Step 2 Press the LAMP button on the face of the active TSC card.

Step 3 Ensure that all the LEDs on the cards in the shelf illuminate for several seconds.

Step 4 If an LED does not illuminate, the LED might be faulty.

Return the defective card to Cisco through the returned materials authorization (RMA) process. See the "Obtaining Technical Assistance" section on page xxxv to contact Cisco Technical Assistance Center (TAC).

1.4.2 Retrieve Diagnostics File Button

When you click the Retrieve Diagnostics File button in the Maintenance window, CTC retrieves system data that can be off-loaded by a Maintenance or higher-level user to a local directory and sent to Technical Support for troubleshooting purposes. The diagnostics file is in machine language and is not human-readable, but can be used by TAC for problem analysis. Complete the following task to off-load the diagnostics file.

Note In addition to the machine-readable diagnostics file, the ONS 15600 also stores an audit trail of all system events such as user logins, remote logins, configuration, and changes. This audit trail is considered a record-keeping feature rather than a troubleshooting feature. Information about the feature is located in the *Cisco ONS 15600 Procedure Guide*.

Off-Load the Diagnostics File

Step 1 In the node view, click the **Maintenance > Diagnostic** tab.

Step 2 Click **Retrieve Diagnostic File**.

Step 3 In the Saving Diagnostic File dialog box, navigate to the directory (local or network) where you want to save the file.

Step 4 Enter a name in the File Name field.

You do not have to give the archive file a particular extension. It is readable in any application that supports text files, such as WordPad, Microsoft Word (imported), etc.

Step 5 Click **Save**.

The Get Diagnostics status window shows a progress bar indicating the percentage of the file being saved, then shows "Get Diagnostics Complete."

Step 6 Click **OK**.

1.5 Restoring the Database to a Previous or Original Configuration

This section contains troubleshooting for node operation errors that might require restoring software data or restoring the node to the default setup.

1.5.1 Node is Functioning Improperly or Has Incorrect Data

Symptom One or more nodes are not functioning properly or have incorrect data.

Table 1-1 describes the potential cause of the symptom and the solution.

Table 1-1 Node is Functioning Improperly or Has Incorrect Data

Possible Problem	Solution
The node has an incorrect or corrupted database.	Complete the procedures in the "Maintain the Node" chapter of the *Cisco ONS 15600 Procedure Guide*.

1.6 PC Connectivity Troubleshooting

This section contains information about system minimum requirements, supported platforms, browsers, and JREs for R6.0, and troubleshooting procedures for PC and network connectivity to the ONS 15600.

1.6.1 PC System Minimum Requirements

Workstations running CTC R6.0 for the ONS products on Windows platforms need to have the following minimum requirements:

- Pentium III or higher processor
- Processor speed of at least 700 MHz
- 256 Mb or more of RAM
- 50 Mb or more of available hard disk space
- 20 GB or larger hard drive

1.6.2 Sun System Minimum Requirements

Workstations running CTC R6.0 for the ONS products on Sun workstations need to have the following minimum requirements:

- UltraSPARC or faster processor
- 256 Mb or more of RAM
- 50 Mb or more of available hard disk space

1.6.3 Supported Platforms, Browsers, and JREs

Software R6.0 CTC supports the following platforms:

- Windows NT
- Windows 98
- Windows XP
- Windows 2000
- Solaris 8
- Solaris 9

Software R6.0 CTC supports the following browsers and JREs:

- Netscape 7 browser (on Solaris 8 or 9 with Java plug-in 1.4.2)
- PC platforms with Java plug-in 1.4.2
- Internet Explorer 6.0 browser (on PC platforms with Java plug-in 1.4.2)
- Mozilla application suite for browsers

Note You can obtain browsers at the following URLs:
Netscape: http://channels.netscape.com/ns/browsers/default.jsp
Internet Explorer: http://www.microsoft.com
Mozilla: http://mozilla.org

Note The required JRE version is JRE 1.4.2.

Note JRE 1.4.2 for Windows and Solaris is available on R6.0 product CDs.

1.6.4 Unsupported Platforms and Browsers

Software R6.0 does not support the following platforms:

- Windows 95
- Solaris 2.5
- Solaris 2.6

Software R6.0 does not support the following browsers and JREs:

- Netscape 4.73 for Windows.
- Netscape 4.76 on Solaris is not supported.
- Netscape 7 on Solaris 8 or 9 is only supported with JRE 1.4.2

1.6.5 Retrieve the Node Information

If you do not know the IP address of your ONS 15600 network element (NE), you can obtain and view the NE information using a TL1 session.

Step 1 Connect a 3-pair swapping null modem adapter to the RS-232 port on the customer access panel (CAP).

Step 2 Connect a serial cable to the null modem adapter and to the serial port on your PC.

Step 3 Configure the terminal emulation software (HyperTerminal):

- **a.** Terminal emulation = vt100
- **b.** Bits per second = 9600
- **c.** Parity = None
- **d.** Stop BITS = 1
- **e.** Flow control = None

Step 4 Press **Enter**. A > prompt appears.

Step 5 At the prompt, type the Activate User command to open a TL1 session:

ACT-USER::CISCO15:<CTAG>::<PID>;

Note When the semicolon is typed, the TL1 command is executed immediately.

Step 6 At the prompt, type the Retrieve Network Element General command to retrieve the NE information:

RTRV-NE-GEN:::<CTAG>;

Step 7 The response message will provide the following NE information.

- <IPADDR> indicates the node IP address; <IPADDR> is a string
- <IPMASK> indicates the node IP mask; <IPMASK> is a string
- <DEFRTR> indicates the node default router; <DEFRTR> is a string
- <NAME> is the node name. The maximum name size is 20 characters; <name> is a string
- <SWVER> is the software version; <SWVER> is a string
- <LOAD> is the load version; <LOAD> is a string
- <SELCLK> is the system-wide selected clock/sync copy; <SELCLK> is of type DATA_CLK_COPY
- <PREFCLK> is the preferred clock/sync copy; <PREFCLK> is of type DATA_CLK_COPY
- <SELDATA> is the system-wide selected data copy; <SELDATA> is of type DATA_CLK_COPY
- <PREFDATA> is the preferred data copy; <SELDATA> is of type DATA_CLK_COPY

Step 8 At the prompt, type the Cancel User command to close the TL1 session:

CANC-USER::CISCO15:<CTAG>;

Step 9 Remove the serial cable from the null modem adapter on the CAP and the serial port on your PC.

Step 10 Remove the null modem adapter from the RS-232 port on the CAP.

1.6.6 Unable to Ping Your PC

Symptom When connecting your PC to the ONS 15600, you are unable to ping the IP address of your PC to verify the IP configuration.

Table 1-2 describes the potential causes of the symptom and the solutions.

Table 1-2 Unable to Ping Your PC

Possible Problem	Solution
The IP address was typed incorrectly.	Verify that the IP address used to ping the PC matches the IP address displayed in the Windows IP Configuration information retrieved from the system. See the "1.6.6.1 Verify the IP Configuration of Your PC" procedure on page 1-49.
The IP configuration of your PC is not properly set.	To verify the IP configuration of your PC, see the "1.6.6.1 Verify the IP Configuration of Your PC" procedure on page 1-49. If this procedure is unsuccessful, contact your network administrator for instructions to correct the IP configuration of your PC.

1.6.6.1 Verify the IP Configuration of Your PC

Step 1 Open a DOS command window by selecting **Start > Run** from the Start menu on your PC.

Step 2 In the Run window open field, type **command** and then click **OK**. The DOS command window appears.

Step 3 At the prompt in the DOS window, type one of the following commands:

- For Windows 98, NT, 2000, and XP, type **ipconfig** and press the **Enter** key.

The Windows IP configuration information appears, including the IP address, Subnet Mask, and the Default Gateway.

Step 4 At the prompt in the DOS window, type **ping** followed by the IP address you verified in Step 3.

Step 5 Press the **Enter** key to execute the command.

If the DOS window displays multiple (usually four) replies, the IP configuration is working properly.

If you do not receive a reply, your IP configuration might not be properly set. Contact your network administrator for instructions to correct the IP configuration of your PC.

1.6.7 Browser Login Does Not Launch Java

Symptom The message "Loading Java Applet" does not appear and the JRE does not launch during the initial login.

Table 1-3 describes the potential cause of the symptom and the solutions.

Table 1-3 Browser Login Does Not Launch Java

Possible Problem	Solution
The PC operating system and browser are not properly configured.	Reconfigure the PC operating system and the browser. See the "1.6.7.1 Reconfigure the PC Operating System and the Browser" procedure on page 1-50.

1.6.7.1 Reconfigure the PC Operating System and the Browser

Step 1 From the Windows start menu, click **Settings > Control Panel**.

Step 2 If **Java Plug-in Control Panel** does not appear, the JRE might not be installed on your PC.

a. Run the Cisco ONS 15600 software CD.

b. Open the [CD drive]:\Windows\JRE folder.

c. Double-click the jre-1_4_2-win icon to run the JRE installation wizard.

d. Follow the JRE installation wizard steps.

Step 3 From the Windows start menu, click **Settings > Control Panel**.

Step 4 Double-click the **Java Plug-in 1.4.2** icon.

Step 5 Click **Advanced** on the Java Plug-in Control Panel.

Step 6 From the Java Run Time Environment menu, choose **JRE 1.4 in C:\ProgramFiles\JavaSoft\JRE\1.4.2**.

Step 7 Click **Apply**.

Step 8 In Communicator, click **Edit > Preferences**.

Step 9 Click **Advanced > Proxies > Direct connection to the Internet > OK**.

Step 10 Again on Communicator, click **Edit > Preferences**.

Step 11 Click **Advanced > Cache**.

Step 12 Confirm that the Disk Cache Folder field shows the following:

Problem C:\ProgramFiles\Netscape\<username>\Communicator\cache for *platform*/*platform*.

Step 13 If the Disk Cache Folder field is not correct, click **Choose Folder**.

Step 14 Navigate to the file listed in Step 12 and click **OK**.

Step 15 Click **OK** in the Preferences window and exit the browser.

Step 16 Temporarily disable any virus-scanning software on the computer. See the "1.7.2 Browser Stalls When Downloading JAR Files From TSC Card" procedure on page 1-53.

Step 17 Verify that the computer does not have two network interface cards (NICs) installed. If the computer does have two NICs, remove one.

Step 18 Restart the browser and log into the ONS 15600.

1.6.8 Unable to Verify the NIC Connection on your PC

Symptom When connecting your PC to the ONS 15600, you are unable to verify that the NIC connection is working properly because the link LED is not illuminated or flashing.

Table 1-4 describes the potential causes of the symptom and the solutions.

Table 1-4 Unable to Verify the NIC Connection on Your PC

Possible Problem	Solution
The CAT-5 cable is not plugged in properly.	Confirm that both ends of the cable are properly inserted. If the cable is not fully inserted because of a broken locking clip, replace the cable.
The CAT-5 cable is damaged.	Ensure that the cable is in good condition. If in doubt, use a known-good cable. Often, cabling is damaged due to pulling or bending.
Incorrect type of CAT-5 cable is being used.	**CAP connection:** To connect an ONS 15600 directly to your laptop/PC or a router, use a cross-over CAT-5 cable. To connect the ONS 15600 to a hub or a LAN switch, use a straight-through CAT-5 cable. **TSC card connection:** To connect an ONS 15600 active TSC card directly to your laptop/PC, you might use either a straight-through or cross-over CAT-5 cable because the RJ-45 port on the faceplate is auto sensing. For details on the types of CAT-5 cables, see the "1.9.2.2 Crimp Replacement CAT-5 Cables" procedure on page 1-67.
The NIC is improperly inserted or installed.	If you are using a PCMCIA based NIC, remove and reinsert the NIC to make sure the NIC is fully inserted. If the NIC is built into the laptop/PC, verify that the NIC is not faulty.
The NIC is faulty.	Confirm that the NIC is working properly. If you have no issues connecting to the network (or any other node), the NIC should be working correctly. If you have difficulty connecting to the network (or any other node), the NIC might be faulty and needs to be replaced.

1.6.9 TCP/IP Connection is Lost

Symptom The TCP/IP connection was established and then lost, and a DISCONNECTED alarm appears on CTC.

Table 1-5 describes the potential cause of the symptom and the solution.

Table 1-5 TCP/IP Connection is Lost

Possible Problem	Solution
Your PC lost TCP/IP connection with the ONS 15600.	Use a standard ping command to verify the TCP/IP connection between the PC and the ONS 15600 TSC card. A ping command will work if the PC connects directly to the TSC card or uses a LAN to access the TSC card. A ping command will also work if the CTC is connected via a gateway network element (GNE) and DCC if the node and CTC are in the same subnet or the required static routes are configured. See the "Ping the ONS 15600" procedure on page 1-52.

Ping the ONS 15600

Step 1 Display the command prompt:

a. If you are using a Microsoft Windows operating system, from the Start Menu choose **Run**, type command in the Open field of the Run dialog box, and click **OK**.

b. If you are using a Sun Solaris operating system, from the Common Desktop Environment (CDE) click the **Personal Application tab** and click **Terminal.**

Step 2 For both the Microsoft and Sun operating systems, type the following at the prompt:

ping [ONS 15600 IP address]

For example, ping 192.1.0.2.

If the workstation has connectivity to the ONS 15600, the ping is successful and displays a reply from the IP address. If the workstation does not have connectivity, a "Request timed out" message displays.

Step 3 If the ping is successful, it demonstrates that an active TCP/IP connection exists. Restart CTC.

Step 4 If the ping is not successful, and the workstation connects to the ONS 15600 through a LAN, verify that the workstation's IP address is on the same subnet as the ONS node.

If the ping is not successful and the workstation connects directly to the ONS 15600, verify that the link light on the workstation NIC is illuminated.

1.7 CTC Operation Troubleshooting

This section contains troubleshooting procedures for CTC login or operation problems.

1.7.1 Cisco Transport Controller Installation Wizard Hangs

Symptom The CTC Installation Wizard hangs or stalls during Netscape Communicator installation when installing the RealPlayer G2 plug-in application from the Cisco ONS 15600 software or documentation CD-ROM.

Table 1-6 describes the potential cause of the symptom and the solutions.

Table 1-6 Cisco Transport Controller Installation Wizard Hangs

Possible Problem	Solution
RealPlayer G2 is incompatible with the CTC Installation Wizard when it is installed with the Netscape Communicator software from the CD.	Abort the installation. See the "Abort the Stalled Installation Wizard" procedure on page 1-53. Restart the CTC Installation Wizard and perform a custom Netscape Communicator installation that excludes RealPlayer G2 from the items being installed. Refer to the *Cisco ONS 15600 Procedure Guide* to perform a custom installation that excludes RealPlayer G2. **Note** The RealPlayer G2 software can be installed separately at a later time without affecting the other Cisco Transport Controller software.

Abort the Stalled Installation Wizard

Step 1 Abort the stalled CTC Installation Wizard by pressing **Ctrl+Alt+Del**. The Windows Security dialog appears.

Step 2 In the Windows Security dialog, click **Task Manager**.

Step 3 In the Windows Task Manager dialog, highlight the Cisco Transport Controller Installation Wizard and click the **End Task** button.

Step 4 Click **Yes** in the confirmation dialog box.

Step 5 Navigate to the drive containing the CTC CD-ROM and double-click **setup.exe** to restart the Cisco Transport Controller Installation Wizard.

Step 6 Refer to the *Cisco ONS 15600 Procedure Guide* to perform a custom Netscape Communicator installation that excludes RealPlayer G2 from the items to be installed.

1.7.2 Browser Stalls When Downloading JAR Files From TSC Card

Symptom The browser stalls or hangs when downloading a Cisco Transport Controller JAR files from the TSC card.

Table 1-7 describes the potential cause of the symptom and the solution.

Table 1-7 Browser Stalls When Downloading JAR Files From TSC Card

Possible Problem	Solution
McAfee VirusScan software might be interfering with the operation. The problem occurs when the VirusScan Download Scan is enabled on McAfee VirusScan 4.5 or later.	Run the CTC installation wizard to pre-install the CTC JAR files. Disable the VirusScan Download Scan feature. See the "1.7.2.1 Disable the VirusScan Download Scanning" procedure on page 1-54.

1.7.2.1 Disable the VirusScan Download Scanning

Step 1 From the Windows start menu, choose **Programs > Network Associates > VirusScan Console**.

Step 2 Double-click the **VShield** icon listed in the VirusScan Console dialog box.

Step 3 Click the **Configure** button on the lower part of the Task Properties window.

Step 4 Click the **Download Scan** icon next to the System Scan Properties dialog box.

Step 5 Uncheck the **Enable Internet download scanning** checkbox.

Step 6 Click **Yes** when the warning message appears.

Step 7 Click **OK** in the System Scan Properties dialog box.

Step 8 Click **OK** in the Task Properties window.

Step 9 Close the McAfee VirusScan window.

1.7.3 Cisco Transport Controller Does Not Launch

Symptom CTC does not launch and usually an error message appears before the login screen appears.

Table 1-8 describes the potential causes of the symptom and the solutions.

Table 1-8 Cisco Transport Controller Does Not Launch

Possible Problem	Solution
The Communicator browser cache points to an invalid directory.	Redirect the Communicator cache to a valid directory. See the "1.7.3.1 Redirect the Communicator Cache to a Valid Directory" procedure on page 1-54.
The user is connected to the standby TSC card.	Connect the login PC to the port on the front of the active TSC card; the active TSC card has a green ACT/STBY LED illuminated. **Note** For typical TSC card LED behavior, see the "2.7 LED Behavior" section on page 2-123.

1.7.3.1 Redirect the Communicator Cache to a Valid Directory

Step 1 Launch Netscape Communicator.

Step 2 Display the **Edit** menu.

Step 3 Choose **Preferences**.

Step 4 In the Category column on the left-hand side, go to **Advanced** and choose the **Cache** tab.

Step 5 Change your disk cache folder to point to the cache file location.

The cache file location is usually C:\ProgramFiles\Netscape\Users\<yourname>\cache. The <yourname> segment of the file location is often the same as the user name.

1.7.4 Sluggish Cisco Transport Controller Operation or Login Problems

Symptom You experience sluggish CTC operation or have problems logging into CTC.

Table 1-9 describes the potential cause of the symptom and the solution.

Table 1-9 Sluggish Cisco Transport Controller Operation or Login Problems

Possible Problem	Solution
The CTC cache file is corrupted.	Delete the CTC cache file. This operation forces the ONS 15600 to download a new set of .jar files to your computer hard drive. See the "1.7.4.1 Delete the CTC Cache File Automatically" procedure on page 1-55 or the "1.7.4.2 Delete the CTC Cache File Manually" procedure on page 1-56.
Insufficient heap memory allocation.	Increase the heap size if you are using CTC to manage more than 50 nodes concurrently. See the "1.7.4.3 Set the CTC_HEAP and CTC_MAX_PERM_SIZE_HEAP Environment Variables for Windows" procedure on page 1-56 and the "1.7.4.4 Set the CTC_HEAP and CTC_MAX_PERM_SIZE_HEAP Environment Variables for Solaris" procedure on page 1-57. **Note** To avoid network performance issues, Cisco recommends managing a maximum of 50 nodes concurrently with CTC. To manage more than 50 nodes, Cisco recommends using Cisco Transport Manager (CTM). Cisco does not recommend running multiple CTC sessions when managing two or more large networks.

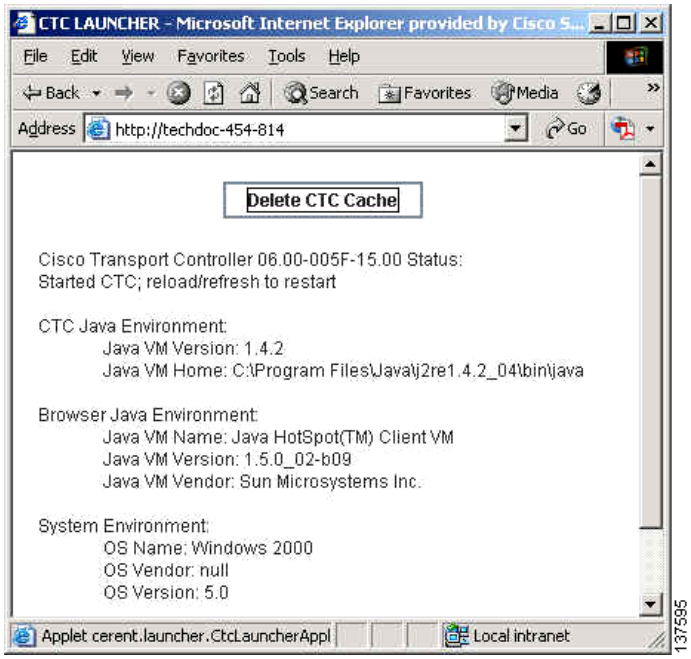
1.7.4.1 Delete the CTC Cache File Automatically

Step 1 Enter an ONS 15600 IP address into the browser URL field. The initial browser window shows a Delete CTC Cache button.

Step 2 Close all open CTC sessions and browser windows. The PC operating system will not allow you to delete files that are in use.

Step 3 Click the **Delete CTC Cache** button on the initial browser window to clear the CTC cache. Figure 1-16 shows the Delete CTC Cache window.

Figure 1-16 The Delete the CTC Cache Window



1.7.4.2 Delete the CTC Cache File Manually

Step 1 To delete the *.jar files manually, from the Windows Start menu choose **Search > For Files or Folders**.

Step 2 Enter **ctc*.jar or cms*.jar** in the Search for files or folders named field on the Search Results dialog box and click **Search Now**.

Step 3 Click the **Modified** column on the Search Results dialog box to find the *.jar files that match the date when you downloaded the files from the TSC card.

Step 4 Highlight the files and press the keyboard **Delete** key.

Step 5 Click **Yes** in the confirmation dialog box.

1.7.4.3 Set the CTC_HEAP and CTC_MAX_PERM_SIZE_HEAP Environment Variables for Windows

Note Before proceeding with the following steps, ensure that your system has a minimum of 1 GB of RAM. If your system does not have a minimum of 1 GB of RAM, contact the Cisco Technical Assistance Center (TAC).

Step 1 Close all open CTC sessions and browser windows.

Step 2 From the Windows **Start** menu, choose **Control Panel > System**.

Step 3 In the System Properties window, click the **Advanced** tab.

Step 4 Click the **Environment Variables** button to open the Environment Variables window.

Step 5 Click the **New** button under the System variables field.

Step 6 Type `CTC_HEAP` in the Variable Name field.

Step 7 Type `512` in the Variable Value field, and then click the **OK** button to create the variable.

Step 8 Again, click the **New** button under the System variables field.

Step 9 Type `CTC_MAX_PERM_SIZE_HEAP` in the Variable Name field.

Step 10 Type `128` in the Variable Value field, and then click the **OK** button to create the variable.

Step 11 Click the **OK** button in the Environment Variables window to accept the changes.

Step 12 Click the **OK** button in the System Properties window to accept the changes.

1.7.4.4 Set the CTC_HEAP and CTC_MAX_PERM_SIZE_HEAP Environment Variables for Solaris

Step 1 From the user shell window, kill any CTC sessions and broswer applications.

Step 2 In the user shell window, set the environment variables to increase the heap size.

Example

The following example shows how to set the environment variables in the C shell:

```
% setenv CTC_HEAP 512
% setenv CTC_MAX_PERM_SIZE_HEAP 128
```

1.7.5 Node Icon is Gray on Cisco Transport Controller Network View

Symptom The CTC network view shows one or more node icons as gray in color and without a node name.

Table 1-10 describes the potential causes of the symptom and the solutions.

Table 1-10 Node Icon is Gray on Cisco Transport Controller Network View

Possible Problem	Solution
Different CTC releases do not recognize each other.	Usually accompanied by an INCOMPATIBLE-SW alarm. Incompatibility occurs on login nodes with compatible software that encounter other nodes in the network that have a newer software version. **Note** In mixed-platform networks (ONS 15600, ONS 15454, and ONS 15327), you do not necessarily need to log into CTC on an ONS 15600 node to enable OAM&P of all nodes. For example, ONS 15454 also recognizes ONS 15600 nodes.
A username/password mismatch.	Usually accompanied by a NOT-AUTHENTICATED alarm. Correct the username and password as described in the "1.7.7 Username or Password Mismatch" procedure on page 1-58.

Table 1-10 Node Icon is Gray on Cisco Transport Controller Network View (continued)

Possible Problem	Solution
No IP connectivity between nodes.	Usually accompanied by Ethernet-specific alarms. Verify the Ethernet connections between nodes.
A lost DCC connection.	Usually accompanied by an EOC alarm. Clear the EOC alarm and verify the DCC connection as described in the "EOC" alarm on page 2-41.
OSPF not properly configured.	Usually accompanied by a HELLO failure. Reconfigure the OSPF on the system to proper settings.
CTC launched from ONS 15454 or ONS 15327 node.	You can manage an ONS 15600 from CTC launched on the same release or higher CTC session from an ONS 15454 or ONS 15327 node. The ONS 15600 CTC is backward-compatible to ONS 15454 and ONS 15327 Software Release 3.3 CTC. Restart CTC and log into an ONS 15600 node to enable node management.

1.7.6 Cisco Transport Controller Does Not Recognize the Node

Symptom This situation is often accompanied by the INCOMPATIBLE-SW alarm.

Table 1-11 describes the potential cause of the symptom and the solutions.

Table 1-11 Cisco Transport Controller Does Not Recognize the Node

Possible Problem	Solution
The software loaded on the connecting workstation and the software on the TSC card are incompatible.	Incompatibility occurs when the TSC card software is upgraded but the PC has not yet upgraded to the compatible CTC .jar file. It also occurs on login nodes with compatible software that encounter other nodes in the network that have a newer software version. In mixed platform networks (ONS 15600, ONS 15454, and ONS 15327), you must log into the same or higher CTC software release as the one loaded on the ONS 15600 node to enable OAM&P of all nodes. **Note** ONS 15454 and ONS 15327 Software Release 3.3 and earlier does not recognize ONS 15600 nodes. **Note** You cannot access other nodes over DCC (the gray nodes) when the PC is connected to the active TSC card unless that ONS 15600 is configured as a gateway NE.

1.7.7 Username or Password Mismatch

Symptom A mismatch often occurs concurrently with a NOT-AUTHENTICATED alarm.

Table 1-12 describes the potential cause of the symptom and the solution.

Table 1-12 Username or Password Mismatch

Possible Problem	Solution
The username or password entered does not match the information stored in the TSC card.	All ONS nodes must have the same username and password created to display every ONS node in the network. You can also be locked out of certain ONS nodes on a network if your username and password were not created on those specific ONS nodes. For initial login to the ONS 15600, type the **CISCO15** user name in capital letters, type the **otbu+1** password, and click **Login**. See the "1.7.7.1 Verify Correct Username and Password" procedure on page 1-59.
The username or password does not match the information stored in the Radius server database.	If the node has been configured for Radius authentication (new in R6.0), the username and password are verified against the Radius server database rather than the security information in the local node database. For more information about Radius security, refer to the "Security" chapter in the *Cisco ONS 15600 Reference Manual*.

1.7.7.1 Verify Correct Username and Password

Step 1 Ensure that your keyboard Caps Lock key is not turned on and affecting the case-sensitive entry of the user name and password.

Step 2 Contact your system administrator to verify the user name and password.

Step 3 Contact the Cisco Technical Assistance Center (TAC) to create a new user name and password. See the "Obtaining Technical Assistance" section on page xxxv.

1.7.8 Superuser Password Needs to Be Reset

Symptom The Superuser password has been lost or compromised.

Table 1-13 describes the potential cause of the symptom and the solution.

Table 1-13 No IP Connectivity Exists Between Nodes

Possible Problem	Solution
A security breach or record-keeping error has occurred.	Reset the ONS 15600 to the default Superuser UID and password combination using the lamp test button.

Reset the ONS 15600 Password

Note To complete this procedure, you must be on site and have IP connectivity to the node.

Step 1 Locate the recessed button labelled LAMP TEST on the front of the active TSC card.

Step 2 Press in and hold down the recessed button labelled LAMP TEST for five seconds.

Step 3 Release the LAMP TEST button for approximately two seconds.

Step 4 Again press in and hold down the button labelled LAMP TEST for five seconds.

Step 5 Again release the LAMP TEST button.

Step 6 Start a normal CTC session. At the login screen, CTC accepts the default username and password set when the ONS 15600 node shipped. The default username is **CISCO15** and the password is **otbu+1**. CISCO15 has Superuser rights and privileges, which allow you to create a user name and assign a password.

Note Other existing usernames and passwords are not affected by the reset. The superuser reset applies only to the local node where the procedure is performed.

Step 7 If you need to create another user name and password, complete the following steps:

a. Click the **Provisioning** > **Security** tabs and click **create**.

b. Fill in the fields with a new user name and password and assign a security level.

c. Click **OK**.

a. Click the **Provisioning** > **Security** tabs and click **create**.

b. Fill in the fields with a new user name and password and assign a security level.

c. Click **OK**.

Note After new user names and passwords are set up, including at least one Superuser, log in as a newly created Superuser and delete the default CISCO15 username and otbu+1 password to ensure security is not compromised.

1.7.9 No IP Connectivity Exists Between Nodes

Symptom The nodes have a gray icon which is usually accompanied by alarms.

Table 1-14 describes the potential causes of the symptom and the solutions.

Table 1-14 No IP Connectivity Exists Between Nodes

Possible Problem	Solution
The node has lost DCC connection.	Usually is accompanied by DCC termination alarms, such as EOC or EOC-L. Clear the EOC (or EOC-L) alarm and verify the DCC connection as described in the "EOC" alarm on page 2-41.
The nodes are in different subnetworks and required static routes that are not provisioned.	Usually is accompanied by DCC termination alarms. Properly provision required static routes and nodes in the same subnets. Refer to the procedure for setting up CTC access in the *Cisco ONS 15600 Procedure Guide*.
OSPF is not properly configured.	Usually is accompanied by OSPF Hello Fail alarms. Configure the OSPF to the proper settings. See the "HELLO" alarm on page 2-68.

1.7.10 DCC Connection Lost

Symptom A span between nodes on the network view is gray or the node is reporting DCC termination alarms, such as EOC.

Table 1-15 describes the potential cause of the symptom and the solution.

Table 1-15 DCC Connection Lost

Possible Problem	Solution
The DCC connection is lost.	Clear the EOC alarm and verify the DCC connection as described in the "EOC" alarm on page 2-41.

1.7.11 Loss of IP Communication Between Nodes on an OSPF LAN

Symptom The CTC session on an ONS 15600 connected to router #1 loses communication with the ONS 15600 connected to router #2 on the same LAN in OSPF backbone area 0.

Table 1-16 describes the potential causes of the symptom and the solutions.

Table 1-16 Loss of IP Communication in Segmented OSPF Area

Possible Problem	Solution
The OSPF backbone area 0 has segmented into multiple GNEs.	If multiple ONS 15600 nodes and routers are connected to the same LAN in OSPF backbone area 0 and a link between two routers breaks, the backbone OSPF area 0 could divide into multiple gateway network elements (GNEs). If this occurs, the CTC session on the ONS node connected to router #1 will not be able to communicate with the ONS 15600 connected to router #2. This is standard behavior for an OSPF network. To resolve this problem, you must repair the link between the routers or provide another form of redundancy in the network. Refer to the *Cisco ONS 15600 Procedure Guide* for procedures to repair the link between the routers.
A broken link between two routers on the LAN in OSPF backbone area 0.	

1.8 Circuits and Timing

This section provides solutions to circuit creation and reporting errors, as well as common timing reference errors and alarms.

1.8.1 ONS 15600 Switches Timing Reference

Symptom Timing references switch when one or more problems occur.

Table 1-17 describes the potential causes of the symptom and the solutions.

Table 1-17 ONS 15600 Switches Timing Reference

Possible Problem	Solution
The optical or BITS input is receiving loss of signal (LOS), loss of frame (LOF), or alarm indication signal (AIS) from its timing source.	Clear the alarm and set up the timing source to a reliable source. To clear an LOS (BITS) alarm, see the "LOS (BITS)" alarm on page 2-84. To clear an LOF (BITS) alarm, see the "LOF (BITS)" alarm on page 2-80. To clear an AIS (BITS) alarm, see the "AIS" condition on page 2-15. Refer to the procedure for setting up timing in the *Cisco ONS 15600 Procedure Guide*.
The optical or BITS input is not functioning.	
Synchronization Status Messaging (SSM) message is set to Don't Use for Synchronization (DUS).	The Synchronization Status Message (SSM) Changed to Do Not Use (DUS) condition occurs when the synchronization status message quality level is changed to DUS. The port that reports the condition is not at fault. The condition applies to the timing source. SSM-DUS prevents timing loops by providing a termination point for the signal usage. To clear the SSM-DUS alarm, see the "SSM-DUS" condition on page 2-112.
SSM indicates a Stratum 3 or lower clock quality.	

Table 1-17 ONS 15600 Switches Timing Reference (continued)

Possible Problem	Solution
The input frequency is off by more than 15 ppm.	Set up the timing input to a reliable timing source. Refer to the procedure for setting up timing in the *Cisco ONS 15600 Procedure Guide*.
The input clock wanders and has more than three slips in 30 seconds.	

1.8.2 Holdover Synchronization Alarm

Symptom The clock is running at a different frequency than normal and the HLDOVRSYNC alarm appears. Holdover occurs when the node is provisioned for external or line timing and both of the provisioned references fail. The timing switches to the internal Stratum 3E clock on the TSC card.

Table 1-18 describes the potential cause of the symptom and the solution.

Table 1-18 Holdover Synchronization Alarm

Possible Problem	Solution
The primary and secondary reference inputs have failed.	This alarm is raised when the primary and secondary reference inputs fail. See the "HLDOVRSYNC" condition on page 2-71 for a detailed description. **Note** The ONS 15600 supports holdover timing per Telcordia standard GR-436-CORE when provisioned for external timing.

1.8.3 Free-Running Synchronization Mode

Symptom The clock is running at a different frequency than normal and the FRNGSYNC alarm appears. Free Running is reported when the node is running on the internal clock after a failure of the primary and secondary clock references.

Table 1-19 describes the potential cause of the symptom and the solution.

Table 1-19 Free-Running Synchronization Mode

Possible Problem	Solution
No reliable reference input is available.	The clock is using the internal oscillator as its only frequency reference. This occurs when no reliable, prior timing reference is available. See the "FRNGSYNC" condition on page 2-66 for a detailed description.

1.8.4 Daisy-Chained BITS Not Functioning

Symptom You are unable to daisy-chain the BITS.

Table 1-20 describes the potential cause of the symptom and the solution.

Table 1-20 Daisy-Chained BITS Not Functioning

Possible Problem	Solution
Daisy-chaining BITS is not supported on the ONS 15600.	Daisy-chaining BITS causes additional wander buildup in the network and is therefore not supported. Instead, use a timing signal generator to create multiple copies of the BITS clock and separately link them to each ONS 15600. You cannot use BITS Out A and/or BITS Out B outputs when providing a clock source from BITS In A and/or BITS In B inputs. To provide BITS Out A and/or BITS Out B external outputs, the clock source must be derived from an optical input.

1.8.5 Circuits Remain in PARTIAL Status

Symptom Circuits remain in the PARTIAL status.

Table 1-23 describes the potential cause of the symptom and the solution.

Table 1-21 Circuits Remain in PARTIAL Status

Possible Problem	Solution
The MAC address changed.	Repair the circuits. See the "1.8.5.1 Repair Circuits" procedure on page 1-64.
The node is resetting.	Wait for the node to finish the reset.
The node has lost DCC connectivity.	See the "1.6.9 TCP/IP Connection is Lost" section on page 1-51.
There are user ID and.or password issues.	See the "1.7.7 Username or Password Mismatch" section on page 1-58.

1.8.5.1 Repair Circuits

Step 1 In node view, click the **Circuits** tab. Note that all circuits listed are PARTIAL.

Step 2 In node view, choose **Repair Circuits** from the **Tools** drop-down list. The Circuit Repair dialog box appears.

Step 3 Read the instructions in the Circuit Repair dialog box. If all the steps in the dialog box have been completed, click **Next**. Ensure that you have the old and new MAC addresses.

Step 4 The Node MAC Addresses dialog box appears:

a. From the Node drop-down list, choose the name of the node where you replaced the CAP.

b. In the Old MAC Address field, enter the old MAC address.

c. Click **Next**.

Step 5 The Repair Circuits dialog box appears. Read the information in the dialog box and click **Finish**.

Note The CTC session freezes until all circuits are repaired. Circuit repair can take up to five minutes or more depending on the number of circuits provisioned.

When the circuit repair is complete, the Circuits Repaired dialog box appears.

Step 6 Click **OK**.

Step 7 In the node view of the new node, click the **Circuits** tab. Note that all circuits listed are DISCOVERED. If all circuits listed do not have a DISCOVERED status, call the Cisco TAC (1 800 553-2447) to open a Return Material Authorization (RMA).

1.9 Fiber and Cabling

This section explains problems typically caused by cabling connectivity errors. It also includes instructions for crimping Cat-5 cable and lists the optical fiber connectivity levels.

1.9.1 Bit Errors Appear for an Optical Traffic Card

Symptom An optical traffic card has multiple Bit errors.

Table 1-22 describes the potential causes of the symptom and the solutions.

Table 1-22 Bit Errors Appear for a Traffic Card

Possible Problem	Solution
Faulty cabling Low optical-line power High optical-line power	Bit errors on line (traffic) ports usually originate from cabling problems or low or high optical-line power levels. The errors can be caused by synchronization problems, especially if PJ (pointer justification) errors are reported. Troubleshoot cabling problems using the "1.1 Network Troubleshooting Tests" section on page 1-2. Troubleshoot low or high optical-line power levels using the "1.9.2 Faulty Fiber-Optic Connections" section on page 1-65. Use a test set whenever possible to check for errors.

1.9.2 Faulty Fiber-Optic Connections

Symptom An optical (OC-N) card has multiple SONET alarms or signal errors.

Table 1-23 describes the potential cause of the symptom and the solution.

Table 1-23 Faulty Fiber-Optic Connections

Possible Problem	Solution
Faulty fiber-optic connections to the optical (OC-N) card	Faulty fiber-optic connections can be the source of SONET alarms and signal errors. See the "1.9.2.1 Verify Fiber-Optic Connections" procedure on page 1-66.

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

Warning **Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.** Statement 1056

1.9.2.1 Verify Fiber-Optic Connections

Step 1 Ensure that a single-mode fiber connects the ONS 15600 optical (OC-N) port(s).

SM or SM Fiber should be printed on the fiber span cable. ONS 15600 optical (OC-N) cards do not use multimode fiber.

Step 2 Ensure that the OGI fiber connector is properly aligned and locked.

Step 3 Verify that the single-mode fiber optical-line power level coming into the breakout panel is within the specified range:

a. Remove the receive (Rx) end of the suspect fiber.

b. Connect the receive end of the suspect fiber to a fiber-optic power meter, such as a GN Nettest LP-5000.

c. Determine the power level of the fiber with the fiber-optic power meter.

d. Verify that the power meter is set to the appropriate wavelength for the optical (OC-N) card you are testing (either 1310 nm or 1550 nm depending on the specific card).

e. Verify that the power level falls within the range specified for the card; see the "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69.

- If the power level is within tolerance, the problem is with the fan-out cables or the optical (OC-N) card.
- If the power level is too high, add the appropriate attenuation.

Step 4 If the power level falls below the specified range:

Note When this condition occurs, the far-end node is usually an ONS 15454.

a. Clean or replace the OGI fiber fan-out cables. If possible, do this for the optical (OC-N) card you are working on and the far-end card. Refer to the *Cisco ONS 15600 Procedure Guide* for fiber cleaning procedures.

b. Clean the optical connectors on the card. If possible, do this for the optical (OC-N) card you are working on and the far-end card. Refer to the *Cisco ONS 15600 Procedure Guide* for fiber cleaning procedures.

c. Replace the far-end transmitting optical (OC-N) card to eliminate the possibility of a degrading transmitter on the far-end optical (OC-N) card.

d. If the power level still falls below the specified range with the replacement fibers and replacement card, check for one of these three factors that attenuate the power level and affect link loss (LL):

- Excessive fiber distance; single-mode fiber attenuates at approximately 0.5 dB/km.
- Excessive number or fiber connectors; connectors take approximately 0.5 dB each.
- Excessive number of fiber splices; splices take approximately 0.5 dB each.

Note These are typical attenuation values. Refer to the specific product documentation for the actual values or use an optical time domain reflectometer (OTDR) to establish precise link loss and budget requirements.

Step 5 If no power level shows on the fiber, the fiber is bad or the transmitter on the OC-N port failed.

a. Check that the Transmit (Tx) and Receive (Rx) fibers are not reversed. LOS and EOC alarms normally accompany reversed Tx and Rx fibers. Fixing reversed Tx and Rx fibers clears the alarms and restores the signal.

b. Clean or replace the OGI fiber fan-out cables. If possible, do this for both the OC-N port you are working on and the far-end OC-N port. Refer to the *Cisco ONS 15600 Procedure Guide* for fiber cleaning procedures.

c. Retest the fiber power level.

d. If the replacement fiber still shows no power, replace the optical (OC-N) card.

Tip To prevent overloading the receiver, use an attenuator on the fiber between the OC-N port transmitter and the receiver. Place the attenuator on the receive transmitter of the OC-N ports. Refer to the attenuator documentation for specific instructions.

1.9.2.2 Crimp Replacement CAT-5 Cables

You can crimp your own CAT-5 cables for use with the ONS 15600. To connect the customer access panel (CAP) of an ONS 15600 directly to your laptop/PC or a router, use a straight-through CAT-5 cable. To connect the CAP of an ONS 15600 to a hub or a LAN switch, use a cross-over CAT-5 cable. To connect an ONS 15600 active TSC card directly to your laptop/PC, you might use either a straight-through or cross-over CAT-5 cable because the RJ-45 port on the faceplate is auto sensing.

Use a straight-through or cross-over cable to connect to the backplane Ethernet connections of an ONS 15600. Use a straight-through cable to connect to the faceplate connector of the ONS 15600 TSC card. Use CAT-5 cable RJ-45 T-568B, Color Code (100 Mbps), and a crimping tool. Figure 1-17 shows the layout of an RJ-45 connector.

Figure 1-17 RJ-45 Pin Numbers

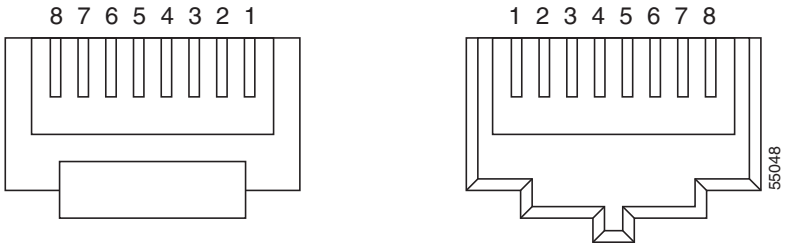


Figure 1-18 shows the layout of a straight-through cable.

Figure 1-18 Straight-Through Cable Layout

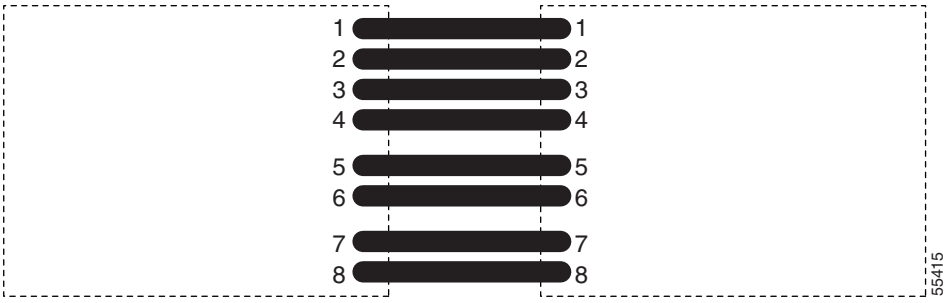


Table 1-24 shows the straight-through cable pinout.

Table 1-24 Straight-Through Cable Pinout

Pin	Color	Pair	Name	Pin
1	White/Orange	2	Transmit Data +	1
2	Orange	2	Transmit Data -	2
3	White/Green	3	Receive Data +	3
4	Blue	1	—	4
5	White/Blue	1	—	5
6	Green	3	Receive Data -	6
7	White/Brown	4	—	7
8	Brown	4	—	8

Figure 1-19 shows the layout of a cross-over cable.

Figure 1-19 Crossover Cable Layout

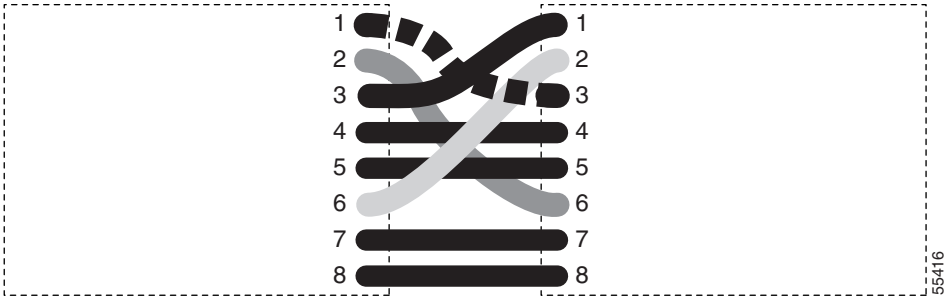


Table 1-25 shows the cross-over cable pinout.

Table 1-25 Crossover Cable Pinout

Pin	Color	Pair	Name	Pin
1	White/Orange	2	Transmit Data +	3
2	Orange	2	Transmit Data -	6
3	White/Green	3	Receive Data +	1
4	Blue	1	—	4
5	White/Blue	1	—	5
6	Green	3	Receive Data -	2
7	White/Brown	4	—	7
8	Brown	4	—	8

Note Odd-numbered pins always connect to a white wire with a colored stripe.

1.9.3 Optical Traffic Card Transmit and Receive Levels

Step 1 Each optical traffic card has connectors on its faceplate that contain both transmit and receive ports. Table 1-26 shows the optical power levels for the transmit and receive ports of the optical traffic cards.

Table 1-26 Optical Transmit and Receive Levels

	Transmit		Receive	
Card	Minimum	Maximum	Minimum	Maximum
OC48 L16 1550	–2 dBm	+3 dBm	–28 dBm	–9 dBm
OC192 L4 1550	+4 dBm	+7 dBm	–22 dBm	–9 dBm
OC48 SR16 1310	–10 dBm	–3 dBm	–18 dBm	–3 dBm

Table 1-26 Optical Transmit and Receive Levels (continued)

Card	Transmit		Receive	
	Minimum	Maximum	Minimum	Maximum
OC192 SR4 1310	–6 dBm	–1 dBm	–11 dBm	–1 dBm
ASAP SFPs				
ONS-SE-Z1 (Supports OC-3 SR-1, OC-12 SR-1, OC-48 IR-1, or GE LX)	–5.0 dBm	0 dBm	–23[1] –19[2] –18[3]	–3[1] –3[2] 0[3]
ONS-SI-155-L2 (Supports OC-3 LR-2)	–15	–8.0	–28	–8
ONS-SI-622-L2: (Supports OC-12 LR-2)	–5.0	0	–34	–10
ONS-SE-2G-L2: (Supports OC-48 LR-2)	–2.0	3.0	–28	–9

1. 155.52/622.08 Mbps
2. 1250 Mbps
3. 2488.32 Mbps

The CTC Maintenance > Transceiver tab shows the optical power transmitted (OPT) and optical power received (OPR) levels.

Note CTC might show OPT levels at 1 dBm more or less than the actual card OPT level.

1.10 Power Supply Problems

This section provides the a procedure for troubleshooting power supply difficulties.

Note For information about power consumption for nodes and cards, refer to the *Cisco ONS 15600 Reference Manual*.

Symptom Loss of power or low voltage, resulting in a loss of traffic.

Table 1-27 describes the potential causes of the symptom and the solutions.

Table 1-27 Power Supply Problems

Possible Problem	Solution
A loss of power or low voltage reading.	The ONS 15600 requires a constant source of DC power to properly function. Input power is –48 VDC. Power requirements range from –40.5 VDC to –72 VDC. A newly-installed ONS 15600 that is not properly connected to its power supply will not operate. Power problems can be confined to a specific ONS 15600 or affect several pieces of equipment on the site. A loss of power or low voltage can result in a loss of traffic. See the "1.10.0.1 Isolate the Cause of Power Supply Problems" procedure on page 1-71.
An improperly connected power supply.	

Caution Operations that interrupt power supply or short the power connections to the ONS 15600 are service-affecting.

Warning **The power supply circuitry for the equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.** Statement 207

Warning **Static electricity can damage electro-optical modules. While handling electro-optical module, wear a grounding wrist strap to discharge the static buildup. Wrist straps are designed to prevent static electricity damage to equipment.** Statement 312

1.10.0.1 Isolate the Cause of Power Supply Problems

Step 1 If a single ONS 15600 show signs of fluctuating power or power loss:

- **a.** Verify that the –48 VDC power terminals are properly connected to the power distribution unit (PDU).
- **b.** Verify that the power cable is in good condition.
- **c.** Verify that the power cable connections are properly crimped.
- **d.** Verify that 50A circuit breakers are used in the PDU.
- **e.** Verify that the circuit breakers are not blown or tripped.
- **f.** Verify that a rack-ground cable attaches to the frame-ground terminal (FGND) on the ONS 15600. Connect this cable to the ground terminal according to local site practice.
- **g.** Verify that the DC power source has enough capacity to carry the power load.

h. If the DC power source is battery-based:

- Check that the output power is high enough. Power requirements range from –40.5 VDC to –72 VDC.
- Check the age of the batteries. Battery performance decreases with age.
- Check for opens and shorts in batteries, which might affect power output.
- If brownouts occur, the power load and fuses might be too high for the battery plant.

Step 2 If multiple pieces of site equipment show signs of fluctuating power or power loss:

a. Check the uninterruptible power supply (UPS) or rectifiers that supply the equipment. Refer to the UPS manufacturer's documentation for specific instructions.

b. Check for excessive power drains caused by other equipment, such as generators.

c. Check for excessive power demand on backup power systems or batteries when alternate power sources are used.

CHAPTER 2

Alarm Troubleshooting

Note The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

This chapter gives a description, severity, and troubleshooting procedure for each commonly encountered Cisco ONS 15600 alarm and condition. Tables 2-1 through 2-5 provide lists of ONS 15600 alarms organized by severity. Table 2-6 on page 2-5 provides a list of alarms organized alphabetically. Table 2-7 gives definitions of all ONS 15600 alarm logical objects, which are the basis of the alarm profile list in Table 2-8 on page 2-8. For a comprehensive list of all conditions, refer to the *Cisco SONET TL1 Command Guide*.

An alarm troubleshooting procedure applies to both the Cisco Transport Controller (CTC) and Transaction Language One (TL1) version of that alarm. If the troubleshooting procedure does not clear the alarm, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call the Cisco Technical Assistance Center (TAC) (1-800-553-2447).

More information about alarm profile information modification and downloads is located in the “Manage Alarms” chapter in the *Cisco ONS 15600 Procedure Guide*.

2.1 Alarm Indexes by Default Severity

The following tables group alarms and conditions by their default severities in the ONS 15600 system. These severities are the same whether they are reported in the CTC Alarms window severity (SEV) column or in TL1.

Note The CTC default alarm profile contains some alarms or conditions which are not currently implemented but are reserved for future use.

Note The CTC default alarm profile in some cases contains two severities for one alarm (for example, MJ/MN). The ONS 15600 platform default severity comes first (in this example, MJ), but the alarm can be demoted to the second severity in the presence of a higher-ranking alarm. This is in accordance with Telcordia GR-474-CORE.

2.1.1 Critical Alarms (CR)

Table 2-1 alphabetically lists ONS 15600 Critical (CR) alarms.

Table 2-1 ONS 15600 Critical Alarm List

BKUPMEMP (EQPT)	IMPROPRMVL (EQPT)	MEA (EQPT)
CTNEQPT-PB-A (EQPT)	IMPROPRMVL (FAN)	MEA (PIM)
CTNEQPT-PB-B (EQPT)	IMPROPRMVL (PIM)	MEA (PPM)
ENCAP-MISMATCH-P (POS)	IMPROPRMVL (PPM)	MFGMEM (EQPT)
EQPT (EQPT)	LASER-BIAS (EQPT)	MFGMEM (FAN)
EQPT (PIM)	LASER-BIAS (PPM)	MFGMEM (PIM)
EQPT (PPM)	LASER-OVER-TEMP (EQPT)	MFGMEM (PPM)
EQPT-BOOT (EQPT)	LASER-OVER-TEMP (PPM)	PLM-P (STSMON)
EQPT-CC-PIM (PIM)	LOF (OCN)	SYNCCLK (NE)
EQPT-PIM-PPM (PPM)	LOP-P (STSMON)	UNEQ-P (STSMON)
FAN-FAIL (FAN)	LOS (OCN)	XCMTX (NE)

2.1.2 Major Alarms (MJ)

Table 2-2 alphabetically lists ONS 15600 Major (MJ) alarms.

Table 2-2 ONS 15600 Major Alarm List

APSCM (OCN)	DBOSYNC (NE)	MEM-GONE (EQPT)
APSCNMIS (OCN)	E-W-MISMATCH (OCN)	PRC-DUPID (OCN)
BLSROSYNC (OCN)	EXTRA-TRAF-PREEMPT (OCN)	PWR (PPM)
BLSR-SW-VER-MISM (OCN)	FAN-FAIL-PARTIAL (FAN)	RING-MISMATCH (OCN)
CARLOSS (GIGE)	GFP-LFD (POS)	SYNCPRI (NE-SREF)
CLKFAIL (EQPT)	GFP-UP-MISMATCH (POS)	SYSBOOT (NE)
CXCHALT (EQPT)	INVMACADR (BPlane)	TPTFAIL (POS)

2.1.3 Minor Alarms (MN)

Table 2-3 alphabetically lists ONS 15600 Minor (MN) alarms.

Table 2-3 ONS 15600 Minor Alarm List

APSB (OCN)	EXT (ENVALRM)	OPEN-SLOT (EQPT)
APSCDFLTK (OCN)	FAN-DEGRADE (FAN)	PROV-MISMATCH (PPM)
APSC-IMP (OCN)	FAN-PWR (FAN)	PWR-FA (BPlane)
APSCINCON (OCN)	FE-SDPRLF (OCN)	PWR-FAIL-A (CAP)

Table 2-3 ONS 15600 Minor Alarm List (continued)

APSIMP (OCN)	FREQ-MISMATCH (EQPT)	PWR-FAIL-A (EQPT)
APSMM (OCN)	HELLO (OCN)	PWR-FAIL-B (CAP)
AUTORESET (EQPT)	HI-LASERBIAS (PPM)	PWR-FAIL-B (EQPT)
CIDMISMATCH-A (EQPT)	HI-RXPOWER (OCN)	PWR-FAIL-RET-A (EQPT)
CIDMISMATCH-B (EQPT)	HI-TXPOWER (PPM)	PWR-FAIL-RET-B (EQPT)
CONTBUS-CLK-A (EQPT)	IMPROPRMVL (CAP)	SFTWDOWN (EQPT)
CONTBUS-CLK-B (EQPT)	IMPR-XC (NE)	SNTP-HOST (NE)
CONTBUS-IO-A (EQPT)	ISIS-ADJ-FAIL (OCN)	SSM-FAIL (BITS)
CONTBUS-IO-B (EQPT)	KBYTE-APS-CHANNEL-FAILURE (OCN)	SSM-FAIL (OCN)
CONTCOM (EQPT)	LOF (BITS)	SYNCPRI (EXT-SREF)
DATAFLT (NE)	LO-LASERBIAS (PPM)	SYNCSEC (EXT-SREF)
DUP-IPADDR (NE)	LO-RXPOWER (OCN)	SYNCSEC (NE-SREF)
DUP-NODENAME (NE)	LOS (BITS)	SYNCTHIRD (EXT-SREF)
EOC (OCN)	LO-TXPOWER (PPM)	TIM-P (STSMON)
EOC-L (OCN)	MATECLK (EQPT)	UNPROT-SYNCCLK (NE)
EQPT (CAP)	MEM-LOW (EQPT)	UNPROT-XCMTX (NE)
EQPT-HITEMP (EQPT)	MFGMEM (CAP)	UNROUTEABLE-IP (NE)

2.1.4 Not Alarmed (NA) Conditions

Table 2-4 alphabetically lists ONS 15600 Not Alarmed conditions.

Table 2-4 ONS 15600 NA Conditions List

AUD-LOG-LOSS (NE)	LKOUTPR-S (OCN)	SSM-PRS (NE-SREF)
AUD-LOG-LOW (NE)	LOCKOUT-REQ (OCN)	SSM-PRS (OCN)
AUTOSW-LOP (STSMON)	LOCKOUT-REQ (STSMON)	SSM-RES (BITS)
AUTOSW-PDI (STSMON)	LOCKOUT-REQ-RING (OCN)	SSM-RES (NE-SREF)
AUTOSW-SDBER (STSMON)	LPBKCRS (STSMON)	SSM-RES (OCN)
AUTOSW-SFBER (STSMON)	LPBKFACILITY (GIGE)	SSM-SMC (BITS)
AUTOSW-UNEQ (STSMON)	LPBKFACILITY (OCN)	SSM-SMC (NE-SREF)
CHANLOSS (OCN)	LPBKPAYLOAD (OCN)	SSM-SMC (OCN)
EXERCISE-RING-FAIL (OCN)	LPBKTERMINAL (GIGE)	SSM-ST2 (BITS)
EXERCISE-SPAN-FAIL (OCN)	LPBKTERMINAL (OCN)	SSM-ST2 (NE-SREF)
EXERCISING-RING (OCN)	MAN-REQ (STSMON)	SSM-ST2 (OCN)
EXERCISING-SPAN (OCN)	MANRESET (EQPT)	SSM-ST3 (BITS)
FAILTOSW (OCN)	MANRESET (PIM)	SSM-ST3 (NE-SREF)
FAILTOSW-PATH (STSMON)	MANRESET (PPM)	SSM-ST3 (OCN)

Table 2-4 ONS 15600 NA Conditions List (continued)

FAILTOSWR (OCN)	MANSWTOINT (NE-SREF)	SSM-ST3E (BITS)
FAILTOSWS (OCN)	MANSWTOPRI (EXT-SREF)	SSM-ST3E (NE-SREF)
FE-EXERCISING-RING (OCN)	MANSWTOPRI (NE-SREF)	SSM-ST3E (OCN)
FE-FRCDWKSWPR-RING (OCN)	MANSWTOSEC (EXT-SREF)	SSM-ST4 (BITS)
FE-FRCDWKSWPR-SPAN (OCN)	MANSWTOSEC (NE-SREF)	SSM-ST4 (NE-SREF)
FE-LOCKOUTOFPR-ALL (OCN)	MANSWTOTHIRD (EXT-SREF)	SSM-ST4 (OCN)
FE-LOCKOUTOFPR-SPAN (OCN)	MANSWTOTHIRD (NE-SREF)	SSM-STU (BITS)
FE-MANWKSWPR-RING (OCN)	MANUAL-REQ-RING (OCN)	SSM-STU (NE-SREF)
FE-MANWKSWPR-SPAN (OCN)	MANUAL-REQ-SPAN (OCN)	SSM-STU (OCN)
FE-SF-RING (OCN)	PDI-P (STSMON)	SSM-TNC (BITS)
FE-SF-SPAN (OCN)	PWRRESTART (EQPT)	SSM-TNC (NE-SREF)
FORCED-REQ (STSMON)	RING-SW-EAST (OCN)	SSM-TNC (OCN)
FORCED-REQ-RING (OCN)	RING-SW-WEST (OCN)	SWTOPRI (EXT-SREF)
FORCED-REQ-SPAN (OCN)	ROLL (STSMON)	SWTOPRI (NE-SREF)
FRCDSWTOINT (NE-SREF)	ROLL-PEND (STSMON)	SWTOSEC (EXT-SREF)
FRCDSWTOPRI (EXT-SREF)	SD-L (OCN)	SWTOSEC (NE-SREF)
FRCDSWTOPRI (NE-SREF)	SD-P (STSMON)	SWTOTHIRD (EXT-SREF)
FRCDSWTOSEC (EXT-SREF)	SF-L (OCN)	SWTOTHIRD (NE-SREF)
FRCDSWTOSEC (NE-SREF)	SF-P (STSMON)	SW-VER (EQPT)
FRCDSWTOTHIRD (EXT-SREF)	SPAN-SW-EAST (OCN)	SYNC-FREQ (BITS)
FRCDSWTOTHIRD (NE-SREF)	SPAN-SW-WEST (OCN)	SYNC-FREQ (OCN)
FRNGSYNC (NE-SREF)	SQUELCH (OCN)	UPGRADE (NE)
FSTSYNC (EQPT)	SSM-DUS (BITS)	WKSWPR (OCN)
FULLPASSTHR-BI (OCN)	SSM-DUS (OCN)	WKSWPR (STSMON)
HLDOVRSYNC (NE-SREF)	SSM-OFF (BITS)	WTR (OCN)
INTRUSION-PSWD (NE)	SSM-OFF (OCN)	WTR (STSMON)
KB-PASSTHR (OCN)	SSM-PRS (BITS)	—

2.1.5 Not Reported (NR) Conditions

Table 2-5 alphabetically lists ONS 15600 Not Reported conditions.

Table 2-5 ONS 15600 NR Conditions List

AIS (BITS)	AIS-P (STSMON)	RFI-L (OCN)
AIS-L (OCN)	AUTOSW-AIS (STSMON)	RFI-P (STSMON)

2.2 Alarms and Conditions Listed by Alphabetical Entry

Table 2-6 alphabetically lists all ONS 15600 alarms and conditions.

Table 2-6 ONS 15600 Alarm and Condition Alphabetical List

AIS (BITS)	FRCDSWTOSEC (EXT-SREF)	PWR-FAIL-B (CAP)
AIS-L (OCN)	FRCDSWTOSEC (NE-SREF)	PWR-FAIL-B (EQPT)
AIS-P (STSMON)	FRCDSWTOTHIRD (EXT-SREF)	PWR-FAIL-RET-A (EQPT)
APSB (OCN)	FRCDSWTOTHIRD (NE-SREF)	PWR-FAIL-RET-B (EQPT)
APSCDFLTK (OCN)	FREQ-MISMATCH (EQPT)	PWRRESTART (EQPT)
APSC-IMP (OCN)	FRNGSYNC (NE-SREF)	RFI-L (OCN)
APSCINCON (OCN)	FSTSYNC (EQPT)	RFI-P (STSMON)
APSCM (OCN)	FULLPASSTHR-BI (OCN)	RING-MISMATCH (OCN)
APSCNMIS (OCN)	GFP-LFD (POS)	RING-SW-EAST (OCN)
APSIMP (OCN)	GFP-UP-MISMATCH (POS)	RING-SW-WEST (OCN)
APSMM (OCN)	HELLO (OCN)	ROLL (STSMON)
AUD-LOG-LOSS (NE)	HI-LASERBIAS (PPM)	ROLL-PEND (STSMON)
AUD-LOG-LOW (NE)	HI-RXPOWER (OCN)	SD-L (OCN)
AUTORESET (EQPT)	HI-TXPOWER (PPM)	SD-P (STSMON)
AUTOSW-AIS (STSMON)	HLDOVRSYNC (NE-SREF)	SF-L (OCN)
AUTOSW-LOP (STSMON)	IMPROPRMVL (CAP)	SF-P (STSMON)
AUTOSW-PDI (STSMON)	IMPROPRMVL (EQPT)	SFTWDOWN (EQPT)
AUTOSW-SDBER (STSMON)	IMPROPRMVL (FAN)	SNTP-HOST (NE)
AUTOSW-SFBER (STSMON)	IMPROPRMVL (PIM)	SPAN-SW-EAST (OCN)
AUTOSW-UNEQ (STSMON)	IMPROPRMVL (PPM)	SPAN-SW-WEST (OCN)
BKUPMEMP (EQPT)	IMPR-XC (NE)	SQUELCH (OCN)
BLSROSYNC (OCN)	INTRUSION-PSWD (NE)	SSM-DUS (BITS)
BLSR-SW-VER-MISM (OCN)	INVMACADR (BPlane)	SSM-DUS (OCN)
CARLOSS (GIGE)	ISIS-ADJ-FAIL (OCN)	SSM-FAIL (BITS)
CHANLOSS (OCN)	KB-PASSTHR (OCN)	SSM-FAIL (OCN)
CIDMISMATCH-A (EQPT)	KBYTE-APS-CHANNEL-FAILURE (OCN)	SSM-OFF (BITS)
CIDMISMATCH-B (EQPT)	LASER-BIAS (EQPT)	SSM-OFF (OCN)
CLKFAIL (EQPT)	LASER-BIAS (PPM)	SSM-PRS (BITS)
CONTBUS-CLK-A (EQPT)	LASER-OVER-TEMP (EQPT)	SSM-PRS (NE-SREF)
CONTBUS-CLK-B (EQPT)	LASER-OVER-TEMP (PPM)	SSM-PRS (OCN)
CONTBUS-IO-A (EQPT)	LKOUTPR-S (OCN)	SSM-RES (NE-SREF)
CONTBUS-IO-B (EQPT)	LOCKOUT-REQ (OCN)	SSM-RES (OCN)
CONTCOM (EQPT)	LOCKOUT-REQ (STSMON)	SSM-RES)(BITS)

Table 2-6 ONS 15600 Alarm and Condition Alphabetical List (continued)

CTNEQPT-PB-A (EQPT)	LOCKOUT-REQ-RING (OCN)	SSM-SMC (BITS)
CTNEQPT-PB-B (EQPT)	LOF (BITS)	SSM-SMC (NE-SREF)
CXCHALT (EQPT)	LOF (OCN)	SSM-SMC (OCN)
DATAFLT (NE)	LO-LASERBIAS (PPM)	SSM-ST2 (BITS)
DBOSYNC (NE)	LOP-P (STSMON)	SSM-ST2 (NE-SREF)
DUP-IPADDR (NE)	LO-RXPOWER (OCN)	SSM-ST2 (OCN)
DUP-NODENAME (NE)	LOS (BITS)	SSM-ST3 (BITS)
FRCDSWTOPRI (EXT-SREF)	LOS (OCN)	SSM-ST3 (NE-SREF)
ENCAP-MISMATCH-P (POS)	LO-TXPOWER (PPM)	SSM-ST3 (OCN)
EOC (OCN)	LPBKCRS (STSMON)	SSM-ST3E (BITS)
EOC-L (OCN)	LPBKFACILITY (GIGE)	SSM-ST3E (NE-SREF)
EQPT (CAP)	LPBKFACILITY (OCN)	SSM-ST3E (OCN)
EQPT (EQPT)	LPBKPAYLOAD (OCN)	SSM-ST4 (BITS)
EQPT (PIM)	LPBKTERMINAL (GIGE)	SSM-ST4 (NE-SREF)
EQPT (PPM)	LPBKTERMINAL (OCN)	SSM-ST4 (OCN)
EQPT-BOOT (EQPT)	MAN-REQ (STSMON)	SSM-STU (BITS)
EQPT-CC-PIM (PIM)	MANRESET (EQPT)	SSM-STU (NE-SREF)
EQPT-HITEMP (EQPT)	MANRESET (PIM)	SSM-STU (OCN)
EQPT-PIM-PPM (PPM)	MANRESET (PPM)	SSM-TNC (BITS)
E-W-MISMATCH (OCN)	MANSWTOINT (NE-SREF)	SSM-TNC (NE-SREF)
EXERCISE-RING-FAIL (OCN)	MANSWTOPRI (EXT-SREF)	SSM-TNC (OCN)
EXERCISE-SPAN-FAIL (OCN)	MANSWTOPRI (NE-SREF)	SWTOPRI (EXT-SREF)
EXERCISING-RING (OCN)	MANSWTOSEC (EXT-SREF)	SWTOPRI (NE-SREF)
EXERCISING-SPAN (OCN)	MANSWTOSEC (NE-SREF)	SWTOSEC (EXT-SREF)
EXT (ENVALRM)	MANSWTOTHIRD (EXT-SREF)	SWTOSEC (NE-SREF)
EXTRA-TRAF-PREEMPT (OCN)	MANSWTOTHIRD (NE-SREF)	SWTOTHIRD (EXT-SREF)
FAILTOSW (OCN)	MANUAL-REQ-RING (OCN)	SWTOTHIRD (NE-SREF)
FAILTOSW-PATH (STSMON)	MANUAL-REQ-SPAN (OCN)	SW-VER (EQPT)
FAILTOSWR (OCN)	MATECLK (EQPT)	SYNCCLK (NE)
FAILTOSWS (OCN)	MEA (EQPT)	SYNC-FREQ (BITS)
FAN-FAIL (FAN)	MEA (PIM)	SYNC-FREQ (OCN)
FAN-FAIL-PARTIAL (FAN)	MEA (PPM)	SYNCPRI (EXT-SREF)
FAN-PWR (FAN)	MEM-GONE (EQPT)	SYNCPRI (NE-SREF)
FE-EXERCISING-RING (OCN)	MEM-LOW (EQPT)	SYNCSEC (EXT-SREF)
FE-FRCDWKSWPR-RING (OCN)	MFGMEM (CAP)	SYNCSEC (NE-SREF)
FE-FRCDWKSWPR-SPAN (OCN)	MFGMEM (EQPT)	SYNCTHIRD (EXT-SREF)
FE-LOCKOUTOFPR-ALL (OCN)	MFGMEM (FAN)	SYSBOOT (NE)

Table 2-6 ONS 15600 Alarm and Condition Alphabetical List (continued)

FE-LOCKOUTOFPR-SPAN (OCN)	MFGMEM (PIM)	TIM-P (STSMON)
FE-MANWKSWPR-RING (OCN)	MFGMEM (PPM)	TPTFAIL (POS)
FE-MANWKSWPR-SPAN (OCN)	NOT-AUTHENTICATED	UNEQ-P (STSMON)
FE-SDPRLF (OCN)	OPEN-SLOT (EQPT)	UNPROT-SYNCCLK (NE)
FE-SF-RING (OCN)	PDI-P (STSMON)	UNPROT-XCMTX (NE)
FE-SF-SPAN (OCN)	PLM-P (STSMON)	UNROUTEABLE-IP (NE)
FORCED-REQ (STSMON)	PRC-DUPID (OCN)	UPGRADE (NE)
FORCED-REQ-RING (OCN)	PROV-MISMATCH (PPM)	WKSWPR (OCN)
FORCED-REQ-SPAN (OCN)	PWR (PWR)	WKSWPR (STSMON)
FRCDSWTOINT (NE-SREF)	PWR-FA (BPlane)	WTR (OCN)
FRCDSWTOPRI (EXT-SREF)	PWR-FAIL-A (CAP)	WTR (STSMON)
FRCDSWTOPRI (NE-SREF)	PWR-FAIL-A (EQPT)	XCMTX (NE)

2.3 Alarm Logical Objects

The CTC alarm profile list organizes all alarms and conditions according to the logical objects they are raised against. These logical objects represent physical objects such as cards, logical objects such as circuits, or transport and signal monitoring entities such as the SONET optical overhead bits. One alarm can appear in multiple entries. It can be raised against multiple objects. For example, the loss of signal (LOS) alarm can be raised against the optical signal (OC-N) or the building integrated timing supply (BITS) clock as well as other objects. Therefore, both OCN: LOS and BITS: LOS appear in the list (as well as the other objects).

Alarm profile list objects are defined in Table 2-7.

Note Alarm logical object names can appear as abbreviated versions of standard terms used in the system and the documentation. For example, the "OCN" logical object refers to the OC-N signal. Logical object names or industry-standard terms are used within the entries as appropriate.

Table 2-7 Alarm Logical Object Type Definitions

Type	Description
BITS	Building integration timing supply incoming references (BITS-1, BITS-2).
BPLANE	The backplane.
CAP	Customer Access Panel (CAP)
ENVALRM	An environmental alarm port.
EQPT	A card, its physical objects, and logical objects as they are located in any of the eight noncommon card slots. The EQPT object is used for alarms that refer to the card itself and all other objects on the card including ports, lines, synchronous transport signals (STS), and virtual tributaries (VT).
EXT-SREF	BITS outgoing references (SYNC-BITS1, SYNC-BITS2).

Table 2-7 Alarm Logical Object Type Definitions (continued)

FAN	Fan-tray assembly.
GIGE	Gigabit Ethernet.
NE	The entire network element.
NE-SREF	The timing status of the NE.
OCN	An OC-N line on an OC-N card.
PIM	Pluggable input-output module (or 4PIO) for the Any Service, Any Port (ASAP) card.
POS	Packet over SONET (virtual entity).
PPM	Pluggable port module (PPM), or small form-factor pluggable (SFP), for the ASAP card.
PS-STS	Protection-switched ONS 15600 STS.
PWR	The node's power supply.
STSMON	STS alarm detection at the monitor point (upstream from the cross-connect).
STSRNG	The STS ring.
STSTERM	STS alarm detection at termination (downstream from the cross-connect).

2.4 Alarm List by Logical Object Type

Table 2-8 lists all ONS 15600 Release 6.0 alarms and logical objects as they are given in the system alarm profile. The list entries are organized logical object name and then by alarm or condition name. Each entry refers to an alarm description in this chapter. Where appropriate, the alarm entries also contain troubleshooting procedures.

Note In a mixed network containing different types of nodes (such as an ONS 15310-CL, ONS 15454, and ONS 15600), the initially displayed alarm list in the Provisioning > Alarm Profiles > Alarm Profile Editor tab lists all conditions that are applicable to all nodes in the network. However, when you load the default severity profile from a node, only applicable alarms will display severity levels. Nonapplicable alarms can display "use default" or "unset."

Note In some cases this list does not follow alphabetical order, but it does reflect the order shown in CTC.

Table 2-8 ONS 15600 Alarm List by Logical Object in Alarm Profile

BITS: AIS	NE-SREF: FRCDSWTOSEC	OCN: LOCKOUT-REQ-RING
BITS: LOF	NE-SREF: FRCDSWTOTHIRD	OCN: LOF
BITS: LOS	NE-SREF: FRNGSYNC	OCN: LOS
BITS: SSM-DUS	NE-SREF: HLDOVRSYNC	OCN: LPBKFACILITY
BITS: SSM-FAIL	NE-SREF: MANSWTOINT	OCN: LPBKPAYLOAD
BITS: SSM-OFF	NE-SREF: MANSWTOPRI	OCN: LPBKTERMINAL
BITS: SSM-PRS	NE-SREF: MANSWTOSEC	OCN: MANUAL-REQ-RING

Table 2-8 ONS 15600 Alarm List by Logical Object in Alarm Profile (continued)

BITS: SSM-RES	NE-SREF: MANSWTOTHIRD	OCN: MANUAL-REQ-SPAN
BITS: SSM-SMC	NE-SREF: SSM-PRS	OCN: PRC-DUPID
BITS: SSM-ST2	NE-SREF: SSM-RES	OCN: RFI-L
BITS: SSM-ST3	NE-SREF: SSM-SMC	OCN: RING-MISMATCH
BITS: SSM-ST3E	NE-SREF: SSM-ST2	OCN: RING-SW-EAST
BITS: SSM-ST4	NE-SREF: SSM-ST3	OCN: RING-SW-WEST
BITS: SSM-STU	NE-SREF: SSM-ST3E	OCN: SD-L
BITS: SSM-TNC	NE-SREF: SSM-ST4	OCN: SF-L
BITS: SYNC-FREQ	NE-SREF: SSM-STU	OCN: SPAN-SW-EAST
BPlane: INVMACADR	NE-SREF: SSM-TNC	OCN: SPAN-SW-WEST
BPlane: PWR-FA	NE-SREF: SWTOPRI	OCN: SQUELCH
CAP: EQPT	NE-SREF: SWTOSEC	OCN: SSM-DUS
CAP: IMPROPRMVL	NE-SREF: SWTOTHIRD	OCN: SSM-FAIL
CAP: MFGMEM	NE-SREF: SYNCPRI	OCN: SSM-OFF
CAP: PWR-FAIL-A	NE-SREF: SYNCSEC	OCN: SSM-PRS
CAP: PWR-FAIL-B	NE: AUD-LOG-LOSS	OCN: SSM-RES
ENVALRM: EXT	NE: AUD-LOG-LOW	OCN: SSM-SMC
EQPT: AUTORESET	NE: DATAFLT	OCN: SSM-ST2
EQPT: BKUPMEMP	NE: DBOSYNC	OCN: SSM-ST3
EQPT: CIDMISMATCH-A	NE: DUP-IPADDR	OCN: SSM-ST3E
EQPT: CIDMISMATCH-B	NE: DUP-NODENAME	OCN: SSM-ST4
EQPT: CLKFAIL	NE: IMPR-XC	OCN: SSM-STU
EQPT: CONTBUS-CLK-A	NE: INTRUSION-PSWD	OCN: SSM-TNC
EQPT: CONTBUS-CLK-B	NE: SNTP-HOST	OCN: SYNC-FREQ
EQPT: CONTBUS-IO-A	NE: SYNCCLK	OCN: WKSWPR
EQPT: CONTBUS-IO-B	NE: SYSBOOT	OCN: WTR
EQPT: CONTCOM	NE: UNPROT-SYNCCLK	PIM: EQPT
EQPT: CTNEQPT-PB-A	NE: UNPROT-XCMTX	PIM: EQPT-CC-PIM
EQPT: CTNEQPT-PB-B	NE: UNROUTEABLE-IP	PIM: IMPROPRMVL
EQPT: CXCHALT	NE: UPGRADE	PIM: MANRESET
EQPT: EQPT	NE: XCMTX	PIM: MEA
EQPT: EQPT-BOOT	OCN: AIS-L	PIM: MFGMEM
EQPT: EQPT-HITEMP	OCN: APSB	POS: ENCAP-MISMATCH-P
EQPT: FREQ-MISMATCH	OCN: APSC-IMP	POS: GFP-LFD
EQPT: FSTSYNC	OCN: APSCDFLTK	POS: GFP-UP-MISMATCH
EQPT: IMPROPRMVL	OCN: APSCINCON	POS: TPTFAIL
EQPT: LASER-BIAS	OCN: APSCM	PPM: EQPT

Table 2-8 ONS 15600 Alarm List by Logical Object in Alarm Profile (continued)

EQPT: LASER-OVER-TEMP	OCN: APSCNMIS	PPM: EQPT-PIM-PPM
EQPT: MANRESET	OCN: APSIMP	PPM: HI-LASERBIAS
EQPT: MATECLK	OCN: APSMM	PPM: HI-TXPOWER
EQPT: MEA	OCN: BLSR-SW-VER-MISM	PPM: IMPROPRMVL
EQPT: MEM-GONE	OCN: BLSROSYNC	PPM: LASER-BIAS
EQPT: MEM-LOW	OCN: CHANLOSS	PPM: LASER-OVER-TEMP
EQPT: MFGMEM	OCN: E-W-MISMATCH	PPM: LO-LASERBIAS
EQPT: OPEN-SLOT	OCN: EOC	PPM: LO-TXPOWER
EQPT: PWR-FAIL-A	OCN: EOC-L	PPM: MANRESET
EQPT: PWR-FAIL-B	OCN: EXERCISE-RING-FAIL	PPM: MEA
EQPT: PWR-FAIL-RET-A	OCN: EXERCISE-SPAN-FAIL	PPM: MFGMEM
EQPT: PWR-FAIL-RET-B	OCN: EXERCISING-RING	PPM: PROV-MISMATCH
EQPT: PWRRESTART	OCN: EXERCISING-SPAN	PWR: PWR
EQPT: SFTWDOWN	OCN: EXTRA-TRAF-PREEMPT	STSMON: AIS-P
EQPT: SW-VER	OCN: FAILTOSW	STSMON: AUTOSW-AIS
EXT-SREF: FRCDSWTOPRI	OCN: FAILTOSWR	STSMON: AUTOSW-LOP
EXT-SREF: FRCDSWTOSEC	OCN: FAILTOSWS	STSMON: AUTOSW-PDI
EXT-SREF: FRCDSWTOTHIRD	OCN: FE-EXERCISING-RING	STSMON: AUTOSW-SDBER
EXT-SREF: MANSWTOPRI	OCN: FE-FRCDWKSWPR-RING	STSMON: AUTOSW-SFBER
EXT-SREF: MANSWTOSEC	OCN: FE-FRCDWKSWPR-SPAN	STSMON: AUTOSW-UNEQ
EXT-SREF: MANSWTOTHIRD	OCN: FE-LOCKOUTOFPR-ALL	STSMON: FAILTOSW-PATH
EXT-SREF: SWTOPRI	OCN: FE-LOCKOUTOFPR-SPAN	STSMON: FORCED-REQ
EXT-SREF: SWTOSEC	OCN: FE-MANWKSWPR-RING	STSMON: LOCKOUT-REQ
EXT-SREF: SWTOTHIRD	OCN: FE-MANWKSWPR-SPAN	STSMON: LOP-P
EXT-SREF: SYNCPRI	OCN: FE-SDPRLF	STSMON: LPBKCRS
EXT-SREF: SYNCSEC	OCN: FE-SF-RING	STSMON: MAN-REQ
EXT-SREF: SYNCTHIRD	OCN: FE-SF-SPAN	STSMON: PDI-P
FAN: FAN-DEGRADE	OCN: FORCED-REQ-RING	STSMON: PLM-P
FAN: FAN-FAIL	OCN: FORCED-REQ-SPAN	STSMON: RFI-P
FAN: FAN-FAIL-PARTIAL	OCN: FULLPASSTHR-BI	STSMON: ROLL
FAN: FAN-PWR	OCN: HELLO	STSMON: ROLL-PEND
FAN: IMPROPRMVL	OCN: HI-RXPOWER	STSMON: SD-P
FAN: MFGMEM	OCN: ISIS-ADJ-FAIL	STSMON: SF-P
GIGE: CARLOSS	OCN: KB-PASSTHR	STSMON: TIM-P
GIGE: LPBKFACILITY	OCN: KBYTE-APS-CHANNEL-FAILURE	STSMON: UNEQ-P
GIGE: LPBKTERMINAL	OCN: LKOUTPR-S	STSMON: WKSWPR

Table 2-8 ONS 15600 Alarm List by Logical Object in Alarm Profile (continued)

NE-SREF: FRCDSWTOINT	OCN: LO-RXPOWER	STSMON: WTR
NE-SREF: FRCDSWTOPRI	OCN: LOCKOUT-REQ	—

2.5 Trouble Notifications

The ONS 15600 system reports trouble by utilizing standard alarm and condition characteristics, standard severities following the rules in Telcordia GR-253-CORE, and graphical user interface (GUI) state indicators. These notifications are described in the following paragraphs.

The ONS 15600 uses standard Telcordia categories to characterize levels of trouble. The system reports trouble notifications as alarms and status or descriptive notifications (if configured to do so) as conditions in the CTC Alarms window. Alarms typically signify a problem that the user needs to remedy, such as a loss of signal. Conditions do not necessarily require troubleshooting.

2.5.1 Alarm Characteristics

The ONS 15600 uses standard alarm entities to identify what is causing trouble. All alarms stem from hardware, software, environment, or operator-originated problems whether or not they affect service. Current alarms for the network, CTC session, node, or card are listed in the Alarms tab. (In addition, cleared alarms are also found in the History tab.)

2.5.2 Condition Characteristics

Conditions include any problem detected on an ONS 15600 shelf. They might include standing or transient notifications. A snapshot of all current raised, standing conditions on the network, node, or card can be retrieved in the CTC Conditions window or using TL1's set of RTRV-COND commands. (In addition, some but not all cleared conditions are also found in the History tab.)

For a comprehensive list of all conditions, refer to the *Cisco SONET TL1 Command Guide*.

2.5.3 Severities

The ONS 15600 uses Telcordia-devised standard severities for alarms and conditions: Critical (CR), Major (MJ), Minor (MN), Not Alarmed (NA) and Not Reported (NR). These are described below:

- A Critical (CR) alarm generally indicates severe, Service-Affecting (SA) trouble that needs immediate correction. Loss of traffic on an STS-1, which can hold 28 DS-1 circuits, would be a Critical (CR), Service-Affecting (SA) alarm.
- A Major (MJ) alarm is a serious alarm, but the trouble has less impact on the network. For example, loss of traffic on more than five DS-1 circuits is Critical (CR), but loss of traffic on one to four DS-1 circuits is Major (MJ).
- Minor (MN) alarms generally are those that do not affect service. For example, the automatic protection switching (APS) byte failure (APSB) alarm indicates that line terminating equipment (LTE) detects a byte failure on the signal that could prevent traffic from properly executing a traffic switch.

- Not Alarmed (NA) conditions are information indicators, such as for the free-running synchronization (FRNGSYNC) state or forced-switch to primary timing source (FRCSWTOPRI) event. They might or might not require troubleshooting, as indicated in the entries.
- Not Reported (NR) conditions occur as a secondary result of another event. For example, the alarm indication signal (AIS), with severity NR, is inserted by a downstream node when an LOS (CR or MJ) alarm occurs upstream. These conditions do not in themselves require troubleshooting, but are to be expected in the presence of primary alarms.

Severities can be customized for an entire network or for single nodes, from the network level down to the port level by changing or downloading customized alarm profiles. These custom severities are subject to the standard severity-demoting rules given in Telcordia GR-474-CORE and shown in the 2.5.4 Alarm Hierarchy section. Procedures for customizing alarm severities are located in the "Manage Alarms" chapter in the *Cisco ONS 15600 Procedure Guide*.

2.5.4 Alarm Hierarchy

All alarm, condition, and unreported event severities listed in this manual are default profile settings. However in situations when traffic is not lost, such as when the alarm occurs on protected ports or circuits, alarms having Critical (CR) or Major (MJ) default severities can be demoted to lower severities such as Minor (MN) or Non-Service-Affecting (NSA) as defined in Telcordia GR-474-CORE.

A path alarm can be demoted if a higher-ranking alarm is raised for the same object. For example, If a path trace identifier mismatch (TIM-P) is raised on a circuit path and then a loss of pointer on the path (LOP-P) is raised on the path, the LOP-P alarm stands and the TIM-P closes. The hierarchy of path alarms in the ONS 15600 system is shown in Table 2-9.

Table 2-9 Path Alarm Hierarchy

Priority	Condition Type
Highest	AIS-P
—	LOP-P
—	UNEQ-P
Lowest	TIM-P

Facility (port) alarms also follow a hierarchy, which means that lower-ranking alarms are closed by higher-ranking alarms. The hierarchy of facility alarms in the ONS 15600 system is shown in Table 2-10.

Table 2-10 Facility Alarm Hierarchy

Priority	Condition Type
Highest	LOS
—	LOF
—	AIS-L
—	SF-L
—	SD-L
—	RFI-L
—	TIM-S[1]

Table 2-10 Facility Alarm Hierarchy (continued)

Priority	Condition Type
—	AIS-P
—	LOP-P
—	SF-P
—	SD-P
—	UNEQ-P
—	TIM-P
Lowest	PLM-P

1. This alarm is not used in this platform in this release.

Near-end failures and far-end failures follow different hierarchies. Near-end failures stand according to whether they are for the entire signal (LOS, LOF), facility (AIS-L, etc.), path (AIS-P, etc.) or VT (AIS-V, etc.). The full hierarchy for near-end failures is shown in Table 2-11. This table is taken from Telcordia GR-253-CORE.

Table 2-11 Near-End Alarm Hierarchy

Priority	Condition Type
Highest	LOS
—	LOF
—	AIS-L
—	AIS-P[1]
—	LOP-P[2]
—	UNEQ-P
—	TIM-P
—	PLM-P
—	AIS-V[1]
—	LOP-V[2]
—	UNEQ-V[3]
—	PLM-V
Lowest	DS-N AIS (if reported for outgoing DS-N signals, which are not supported for the ONS 15600)

1. Although it is not defined as a defect or failure, all-ones STS pointer relay is also higher priority than LOP-P. Similarly, all-ones VT pointer relay is higher priority than LOP-V.
2. LOP-P is also higher priority than the far-end failure RFI-P, which does not affect the detection of any near-end failures. Similarly, LOP-V is higher priority than RFI-V.
3. This alarm is not used in this platform in this release.

The far-end failure alarm hierarchy is shown in Table 2-12, as given in Telcordia-GR-253-CORE.

Table 2-12 Far-End Alarm Hierarchy

Priority	Condition Type
Highest	RFI-L
—	RFI-P
Lowest	RFI-V

2.5.5 Service Effect

Service-Affecting (SA) alarms—those that interrupt service—might be Critical (CR) or Major (MJ) severity alarms. Service-Affecting (SA) alarms indicate service is affected.
Non-Service-Affecting (NSA) alarms always have a Minor (MN), Not Alarmed (NA), or Not Reported (NR) severity.

2.5.6 States

The Alarms or History tab State (ST) column indicate the disposition of the alarm or condition as follows:

- A raised (R) event is one that is active.
- A cleared (C) event is one that is no longer active.
- A transient (T) event is one that is automatically raised and cleared in CTC during system changes such as user login, logout, loss of connection to node view, etc. Transient events do not require user action. These are listed in Chapter 3, “Transient Conditions.”

2.5.7 Safety Summary

This section covers safety considerations to ensure safe operation of the ONS 15600 system. Personnel should not perform any procedures in this manual unless they understand all safety precautions, practices, and warnings for the system equipment. Some troubleshooting procedures require installation or removal of cards. In these instances, users should pay close attention to the following caution:

Caution Hazardous voltage or energy might be present on the backplane when the system is operating. Use caution when removing or installing cards.

Some troubleshooting procedures require installation or removal of optical cards. In these instances, users should pay close attention to the following warnings:

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Warning **Class 1 laser product.** Statement 1008

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Warning **The power supply circuitry for the equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.** Statement 207

2.6 Alarm Procedures

This section lists alarms alphabetically and includes some conditions commonly encountered when troubleshooting alarms. The severities, descriptions, and troubleshooting procedures accompany alarms and conditions.

2.6.1 AIS

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: BITS

The Alarm Indication Signal (AIS) condition indicates that this node is detecting an alarm indication signal in the incoming signal SONET overhead.

Generally, any AIS is a special SONET signal that communicates to the receiving node when the transmit node does not send a valid signal. AIS is not considered an error. It is raised by the receiving node on each input when the node sees the AIS instead of a real signal. In most cases when this condition is raised, an upstream node is raising an alarm to indicate a signal failure; all nodes downstream from it only raise some type of AIS. This condition clears when you resolved the problem on the upstream node.

Clear the AIS Condition

Step 1 Determine whether there are alarms on the upstream nodes and equipment, especially the "LOS (OCN)" alarm on page 2-85 or if there are out-of-service (OOS,MT or OOS,DSBLD) ports.

Step 2 Clear the upstream alarms using the applicable procedures in this chapter.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.2 AIS-L

Default Severity: Nor Reported (NR), Non-Service-Affecting (NSA)

Logical Object: OCN

The AIS Line condition indicates that this node is detecting line-level AIS in the incoming signal. This alarm is secondary to another alarm occurring simultaneously in an upstream node.

Clear the AIS-L Condition

Step 1 Complete the "Clear the AIS Condition" procedure on page 2-15.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.3 AIS-P

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: STSMON

The AIS Path condition means that this node is detecting AIS in the incoming path. This alarm is secondary to another alarm occurring simultaneously in an upstream node.

Clear the AIS-P Condition

Step 1 Complete the "Clear the AIS Condition" procedure on page 2-15.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.4 APSB

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The APS Channel Byte Failure alarm occurs when LTE detects protection switching byte failure or an invalid switching code in the incoming APS signal. Some older SONET nodes not manufactured by Cisco send invalid APS codes if they are configured in a 1+1 protection scheme with newer SONET nodes, such as the ONS 15600. These invalid codes cause an APSB alarm on an ONS 15600.

Note APS switches are hitless on the ONS 15600.

Clear the APSB Alarm

Step 1 Use an optical test set to examine the incoming SONET overhead to confirm inconsistent or invalid K bytes. For specific procedures to use the test set equipment, consult the manufacturer. If corrupted K bytes are confirmed and the upstream equipment is functioning properly, the upstream equipment might not interoperate effectively with the ONS 15600.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the alarm does not clear and the overhead shows inconsistent or invalid K bytes, you might need to replace the upstream cards for protection switching to operate properly. Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138.

Caution For the ONS 15600, removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.5 Verify or Create Node DCC Terminations" section on page 2-143 for commonly used alarm troubleshooting procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.5 APSCDFLTK

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The APS Default K Byte Received alarm occurs when a bidirectional line switched ring (BLSR) is not properly configured—for example, when a four-node BLSR has one node configured as a path protection. When this misconfiguration occurs, a node in a path protection or 1+1 configuration does not send the two valid K1/K2 APS bytes anticipated by a system configured for BLSR. One of the bytes sent is considered invalid by the BLSR configuration. The K1/K2 byte is monitored by receiving equipment for link-recovery information.

Troubleshooting for APSCDFLTK is often similar to troubleshooting for the "BLSROSYNC" alarm on page 2-28.

Clear the APSCDFLTK Alarm

Step 1 Complete the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125 to verify that each node has a unique node ID number.

Step 2 Repeat Step 1 for all nodes in the ring.

Step 3 If two nodes have the same node ID number, complete the "Change a BLSR Node ID Number" procedure on page 2-126 to change one node ID number so that each node ID is unique.

Step 4 If the alarm does not clear, verify correct configuration of east port and west port optical fibers. (See the "E-W-MISMATCH" alarm on page 2-48.) West port fibers must connect to east port fibers and east port fibers must connect to west port fibers. The "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide* contains procedures for fibering a BLSR.

Step 5 If the alarm does not clear and if the network is a four-fiber BLSR, ensure that each protect fiber is connected to another protect fiber and each working fiber is connected to another working fiber. The software does not report any alarm if a working fiber is incorrectly attached to a protect fiber.

Step 6 If the alarm does not clear, complete the "Verify Node Visibility for Other Nodes" procedure on page 2-126.

Step 7 If nodes are not visible, complete the "2.8.5 Verify or Create Node DCC Terminations" procedure on page 2-143 to ensure that SONET data communication channel (DCC) terminations exist on each node.

Step 8 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.6 APSC-IMP

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

An Improper SONET APS Code alarm indicates three consecutive, identical frames containing:

- Unused code in bits 6 through 8 of byte K2.
- Codes that are irrelevant to the specific protection switching operation being requested.
- Requests that are irrelevant to the ring state of the ring (such as a span protection switch request in a two-fiber ring NE).
- ET code in K2 bits 6 through 8 received on the incoming span, but not sourced from the outgoing span.

Note This alarm can occur on a VT tunnel when it does not have VT circuits provisioned on it. It can also occur when the exercise command or a lockout is applied to a span. An externally switched span does not raise this alarm because traffic is preempted.

Note The APSC-IMP alarm may be raised on a BLSR or MS-SPRing when a drop connection is part of a cross-connect loopback.

Note The APSC-IMP alarm may be momentarily raised on BLSR spans during PCA circuit creation or deletion across multiple nodes using CTC.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the APSC-IMP Alarm

Step 1 Use an optical test set to determine the validity of the K byte signal by examining the received signal. For specific procedures to use the test set equipment, consult the manufacturer.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

If the K byte is invalid, the problem lies with upstream equipment and not with the reporting ONS 15600. Troubleshoot the upstream equipment using the procedures in this chapter, as applicable. If the upstream nodes are not ONS 15600s, consult the appropriate user documentation.

Step 2 If the K byte is valid, verify that each node has a ring name that matches the other node ring names. Complete the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125.

Step 3 Repeat Step 2 for all nodes in the ring.

Step 4 If a node has a ring name that does not match the other nodes, make that node's ring name identical to the other nodes. Complete the "Change a BLSR Ring ID Number" procedure on page 2-125.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.7 APSCINCON

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

An APS Inconsistent alarm means that an inconsistent APS byte is present. The SONET overhead contains K1/K2 APS bytes that notify receiving equipment, such as the ONS 15600, to switch the SONET signal from a working to a protect path when necessary. An inconsistent APS code occurs when three consecutive frames contain nonidentical APS bytes, which in turn give the receiving equipment conflicting commands about switching.

Clear the APSCINCON Alarm

Step 1 Look for other alarms, especially the "LOS (OCN)" alarm on page 2-85, the "LOF (OCN)" alarm on page 2-81, or the "AIS" condition on page 2-15. Clearing these alarms clears the APSCINCON alarm.

Step 2 If an APSINCON alarm occurs with no other alarms, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.8 APSCM

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

The APS Channel Mismatch alarm occurs when the ONS system expects a working channel but receives a protect channel. In many cases, the working and protect channels are crossed and the protect channel is active. If the fibers are crossed and the working line is active, the alarm does not occur. The APSCM alarm occurs only on the ONS system when bidirectional protection is used on OC-N cards in a 1+1 configuration.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Note APS switches are hitless in the ONS 15600.

Clear the APSCM Alarm

Step 1 Verify that the working-card channel fibers are physically connected directly to the adjoining node's working-card channel fibers.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the fibers are correctly connected, verify that the protection-card channel fibers are physically connected directly to the adjoining node's protection-card channel fibers.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.9 APSCNMIS

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

The APS Node ID Mismatch alarm occurs when the source node ID contained in the incoming APS channel K2 byte is not present in the ring map. The APSCNMIS alarm could occur and clear when a BLSR is being provisioned. If so, you can disregard the temporary occurrence. If the APSCNMIS remains, the alarm clears when a K byte with a valid source node ID is received.

Clear the APSCNMIS Alarm

Step 1 Complete the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125 to verify that each node has a unique node ID number.

Step 2 If the Node ID column contains any two nodes with the same node ID listed, record the repeated node ID.

Step 3 Click **Close** in the Ring Map dialog box.

Step 4 If two nodes have the same node ID number, complete the "Change a BLSR Node ID Number" procedure on page 2-126 to change one node ID number so that each node ID is unique.

Note If the node names shown in the network view do not correlate with the node IDs, log into each node and click the **Provisioning > BLSR** tabs. The BLSR window shows the node ID of the login node.

Note Applying and removing a lockout on a span causes the ONS node to generate a new K byte. The APSCNMIS alarm clears when the node receives a K byte containing the correct node ID.

Step 5 If the alarm does not clear, use the "Initiate a Lock Out on a BLSR Protect Span" procedure on page 2-133 to lock out the span.

Step 6 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134 to clear the lockout.

Step 7 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.10 APSIMP

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The APS Invalid Mode condition occurs if a 1+1 protection group is not properly configured at both nodes to send or receive the correct APS byte. A node that is either configured for no protection or is configured for path protection or BLSR protection does not send the right K2 APS byte anticipated by a system configured for 1+1 protection. The 1+1 protect port monitors the incoming K2 APS byte and raises this alarm if it does not receive the byte.

The condition is superseded by an APSCM or APSMM alarm, but not by an AIS condition. It clears when the port receives a valid code for 10 ms.

Clear the APSIMP Condition

Step 1 Check the configuration of the other node in the 1+1 protection group. If the far end is not configured for 1+1 protection, create the group. For instructions, refer to the "Turn Up Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 2 If the other end of the group is properly configured or the alarm does not clear after you have provisioned the group correctly, verify that the working ports and protect ports are cabled correctly.

Step 3 Ensure that both protect ports are configured for SONET.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.11 APSMM

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

An APS Mode Mismatch failure alarm occurs on traffic (OC-N) facilities when there is a mismatch of the protection switching schemes at the two ends of the span, such as being bidirectional at one end and unidirectional at the other. Each end of a span must be provisioned the same way: bidirectional and bidirectional, or unidirectional and unidirectional. The alarm can also occur if a vendor's equipment (other than Cisco) is provisioned as 1:N and the ONS 15600 is provisioned as 1+1.

If one end is provisioned for 1+1 protection switching and the other is provisioned for path protection switching, an APSMM alarm occurs in the ONS 15600 node that is provisioned for 1+1 protection switching.

Clear the APSMM Alarm

Step 1 For the reporting ONS system, display node view and verify the protection scheme provisioning by completing the following steps:

- **a.** Click the **Provisioning > Protection** tabs.
- **b.** Click the 1+1 protection group configured for the OC-N cards.

  The chosen protection group is the protection group optically connected (with DCC connectivity) to the far end.
- **c.** Click **Edit**.
- **d.** Record whether the Bidirectional Switching check box is checked.

Step 2 Click **OK** in the Edit Protection Group dialog box.

Step 3 Log into the far-end node and verify that the OC-N 1+1 protection group is provisioned.

Step 4 Verify that the Bidirectional Switching check box matches the checked or unchecked condition of the box recorded in Step 1. If not, change it to match.

Step 5 Click **Apply**.

Step 6 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.12 AUD-LOG-LOSS

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE

The Audit Trail Log Loss condition occurs when the log is 100 percent full and that the oldest entries are being replaced as new entries are generated. The log capacity is 640 entries. The log must be off-loaded using the following procedure to make room for more entries.

Clear the AUD-LOG-LOSS Condition

Step 1 In node view, click the **Maintenance > Audit** tabs.

Step 2 Click **Retrieve**.

Step 3 Click **Archive**.

Step 4 In the Archive Audit Trail dialog box, navigate to the directory (local or network) where you want to save the file.

Step 5 Enter a name in the File Name field.

You do not have to assign an extension to the file. It is readable in any application that supports text files, such as WordPad, Microsoft Word (imported), etc.

Step 6 Click **Save**.

The 640 entries are saved in this file. New entries continue with the next number in the sequence, rather than starting over.

Step 7 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.13 AUD-LOG-LOW

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE

The Audit Trail Log Low condition occurs when the audit trail log is 80 percent full.

Note AUD-LOG-LOW is an informational condition. It does not require troubleshooting.

2.6.14 AUTORESET

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Automatic System Reset alarm occurs when you change an IP address or perform any other operation that causes an automatic card-level reboot.

Note If an optical card associated with an active port in a 1+1 protection group resets, all DCC traffic terminated or tunneled on the active port is lost while the card resets. No DCC traffic is lost during a reset of an optical card associated with a standby port.

Clear the AUTORESET Alarm

Step 1 Determine whether there are additional alarms that could have triggered an automatic reset. If there are, troubleshoot these alarms using the applicable section of this chapter.

Step 2 If the card automatically resets more than once a month with no apparent cause, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138. If the lack of communication continues, the AUTORESET alarm is cleared and the 2.6.48 EQPT-BOOT alarm occurs. In this case, no AUTORESET troubleshooting is required. If the alarm does not clear, complete the following procedure.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Caution For the ONS 15600, removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.15 AUTOSW-AIS

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic path protection Switch Caused by an AIS condition indicates that automatic path protection switching occurred because of an AIS condition. If the path protection is configured for revertive switching, it reverts to the working path after the fault clears. The AIS also clears when the upstream trouble is cleared.

Generally, any AIS is a special SONET signal that communicates to the receiving node when the transmit node does not send a valid signal. AIS is not considered an error. It is raised by the receiving node on each input when it detects the AIS instead of a real signal. In most cases when this condition is raised, an upstream node is raising an alarm to indicate a signal failure; all nodes downstream from it only raise some type of AIS. This condition clears when you resolve the problem on the upstream node.

Clear the AUTOSW-AIS Condition

Step 1 Complete the "Clear the AIS Condition" procedure on page 2-15.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.16 AUTOSW-LOP (STSMON)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic path protection Switch Caused by LOP condition for the STS monitor (STSMON) indicates that automatic path protection switching occurred because of the "LOP-P" alarm on page 2-83. If the path protection is configured for revertive switching, it reverts to the working path after the fault clears.

Clear the AUTOSW-LOP (STSMON) Condition

Step 1 Complete the "Clear the LOP-P Alarm" procedure on page 2-83.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.17 AUTOSW-PDI

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic path protection Switch Caused by Payload Defect Indication (PDI) condition indicates that automatic path protection switching occurred because of a "PDI-P" alarm on page 2-97. If the path protection is configured for revertive switching, it reverts to the working path after the fault clears.

Clear the AUTOSW-PDI Condition

Step 1 Complete the "Clear the PDI-P Condition" procedure on page 2-98.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.18 AUTOSW-SDBER

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic path protection Switch Caused by Signal Degrade Bit Error Rate (SDBER) condition indicates that a signal degrade (SD) caused automatic path protection switching to occur. If the path protection is configured for revertive switching, it reverts to the working path when the SD is resolved.

Clear the AUTOSW-SDBER Condition

Step 1 Complete the "Clear the SD-L Condition" procedure on page 2-107. (It is also used for this condition.)

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.19 AUTOSW-SFBER

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic USPR Switch Caused by Signal Fail Bit Error Rate (SFBER) condition indicates that a "SF-L" condition on page 2-108 caused automatic path protection switching to occur. If the path protection is configured for revertive switching, it reverts to the working path when the SF is resolved.

Clear the AUTOSW-SFBER Condition

Step 1 Complete the "Clear the SD-L Condition" procedure on page 2-107 (It is also used for a signal fail condition).

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.20 AUTOSW-UNEQ (STSMON)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Automatic path protection Switch Caused by Unequipped Circuit condition indicates that an UNEQ alarm caused automatic path protection switching to occur. If the path protection is configured for revertive switching, it reverts to the working path after the fault clears.

Clear the AUTOSW-UNEQ (STSMON) Condition

Step 1 Complete the "Clear the UNEQ-P Alarm" procedure on page 2-120.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.21 BKUPMEMP

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

The Primary Non-Volatile Backup Memory Failure alarm refers to a problem with the Timing and Shelf Controller (TSC) card flash memory. The alarm occurs when the controller card is in use and has one of four problems:

- Flash manager fails to format a flash partition.
- Flash manager fails to write a file to a flash partition.
- Problem at the driver level.
- Code volume fails cyclic redundancy checking (CRC, a method to verify for errors in data transmitted to the TSC card).

The BKUPMEMP alarm can also cause the "EQPT (EQPT)" alarm on page 2-44. If the EQPT alarm is caused by BKUPMEMP, complete the following procedure to clear the BKUPMEMP and the EQPT alarm.

Caution It can take up to 30 minutes for software to be updated on a standby TSC card.

Clear the BKUPMEMP Alarm

Step 1 Verify that both TSC cards are powered and enabled by confirming lighted SRV LEDs on the TSC cards.

Step 2 Determine whether the active or standby TSC card that has the alarm.

Step 3 If both TSC cards are powered and enabled, reset the TSC card against which the alarm is raised. Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Wait ten minutes to verify that the card you reset completely reboots.

Step 4 If the TSC card you reset does not reboot successfully, or the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136. If the Cisco TAC technician tells you to remove the card and reinstall a new one, follow the "Replace a TSC Card" procedure on page 2-140.

2.6.22 BLSROSYNC

This alarm is not supported on this platform in this release.

2.6.23 BLSR-SW-VER-MISM

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

The BLSR Software Version Mismatch alarm is raised by the TSC card when it checks all software versions for all nodes in a ring and discovers a mismatch in versions.

Clear the BLSR-SW-VER-MISM Alarm

Step 1 Clear the alarm by loading the correct software version on the TSC card with the incorrect load. To download software, refer to the release-specific software download document.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) condition.

2.6.24 CARLOSS (GIGE)

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: GIGE

The Carrier Loss for Gigabit Ethernet (GE) alarm occurs on ASAP ports supporting Gigabit Ethernet traffic. The loss can be due to a misconfiguration, fiber cut, or client equipment problem.

Clear the CARLOSS (GIGE) Alarm

Step 1 Ensure that the GIGE client is correctly configured by completing the following steps:

a. Double-click the ASAP card to display the card view.

b. Click the **Provisioning > Pluggable Port Modules** tabs.

c. View the Pluggable Port Modules area port listing in the **Actual Equipment Type** column and compare this with the client equipment. If no small form-factor pluggable (SFP, or also referred to as a PPM) is provisioned, refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide* for provisioning instructions.

d. If an SFP (PPM) has been created, view the contents of the Selected PPM area **Rate** column for the port and compare this rate with the client equipment data rate. In this case, the rate should be ETHER. If the SFP (PPM) rate is differently provisioned, select the SFP (PPM), click **Delete**, then click **Create** and choose the correct rate for the equipment type.

Step 2 If there is no SFP (PPM) misprovisioning, check for a fiber cut.

Step 3 If there is no fiber cut or provisioning error, check the client-side equipment for any transmission errors on the line.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) in order to report a Service-Affecting (SA) problem.

2.6.25 CHANLOSS

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The SONET Section Layer DCC Termination Failure condition occurs when the ONS 15600 receives unrecognized data in the section layer DCC bytes.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the CHANLOSS Condition

Step 1 In the absence of other alarms, determine whether the alarmed port is connected to another vendor's equipment. If so, you can mask the alarm on this path using a custom alarm profile. For more information about custom profiles, refer to the "Manage Alarms" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 2 If alternate vendor equipment is not the cause of the alarm, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 for the traffic card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the alarm does not clear, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.26 CIDMISMATCH-A

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

A Connection ID Mismatch on the Single Shelf Cross-Connect (SSXC) A (in Slot 6) alarm occurs when at least one internal connection ID mismatch is present at the STS-1 level on the traffic (OC-N) card outbound data path. The alarm occurs when the head end of the connection between traffic cards is removed.

Note When an alarm includes a numeric or alphabetical designation, it indicates whether the alarm applies to the first or second card of a specific type on the shelf. A zero or A indicates that the alarm occurs against the first card of its type, from left to right, in the shelf. A one or B indicates that the alarm occurs against the second card of its type in the shelf.

Clear the CIDMISMATCH-A Alarm

Step 1 Depending on how many CIDMISMATCH alarms are raised, take one of the following actions:

- If two CIDMISMATCH alarms (CIDMISMATCH-A and the"CIDMISMATCH-B" alarm on page 2-31) are present, continue with Step 6.
- One CIDMISMATCH-x alarm indicates trouble related to one SSXC card. If an automatic switch to the alternate copy SSXC card occurred, the alarmed SSXC card can be serviced. If traffic has not switched, complete the "Request a Cross-Connect Card Preferred Copy Switch" procedure on page 2-136.

  To determine which SSXC card is the preferred copy and if it is currently being used, in node view click the **Maintenance > Preferred Copy** tabs. The Data Copy area Preferred field shows Copy A or Copy B. The Currently Used field shows the copy being used.

  Note In CTC, Copy A refers to the SSXC card in Slot 6. Copy B refers to the SSXC card in Slot 8. Either copy can be chosen as the preferred copy SSXC card. The other SSXC card is called the alternate SSXC card in this chapter.

Step 2 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 for the alarmed SSXC card.

Step 3 If the alarm does not clear, ensure that an automatic protection switch has moved traffic to the protect port. If an APS switch occurred, continue with Step 4.

- A path protection APS is identified by an AUTOSW-type alarm or condition (such as AUTOSW-AIS, AUTOSW-LOP, AUTOSW-PDI, AUTOSW-SDBER, AUTOSW-SFBER, or AUTOSW-UNEQ).
- A 1+1 APS is identified in the node view Maintenance > Protection window. If you click the protection group, under the Selected Group list, the ports are designated as Working/Standby and Protect/Active.

If the reporting traffic card has 1+1 active ports and traffic has not switched to the protect ports, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Step 4 Complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the SSXC card.

Step 5 If the alarm does not clear, complete the "Replace an SSXC Card" procedure on page 2-137, "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138, or "Replace a TSC Card" procedure on page 2-140 as appropriate for the reporting card.

Step 6 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

Step 7 When the alarm clears, if an automatic switch to the alternate copy SSXC card occurred, traffic is restored to the preferred copy.

If the reporting card is a traffic card, traffic reverts to the working port if an automatic switch occurred. If traffic was manually switched in a 1+1 protection group, revert traffic to the original port by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127. If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

2.6.27 CIDMISMATCH-B

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

A Connection ID Mismatch on SSXC-B (Slot 8) alarm occurs when at least one internal connection ID mismatch is present at the STS-1 level on the OC-48 or OC-192 card outbound data path. The alarm occurs when the head end of the connection between traffic (OC-N) cards is removed.

Clear the CIDMISMATCH-B Alarm

Step 1 Complete the "Clear the CIDMISMATCH-A Alarm" procedure on page 2-30.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.28 CLKFAIL

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Clock Fail alarm occurs when an internal clock module fails. If this alarm occurs against the standby TSC card, the card must be replaced. If the alarm occurs against the active TSC card, the card automatically becomes standby because the traffic and SSXC cards can only take timing from the active TSC card.

Clear the CLKFAIL Alarm

Step 1 Complete the "Replace a TSC Card" procedure on page 2-140 for the reporting TSC card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Note When there are different versions of system software on the two TSC cards, it takes approximately 20 minutes for the active TSC card to transfer the system software to the newly installed standby TSC card. When the transfer completes, the TSC card reboots and goes into standby mode after approximately three minutes.

Note If the active and standby TSC cards have the same versions of software, it takes approximately three minutes for software to be updated on a standby TSC card.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.29 CONTBUS-CLK-A

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

An Inbound Interconnection Timing Control Bus 0 Failure alarm on the Slot 10 TSC card occurs if the timing signal from the Slot 5 TSC card has an error. If the Slot 10 TSC card and all other cards on the shelf raise this alarm, the alarm processor on the Slot 5 TSC card clears the alarm on the other cards and raises this alarm against the Slot 5 TSC card only.

Clear the CONTBUS-CLK-A Alarm

Step 1 If a single traffic card is reporting the alarm and it is part of a path protection, complete the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129. If the traffic card is part of a 1+1 protection group, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Note If the reporting card is an SSXC card, traffic should have already switched from the errored copy of the card.

Note If the active TSC is reporting the alarm, shelf control should already have switched off the card.

Step 2 Complete the appropriate procedure in the "2.8.4 Physical Card Reseating, Resetting, and Replacement" section on page 2-136 for the reporting card.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

When the alarm clears, if an automatic switch to the alternate copy SSXC occurred, traffic is automatically restored to the preferred copy.

Step 4 If traffic was manually switched in a 1+1 protection group, revert traffic to the original port by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127. If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

Step 5 When the alarm has been cleared, if desired, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

2.6.30 CONTBUS-CLK-B

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

An Inbound Interconnection Timing Control Bus 1 Failure alarm on the Slot 5 TSC card occurs if the timing signal from the Slot 10 TSC card has an error. If the Slot 5 TSC card and all other cards on the shelf raise the alarm, the processor on the Slot 10 TSC card clears the alarm on the other cards and raises this alarm against the Slot 10 TSC card only.

Note When an alarm includes a numeric or alphabetical designation, it indicates whether the alarm applies to the first or second card of a specific type on the shelf. A zero or A indicates that the alarm occurs against the first card of its type, from left to right, in the shelf. A one or B indicates that the alarm occurs against the second card of its type in the shelf.

Clear the CONTBUS-CLK-B Alarm

Step 1 Complete the "Clear the CONTBUS-CLK-A Alarm" procedure on page 2-32.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.31 CONTBUS-IO-A

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

A TSC card A to Shelf A Slot Communication Failure alarm occurs when the active Slot 5 TSC card (TSC card A) has lost communication with another card in the shelf. The other card is identified by the Object column in the CTC alarm window.

The CONTBUS-IO-A alarm can appear briefly when the ONS 15600 switches to the standby TSC card. In the case of a TSC card protection switch, the alarm clears after the other cards establish communication with the newly active TSC card. If the alarm persists, the problem lies with the physical path of communication from the TSC card to the reporting card. The physical path of communication includes the TSC card, the other card, and the backplane.

Clear the CONTBUS-IO-A Alarm

Step 1 Ensure that the reporting card is physically present in the shelf. Record the card type. Click the **Inventory** tab and view the Eqpt Type column to display the provisioned type.

If the actual card type and the provisioned card type do not match, see the "MEA" alarm on page 2-93 for the reporting card.

Step 2 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 for the alarmed card. For the LED behavior, see the "2.7 LED Behavior" section on page 2-123.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card. (A reset standby card remains standby.)

Step 3 If CONTBUS-IO-A is raised on several cards at the same time, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card.

Step 4 Verify that the reset is complete and error-free and that no new related alarms appear in CTC. A green SRV LED indicates an active card.

Step 5 If the CTC reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the reporting card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 6 If the reset card has not rebooted successfully, or the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136. If the Cisco TAC technician tells you to remove the card and reinstall a new one, follow the "Replace a TSC Card" procedure on page 2-140.

2.6.32 CONTBUS-IO-B

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

A TSC card B to Shelf Communication Failure alarm occurs when the active Slot 10 TSC card (TSC card B) has lost communication with another card in the shelf. The other card is identified by the Object column in the CTC alarm window.

The CONTBUS-IO-B alarm might appear briefly when the ONS 15600 switches to the protect TSC card. In the case of a TSC card protection switch, the alarm clears after the other cards establish communication with the newly active TSC card. If the alarm persists, the problem lies with the physical path of communication from the TSC card to the reporting card. The physical path of communication includes the TSC card, the other card, and the backplane.

Clear the CONTBUS-IO-B Alarm

Step 1 Ensure that the reporting card is physically present in the shelf. Record the card type. Click the **Inventory** tab and view the Eqpt Type column to display the provisioned type.

If the actual card type and the provisioned card type do not match, see the "MEA" alarm on page 2-93 for the reporting card.

Step 2 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 for the alarmed card. For the LED behavior, see the "2.7 LED Behavior" section on page 2-123.

Step 3 If the alarm object is the standby Slot 5 TSC card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card. (A reset standby card remains standby.)

Step 4 If CONTBUS-IO-B is raised on several cards at the same time, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card.

Step 5 Verify that the reset is complete and error-free and that no new related alarms appear in CTC. A green SRV LED indicates an active card.

Step 6 If the CTC reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the reporting card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 7 If the reset card has not rebooted successfully, or the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136. If the Cisco TAC technician tells you to remove the card and reinstall a new one, follow the "Replace a TSC Card" procedure on page 2-140.

2.6.33 CONTCOM

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Interconnection Control Communication Failure alarm occurs when the internal messaging processor on the reporting active TSC card fails.

A TSC card should boot and be in the ready state within approximately five minutes. If the CONTCOM alarm clears within this time frame and the TSC card goes to standby or active mode as applicable, no action is necessary.

If the communication equipment on the backplane fails, a CONTBUS alarm occurs instead of a CONTCOM alarm.

Clear the CONTCOM Alarm

Step 1 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Step 2 If the CTC reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136.

Step 3 If the alarm does not clear, complete the "Replace a TSC Card" procedure on page 2-140.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

Step 5 When the alarm has been cleared, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 as needed.

2.6.34 CTNEQPT-PB-A

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

The SSXC-0 Data Payload Bus Interconnect Failure alarm occurs when the data path interconnection between equipment from SSXC-0 (Slot 6) to inbound or outbound traffic (OC-N) card slots has a failure. The SSXC card and the reporting card are no longer communicating through the backplane. The problem exists in the SSXC card, the reporting traffic card, or the backplane. If more than one traffic card on the shelf raises this alarm, the TSC card clears this alarm on the traffic cards and raises it alarm against SSXC-0.

Note When an alarm includes a numeric or alphabetical designation, it indicates whether the alarm applies to the first or second card of a specific type on the shelf. A zero or A indicates that the alarm occurs against the first card of its type, from left to right, in the shelf. A one or B indicates that the alarm occurs against the second card of its type in the shelf.

Note If you insert a new TSC card that has the same version of software as the active and standby TSC card, it takes approximately three minutes for the standby TSC card to become available.

Note It takes approximately 20 minutes for the active TSC card to transfer the system software to the newly installed TSC card. Software transfer occurs in instances where different software versions exist on the two cards. When the transfer completes, the TSC card reboots and goes into standby mode after approximately three minutes.

Clear the CTNEQPT-PB-A Alarm

Step 1 If the alarm occurs against a single traffic (OC-N) card, continue with Step 2. If the alarm occurs against multiple traffic cards, it indicates a problem with the SSXC card. Continue with Step 6.

Step 2 If the traffic card ports are part of a path protection, switch the single circuit on the span using instructions in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*. If the ports are part of a 1+1 protection group, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Step 3 Complete the "Hard-Reset a Card Using CTC" procedure on page 2-135.

Step 4 If the CTC reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the reporting card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 5 If the alarm does not clear, complete the appropriate procedure in the "2.8.4 Physical Card Reseating, Resetting, and Replacement" section on page 2-136.

Note If the traffic card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port. Refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions. Label the bad port and take it out of service until the card can be replaced.

Step 6 If you replace the traffic card and the alarm does not clear, an SSXC card problem is indicated. If an automatic switch to the alternate copy SSXC card occurred, the SSXC card can be serviced. If traffic has not switched, request a preferred copy switch by completing the "Request a Cross-Connect Card Preferred Copy Switch" procedure on page 2-136.

To determine which SSXC card is the preferred copy and whether it is currently being used, in node view go to the Maintenance > Preferred Copy window. The Data Copy area Preferred field shows Copy A or Copy B. The Currently Used field shows the copy being used.

Note In CTC, Copy A refers to the SSXC card in Slot 6. Copy B refers to the SSXC card in Slot 8. Either copy might be chosen as the preferred copy SSXC card. The other SSXC card is called the alternate SSXC card in this chapter.

Continue with Step 7.

Step 7 Perform a CTC soft reset on the SSXC card by completing the following steps:

a. Display node view.

b. Position the CTC cursor over the card.

c. Right-click and choose **Soft-reset Card** from the shortcut menu.

d. Click **Yes** in the Soft-reset Card dialog box.

Step 8 If the CTC reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the alarmed card.

Step 9 If the alarm does not clear, complete the "Replace an SSXC Card" procedure on page 2-137.

Step 10 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

Step 11 Depending on which card raised the alarm, perform the following actions:

- If traffic was manually switched in a 1+1 protection group, revert traffic to the original port by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127.
- If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

Note If an automatic switch to the alternate copy SSXC card occurred, traffic is automatically restored to the preferred copy.

2.6.35 CTNEQPT-PB-B

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

The SSXC-1 Data Payload Bus Interconnect Failure alarm occurs when the data path interconnection fails between equipment from SSXC-1 (Slot 8) and traffic card slots. If more than one traffic card on the shelf raises this alarm, the TSC card clears the alarm on the traffic cards and raises the alarm against the SSXC-1.

Note In CTC, Copy A refers to the SSXC card in Slot 6/7. Copy B refers to the SSXC card in Slot 8/9. Either copy might be chosen as the preferred copy SSXC card. The other SSXC card is called the alternate SSXC card in this chapter.

Clear the CTNEQPT-PB-B Alarm

Step 1 Complete the "Clear the CTNEQPT-PB-A Alarm" procedure on page 2-37.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.36 CXCHALT

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: EQPT

An SSXC Operation Suspended alarm indicates that operation on the alternate SSXC card has halted because of problems in fan tray 2, which services controller cards including the SSXC cards.

The CXCHALT alarm occurs five minutes after a fan failure alarm such as the "FAN-DEGRADE" alarm on page 2-57, the "FAN-FAIL" alarm on page 2-58, the "IMPROPRMVL (EQPT, PIM, PPM)" alarm on page 2-72, or the "FAN-FAIL-PARTIAL" alarm on page 2-58 halts alternate SSXC operation.

Caution If a CXCHALT occurs due to a fan failure, you should move a working fan assembly from tray 1 or 3 and install it in the tray 2 position because the remaining working SSXC card can be damaged in as little as 15 minutes. If damage occurs to the remaining SSXC Card, it restarts and then fails. Traffic is dropped until a replacement is installed.

Clear the CXCHALT Alarm

Step 1 Troubleshoot the fan alarm by following the "Clear the FAN-FAIL Alarm" procedure on page 2-58, which includes fan replacement.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.37 DATAFLT

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Software Data Integrity Fault alarm occurs when the TSC exceeds its flash memory capacity.

Caution Configurations more than three minutes old are saved. Those newer than three minutes are not saved.

Clear the DATAFLT Alarm

Step 1 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.38 DBOSYNC

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: NE

The Standby Database Out of Synchronization alarm occurs when the standby TSC card "To be Active" database does not synchronize with the active database on the active TSC card.

Caution If you reset the active TSC card while this alarm is raised, you lose current provisioning.

Clear the DBOSYNC Alarm

Step 1 Save a backup copy of the active TSC card database. Refer to the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions.

Step 2 Make a minor provisioning change to the active database to see if applying a provisioning change clears the alarm by completing the following steps:

a. In node view, click the **Provisioning > General > General** tabs.

b. In the Description field, make a small change such as adding a period to the existing entry.

The change causes a database write but does not affect the node state. The write could take up to a minute.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.39 DUP-IPADDR

Default Severity: Minor (MN), Non-Service Affecting (NSA)

Logical Object: NE

The Duplicate IP Address alarm indicates that the alarmed node IP address is already in use within the same DCC area. When this happens, CTC no longer reliably connects to either node. Depending on how the packets are routed, CTC could connect to either node (having the same IP address). If CTC has connected to both nodes before they shared the same address, it has two distinct NodeModel instances (keyed by the node ID portion of the MAC address).

Clear the DUP-IPADDR Alarm

Step 1 Isolate the alarmed node from the other node having the same address by completing the following steps:

a. Connect to the alarmed node using the Craft port on the ONS 15600 chassis.

b. Begin a CTC session.

c. In the login dialog window, uncheck the **Network Discovery** check box.

Step 2 In node view, click the **Provisioning > Network > General** tabs.

Step 3 In the IP Address field, change the IP address to a unique number.

Step 4 Click **Apply**.

Step 5 Restart any CTC sessions that are logged into either of the formerly duplicated node IDs. (For instructions to log in or log out, refer to the "Set Up PC and Log Into the GUI" chapter in the *Cisco ONS 15600 Procedure Guide*.)

Step 6 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.40 DUP-NODENAME

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Duplicate Node Name alarm indicates that the alarmed node alphanumeric name is already being used within the same DCC area.

Clear the DUP-NODENAME Alarm

Step 1 In node view, click the **Provisioning > General > General** tabs.

Step 2 In the Node Name field, enter a unique name for the node.

Step 3 Click **Apply**.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.41 ENCAP-MISMATCH-P

The ENCAP-MISMATCH-P alarm is not used in this platform in this release. It is reserved for future development.

2.6.42 EOC

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The SONET DCC Termination Failure alarm occurs when the ONS 15600 loses its DCC. Although this alarm is primarily SONET, it can apply to dense wavelength division multiplexing (DWDM) in other platforms.

The section DCC (SDCC) consists of three bytes, D1 through D3, in the SONET overhead. The bytes convey information about operation, administration, maintenance, and provisioning (OAM&P). The ONS 15600 uses the DCC on the SONET section layer to communicate network management information.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Note If a circuit shows an incomplete state when this alarm is raised, the logical circuit is in place. The circuit is able to carry traffic when the connection issue is resolved. You do not need to delete the circuit when troubleshooting this alarm.

Clear the EOC Alarm

Step 1 If the "LOS (OCN)" alarm on page 2-85 is also reported, complete the "Clear the LOS (OCN) Alarm" procedure on page 2-85. (This procedure is also used for EOC.)

Step 2 If the "SF-L" condition on page 2-108 is reported, complete the "Clear the SD-L Condition" procedure on page 2-107. (This procedure is also used for EOC.)

Step 3 If the alarm does not clear on the reporting node, verify the physical connections between the cards and that the fiber-optic cables are configured to carry SDCC traffic. If they are not, correct them. For more information about fiber connections and terminations, refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

If the physical connections are correct and configured to carry DCC traffic, ensure that both ends of the fiber span have in-service (IS-NR) ports. Verify that the SRV LED on each OC-N card is green.

Step 4 When the LEDs on the OC-N cards are correctly illuminated, complete the "2.8.5 Verify or Create Node DCC Terminations" procedure on page 2-143.

Step 5 Repeat Step 4 at the adjacent nodes.

Step 6 If DCC is provisioned for the ends of the span, verify that the port is active and in service by completing the following steps:

- **a.** Confirm that the OC-N card shows a green LED in CTC or on the physical card.

  A green SRV LED indicates an active card.
- **b.** To determine whether the port is in service, double-click the card in CTC to display the card view.
- **c.** Click the **Provisioning > Line** tabs.
- **d.** Verify that the Admin State column lists the port as **IS**.
- **e.** If the Admin State column lists the port as OOS,MT or OOS,DSBLD, click the column and click **IS** from the drop-down list. Click **Apply**.

Step 7 For all nodes, if the card is in service, use an optical test set to determine whether signal failures are present on fiber terminations. For specific procedures to use the test set equipment, consult the manufacturer.

Caution Using an optical test set disrupts service on the OC-N card. It could be necessary to manually switch traffic carrying circuits over to a protection path. Refer to the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used switching procedures.

Step 8 If no signal failures exist on terminations, measure power levels to verify that the budget loss is within the parameters of the receiver. See the "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69 for information.

Step 9 If budget loss is within parameters, ensure that fiber connectors are securely fastened and properly terminated. For more information refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 10 If fiber connectors are properly fastened and terminated, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card.

Resetting the active TSC card switches control to the standby TSC card. If the alarm clears when the ONS 15600 node switches to the standby TSC card, the user can assume that the previously active card is the cause of the alarm.

Step 11 If the TSC card reset does not clear the alarm, delete the problematic SDCC termination by completing the following steps:

a. From card view, click **View > Go to Previous View** if you have not already done so.

b. Click the **Provisioning > Comm Channels > SDCC** tabs.

c. Highlight the problematic DCC termination.

d. Click **Delete**.

e. Click **Yes** in the Confirmation Dialog box.

Step 12 Recreate the SDCC termination. Refer to the "Turn Up Network" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions.

Step 13 Verify that both ends of the DCC have been recreated at the optical ports.

Step 14 If the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136. If the Cisco TAC technician tells you to remove the card and reinstall a new one, follow the "Replace a TSC Card" procedure on page 2-140.

2.6.43 EOC-L

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Line DCC Termination Failure alarm occurs when the ONS 15600 loses its line DCC termination. The line DCC (LDCC) consists of nine bytes, D4 through D12, in the SONET overhead. The bytes convey information about OAM&P. The ONS 15600 uses the LDCCs on the SONET line layer to communicate network management information.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Note If a circuit shows a partial status when the EOC or EOC-L alarm is raised, it occurs when the logical circuit is in place. The circuit is able to carry traffic when the DCC termination issue is resolved. You do not need to delete the circuit when troubleshooting this alarm.

Clear the EOC-L Alarm

Step 1 Complete the "Clear the EOC Alarm" procedure on page 2-42.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the affected card. (The procedure is similar for all cards.) If the Cisco TAC technician tells you to remove the card and reinstall a new one, replace it using the appropriate procedure in the "2.8.4 Physical Card Reseating, Resetting, and Replacement" section on page 2-136.

2.6.44 EQPT (CAP)

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: CAP

An Equipment Failure alarm for the CAP indicates that the customer access panel has a physical failure. Log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.45 EQPT (EQPT)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

An Equipment Failure alarm indicates that a hardware failure has occurred on the reporting card. If the EQPT alarm occurs with a BKUPMEMP alarm, refer to the "2.6.21 BKUPMEMP" section on page 2-27. The BKUPMEMP procedure also clears the EQPT alarm.

This alarm is also invoked if a diagnostic circuit detects a card application-specific integrated circuit (ASIC) failure. In this case, if the card is part of a protection group, an APS switch occurs. If the card is the protect card, switching is inhibited. The standby path generates a path-type alarm.

Clear the EQPT Alarm

Step 1 Complete the appropriate procedure in the "2.8.3 CTC Card Resetting and Switching" section on page 2-134 section.

Step 2 Verify that the reset is complete and error-free and that no new related alarms appear in CTC. For LED appearance, see the "2.7 LED Behavior" section on page 2-123.

Step 3 If the CTC reset does not clear the alarm, complete the appropriate procedure in the "2.8.4 Physical Card Reseating, Resetting, and Replacement" section on page 2-136 section procedure for the reporting card.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 4 If the physical reseat of the card fails to clear the alarm, complete the "Replace an OC-48 Card or OC-192 Card" section on page 2-138 procedure for the reporting card.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the ""2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for more information.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 5 If the alarm does not clear, log onto http://www.cisco.com/techsupport for more information or call Cisco TAC (1 800 553-2447) to report a Service-Affecting (SA) problem.

2.6.46 EQPT (PIM)

Default Severity: Critical (CR), Service-Affecting (SA) (SA

Logical Object: PIM

The EQPT alarm for the ASAP card pluggable input-output module 4PIO (or PIM) is raised when all ports on the four-port module fail.

Clear the EQPT (PIM) Alarm

Step 1 Complete the "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.47 EQPT (PPM)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: PPM

The EQPT alarm for the SFP (PPM) is raised when one of the SFP (PPM) ports on a four-port 4PIO (PIM) module fails.

Clear the EQPT (PPM) Alarm

Step 1 Replace the alarmed SFP (PPM) by completing the "Replace an ASAP SFP (PPM) Module" procedure on page 2-142.

Step 2 If the alarm does not clear, move traffic off any active PPMs (SFPs). See the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126. After switching traffic, replace the 4PIO (PIM) using the instructions in the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.48 EQPT-BOOT

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

An Equipment Boot Failure alarm occurs when a TSC card, SSXC card, or traffic (OC-N) card does not fully boot from the restart point after self-rebooting three times.

Clear the EQPT-BOOT Alarm

Step 1 Complete the "Clear the EQPT Alarm" procedure on page 2-44.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.49 EQPT-CC-PIM

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: PIM

The EQPT Alarm on a Carrier or 4PIO (PIM) is raised when an LOF or LOS alarm is shown on an ASAP card but this alarm is not also shown against the 4PIO (PIM) that carries the affected traffic. If multiple four-port 4PIOs (PIMs) do not show this LOF or LOS alarm, the EQPT-CC-PIM alarm raises against the ASAP carrier card itself.

Clear the EQPT-CC-PIM Alarm

Step 1 Complete the "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141.

Step 2 If the alarm does not clear, move traffic off any active 4PIOs (PIMs). Procedures and guidelines to do this are located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*. Then complete the "Replace an ASAP Carrier Module" procedure on page 2-141 and reinstall the 4PIOs (PIMs) by completing the "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141. For more information about removing or installing these modules, refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.50 EQPT-HITEMP

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Equipment Failure High Temperature alarm occurs when the TSC card, SSXC card, or traffic (OC-N) card internal temperature exceeds 185 degrees Fahrenheit (85 degrees Celsius).

Clear the EQPT-HITEMP Alarm

Step 1 Ensure that the room temperature is not abnormally high.

Step 2 If the room temperature is not the cause of the alarm, ensure that filler modules are installed in the ONS 15600 empty slots. Filler modules help airflow.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the "FAN-DEGRADE" alarm on page 2-57 or the "FAN-FAIL" alarm on page 2-58 accompanies the alarm, complete the "Clear the FAN-FAIL Alarm" procedure on page 2-58.

Step 4 If the alarm does not clear, check the condition of the air filter to see if it needs cleaning or replacement. Replace the air filter using the procedure located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide* as needed.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.51 EQPT-PIM-PPM

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: PPM

The EQPT alarm for an SFP (PPM) is raised when a 4PIO (PIM) is reporting low electrical amplitude from an SFP (PPM). If this symptom shows up from multiple SFPs (PPMs) then the alarm should be against the 4PIO (PIM). Otherwise the alarm will be against the SFP (PPM) creating the problem.

Clear the EQPT-PIM-PPM Alarm

Step 1 Move any traffic away from the affected SFP (PPM), using guidelines and instructions in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*, then replace the alarmed SFP (PPM) module using instructions in that guide.

Step 2 If the alarm does not clear, move any traffic away from the affected 4PIO (PIM), using the instructions in the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*, and replace the 4PIO (PIM).

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.52 E-W-MISMATCH

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

A Procedural Error Misconnect East/West Direction alarm occurs during BLSR setup, or when nodes in a ring have slots misconnected. An east slot can be misconnected to another east slot, or a west slot can be misconnected to another west slot. In most cases, the user did not connect the fibers correctly or the ring provisioning plan was flawed. You can physically reconnect the cable to the correct slots to clear the E-W-MISMATCH alarm. Alternately, you can delete and recreate the span in CTC to change the west line and east line designations. The CTC method clears the alarm, but could change the traditional east-west node connection pattern of the ring.

Note The E-W-MISMATCH alarm also appears during the initial set up of a ring with its East-West slots configured correctly. If the alarm appears during the initial setup, the alarm clears itself shortly after the ring setup is complete.

Note The lower-numbered slot at a node is traditionally labeled the west slot and the higher numbered slot is labeled the east slot. For example, in the ONS 15600 system, Slot 2 is west and Slot 12 is east.

Note The physical switch procedure is the recommend method of clearing the E-W-MISMATCH alarm. The physical switch method reestablishes the logical pattern of connection in the ring. However, you can also use CTC to recreate the span and identify the misconnected slots as east and west. The CTC method is useful when the misconnected node is not geographically near the troubleshooter.

Clear the E-W-MISMATCH Alarm with a Physical Switch

Step 1 Diagram the ring setup, including nodes and spans, on a piece of paper or white board.

Step 2 In node view, click **View > Go to Network View**.

Step 3 Label each of the nodes on the diagram with the same name that appears on the network map.

Step 4 Right-click each span to display the node name/slot/port for each end of the span.

Step 5 Label the span ends on the diagram with the same information.

Step 6 Repeat Steps 4 and 5 for each span on your diagram.

Step 7 Label the highest slot at each node east and the lowest slot at each node west.

Step 8 Examine the diagram. You should see a clockwise pattern of west slots connecting to east slots for each span. Refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide* for more information about cable installation in the system.

Step 9 If any span has an east-to-east or west-to-west connection, physically switching the fiber connectors from the card that does not fit the pattern to the card that continues the pattern should clear the alarm.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Step 10 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

Clear the E-W-MISMATCH Alarm in CTC

Step 1 Log into the misconnected node. A misconnected node has both ring fibers connecting it to its neighbor nodes misconnected.

Step 2 Click the **Maintenance > BLSR** tabs.

Step 3 From the row of information for the fiber span, complete the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125 to identify the node ID, ring name, and the slot and port in the East Line column and West Line column. Record the above information.

Step 4 Click **View > Go to Network View**.

Step 5 Delete and recreate the BLSR by completing the following steps:

- **a.** Click the **Provisioning > BLSR** tabs.
- **b.** Click the row from Step 3 to select it and click **Delete**.
- **c.** Click **Create**.
- **d.** Fill in the ring name and node ID from the information collected in Step 3.
- **e.** Click **Finish**.

Step 6 Display node view and click the **Maintenance > BLSR** tabs.

Step 7 Change the West Line drop-down list to the slot you recorded for the East Line in Step 3.

Step 8 Change the East Line drop-down list to the slot you recorded for the West Line in Step 3.

Step 9 Click **OK**.

Step 10 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.53 EXERCISE-RING-FAIL

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Ring command issues ring protection switching of the requested channel without completing the actual bridge and switch. The EXERCISE-RING-FAIL condition is raised if the command was issued and accepted but the exercise did not take place.

Note If the exercise command gets rejected due to the existence of a higher priority condition in the ring, EXERCISE-RING-FAIL is not reported.

Clear the EXERCISE-RING-FAIL Condition

Step 1 Look for and clear, if present, the "LOF (OCN)" alarm on page 2-81, the "LOS (OCN)" alarm on page 2-85, or a BLSR alarm.

Step 2 Complete the "Initiate an Exercise Ring Switch on a BLSR" procedure on page 2-133.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.54 EXERCISE-RING-REQ

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Ring command issues ring protection switching of the requested channel without completing the actual bridge and switch. The EXERCISE-RING-REQ condition indicates that the command is being issued on the near end node.

Note EXERCISE-RING-REQ is an informational condition and does not require troubleshooting.

2.6.55 EXERCISE-SPAN-FAIL

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Span command issues span switching of the requested channel without completing the actual bridge and switch. The EXERCISE-SPAN-FAIL alarm is raised if the command was issued and accepted but the exercise did not take place.

Note If the exercise command gets rejected due to the existence of a higher-priority condition in the span or ring, EXERCISE-SPAN-FAIL is not reported.

Clear the EXERCISE-SPAN-FAIL Condition

Step 1 Look for and clear, if present, the "LOF (OCN)" alarm on page 2-81, the "LOS (OCN)" alarm on page 2-85, or a BLSR alarm.

Step 2 Complete the "Initiate an Exercise Ring Switch on a BLSR" procedure on page 2-133.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.56 EXERCISING-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Ring command issues span switching of the requested channel without completing the actual bridge and switch. The EXERCISING-RING condition is raised if the command was issued and accepted and the exercise is taking place. This condition appears on the network view Alarms and History tab, not on the Conditions tab.

Note EXERCISING-RING is an informational condition and does not require troubleshooting.

2.6.57 EXERCISING-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Span command issues span switching of the requested channel without completing the actual bridge and switch. The EXERCISING-SPAN condition is raised if the command was issued and accepted and the exercise is taking place. This condition appears on the network view Alarms and History tab, not on the Conditions tab.

Note EXERCISING-SPAN is an informational condition and does not require troubleshooting.

2.6.58 EXT

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: ENVALRM

A Failure Detected External to the NE alarm occurs because an environmental alarm is present. For example, a door could be open or flooding might have occurred.

Clear the EXT Alarm

Step 1 Click the **Maintenance > Alarm Extenders > External Alarms** tab to gather further information about the EXT alarm.

Step 2 Follow your standard operating procedure to remedy environmental conditions that cause alarms. The alarm clears when the situation is remedied.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.59 EXTRA-TRAF-PREEMPT

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

An Extra Traffic Preempted alarm occurs on OC-N cards in two-fiber and four-fiber BLSRs when low-priority traffic directed to the protect system has been preempted by a working system protection switch.

Clear the EXTRA-TRAF-PREEMPT Alarm

Step 1 Verify that the protection switch has occurred by checking the Conditions tab.

Step 2 If a ring switch has occurred, clear the ring switch on the working system by following the appropriate alarm in this chapter. For more information about protection switches, refer to the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 3 If the alarm occurred on a four-fiber BLSR and the span switch occurred on this OC-N, clear the span switch on the working system.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.60 FAILTOSW

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Failure to Switch to Protection Facility condition occurs when a working or protect electrical facility switches to its companion port by using a MANUAL command. For example, if you attempt to manually switch traffic from an unused protect port to an in-service working port, the switch will fail (because traffic is already present on the working port) and you will see the FAILTOSW condition.

Clear the FAILTOSW Condition

Step 1 Look up and troubleshoot the higher-priority alarm. Clearing the higher-priority condition frees the card and clears the FAILTOSW.

Step 2 If the condition does not clear, replace the working electrical (traffic) card that is reporting the higher priority alarm by following the correct replacement procedure in the "2.8.4 Physical Card Reseating, Resetting, and Replacement" procedure on page 2-136. This card is the working electrical card using the protect card and not reporting FAILTOSW.

Replacing the working electrical card that is reporting the higher-priority alarm allows traffic to revert to the working slot and the card reporting the FAILTOSW to switch to the protect card.

Note If an ONS 15600 traffic (OC-N) card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port; refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions. Label the bad port, and place it out of service until such time as the card can be replaced.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.61 FAILTOSW-PATH

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Fail to Switch to Protection Path condition occurs when the working circuit does not switch to the protection circuit on a path protection. Common causes of the FAILTOSW-PATH alarm include a missing or defective protect port, a lockout set on one of the path protection nodes, or path-level alarms that would cause a path protection switch to fail including the "AIS-P" condition on page 2-16, the "LOP-P" alarm on page 2-83, the "SD-P" condition on page 2-108, the "SF-P" condition on page 2-109, and the "UNEQ-P" alarm on page 2-119.

The "LOF (OCN)" alarm on page 2-81, the "LOS (OCN)" alarm on page 2-85, the "SD-L" condition on page 2-106, or the "SF-L" condition on page 2-108 can also occur on the failed path.

Clear the FAILTOSW-PATH Alarm in a Path Protection Configuration

Step 1 Look up and clear the higher priority alarm. Clearing this condition frees the standby card and clears the FAILTOSW-PATH condition. If the "AIS-P" condition on page 2-16, the "LOP-P" alarm on page 2-83, the "UNEQ-P" alarm on page 2-119, the "SF-P" condition on page 2-109, the "SD-P" condition on

page 2-108, the "LOF (OCN)" alarm on page 2-81, the "LOS (OCN)" alarm on page 2-85, the "SD-L" condition on page 2-106, or the "SF-L" condition on page 2-108 are also occurring on the reporting port, complete the applicable alarm clearing procedure.

Step 2 If the alarm does not clear, physically check the fiber connections to the card and ports to ensure that they are securely fastened and intact. For more information about fiber connections and terminations, refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 Clear the attempted switch by completing the following steps:

a. In node view, click the **Circuits > Circuits** tabs.

b. Highlight the path where you tried to perform the switch. In the Switch State column, verify that the state is Clear. If it is not, select **Clear** from the list.

c. Click **Apply**.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447). If the alarm was reported against the ONS 15600, it is Service-Affecting (SA) and should be reported.

2.6.62 FAILTOSWR

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Fail to Switch to Protection Ring condition occurs when a ring switch did not complete because of internal APS problems.

FAILTOSWR clears in any of the following situations:

- A physical card pull of the active TSC card (done under Cisco TAC supervision).
- A node power cycle.
- A higher-priority event such as an external switch command.
- The next ring switch succeeds.
- The cause of the APS switch (such as the "SD-L" condition on page 2-106 or the "SF-L" condition on page 2-108) clears.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the FAILTOSWR Condition in a Two-Fiber BLSR Configuration

Step 1 Perform the EXERCISE RING command on the reporting card by completing the following steps:

a. Click the **Maintenance > BLSR** tabs.

b. Click the row of the affected ring under the West Switch column.

c. Select **Exercise Ring** in the drop-down list.

Step 2 If the condition does not clear, from the view menu, choose **Go to Network View**.

Step 3 Look for alarms on OC-N cards that make up the ring or span and troubleshoot these alarms.

Step 4 If clearing other alarms does not clear the FAILTOSW-RING condition, log into the near-end node.

Step 5 Click the **Maintenance > BLSR** tabs.

Step 6 Record the OC-N cards listed under West Line and East Line. Ensure that these OC-N cards and ports are active and in service by completing the following steps:

a. Verify the LED status: a green SRV LED indicates an active card.

b. Double-click the card in CTC to display the card view.

c. Click the **Provisioning > Line** tabs.

d. Verify that the Admin State column lists the port as IS.

e. If the Admin State column lists the port as OOS,MT or OOS,DSBLD, click the column and choose **IS**. Click **Apply**.

Step 7 If the OC-N cards are active and in service, verify fiber continuity to the ports on the recorded cards. To verify fiber continuity, follow site practices.

Step 8 If fiber continuity to the ports is good, use an optical test set to verify that a valid signal exists on the line. For specific procedures to use the test set equipment, consult the manufacturer. Test the line as close to the receiving card as possible.

Caution Using an optical test set disrupts service on the OC-N card. It could be necessary to manually switch traffic carrying circuits over to a protection path. Refer to the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used switching procedures.

Step 9 If the signal is valid, clean the fiber according to site practice. If no site practice exists, complete the procedure in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 10 If cleaning the fiber does not clear the condition, verify that the power level of the optical signal is within the OC-N card receiver specifications. The "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69 lists these specifications.

Step 11 Repeat Steps 7 through 10 for any other ports on the card.

Step 12 If the optical power level for all OC-N cards is within specifications, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the protect standby OC-N card.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 13 If the condition does not clear after you replace the BLSR cards on the node one by one, repeat Steps 4 through 12 for each of the nodes in the ring.

Step 14 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.63 FAILTOSWS

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Failure to Switch to Protection Span condition signals an APS span switch failure. For a four-fiber BLSR, a failed span switch initiates a ring switch. If the ring switch occurs, the FAILTOSWS condition does not appear. If the ring switch does not occur, the FAILTOSWS condition appears. FAILTOSWS clears when one of the following situations occurs:

- A physical card pull of the active TSC card done under Cisco TAC supervision.
- A node power cycle.
- A higher-priority event such as an external switch command occurs.
- The next span switch succeeds.
- The cause of the APS switch (such as the "SD-L" condition on page 2-106 or the "SF-L" alarm on page 2-108) clears.

Clear the FAILTOSWS Condition

Step 1 Perform the EXERCISE SPAN command on the reporting card by completing the following steps:

a. Click the **Maintenance > BLSR** tabs.

b. Determine whether the card you would like to exercise is the west card or the east card.

c. Click the row of the affected span under the East Switch or West Switch column.

d. Select **Exercise Span** in the drop-down list.

Step 2 If the condition does not clear, from the view menu, choose **Go to Network View**.

Step 3 Look for alarms on OC-N cards that make up the ring or span and troubleshoot these alarms.

Step 4 If clearing other alarms does not clear the FAILTOSWS condition, log into the near-end node.

Step 5 Click the **Maintenance > BLSR** tabs.

Step 6 Record the OC-N cards listed under West Line and East Line. Ensure that these OC-N cards are active and in service by completing the following steps:

a. Verify the LED status: A green SRV LED indicates an active card.

b. To determine whether the OC-N port is in service, double-click the card in CTC to display the card view.

c. Click the **Provisioning > Line** tabs.

d. Verify that the Admin State column lists the port as IS.

e. If the Admin State column lists the port as OOS,MT or OOS,DSBLD, click the column and choose **IS**. Click **Apply**.

Step 7 If the OC-N cards are active and in service, verify fiber continuity to the ports on the recorded cards. To verify fiber continuity, follow site practices.

Step 8 If fiber continuity to the ports is good, use an optical test set to verify that a valid signal exists on the line. For specific procedures to use the test set equipment, consult the manufacturer. Test the line as close to the receiving card as possible.

Caution Using an optical test set disrupts service on the OC-N card. It could be necessary to manually switch traffic carrying circuits over to a protection path. Refer to the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used switching procedures.

Step 9 If the signal is valid, clean the fiber according to site practice. If no site practice exists, complete the procedure in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 10 If cleaning the fiber does not clear the condition, verify that the power level of the optical signal is within the OC-N card receiver specifications. The "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69 lists these specifications.

Step 11 Repeat Steps 7 through 10 for any other ports on the card.

Step 12 If the optical power level for all OC-N cards is within specifications, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the protect standby OC-N card.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 13 If the condition does not clear after you replace the BLSR cards on the node one by one, follow Steps 4 through 12 for each of the nodes in the ring.

Step 14 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.64 FAN-DEGRADE

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: FAN

The Partial Fan Failure Speed Control Degradation alarm occurs if fan speed for one of the fans in the fan-tray assembly falls under 500 RPM when read by a tachometry counter.

Clear the FANDEGRADE Alarm

Step 1 Complete the "Clear the FAN-FAIL Alarm" procedure on page 2-58.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.65 FAN-FAIL

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: FAN

The Fan Failure alarm occurs when two or more fans (out of a total of six) have failed. The ONS 15600 has no standby fan. All fans should be active. The FAN-FAIL alarm can be accompanied by the "MFGMEM (FAN)" alarm on page 2-95 against the fan. This alarm can also be raised in conjunction with a "PWR" alarm on page 2-100.

Clear the FAN-FAIL Alarm

Step 1 If the "MFGMEM (FAN)" alarm on page 2-95 is also reported against the fan, complete the "Clear the MFGMEM (FAN) Alarm" procedure on page 2-95.

Step 2 If the alarm does not clear, check the condition of the air filter to see if it needs cleaning or replacement using the procedure located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the alarm does not clear and if the filter is clean, remove the reporting fan trays from the ONS 15600.

Step 4 Reinsert the fan trays, making sure you can hear the fans start operating.

Fans should run immediately when correctly inserted.

Step 5 If the alarm does not clear or if the fans do not run, replace the fan trays using the procedure located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 6 If the alarm does not clear or if the replacement fan trays do not operate correctly, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.66 FAN-FAIL-PARTIAL

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: FAN

The Partial Fan Failure alarm occurs when one of the six fans in the shelf fails.

Troubleshoot with the "Clear the FAN-FAIL Alarm" procedure on page 2-58 procedure. If the alarm does not clear, log on to http://www.cisco.com/tac for more information or call Cisco TAC at 1-800-553-2447.

2.6.67 FAN-PWR

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: FAN

The Fan Power Failure alarm occurs when a power feed (A or B) from the shelf to fan tray 1, 2, or 3 fails. Because fans are not able to differentiate the power feeds, there is only one alarm for A or B failure.

Clear the FAN-PWR Alarm

Step 1 Remove the reporting fan trays from the ONS 15600.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 Reinsert the fan trays, making sure you hear the fans start to operate.

Fans should run immediately when correctly inserted.

Step 3 If the alarm does not clear or if the fans do not run, replace the fan trays using the procedure located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.68 FE-EXERCISING-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Exercise Ring command issues ring protection switching of the requested channel without completing the actual bridge and switch. The Far-End Exercising Ring condition indicates that the command is being executed on the far-end node.

Note FE-EXERCISING-RING is an informational condition and does not require troubleshooting.

2.6.69 FE-FRCDWKSWPR-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far End Ring Working Facility Forced to Switch to Protection condition occurs when a far-end node ring is forced from working to protect using the FORCE RING command. This condition is only visible on the network view Conditions tab.

The prefix FE means the main alarm is occurring at the far-end node and not at the node reporting the FE-FRCDWKSWPR-RING condition. Troubleshoot the FE condition by troubleshooting the main alarm at its source. The secondary alarms or conditions clear when the primary alarm clears.

Clear the FE-FRCDWKSWPR-RING Condition

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm. For example, an FE-AIS condition from the OC-48 card in Slot 12 of Node 1 could link to the main AIS condition from an OC-48 card in Slot 6 of Node 2.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Clear the main alarm.

Step 4 If the FE-FRCDWKSWPR-RING condition does not clear, complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 5 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.70 FE-FRCDWKSWPR-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far End Working Facility Forced to Switch to Protection Span condition occurs when a far-end span on a four-fiber BLSR is forced from working to protect using the Force Span command. This condition is only visible on the network view Conditions tab. The port where the Force Switch occurred is indicated by an "F" on the network view detailed circuit map. This condition is accompanied by WKSWPR.

Clear the FE-FRCDWKSWPR-SPAN Condition

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Clear the main alarm.

Step 4 If the FE-FRCDWKSWPR-SPAN condition does not clear, complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 5 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.71 FE-LOCKOUTOFPR-ALL

This condition is not used in this platform in this release. It is reserved for future development.

2.6.72 FE-LOCKOUTOFPR-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far-End Lock Out of Protection Span condition occurs when a BSLR span is locked out of the protection system from a far-end node using the Lockout Protect Span command. This condition is only seen on the network view Conditions tab and is accompanied by LKOUTPR-S. The port where the lockout originated is marked by an "L" on the network view detailed circuit map.

Clear the FE-LOCKOUTOFPR-SPAN Condition

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Ensure there is no lockout set. Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.73 FE-MANWKSWPR-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far End Ring Manual Switch of Working to Protect condition occurs when a BLSR working ring is switched from working to protect at a far-end node using the MANUAL RING command.

Clear the FE-MANWKSWPR-RING Condition

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm. For example, an FE-AIS condition from the OC-48 card in Slot 12 of Node 1 could link to the main AIS condition from an OC-48 card in Slot 6 of Node 2.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.74 FE-MANWKSWPR-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far-End Span Manual Switch Working to Protect condition occurs when a four-fiber BLSR span is switched from working to protect at the far-end node using the Manual to Protect command. This condition is only visible on the network view Conditions tab. The port where the Manual Switch occurred is indicated by an "M" on the network view detailed circuit map. This condition is accompanied by WKSWPR.

Clear the FE-MANWKSWPR-SPAN Condition

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.75 FE-SDPRLF

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far End Signal Degrade Protection Line Failure alarm occurs when an APS channel "SD-L" condition on page 2-106 occurs on the far-end protect card.

Note The FESDPRLF alarm occurs when bidirectional protection is used on optical cards in a 1+1 configuration or four-fiber BLSR configuration.

Clear the FE-SDPRLF Alarm

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Clear the main alarm, which in this case is probably the "SD-L" condition on page 2-106. If not, refer to the appropriate alarm section in this chapter in this chapter for instructions.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.76 FE-SF-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Far End Signal Failure BER Threshold Passed for a BLSR Ring alarm indicates that an "SF-L" alarm on page 2-108 has occurred at the far-end node, and it has in turn affected the ring's traffic.

Clear the FE-SF-RING Alarm

Step 1 To troubleshoot an FE condition, determine which node and card link directly to the card reporting the FE alarm.

Step 2 Log into the node that links directly to the card reporting the FE condition.

Step 3 Clear the main alarm, which in this case is probably the "SF-L" condition on page 2-108. If not, refer to the appropriate alarm section in this chapter in this chapter for instructions.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.77 FE-SF-SPAN

The FE-SF-SPAN condition is not used in this platform in this release. It is reserved for future development.

2.6.78 FORCED-REQ

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Force Switch Request on Facility or Port condition occurs when you enter the Force command on a port to force traffic from a working port to a protect port or protection span (or from a protect port to a working port or span). You do not need to clear the condition if you want the Force switch to remain.

Clear the FORCED-REQ Condition

Step 1 Complete the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.79 FORCED-REQ-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Force Switch Request Ring condition applies to optical trunk cards when the FORCE RING command is applied to BLSRs to move traffic from working to protect. This condition is visible on the network view Alarms, Conditions, and History tabs and is accompanied by WKSWPR. The port where the FORCE RING command originated is marked with an "F" on the network view detailed circuit map.

Clear the FORCED-REQ-RING Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.80 FORCED-REQ-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Force Switch Request Span condition applies to optical trunk cards in two-fiber or four-fiber BLSRs when the Force Span command is applied to a BLSR SPAN to force traffic from working to protect or from protect to working. This condition appears on the network view Alarms, Conditions, and History tabs. The port where the FORCE SPAN command was applied is marked with an "F" on the network view detailed circuit map.

This condition can also be raised in 1+1 facility protection groups. If traffic is present on a working port and you use the FORCE command to prevent it from switching to the protect port (indicated by "FORCED TO WORKING"), FORCED-REQ-SPAN indicates this force switch. In this case, the force is affecting not only the facility, but the span.

Clear the FORCED-REQ-SPAN Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.81 FRCDSWTOINT

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE-SREF

The Force Switch to Internal Timing condition occurs when the user issues a Force command to switch to an internal timing source.

Note FRCDSWTOINT is an informational condition and does not require troubleshooting.

2.6.82 FRCDSWTOPRI

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Force Switch to Primary Timing Source condition occurs when the user issues a Force command to switch to the primary timing source.

Note FRCDSWTOPRI is an informational condition. It does not require troubleshooting.

2.6.83 FRCDSWTOSEC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Force Switch to Second Timing Source condition occurs when the user issues a Force command to switch to the second timing source.

Note FRCDSWTOSEC is an informational condition. It does not require troubleshooting.

2.6.84 FRCDSWTOTHIRD

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Force Switch to Third Timing Source condition occurs when the user issues a Force command to switch to a third timing source.

Note FRCDSWTOTHIRD is an informational condition. It does not require troubleshooting.

2.6.85 FREQ-MISMATCH

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Frequency Mismatch alarm occurs when one of the two TSC cards has a timing module failure that causes an inconsistency between the TSC card timing frequencies. This alarm can be caused by the active or standby TSC card.

The ONS 15600 checks timing frequency synchronization in 83-minute (1:23 hours and minutes) cycles. The FREQ-MISMATCH alarm occurs if two consecutive timing check cycles show frequency mismatches. The alarm is cleared if one cycle shows a timing frequency match between the TSC cards.

Clear the FREQ-MISMATCH Alarm

Step 1 Complete the "Replace a TSC Card" procedure on page 2-140 for the standby TSC card.

Step 2 Wait for two intervals of 83 minutes (2:46 hours and minutes) and check the node view Alarms window to see whether the alarm is cleared.

During the initial 83-minute synchronization check cycle when the replacement standby TSC card is booting up, the replacement TSC card is attaining the timing from the BITS or internal source so it is normal that the two TSC cards are not synchronized. The ONS 15600 system disregards the result of this check cycle and begins keeping track of synchronization in the second 83-minute cycle. If the result of the cycle shows that the TSC cards are synchronized properly, the alarm is cleared.

Step 3 If the FREQ-MISMATCH alarm did not clear after two timing check cycles, it means that the second timing cycle resulted in a mismatch. Wait a third 83-minute cycle and check the alarm again.

If the alarm has cleared, it means a third cycle showed that the TSC card timing modules were synchronized. If the alarm remains, it means that the ONS 15600 system has had two frequency mismatch cycles, and indicates a problem with the other TSC card.

Step 4 If the FREQ-MISMATCH alarm remains after three 83-minute cycles, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 to make the TSC card standby.

Step 5 Complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the standby TSC card.

The card removal and reboot temporarily clears the alarm.

Step 6 Wait for three intervals of 83 minutes (4:09 hours and minutes) and check CTC to see if the FREQ-MISMATCH alarm has recurred. If it has not recurred, the problem is solved.

Step 7 If the alarm has recurred after both TSC cards have been replaced, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.86 FRNGSYNC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE-SREF

The Free Running Synchronization Mode condition occurs when the reporting ONS 15600 is in free-run synchronization mode. External timing sources have been disabled and the node is using its internal clock, or the node has lost its designated BITS timing source. After the 24-hour holdover period expires, timing slips could begin to occur on an ONS 15600 node relying on an internal clock.

Note If the ONS 15600 is configured to operate from its internal clock, disregard the FRNGSYNC condition.

Clear the FRNGSYNC Condition

Step 1 If the ONS 15600 is configured to operate from an external timing source, verify that the BITS timing source is valid. Common problems with a BITS timing source include reversed wiring and bad timing cards. Refer to the "Timing" chapter in the *Cisco ONS 15600 Reference Manual* for more information about it.

Step 2 If the BITS source is valid, clear alarms related to the failures of the primary and secondary reference sources, such as the "SYNCPRI" alarm on page 2-116 and the "SYNCSEC" alarm on page 2-117.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.87 FSTSYNC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Fast Synchronization Mode condition occurs when the ONS 15600 synchronizes its clock modules. Since the ONS 15600 uses Stratum 3E timing, synchronization can take about 12 minutes. This condition occurs on the TSC card where the timing distribution is sourced. Whenever this condition is active, any timing or controller switching might affect the traffic. Errorless switching is not guaranteed.The "UNPROT-SYNCCLK" alarm on page 2-120 can accompany this condition if there is no timing protection is available while the clock is synchronizing.

If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.88 FULLPASSTHR-BI

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Bidirectional Full Pass-Through Active condition occurs on a nonswitching node in a BLSR when the protect channels on the node are active and carrying traffic and a change is present in the receive K byte from "No Request." (Both data and K bytes are in pass-through mode.)

Clear the FULLPASSTHR-BI Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.89 GFP-LFD

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: POS

The Generic Framing Procedure (GFP) Loss of Frame Delineation alarm occurs if there is a bad SONET connection, if SONET path errors cause GFP header errors in the check sum calculated over payload length (PLI/cHEC) combination, or if the GFP source port sends an invalid PLI/cHEC combination. The loss causes traffic stoppage.

Clear the GFP-LFD Alarm

Step 1 Look for and clear any associated SONET path errors such as LOS or AIS-L originating at the transmit node.

Step 2 If the GFP-LFD alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.90 GFP-UP-MISMATCH

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: POS

The GFP User Payload Mismatch alarm is raised when the ASAP card is provisioned with different values such as the near-end port media type not matching the remote port media type.

Clear the GFP-UP-MISMATCH Alarm

Step 1 Double-click the alarmed card to display the card view.

Step 2 Click the **Provisioning > Ethernet > POS Ports** tabs.

Step 3 Verify that the ENCAP CRC and Framing Type columns contain the same value. If they do not, change the incorrect one (depending on your network's requirements).

Step 4 Click **Apply**.

Step 5 If the GFP-UP-MISMATCH alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.91 HELLO

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Open Shortest Path First (OSPF) Hello Fail alarm occurs when SONET DCC termination OSPF area IDs are mismatched between two DCC terminations for a span. On a span between two ONS 15600s, this alarm occurs at both nodes containing the mismatched DCC area IDs. On a span between an ONS 15600 and an ONS 15454, this alarm is raised only on the ONS 15600 node. Mismatched OSPF area IDs can cause CTC to lose management across the link.

Clear the HELLO Alarm

Step 1 Log into both end nodes with the DCC terminations.

Step 2 On the nodes where the alarm occurred, record the slot and port (from the Slot column and Port column in the Alarms window) that the Hello alarm occurs against. This information helps you determine which DCC termination is mismatched.

Tip You can log into another node by going to network view and double-clicking the node.

Step 3 On one node, in node view, click the **Provisioning > Network > OSPF** tabs.

Step 4 In the DCC OSPF Area ID Table area, locate the alarmed DCC termination by comparing slot and port numbers to the slot and port number indicated in the alarm on the node.

Step 5 Click the Area ID column cell for the mismatched DCC termination.

Step 6 Change the area ID in the cell to the same ID as its partner DCC termination. (The ONS 15600 defaults to 0.0.0.0 format addresses.)

Step 7 Click **Apply**.

Step 8 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.92 HI-LASERBIAS

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: PPM

The Equipment High Transmit Laser Bias Current alarm indicates that the card laser has reached the maximum laser bias tolerance.

Laser bias typically starts at about 30 percent of the manufacturer maximum laser bias specification and increases as the laser ages. If the HI-LASERBIAS alarm threshold is set at 100 percent of the maximum, the laser usability has ended. If the threshold is set at 90 percent of the maximum, the card is still usable for several weeks or months before it needs to be replaced.

Clear the HI-LASERBIAS Alarm

Step 1 Complete the "Replace an ASAP Carrier Module" procedure on page 2-141, "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141, or "Replace an ASAP SFP (PPM) Module" procedure on page 2-142, depending upon which part is bad.

Caution Removing a facility or card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. Refer to the *Cisco ONS 15600 Procedure Guide*.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.93 HI-RXPOWER

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Equipment High Receive Power alarm is an indicator of the optical signal power that is transmitted to the ASAP card. HI-RXPOWER occurs when the measured optical power of the received signal exceeds the threshold value, which is user-provisionable.

Note For more information about ASAP cards, refer to the *Cisco ONS 15600 Reference Manual*. For more information about how they and their component modules are provisioned, refer to the *Cisco ONS 15600 Procedure Guide*.

Clear the HI-RXPOWER Alarm

Step 1 Determine whether there are any faults for the SFP (PPM) or 4PIO (PIM) modules associated with the errored circuit. If there are, troubleshoot them using the procedures in this manual.

Step 2 If no faults are present on the other port(s) of the transmit or receive card, use a known-good loopback cable to complete the "Create the Facility (Line) Loopback or Payload Loopback on the Source Optical Port" procedure on page 1-7 and test the loopback.

Step 3 If the carrier module itself is bad and you need all of its port bandwidth, complete the "Replace an ASAP Carrier Module" procedure on page 2-141. If the port is bad but you can move the traffic to another port, complete the "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141 or "Replace an ASAP SFP (PPM) Module" procedure on page 2-142 as needed.

Caution Removing hardware that currently carries traffic can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.94 HI-TXPOWER

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Objects: PPM

The Equipment High Transmit Power alarm is an indicator on the ASAP card transmitted optical signal power. HI-TXPOWER occurs when the measured optical power of the transmitted signal exceeds the threshold.

Note For more information about ASAP cards, refer to the *Cisco ONS 15600 Reference Manual*.

Clear the HI-TXPOWER Alarm

Step 1 Display the ASAP card view.

Step 2 Click the **Provisioning > Optics Thresholds** tabs.

Step 3 Increase the TX Power Low column value by 0.5 dBm.

Step 4 If the card transmit power setting cannot be increased without affecting the signal, complete the "Replace an ASAP SFP (PPM) Module" procedure on page 2-142.

Step 5 If no ports are shown bad and the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.95 HLDOVRSYNC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA) condition

Logical Object: NE-SREF

The Holdover Synchronization Mode condition is caused by loss of the primary and second timing references in the node. Timing reference loss occurs when line coding on the timing input is different from the configuration on the node, and it often occurs during the selection of a new node reference clock. The condition clears when primary or second timing is reestablished. After the 24-hour holdover period expires, timing slips could begin to occur on an ONS 15600 relying on an internal clock.

Clear the HLDOVRSYNC Condition

Step 1 Clear additional alarms that relate to timing, such as:

- 2.6.86 FRNGSYNC, page 2-66
- 2.6.87 FSTSYNC, page 2-67
- 2.6.111 LOF (BITS), page 2-80
- 2.6.116 LOS (BITS), page 2-84
- 2.6.127 MANSWTOINT, page 2-91
- 2.6.128 MANSWTOPRI, page 2-91
- 2.6.129 MANSWTOSEC, page 2-91

- 2.6.130 MANSWTOTHIRD, page 2-92
- 2.6.181 SWTOPRI, page 2-114
- 2.6.182 SWTOSEC, page 2-115
- 2.6.183 SWTOTHIRD, page 2-115
- 2.6.186 SYNC-FREQ, page 2-116
- 2.6.187 SYNCPRI, page 2-116
- 2.6.188 SYNCSEC, page 2-117
- 2.6.189 SYNCTHIRD, page 2-117

Step 2 Reestablish a primary and secondary timing source according to local site practice. If none exists, refer to the "Change Node Settings" chapter in the *Cisco ONS 15600 Procedure Guide* to find one.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) in order to report a Service-Affecting (SA) problem.

2.6.96 IMPROPRMVL (CAP)

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: CAP

The Improper Removal CAP alarm occurs when a CAP is not correctly installed on the backplane or is missing altogether. The problem is not user serviceable. Contact the Cisco TAC at 1-800-553-2447.

2.6.97 IMPROPRMVL (EQPT, PIM, PPM)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Objects: EQPT, PIM, PPM

The Improper Removal equipment alarm occurs when a card is physically removed from its slot before it is deleted from CTC. The card does not need to be in service to cause the IMPROPRMVL alarm; it only needs to be recognized by CTC. The alarm does not appear if you delete the card from CTC before you physically remove the card from the node. It can also occur if the card is inserted into a slot but is not preprovisioned or fully plugged into the backplane. For ASAP card SFPs (PPMs), the alarm occurs if you provision an SFP (PPM) but no physical module is inserted on the port, or if no SFP (PPM) is inserted into the 4PIO (PIM).

Caution If CTC begins to reboot a card before you remove the card, allow the card to finish rebooting. After the card reboots, delete the card in CTC and physically remove the card before it begins to reboot. When you delete the card, CTC loses connection with node view and goes to network view.

Note It can take up to 30 minutes for software to be updated on a standby TSC card.

Clear the IMPROPRMVL (EQPT, PIM, PPM) Alarm

Step 1 In node view, right-click the card reporting the IMPROPRMVL.

Step 2 Choose **Delete** from the shortcut menu.

Note CTC does not allow you to delete the reporting card if the card is in service, does have circuits mapped to it, is paired in a working protection scheme, has DCC enabled, or is used as a timing reference. However if none of these services is provisioned, you can delete an IS card.

Step 3 If any ports on the card are in service, place them out of service (OOS,MT) by completing the following steps:

Caution Before placing a port out of service (OOS,MT or OOS,DSBLD), ensure that no live traffic is present.

a. In node view, double-click the reporting card to display the card view.

b. Click the **Provisioning > Line** tab.

c. Click the Admin State column of any in-service (IS) ports.

d. Choose **OOS,MT** to take the ports out of service.

Step 4 If a circuit has been mapped to the card, delete it using the procedure in the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Before deleting the circuit, ensure that the circuit does not carry live traffic.

Step 5 If the card is paired in a protection scheme, delete the protection group by completing the following steps:

a. Click **View > Go to Previous View** to return to node view.

b. If you are already in node view, click the **Provisioning > Protection** tabs.

c. Click the protection group of the reporting card.

d. Click **Delete**.

Step 6 If the card is provisioned for DCC, delete the DCC provisioning by completing the following steps:

a. Click the node view **Provisioning > Comm Channels > SDCC** tabs.

b. Click the slots and ports listed in DCC terminations.

c. Click **Delete** and click **Yes** in the dialog box that appears.

Step 7 If the card is used as a timing reference, change the timing reference by completing the following steps:

a. Click the **Provisioning > Timing > General** tabs.

b. Under NE Reference, click the drop-down arrow for **Ref-1**.

c. Change Ref-1 from the listed OC-N card to **Internal Clock**.

d. Click **Apply**.

Step 8 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) in order to report a Service-Affecting (SA) problem.

2.6.98 IMPROPRMVL (EQPT for the SSXC or TSC Card)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: EQPT

The Improper Removal SSXC, Traffic Card, or TSC card alarm occurs when a TSC card, SSXC card, or traffic (OC-N) card is physically removed from its slot. This alarm can occur if the card is recognized by CTC and the active TSC card but is not in service. For example, it could be inserted in the slot but not fully plugged into the backplane.

If the removed TSC card or SSXC card is the last one on the shelf, the severity is Critical (CR) and traffic is affected. Otherwise, the alarm is Minor (MN).

Caution Do not remove and reinsert (reseat) a card during a card reboot. If CTC begins to reboot a card before you remove the card, allow the card to finish rebooting. After the card reboots, delete the card in CTC again and physically remove the card before it begins to reboot.

Note After deleting a card in CTC, the software allows you approximately 15 seconds to physically remove the card before CTC begins a card reboot.

Clear the IMPROPRMVL (SSXC, TSC) Alarm

Step 1 Complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the TSC card or SSXC. (The procedure is similar for both.)

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.99 IMPROPRMVL (FAN)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: FAN

The Improper Removal Fan alarm occurs when fan tray 1, 2, or 3 is physically removed from its slot.

Clear the IMPROPRMVL (FAN) Alarm

Step 1 Refer to the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide* for procedures to replace the fan-tray assembly.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the fan tray does not run immediately, troubleshoot with the "Clear the FAN-FAIL Alarm" procedure on page 2-58.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.100 IMPR-XC

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Improper Cross-Connect Card alarm indicates that the CXC card is being used rather than the SSXC (the preferred cross-connect card for R5.0 and onward). The alarm remains standing as long as a CXC is present on the node. Since a CXC card is still capable of passing traffic, the alarm is not Service-Affecting (SA). However, a system containing a CXC card and the current software release is not fully guaranteed for functionality.

Note IMPR-XC is an informational alarm and does not require troubleshooting. However, if you are experiencing cross-connect related problems at this site, also report this alarm to the Cisco TAC.

2.6.101 INTRUSION-PSWD

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE

The Security Intrusion Incorrect Password condition occurs after a user attempts a provisionable (by Superuser) number of unsuccessful logins, a login with an expired password, or an invalid password. The alarmed user is locked out of the system, and INTRUSION-PSWD condition is raised. This condition is only shown in Superuser login sessions, not in login sessions for lower-level users. The INTRUSION-PSWD condition is automatically cleared when a provisionable lockout timeout expires, or it can be manually cleared in CTC by the Superuser if lockout is permanent.

Clear the INTRUSION-PSWD Condition

Step 1 Click the **Provisioning > Security > Users** tabs.

Step 2 Click **Clear Security Intrusion Alarm**.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.102 INVMACADR

Default Severity: Major (MJ), Non-Service-Affecting (NSA)

Logical Object: BPLANE

The Invalid MAC Address alarm occurs when the ONS 15600 MAC address retrieval fails and the node does not have a valid MAC address to support the operating system (OS). Do not attempt to troubleshoot an INVMACADR alarm. Contact the Cisco Technical Assistance Center (TAC) at (1-800-553-2447).

2.6.103 ISIS-ADJ-FAIL

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Open System Interconnection (OSI) Intermediate System to Intermediate-System (IS-IS) Adjacency Failure alarm is raised by an intermediate system (node routing IS Level 1 or Level 1 and 2) when no IS or end system (ES) adjacency is established on a point-to-point subnet. The Intermediate-System Adjacency Failure alarm is not supported by ES. It is also not raised by IS for disabled routers.

The alarm is typically caused by a misconfigured router manual area adjacency (MAA) address. For more information about IS-IS OSI routing and MAA configuration, refer to the "Management Network Connectivity" chapter in the *Cisco ONS 15600 Reference Manual*. For more information about configuring OSI, refer to the "Turn Up Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Clear the ISIS-ADJ-FAIL Alarm

Step 1 Ensure that both ends of the comm channel are using the correct Layer 2 protocol and settings (LAPD or PPP). To do this, complete the following steps:

a. At the local node, in node view, click the **Provisioning > Comm Channels > SDCC** tabs.

b. Click the row of the circuit. Click **Edit**.

c. In the Edit SDCC termination dialog box, view and record the following selections: Layer 2 protocol (LAPD or PPP); Mode radio button selection (AITS or UITS); Role radio button selection (Network or User); MTU value; T200 value; and T203 selections.

d. Click **Cancel**.

e. Log in to the remote node and follow the same steps, also recording the same information for this node.

Step 2 If both nodes do not use the same Layer 2 settings, you will have to delete the incorrect termination and recreate it. To delete it, click the termination and click **Delete**. To recreate it, refer to the "Turn Up Node" chapter in the *Cisco ONS 15600 Procedure Guide* for the procedure.

Step 3 If the nodes use PPP Layer 2, complete the "Clear the EOC Alarm" procedure on page 2-42. If the alarm does not clear, go to Step 7.

Step 4 If both nodes use the LAPD Layer 2 protocol but have different Mode settings, change the incorrect node's entry by clicking the correct setting radio button in the Edit SDCC termination dialog box and clicking **OK.**

Step 5 If the Layer 2 protocol and Mode settings are correct, ensure that one node is using the Network role and the other has the User role. If not (that is, if both have the same mode settings), correct the incorrect one by clicking the correct radio button in the Edit SDCC termination dialog box and clicking **OK**.

Step 6 If the Layer 2, Mode, and Role settings are correct, compare the MTU settings for each node. If one is incorrect, choose the correct value in the Edit SDCC dialog box and click **OK**.

Step 7 If all of the preceding settings are correct, ensure that OSI routers are enabled for the communication channels at both ends by completing the following steps:

a. Click **Provisioning > OSI > Routers > Setup**.

b. View the router entry under the **Status** column. If the status is Enabled, check the other end.

c. If the Status is Disabled, click the router entry and click **Edit**.

d. Check the **Enabled** check box and click **OK**.

Step 8 If the routers on both ends are enabled and the alarm still has not cleared, ensure that both ends of the comm channel have a common MAA by completing the following steps:

a. Click the **Provisioning > OSI > Routers > Setup** tabs.

b. Record the primary MAA and secondary MAAs, if configured.

Tip You can record long strings of information such as the MAA address by using the CTC export and print functions. Export it by choosing File > Export > html. Print it by choosing File > Print.

c. Log into the other node and record the primary MAA and secondary MAAs, if configured.

d. Compare this information. There should be at least one common primary or secondary MAA in order to establish an adjacency.

e. If there is no common MAA, one must be added to establish an adjacency. Refer to the "Turn Up Node" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions to do this.

Step 9 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.104 KB-PASSTHR

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The K Byte Pass Through Active condition occurs on a nonswitching node in a BLSR when the protect channels on the node are not active and the node is in K Byte pass-through state. It also occurs when a BLSR ring is being exercised using the Exercise Ring command.

Clear the KB-PASSTHR Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.105 KBYTE-APS-CHANNEL-FAILURE

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The APS Channel Failure alarm is raised when a span is provisioned for different APS channels on each side. For example, the alarm is raised if K3 is selected on one end and F1, E2, or Z2 is selected on the other end.

This alarm is also raised during checksum failure if the K1 and K2 bytes are overwritten by test equipment. It is not raised in bidirectional full pass-through or K-byte pass-through states. The alarm is overridden by AIS-P, LOF, LOS, or SF-BER alarms.

Clear the KBYTE-APS-CHANNEL-FAILURE Alarm

Step 1 The alarm is most frequently raised due to mismatched span provisioning. In this case, reprovision one side of the span with the same parameters. To do this, refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for procedures.

Step 2 If the error is not caused by incorrect provisioning, it is because of checksum errors within an OC-N, cross-connect, or TSC card. In this case, complete the "Request a Cross-Connect Card Preferred Copy Switch" procedure on page 2-136 to allow CTC to resolve the issue.

Step 3 If third-party equipment is involved, ensure that it is configured for the same APS channel as the Cisco ONS equipment.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.106 LASER-BIAS

Default Severity: Critical (CR), Service- Affecting (SA)

Logical Objects: EQPT, PPM

The High Laser Bias Current alarm occurs when a port on an OC-192 card is transmitting a laser current outside of the acceptable preset range. The alarm occurs at the card level rather than at the port level. The alarm is typically accompanied by signal or bit errors on the downstream node.

Note The difference between this alarm and the laser bias current performance-monitoring parameter is that the alarm indicates a serious physical condition in the transmitter.

Clear the LASER-BIAS Alarm

Step 1 If the alarm is reported against the working OC-192 facility and traffic has not automatically switched to protect, initiate a Force switch. If it is part of a path protection, complete the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129. If is part of a 1+1 protection group, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Step 2 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the reporting card.

Step 3 If the alarm does not clear after replacing the card, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

Step 4 Traffic reverts to the working port if working port if an automatic switch occurred. If the alarm cleared and traffic was switched in Step 1, revert traffic by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127. If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

2.6.107 LASER-OVER-TEMP

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Objects: EQPT, PPM

The Port-Level High Temperature OC-192 equipment alarm accompanies a fault in one of the four OC-192 ports. The fault causes output signal bit errors that are detected by the downstream node, which performs an APS.

If more than one card has this condition, troubleshoot with the "Clear the EQPT-HITEMP Alarm" procedure on page 2-47. Any time an OC-192 card or port reports an over-temperature condition, follow the "Clear the LASER-BIAS Alarm" procedure on page 2-78. If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.108 LKOUTPR-S

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Lockout of Protection Span condition occurs on a BSLR node when traffic is locked out of a protect span using the LOCKOUT SPAN command. This condition is visible on the network view Alarms, Conditions, and History tabs after the lockout has occurred and accompanies the FE-LOCKOUTPR-SPAN condition. The port where the lockout originated is marked by an "L" on the network view detailed circuit map.

Clear the LKOUTPR-S Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.109 LOCKOUT-REQ

Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: OCN, STSMON

The Lockout Switch Request on Facility or Equipment condition occurs when a user initiates a lockout switch request for an OC-N port in a 1+1 facility protection group. This can be accomplished by locking traffic onto the working port with the lock on command (thus locking it off the protect port), or locking it off the protect port with the lock out command. In either case, the protect port will show "Lockout of Protection," and the Conditions window will show the LOCKOUT-REQ condition.

A lockout prevents protection switching. Clearing the lockout allows protection switching and clears the LOCKOUT-REQ condition.

Clear the LOCKOUT-REQ Condition

Step 1 Complete the "Clear a Card or Port Lock On or Lock Out Command" procedure on page 2-129.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.110 LOCKOUT-REQ-RING

- Not Alarmed (NA), Non-Service-Affecting (NSA)
- Logical Object: OCN

The Lockout Switch Request on Ring condition occurs when a user initiates a lockout switch request for an OC-N card or a lockout switch request on the BLSR ring level. A lockout prevents protection switching. Clearing the lockout again allows protection switching and clears the LOCKOUT-REQ-RING condition.

Clear the LOCKOUT-REQ-RING Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.111 LOF (BITS)

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: BITS

The Loss of Frame (BITS) alarm is Major (MJ) if there is no backup TSC card BITS source and Minor (MN) if one of the TSC cards BITS sources fails. If one of the pair fails, a timing APS is activated on the second source.

Clear the LOF (BITS) Alarm

Step 1 Verify that the framing and coding match between the BITS input and the TSC card by completing the following steps:

a. Find the coding and framing formats of the external BITS timing source. This should be in the user documentation for the external BITS timing source or on the external timing source itself.

b. Click the node view **Provisioning > Timing > BITS Facilities** tabs.

c. Verify that the Coding setting matches the Coding setting of the BITS timing source (either B8ZS or AMI).

d. If the coding does not match, click **Coding** to display a drop-down list. Choose the appropriate coding.

e. Verify that the Framing matches the framing of the BITS timing source (either ESF or SF [D4]).

f. If the framing does not match, click **Framing** to display the drop-down list. Choose the appropriate framing.

Note In the Timing window, the B8ZS coding field is normally paired with ESF in the Framing field, and the AMI coding field is normally paired with SF (D4) in the Framing field.

Step 2 Ensure that the BITS clock is operating properly.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.112 LOF (OCN)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: OCN

The Line Loss of Frame Alignment alarm occurs when a port on the reporting traffic (OC-N) card has an LOF. LOF indicates that the receiving ONS 15600 has lost frame delineation in the incoming data and when the SONET overhead loses a valid framing pattern for three milliseconds. Receiving two consecutive valid A1/A2 framing patterns clears the alarm.

LOF on a traffic card is sometimes an indication that the port reporting the alarm expects a specific line rate and the input line rate source does not match the input line rate of the optical receiver.

If the port is in 1+1 protection and successfully switches, the alarm severity is MN, NSA. If the port is unprotected or if protection switching is prevented, the severity is CR, SA.

Clear the LOF (OCN) Alarm

Step 1 Verify that the automatic protection switch to the protect port was successful.

- A path protection APS is identified by an AUTOSW-type alarm or condition (such as AUTOSW-AIS, AUTOSW-LOP, AUTOSW-PDI, AUTOSW-SDBER, AUTOSW-SFBER, or AUTOSW-UNEQ).
- A 1+1 APS is identified in the node view Maintenance > Protection window. If you click the protection group, under the Selected Group list, the ports are designated as Working/Standby and Protect/Active.

Step 2 Verify that the traffic (OC-N) card and port on the upstream node is in service.

- On an in-service traffic card, the green SRV and Laser On LEDs are illuminated.
- If the card ports are in service, in the card view Provisioning window, the Status column for the port(s) show In Service. If the ports are not in service, click the port column and choose **In Service**, then click **Apply**.

Step 3 If the alarm does not clear, clean the optical fiber connectors by completing the following steps:

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

a. Clean the fiber connectors according to local site practice.

b. If no local practice exists, use a CLETOP Real-Type or equivalent fiber-optic cleaner and follow the instructions accompanying the product and/or refer to the procedures in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 4 If you continue to receive the LOF alarm, see the "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69 for acceptable standards.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.113 LO-LASERBIAS

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: PPM

The Equipment Low Transmit Laser Bias Current alarm indicates that the card laser has reached the minimum laser bias tolerance.

If the LO-LASERBIAS alarm threshold is set at 0 percent (the default), the laser's usability has ended. If the threshold is set at 5 percent to 10 percent, the card is still usable for several weeks or months before you need to replace it.

Clear the LO-LASERBIAS Alarm

Step 1 Complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. Refer to the *Cisco ONS 15600 Procedure Guide*.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.114 LOP-P

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: STSMON

A Loss of Pointer Path alarm indicates that the transmitted optical circuit size is different from the provisioned optical circuit size. LOP-P occurs when valid H1/H2 pointer bytes are missing from the SONET overhead. Receiving equipment monitors the H1/H2 pointer bytes to locate the SONET payload. An LOP-P alarm means that eight, nine, or ten consecutive frames do not have valid pointer values. The alarm clears when three consecutive valid pointers are received.

One of the conditions that can cause this alarm is a transmitted STSc circuit that is different from the provisioned STSc. This condition causes a mismatch of the path type on the concatenation facility. It occurs when there are eight to ten new data flags received, or eight to ten invalid pointers. For example, if an STS-3c or STS-1 is sent across a path provisioned for STS-12c, an LOP alarm occurs.

Clear the LOP-P Alarm

Step 1 Complete the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129 or the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126 as appropriate.

Step 2 Use a test set to verify that the incoming signal is valid; refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions on testing optical circuits. If the upstream signal is not valid, troubleshoot upstream.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the incoming signal is valid, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the reporting card.

Note If the traffic (OC-N) card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port. Refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions. Label the bad port, and place it out of service until the card can be replaced.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.115 LO-RXPOWER

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: OCN

The Equipment Low Receive Power alarm is an indicator of the optical signal power that is transmitted to the ASAP card. LO-RXPOWER occurs when the measured optical power of the received signal falls below the threshold value, which is user-provisionable.

Note For more information about ASAP cards, refer to the *Cisco ONS 15600 Reference Manual*. For more information about how they and their component modules are provisioned, refer to the *Cisco ONS 15600 Procedure Guide*.

Clear the LO-RXPOWER Alarm

Step 1 Determine whether there are any faults for the SFP (PPM) or 4PIO (PIM) modules associated with the errored circuit. If there are, troubleshoot them using the procedures in this manual.

Step 2 If no faults are present on the other port(s) of the transmit or receive card, use a known-good loopback cable to complete the "Create the Facility (Line) Loopback or Payload Loopback on the Source Optical Port" procedure on page 1-7 and test the loopback.

Step 3 If the carrier module itself is bad and you need all of its port bandwidth, complete the "Replace an ASAP Carrier Module" procedure on page 2-141. If the port is bad but you can move the traffic to another port, complete the "Replace an ASAP 4PIO (PIM) Module" procedure on page 2-141 or "Replace an ASAP SFP (PPM) Module" procedure on page 2-142 as needed.

Caution Removing hardware that currently carries traffic can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.116 LOS (BITS)

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: BITS

The Loss of Signal BITS alarm is Major (MJ) if there is no backup TSC card BITS source, and Minor (MN) if one of the TSC card BITS sources fails. If one of the pair fails, a timing APS is activated on the second source.

Clear the LOS (BITS) Alarm

Step 1 Check the wiring connection from the ONS 15600 backplane BITS clock pin fields to the timing source. For more information about backplane wiring connections, refer to the "Install the Bay and Backplane Connections" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 Ensure that the BITS clock is operating properly.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.117 LOS (OCN)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: OCN

A Loss of Signal Line alarm for either an OC-48 or OC-192 port occurs when the port on the card is in service but no signal is being received. The cabling might not be correctly connected to the ports, or no signal exists on the line. Possible causes for a loss of signal include upstream equipment failure or a fiber cut. It clears when two consecutive valid frames are received.

Clear the LOS (OCN) Alarm

Step 1 Verify fiber continuity to the port. To verify cable continuity, follow site practices.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the cabling is good, verify that the correct port is in service by completing the following steps:

a. Confirm that the LED is correctly illuminated on the physical card.

   A green SRV LED indicates an active card.

b. To determine whether the OC-N port is in service, double-click the card in CTC to display the card view by completing the following steps:

c. Click the **Provisioning > Line** tabs.

d. Verify that the Admin State column lists the port as IS.

e. If the Admin State column lists the port as OOS,MT or OOS,DSBLD, click the column and choose **IS**.

f. Click **Apply**.

Step 3 If the correct port is in service, clean the fiber according to site practice. If no site practice exists, complete the procedure in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 4 If the alarm does not clear, verify that the power level of the optical signal is within the OC-N card receiver specifications. The "1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69 lists these specifications for each OC-N card.

Step 5 If the optical power level is within specifications, use an optical test set to verify that a valid signal exists on the line. For specific procedures to use the test set equipment, consult the manufacturer. Test the line as close to the receiving card as possible.

Step 6 If a valid signal exists, replace the connector on the backplane.

Step 7 Repeat Steps 1 to 6 for any other port on the card reporting the LOS (OC-N).

Step 8 If the alarm does not clear, look for and troubleshoot any other alarm that could identify the source of the problem.

Step 9 If no other alarms exist that could be the source of the LOS, or if clearing an alarm did not clear the LOS, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the reporting card.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 10 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) in order to report a Service-Affecting (SA) problem.

2.6.118 LO-TXPOWER

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: PPM

The Equipment Low Transmit Power alarm is an indicator for ASAP card transmitted optical signal power. LO-TXPOWER occurs when the measured optical power of the transmitted signal falls under the threshold, which is user-provisionable.

Note For more information about ASAP cards, refer to the *Cisco ONS 15600 Reference Manual*.

Clear the LO-TXPOWER Alarm

Step 1 Display the ASAP card view.

Step 2 Click the **Provisioning > Optics Thresholds** tabs.

Step 3 Increase the TX Power Low column value by 0.5 dBm.

Step 4 If the card transmit power setting cannot be increased without affecting the signal, complete the "Replace an ASAP SFP (PPM) Module" procedure on page 2-142.

Caution Removing a card that currently carries traffic on one or more ports can cause a traffic hit. To avoid this, perform an external switch if a switch has not already occurred. See the "2.8.2 Protection Switching, Lock Initiation, and Clearing" section on page 2-126 for commonly used traffic-switching procedures.

Step 5 If no ports are shown bad and the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.119 LPBKCRS

Default Severity: Not Alarmed (NA), Service-Affecting (SA)

Logical Object: STSMON

The Loopback Cross-Connect condition indicates that a software cross-connect loopback is active between a traffic (OC-N) card and a cross-connect card.

Loopback is a commonly used troubleshooting technique. A signal is sent out on a link or section of the network and returned to the sending device. If the signal does not return or returns with errors, the test confirms that the problem is present in the tested link. By setting up loopbacks on various parts of the node and excluding other parts, you can logically isolate the source of the problem. For more information about loopbacks, see the "Troubleshooting Optical Circuits with Loopbacks" procedure in Chapter 1.

Three types of loopbacks are available: Cross-Connect, Facility, and Payload. Cross-connect loopbacks troubleshoot OC-48 signals on SSXC cards. Facility loopbacks troubleshoot OC-48 ports only and are generally performed locally or at the near end. Payload loopbacks troubleshoot OC-192 ports only and are generally performed locally or at the near end.

Clear the LBKCRS Condition

Step 1 To remove the loopback cross-connect condition, double-click the traffic (OC-N) card in node view.

Step 2 Click the **Provisioning > STS** tabs.

Step 3 In the XC Loopback column, deselect the check box for the port.

Step 4 Click **Apply**.

Step 5 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.120 LPBKFACILITY (GIGE)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: GIGE

A Loopback Facility condition for a Gigabit Ethernet (GE) port occurs when a software facility (line) loopback is active for an ASAP card client 4PIO (PIM) provisioned at the ONE_GE port rate.

For information about troubleshooting these circuits with loopbacks, refer to the "1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks" section on page 1-25.

Note For more information about ASAP cards, refer to the *Cisco ONS 15600 Reference Manual*.

Clear the LPBKFACILITY (GIGE) Condition

Step 1 Complete the "Clear the LBKFACILITY (OCN) Condition" procedure on page 2-88.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.121 LPBKFACILITY (OCN)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

A Facility Loopback Active condition for an OC-N occurs on OC-48 cards or OC-192 cards when a software facility loopback is active for a port on the reporting card, and the facility entity is out of service.

Caution Before performing a facility loopback on an OC-48 card, make sure the card contains at least two section DCC paths to the node where the card is installed. A second section DCC path provides a nonlooped path to log into the node after the loopback is applied, thus enabling you to remove the facility loopback. Ensuring a second section DCC is not necessary if you are directly connected to the ONS 15600 containing the loopback OC-N.

Clear the LBKFACILITY (OCN) Condition

Step 1 To remove the loopback facility condition, double-click the reporting card in node view.

Step 2 Click the **Maintenance > Loopback** tabs.

Step 3 In the Loopback Type column, click the correct row for the port and choose **None** from the drop-down list.

Step 4 Click **Apply**.

Step 5 Click the **Provisioning > Line** tabs.

Step 6 In the Admin State column, click the correct row for the port and choose **IS,AINS** from the drop-down list.

Step 7 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.122 LPBKPAYLOAD

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

A Payload Loopback Active condition occurs on OC-192 cards when a software payload loopback is active for a port on the OC-192 card, and the facility entity is out of service.

Clear the LPBKPAYLOAD Condition

Step 1 To remove the loopback payload condition, double-click the reporting card in node view.

Step 2 Click the **Maintenance > Loopback** tabs.

Step 3 In the Loopback Type column, click the correct row for the port and choose **None** from the drop-down list.

Step 4 Click **Apply**.

Step 5 Click the **Provisioning > Line** tabs.

Step 6 In the Admin State column, click the correct row for the port and choose **IS,AINS** from the drop-down list.

Step 7 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.123 LPBKTERMINAL (GIGE)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: GIGE

A Loopback Terminal condition for a Gigabit Ethernet port occurs when a software terminal (inward) loopback is active for an ASAP card client SFP (PPM) provisioned at the ONE_GE port rate.

For information about troubleshooting these circuits with loopbacks, refer to the "1.3 Troubleshooting an Ethernet Circuit Path With Loopbacks" section on page 1-25].

Clear the LPBKTERMINAL (GIGE) Condition

Step 1 Complete the "Clear the LBKTERMINAL (OCN) Condition" procedure on page 2-90.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.124 LPBKTERMINAL (OCN)

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

A Terminal Loopback Active condition for OC-N occurs on OC-48 cards or OC-192 cards when a software facility loopback is active for a port on the reporting card, and the facility entity is out of service.

Caution Before performing a terminal loopback on an OC-48 card, make sure the card contains at least two section DCC paths to the node where the card is installed. A second section DCC path provides a nonlooped path to log into the node after the loopback is applied, thus enabling you to remove the terminal loopback. Ensuring a second section DCC is not necessary if you are directly connected to the ONS 15600 containing the loopback OC-N.

Clear the LBKTERMINAL (OCN) Condition

Step 1 To remove the loopback facility condition, double-click the reporting card in node view.

Step 2 Click the **Maintenance > Loopback** tabs.

Step 3 In the Loopback Type column, click the correct row for the port and choose **None** from the drop-down list.

Step 4 Click **Apply**.

Step 5 Click the **Provisioning > Line** tabs.

Step 6 In the Admin State column, click the correct row for the port and choose **IS,AINS** from the drop-down list.

Step 7 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.125 MAN-REQ

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Manual Switch Request condition occurs when a user initiates a Manual switch request on an OC-N port. Clearing the Manual switch clears the MAN-REQ condition. You do not need to clear the switch if you want the manual switch to remain.

Clear the MAN-REQ Condition

Step 1 Complete the "Initiate a 1+1 Protection Port Manual Switch Command" procedure on page 2-127.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.126 MANRESET

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EQPT, PIM, PPM

A Manual System Reset condition occurs when you right-click a TSC card, SSXC card, or traffic (OC-N) card in CTC and choose Hard-reset Card or Soft-reset Card. Resets performed during a software upgrade also prompt the alarm. This condition clears automatically when the card finishes resetting.

Note The hard-reset option is enabled only when the card is placed in the OOS-MA, MT service state.

2.6.127 MANSWTOINT

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE-SREF

The Manual Synchronization Switch to Internal Clock condition occurs when the NE (node) timing source is manually switched to an internal timing source.

Note MANSWTOINT is an informational condition and does not require troubleshooting.

2.6.128 MANSWTOPRI

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Manual Synchronization Switch to Primary Reference condition occurs when the NE (node) timing source is manually switched to the primary source.

Note MANSWTOPRI is an informational condition and does not require troubleshooting.

2.6.129 MANSWTOSEC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Manual Synchronization Switch to Second Reference condition occurs when the NE (node) timing source is manually switched to a second source.

Note MANSWTOSEC is an informational condition and does not require troubleshooting.

2.6.130 MANSWTOTHIRD

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Manual Synchronization Switch to Third Reference condition occurs when the NE (node) timing source is manually switched to a third source.

Note MANSWTOTHIRD is an informational condition and does not require troubleshooting.

2.6.131 MANUAL-REQ-RING

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Manual Switch Request on Ring condition occurs when a user initiates a MANUAL RING command on a BLSR ring to switch from working to protect or protect to working. This condition is visible on the network view Alarms, Conditions, and History tabs and is accompanied by WKSWPR. The port where the MANUAL RING command originated is marked with an "M" on the network view detailed circuit map.

Clear the MANUAL-REQ-RING Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.132 MANUAL-REQ-SPAN

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Manual Switch Request on Ring condition occurs on BLSRs when a user initiates a Manual Span command to move BLSR traffic from a working span to a protect span. This condition appears on the network view Alarms, Conditions, and History tabs. The port where the MANUAL SPAN command was applied is marked with an "M" on the network view detailed circuit map.

Clear the MANUAL-REQ-SPAN Condition

Step 1 Complete the "Clear a BLSR External Switching Command" procedure on page 2-134.

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.133 MATECLK

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Mate Clock alarm occurs when the active TSC card cannot detect the clock from the standby TSC card.

Clear the MATECLK Alarm

Step 1 In CTC, check for any alarms that indicate that there are faulty clock references, such as the "HLDOVRSYNC" alarm on page 2-71 or the "FRNGSYNC" alarm on page 2-66, and resolve these alarms.

Step 2 If the MATECLK persists, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136 for the standby TSC card and wait 15 minutes.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If the MATECLK still persists, complete the "Replace a TSC Card" procedure on page 2-140 for the active TSC card, using the standby TSC card to replace the active TSC card.

Step 4 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.134 MEA

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Objects: EQPT, PIM, PPM

The Mismatch Between Equipment Type and Provisioned Attributes alarm is reported against a card slot when the physical card or port does not match the card type provisioned in CTC. Deleting the incompatible card or port, SFP (PPM), or 4PIO (PIM) in CTC or physically removing the card clears the alarm.

Clear the MEA Alarm

Step 1 Physically verify the type of card that sits in the slot reporting the MEA alarm.

Step 2 In CTC, click the node view **Inventory** tab to display the provisioned card type.

Step 3 If you prefer the card type depicted by CTC, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the reporting card and replace it with the card type depicted by CTC (provisioned for that slot).

Note CTC does not allow you to delete a card if at least one port on the card is in service, has a path mapped to it, is paired in a working-protection scheme, has DCC enabled, or is used as a timing reference.

Step 4 If you want to leave the installed card in the slot but it is not in service, delete any circuits mapped to it. Refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for procedures.

Step 5 Place the cursor over the provisioned card in CTC and right-click to choose **Delete Card**.

When the card is deleted in CTC, the card that physically occupies the slot automatically reboots and appears in CTC.

Step 6 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.135 MEM-GONE

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: EQPT

The Memory Gone alarm occurs when data generated by software operations exceeds the memory capacity of the TSC card. CTC does not function properly until the alarm clears. The alarm clears when additional memory becomes available.

Note The alarm does not require user intervention. If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.136 MEM-LOW

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Free Memory of Card Almost Gone alarm occurs when data generated by software operations is close to exceeding the memory capacity of the TSC card. The alarm clears when additional memory becomes available. If additional memory is not made available and the memory capacity of the card is exceeded, CTC ceases to function.

Note The alarm does not require user intervention. If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447)

2.6.137 MFGMEM (CAP)

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: CAP

The Manufacturing Data Memory Failure CAP alarm occurs if the ONS 15600 cannot access the data in the EEPROM on the backplane. MFGMEM is caused by EEPROM failure on the backplane, or fuse failure for the EEPROM.

The EEPROM stores manufacturing data that is needed for compatibility and inventory issues. If the alarm is accompanied by the "PWR-FA" alarm on page 2-101, the 5-VDC fuse for the EEPROM might be tripped. If that is the case, use the procedure below to eliminate the TSC card as the cause of the alarm, but do not attempt to troubleshoot it further. Contact the Cisco TAC at 1-800-553-2447.

Clear the MFGMEM Alarm on the CAP by Resetting the TSC Card

Step 1 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Wait for the "FSTSYNC" condition on page 2-67 to clear.

Step 2 If the alarm does not clear, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447). The standby TSC card might also need replacement. If the alarm continues after both TSC cards have been replaced, the problem lies in the EEPROM on the CAP, and this must be replaced.

Step 3 When the alarm is cleared, you can make the standby TSC card active again by completing the "Soft-Reset a Card Using CTC" procedure on page 2-134.

2.6.138 MFGMEM (FAN)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: FAN

The Manufacturing Data Memory Fan alarm occurs if the ONS 15600 EEPROM on a fan tray fails. MFGMEM can be accompanied by the "FAN-FAIL" alarm on page 2-58.

Clear the MFGMEM (FAN) Alarm

Step 1 Pull out the fan tray.

Step 2 Reinsert the fan trays, making sure you can hear the fans start operating. Fans should run immediately when correctly inserted.

Step 3 If a fan does not run or the alarm persists, refer to the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions to replace the fan tray.

Step 4 If a replacement fan tray does not operate correctly, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.139 MFGMEM (for the PIM, PPM, SSXC, Traffic Card, or TSC Card)

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Objects: EQPT, PIM, PPM

The Manufacturing Data Memory Failure SSXC, Traffic (OC-N) Card, TSC card alarm occurs if the ONS 15600 EEPROM on one of these cards fails.

Clear the MFGMEM Alarm (for the PIM,PPM, SSXC, Traffic Card, or TSC Card)

Step 1 If the alarm is reported against a TSC card, troubleshoot with the "Clear the MFGMEM Alarm on the CAP by Resetting the TSC Card" procedure on page 2-95.

Step 2 If the reporting card is an active traffic line port in a 1+1 protection group or a path protection, ensure that an APS traffic switch has occurred to move traffic to the protect port.

- A path protection APS is identified by an AUTOSW-type alarm or condition (such as AUTOSW-AIS, AUTOSW-PDI, AUTOSW-SDBER, AUTOSW-SFBER, or AUTOSW-UNEQ).
- A 1+1 APS is identified in the node view Maintenance > Protection window. If you click the protection group, under the Selected Group list, the ports are designated as Working/Standby and Protect/Active.

Step 3 If the reporting port is part of a path protection, complete the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129. If the port is part of a 1+1 protection group, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Step 4 If the reporting card is a SSXC card and an automatic switch to the preferred copy SSXC card occurred, traffic automatically switches to the alternate copy.

Complete a "Hard-Reset a Card Using CTC" procedure on page 2-135 for the reporting card (or "Soft-Reset a Card Using CTC" procedure on page 2-134 for the SSXC.

Step 5 If the reset does not clear the alarm, complete the "Reset a Card with a Card Pull (Reseat)" section on page 2-136 for the TSC card, or complete the "Request a Cross-Connect Card Preferred Copy Switch" section on page 2-136 for the SSXC.

Step 6 If the physical reseat of the card or switch does not clear the alarm, complete the appropriate procedure in the "Replace a TSC Card" section on page 2-140 or "Replace an SSXC Card" section on page 2-137 as needed.

Note If the traffic (OC-N) card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port using the "Bridge and Roll Traffic" procedure in the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide*. Label the bad port, and place it out of service until such time as the card can be replaced.

Step 7 If the MFGMEM alarm continues to report after you replaced the card, the problem lies in the EEPROM. Log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

Step 8 If the alarm clears and it was reported by a traffic card, traffic reverts to the working port if an automatic switch occurred. If traffic was manually switched in a 1+1 protection group, revert traffic to the original port by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127. If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

If an automatic switch to the alternate copy SSXC card occurred, traffic is automatically restored to the preferred copy.

Step 9 If the reporting card is a TSC card and you want to make the standby TSC card active again, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

2.6.140 NOT-AUTHENTICATED

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: SYSTEM

The NOT-AUTHENTICATED alarm is raised by CTC (not by the NE) when it fails to log into a node. This alarm only displays in CTC where the login failure occurred. This alarm differs from the "INTRUSION-PSWD" alarm on page 2-75 in that INTRUSION-PSWD occurs when a user exceeds the login failures threshold.

Note NOT-AUTHENTICATED is an informational alarm and is resolved when CTC successfully logs into the node.

2.6.141 OPEN-SLOT

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The OPEN-SLOT alarm indicates that one of the I/O slots (Slot 1 through 4 and 11 through 14) does not contain a traffic card or filler card.

Clear the OPEN-SLOT Alarm

Step 1 Insert a filler card or OC-N card into the empty slot.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.142 PDI-P

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

A Payload Defect Indication Path condition indicates that a signal label mismatch failure (SLMF) in the STS-1 signal. An invalid C2 byte in the SONET path overhead causes an SLMF. The C2 byte is the signal-label byte that tells the equipment what the SONET payload envelope contains and how it is constructed. It enables a SONET device to transport multiple types of services.

The ONS 15600 encounters an SLMF when the payload, such as an asynchronous transport mode (ATM), does not match what the signal label is reporting. The "AIS-P" condition on page 2-16 often accompanies the PDI-P alarm. If the PDI-P is the only alarm reported with an AIS-P, clear the PDI-P alarm to clear the AIS-P alarm. PDI-P can also occur during an upgrade, but usually clears itself and is not a valid alarm.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the PDI-P Condition

Step 1 Check the incoming signal overhead with an optical test to verify that the C2 byte is correct. Refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for circuit test procedures.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the C2 byte is not correct, it indicates an upstream equipment problem (typically with path-terminating equipment [PTE]). Troubleshoot the upstream equipment.

Step 3 If the condition does not clear, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the reporting card.

Note If the traffic (OC-N) card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port; refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions. Label the bad port and place it out of service until the card can be replaced.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.143 PLM-P

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: STSMON

A Payload Label Mismatch Path alarm indicates that signal does not match its label. The condition is indicated by a problematic C2 byte value in the SONET path overhead. The alarm is raised if all of the following conditions are met:

- The received C2 byte is not 0x00 (unequipped).
- The received C2 byte is not a PDI value.
- The received C2 does not match the expected C2.
- The expected C2 byte is not 0x01 (equipped, unspecified).
- The received C2 byte is not 0x01 (equipped, unspecified).

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the PLM-P Alarm

Step 1 Complete the "Clear the PDI-P Condition" procedure on page 2-98.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) in order to report a Service-Affecting (SA) problem.

2.6.144 PRC-DUPID

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

The Procedural Error Duplicate Node ID alarm indicates that two identical node IDs exist in the same BLSR. The ONS 15600 requires each node in the BLSR to have a unique node ID.

Clear the PRC-DUPID Alarm

Step 1 Log into a node on the ring.

Step 2 Find the node ID by completing the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125.

Step 3 Repeat Step 2 for all the nodes on the ring.

Step 4 If two nodes have an identical node ID number, complete the "Change a BLSR Node ID Number" procedure on page 2-126 so that each node ID is unique.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.145 PROV-MISMATCH

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: PPM

The Provisioning Mismatch for an SFP alarm is raised against an SFP (PPM) connector on the ASAP card under one of the following circumstances:

- The physical SFP (PPM) range or wavelength does not match the provisioned value. PPMs (SFPs) have static wavelength values which must match the wavelengths provisioned for the port.
- The SFP (PPM) reach (loss) value does not meet the reach value needed for the port.

Clear the PROV-MISMATCH Alarm

Step 1 Determine what the SFP (PPM) wavelength range should be by viewing the frequency provisioned for the card by completing the following steps:

a. Double-click the card to display the card view.

b. Click the **Provisioning > Optical** tabs (or **Ethernet** tab, as appropriate).

c. Record the values shown in the **Reach** and **Wavelength** columns.

Step 2 Complete the "Replace an ASAP SFP (PPM) Module" procedure on page 2-142.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.146 PWR

Default Severity: Major (MJ), Non-Service Affecting (NSA)

Logical Object: PWR

The NE Power Failure at Connector alarm occurs when one of the two power supplies (A or B) is not detected. This could be because the supply is removed or is not operational. The alarm does not distinguish between the individual power supplies, so onsite information about the alarm is necessary for troubleshooting.

Effects of this alarm depend upon the shutdown order of the two power supplies. If PWR B of the right-side power feed and PWR A of the left-side power feed are shut down, this causes all three fans to turn off and a "FAN-FAIL" alarm on page 2-58 to be raised. In this case, after power is restored all three fans work in high-speed mode for a few minutes until CTC returns them to normal speed. All alarms are cleared.

Clear the PWR Alarm

Step 1 At the site, determine which battery is not present or operational.

Step 2 Remove the power cable from the faulty supply. For instructions, refer to the "Install the Bay and Backplane Cable" chapter in the *Cisco ONS 15600 Procedure Guide* and reverse the power cable installation procedure.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.147 PWR-FA

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: BPlane

The Backplane Power Fuse Failure alarm indicates that the backplane EEPROM memory 5-VDC fuse fails, but the equipment is still in service. Service is not currently affected, but network management can be affected because the ONS 15600 system uses a default NE (node) IP address instead of a programmed one in this case. This alarm might be accompanied by the "INVMACADR" alarm on page 2-76, which appears in the alarm history when network management capability is restored.

Do not attempt to troubleshoot the alarm. If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.148 PWR-FAIL-A

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Objects: CAP, EQPT

The Equipment Power Failure at Connector A alarm occurs when there is no power supply from the main power connector to the equipment. This alarm occurs on the CAP, SSXC card, traffic (OC-N) cards, or TSC card.

Warning **The power supply circuitry for the equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.** Statement 207

Clear the PWR-FAIL-A Alarm

Step 1 If a single card has reported the alarm, take one of the following actions depending what kind of card reported it:

- If the reporting card is an active traffic line port in a 1+1 protection group or part of a path protection, ensure that an APS traffic switch has occurred to move traffic to the protect port.

- A path protection APS is identified by an AUTOSW-type alarm or condition (such as AUTOSW-AIS, AUTOSW-PDI, AUTOSW-SDBER, AUTOSW-SFBER, or AUTOSW-UNEQ).
- A 1+1 APS is identified in the node view Maintenance > Protection window. If you click the protection group, under the Selected Group list, the ports are designated as Working/Standby and Protect/Active.
- If the reporting port is part of a path protection, complete the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129. If the port is part of a 1+1 protection group, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126. Continue with Step 3.

- If an automatic switch to the alternate copy SSXC card occurred, the SSXC card can be serviced. If the switch has not occurred, complete the "Request a Cross-Connect Card Preferred Copy Switch" procedure on page 2-136. Continue with Step 3.

  To determine which SSXC card is the preferred copy and if it is currently being used, open the node view Maintenance > Preferred Copy window. The Data Copy area Preferred field shows Copy A or Copy B. The Currently Used field shows the copy being used.

Note In CTC, Copy A refers to the SSXC card in Slot 6/7. Copy B refers to the SSXC card in Slot 8/9. Either copy might be chosen as the preferred copy SSXC card. The other SSXC card is called the alternate SSXC card in this chapter.

Step 2 Complete the "Soft-Reset a Card Using CTC" procedure on page 2-134 for the reporting card.

Step 3 If the alarm does not clear, complete the "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136.

Step 4 Check the pins on the backplane connector, including the power pins on the edge of the card. Also inspect the pins on the backplane. A bent pin can cause power failure.

Caution If a backplane pin is bent, do not insert another card in the slot until the problem is remedied.

Step 5 If the alarm does not clear, complete the "Replace an SSXC Card" procedure on page 2-137, "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138, or "Replace a TSC Card" procedure on page 2-140 as needed.

Step 6 If the single card reseat and replacement does not clear the alarm, or if multiple cards report the alarm, verify the office power; refer to the "Install the Bay and Backplane Connections" chapter in the *Cisco ONS 15600 Procedure Guide* for power installation instructions.

Step 7 If the alarm does not clear, reseat the power cable connection to the connector. For more information about ONS 15600 power connections, refer to the "Install the Bay and Backplane Connections" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 8 If the alarm does not clear, physically replace the power cable connection to the connector.

Step 9 If the alarm does not clear, a problem with the power distribution unit (PDU) is indicated and it could need to be replaced. Complete the procedure located in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 10 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

Step 11 If the alarm clears and it was reported by a traffic (OC-N) card, traffic reverts to the working port if an automatic switch occurred. If traffic was manually switched to a 1+1 protect port, revert traffic by completing the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127. If traffic was manually switched in a path protection, revert traffic to the original path by completing the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

Step 12 If the alarm was reported by a SSXC card and an automatic switch to the alternate copy SSXC card occurred, traffic is automatically restored to the preferred copy.

Step 13 If the reporting card was reported by a TSC card and you want to make the standby card active, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

2.6.149 PWR-FAIL-B

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Objects: CAP, EQPT

The Equipment Power Failure at Connector B alarm occurs when there is no power supplied to the backup power connector on the shelf. This alarm occurs on the CAP, SSXC card, traffic (OC-N) cards, or TSC card.

Troubleshoot this alarm with the "Clear the PWR-FAIL-A Alarm" procedure on page 2-101.

2.6.150 PWR-FAIL-RET-A

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Equipment Power Failure at Power Return A alarm occurs when the main power return path is not available. This alarm occurs on the TSC card, SSXC card, or traffic (OC-N) cards. Troubleshoot using the "Clear the PWR-FAIL-A Alarm" procedure on page 2-101.

2.6.151 PWR-FAIL-RET-B

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Equipment Power Failure at Power Return B alarm occurs when the main power return path is not available. This alarm occurs on the TSC card, SSXC card, or traffic (OC-N) cards.

Troubleshoot using the "Clear the PWR-FAIL-A Alarm" procedure on page 2-101.

2.6.152 PWRRESTART

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Power-Up Restart condition occurs when the shelf is restarted while no CTC connection is present. The Slot 5 TSC card on the shelf does not report this condition because the card is inactive when the condition occurs. You can see this condition in the Alarm History window when the CTC connection resumes.

2.6.153 RFI-L

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: OCN

An RFI Line condition occurs when the ONS 15600 detects an RFI in the SONET overhead of OC-48 and OC-192 cards because of a fault in another node. Resolving the fault in the adjoining node clears the RFI-L alarm in the reporting node.

RFI-L indicates that the alarm is occurring at the line level. The line layer is the segment between two SONET devices in the circuit and is also known as a maintenance span. The line layer deals with SONET payload transport. The line layer functions include multiplexing and synchronization.

Clear the RFI-L Condition

Step 1 Log into the node at the far end.

Step 2 Check for alarms, especially the "LOS (OCN)" alarm on page 2-85.

Step 3 Resolve alarms in the far-end node using the "Clear the LOF (OCN) Alarm" procedure on page 2-81. This procedure also clears LOS.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.154 RFI-P

Default Severity: Not Reported (NR), Non-Service-Affecting (NSA)

Logical Object: STSMON

An RFI Path condition occurs when the ONS 15600 detects an RFI in the SONET overhead of the STS-1 signal because of a fault in another node. Resolving the fault in the adjoining node clears the RFI-P alarm in the reporting node.

RFI-P occurs in the node that terminates a path. The path layer is the segment between the originating equipment and the terminating equipment. This segment might encompass several consecutive line segments. An RFI-P error message on the ONS 15600 indicates that the node reporting the RFI-P is the terminating node on that path segment.

Clear the RFI-P Condition

Step 1 Verify that the ports are enabled and in-service on the reporting ONS 15600.

In the card-level view, traffic port state is indicated by the color of the port:

- Gray—Out of service (OOS)

- Green—In service (IS)
- Red—Critical (CR) alarm
- Yellow—Minor (MN) alarm
- Orange—Major (MJ) alarm

Step 2 If a port is OOS, click the **Provisioning > Line** tabs and choose **In Service** from the drop-down list for that port. Click **Apply**.

Step 3 To find the path and node failure, verify the integrity of the SONET circuit path at each of the intermediate SONET nodes, checking for inconsistencies in path size or protection configuration.

Step 4 Identify and resolve alarms in the reporting node. The "UNEQ-P" alarm on page 2-119 frequently also needs to be resolved. Complete the "Clear the UNEQ-P Alarm" procedure on page 2-120.

Step 5 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.155 RING-MISMATCH

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: OCN

At least one node in the BLSR has an incorrect node ID. The RING-MISMATCH alarm clears when all nodes in the BLSR have the correct node IDs.

Clear the RING-MISMATCH Alarm

Step 1 Complete the "Identify a BLSR Ring ID or Node ID Number" procedure on page 2-125 to verify each node's ID number.

Step 2 Repeat Step 1 for all nodes in the ring.

Step 3 If one node has an incorrect node ID number, complete the "Change a BLSR Node ID Number" procedure on page 2-126 to change one node's ID number so that each node ID is unique.

Step 4 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.156 RING-SW-EAST

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Ring Switch Is Active East Side condition occurs when a ring switch occurs at the east side of a BLSR using a Force Ring command. The condition clears when the switch is cleared. RING-SW-EAST is visible on the network view Alarms, Conditions, and History tabs. The port where the Force Ring was applied shows an "F" on the network view detailed circuit map.

Note RING-SW-EAST is an informational condition and does not require troubleshooting.

2.6.157 RING-SW-WEST

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Ring Switch Is Active West Side condition occurs when a ring switch occurs at the west side of a BLSR using a Force Ring command. The condition clears when the switch is cleared. RING-SW-WEST is visible on the network view Alarms, Conditions, and History tabs. The port where the Force Ring was applied shows an "F" on the network view detailed circuit map.

Note RING-SW-WEST is an informational condition and does not require troubleshooting.

2.6.158 ROLL

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The ROLL condition indicates that circuits are being rolled. This is typically carried out to move traffic for a maintenance operation or to perform bandwidth grooming. The condition indicates that a good signal has been received on the roll destination leg, but the roll origination leg has not yet been dropped. The condition clears when the roll origination leg is dropped.

Note ROLL is an informational condition and does not require troubleshooting.

2.6.159 ROLL-PEND

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

ROLL-PEND indicates that a roll process has been started, but a good signal has not been received yet by the roll destination leg. This condition can be raised individually by each path in a bulk circuit roll.

The condition clears when a good signal has been received on the roll destination leg.

Note ROLL-PEND is an informational condition and does not require troubleshooting.

2.6.160 SD-L

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

A Signal Degrade Line condition occurs for an optical port that detects a signal degrade condition. Signal degrade is defined by Telcordia as a "soft failure" condition. SD-L and the SF-L condition (see the "SF-L" condition on page 2-108) monitor the incoming BER and are similar. SD is triggered at a lower bit error rate than SF.

The BER threshold on the ONS 15600 is user-provisionable and has a range for SD from 1E–9 dBm to 1E–5 dBm.

SD-L causes a switch from the working card to the protect card at the line (facility) level. A line- or facility-level SD alarm travels on the B2 byte of the SONET overhead.

The SD condition clears when the BER level falls to one tenth of the threshold level that triggered the alarm. A BER increase is sometimes caused by a physical fiber problem, including a faulty or incorrectly plugged fiber connection, a bend in the fiber that exceeds the permitted bend radius, or a bad fiber splice.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the SD-L Condition

Step 1 Verify that the user-provisionable BER threshold is set at the expected level by completing the following steps:

a. From node view, double-click the card reporting the alarm to display the card view.

b. Click the **Provisioning > Line** tabs.

c. Under the SD BER column in the Provisioning window, verify that the cell entry is consistent with what the system was originally provisioned for. The default setting is 1E–7 dBm.

d. If the entry is consistent with what the system was originally provisioned for, continue with Step 2.

e. If the entry is not consistent the original provisioning, click the cell to display a drop-down list of choices and choose the entry consistent with the original provisioning.

f. Click **Apply**.

Step 2 Ensure that the fiber connector for the card is completely plugged in. For more information about fiber connections and card insertion, refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide*.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 Use an optical test set to measure the power level of the line to ensure it is within guidelines. Refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for circuit test procedures.

Step 4 Verify that optical receive levels are within the acceptable range.

Step 5 Clean the fiber connectors at both ends for a line signal degrade by completing the following steps:

a. Clean the fiber connectors according to local site practice.

b. If no local practice exists, use a CLETOP Real-Type, 3M OGI connector cleaner, or equivalent fiber-optic cleaner and follow the instructions accompanying the product and/or refer to the procedures in the "Maintain the Node" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 6 Clean the optical transmitter and receiver by following site practice.

Step 7 Verify that a single-mode laser is used at the far end.

Step 8 If the problem persists, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 on the transmitter card at the other end of the optical line.

Note If the traffic card is implicated and you are able to continue using the traffic card with one port out of service, perform a bridge and roll to move the port traffic to a free port using procedures in the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide*. Label the bad port, and place it out of service until such time as the card can be replaced.

2.6.161 SD-P

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Signal Degrade Path condition occurs when the B3 error count in the SONET overhead exceeds the limit. Troubleshoot with the "Clear the SD-L Condition" procedure on page 2-107.

2.6.162 SF-L

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

A Signal Fail Line condition occurs when the quality of the signal on OC-48 and OC-192 cards causes the BER on the incoming optical line to exceed the SF threshold. Signal failure is defined by Telcordia as a "hard failure" condition. SD and SF both monitor the incoming BER error rate and are similar, but SF is triggered at a higher BER than SD. The default value of NA is determined by Telcordia GR-253-CORE.

The BER threshold on the ONS 15600 is user-provisionable and has a range for SF from 1E–5 dBm to 1E–3 dBm.

SF-L causes a switch from the working port to the protect port at the line (facility) level. A line or facility level SF condition travels on the B2 byte of the SONET overhead. The SF clears when the BER level falls to one-tenth of the threshold level that triggered the alarm. A BER increase is sometimes caused by a physical fiber problem, including a poor fiber connection, a bend in the fiber that exceeds the permitted bend radius, or a bad fiber splice. Troubleshoot with the "Clear the SD-L Condition" procedure on page 2-107.

2.6.163 SF-P

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: STSMON

The Signal Fail Path condition occurs when the B3 error count in the SONET overhead exceeds the limit. Troubleshoot with the "Clear the SD-L Condition" procedure on page 2-107.

2.6.164 SFTWDOWN

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EQPT

A Software Download in Progress condition occurs when a TSC card is downloading or transferring software. No action is necessary. Wait for the transfer or the software download to complete. If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

Note It takes approximately 20 minutes for the active TSC card to transfer the system software to the newly installed TSC card. Software transfer occurs in instances where different software versions exist on the two cards. When the transfer completes, the TSC card reboots and goes into standby mode after approximately three minutes.

Note If the active and standby TSC cards have the same versions of software, it takes approximately three minutes for software to be updated on a standby TSC card.

2.6.165 SNTP-HOST

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Simple Network Timing Protocol (SNTP) Host Failure alarm indicates that an ONS node serving as an IP proxy for the other ONS nodes in the ring is not forwarding SNTP information to the other ONS nodes in the network. The forwarding failure can result from two causes, either the IP network attached to the ONS proxy node is experiencing problems, or the ONS proxy node itself is not functioning properly.

Clear the SNTP-HOST Alarm

Step 1 Ping the SNTP host from a workstation in the same subnet to ensure that communication is possible within the subnet by completing the "Ping the ONS 15600" procedure on page 1-52.

Step 2 If the ping fails, contact the network administrator who manages the IP network that supplies the SNTP information to the proxy and determine whether the network is experiencing problems which might affect the SNTP server/router connecting to the proxy ONS 15600.

Step 3 If no network problems exist, ensure that the ONS 15600 proxy is provisioned correctly by completing the following steps:

- **a.** In node view for the ONS node serving as the proxy, click the **Provisioning > General** tabs.
- **b.** Ensure that the Use NTP/SNTP Server check box is checked.
- **c.** If the Use NTP/SNTP Server check box is not checked, click it.
- **d.** Ensure that the Use NTP/SNTP Server field contains a valid IP address for the server.

Step 4 If proxy is correctly provisioned, refer to the "Management Network Connectivity" chapter in the *Cisco ONS 15600 Reference Manual* for more information on SNTP Host.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.166 SPAN-SW-EAST

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Span Switch Is Active West Side condition occurs when a span switch occurs at the west side of a four-fiber BLSR span using a Force Span command. The condition clears when the switch is cleared. SPAN-SW-EAST is visible on the network view Alarms, Conditions, and History tabs. The port where the Force Span was applied shows an "F" on the network view detailed circuit map.

Note SPAN-SW-EAST is an informational condition and does not require troubleshooting.

2.6.167 SPAN-SW-WEST

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Span Switch Is Active East Side condition occurs when a span switch occurs at the west side of a four-fiber BLSR span using a Force Span command. The condition clears when the switch is cleared. SPAN-SW-WEST is visible on the network view Alarms, Conditions, and History tabs. The port where the Force Span was applied shows an "F" on the network view detailed circuit map.

Note SPAN-SW-WEST is an informational condition and does not require troubleshooting.

2.6.168 SQUELCH

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: OCN

The Ring Squelching Traffic condition occurs in a BLSR when a node that originates or terminates STS circuits fails or is isolated by multiple fiber cuts or maintenance FORCE RING commands. The isolation or failure of the node disables circuits that originate or terminate on the failed node. Squelch alarms appear on one or both of the nodes on either side of the isolated/failed node. The "AIS-P" condition on page 2-16 also appears on all nodes in the ring except the isolated node.

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Clear the SQUELCH Condition

Step 1 Determine the isolated node by completing the following steps:

a. In the node view, click **View > Go to Network View**.

b. The grayed out node with red spans is the isolated node.

Step 2 Verify fiber continuity to the ports on the isolated node. To verify cable continuity, follow site practices.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

Step 3 If fiber continuity is OK, verify that the proper ports are in service by completing the following steps:

a. Confirm that the OC-N card shows a green LED in CTC or on the physical card.

   A green LED indicates an active card.

b. To determine whether the OC-N port is in service, double-click the card in CTC to open the card view.

c. Click the **Provisioning > Line** tabs.

d. Verify that the **State** column lists the port as IS.

e. If the State column lists the port as OOS,DSLB or OOS,MT, click the column and choose **IS**. Click **Apply**.

Step 4 If the correct ports are in service, use an optical test set to verify that a valid signal exists on the line. For specific procedures to use the test set equipment, consult the manufacturer. Test the line as close to the receiving card as possible.

Step 5 If the signal is valid, verify that the power level of the optical signal is within the optical (traffic) card's receiver specifications. Refer to the"1.9.3 Optical Traffic Card Transmit and Receive Levels" section on page 1-69.

Step 6 If the receiver levels are good, ensure that the optical transmit and receive fibers are connected properly.

Step 7 If the connectors are good, complete the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138 for the OC-N card.

Step 8 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.169 SSM-DUS

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, OCN

The Synchronization Status Messaging (SSM) Changed to Do Not Use (DUS) condition occurs when the synchronization status message quality level changes to DUS.

The port that reports the condition is not at fault. The condition applies to the timing source. SSM-DUS prevents timing loops by providing a termination point for the signal usage.

2.6.170 SSM-FAIL

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Objects: BITS, OCN

The SSM Failed to Receive Synchronization alarm occurs when SSM received by the ONS 15600 fails. The problem is external to the ONS 15600. If one of two sources fails, the alarm is Minor (MN). If there is no backup source, the alarm is Major (MJ). This alarm indicates that although the ONS 15600 is set up to receive SSM, the timing source is not delivering valid SSM messages.

Clear the SSM-FAIL Alarm

Step 1 Verify that SSM is enabled on the external timing source.

Step 2 Use an optical test set to determine whether the external timing source is delivering SSM; refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for circuit test procedures.

Step 3 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.171 SSM-OFF

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, OCN

The SSM Changed to Off condition occurs when SSM is disabled by a user.

SSM communicates information about the quality of the timing source. SSM is carried on the S1 byte of the SONET line layer. It enables SONET devices to automatically select the highest quality timing reference and to avoid timing loops. Troubleshoot with the "Clear the SSM-FAIL Alarm" procedure on page 2-112 if desired.

2.6.172 SSM-PRS

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to PRS condition occurs when SSM transmission level changes to Stratum 1 Traceable.

2.6.173 SSM-RES

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to Reserved (RES) condition occurs when the synchronization message quality level changes to RES.

2.6.174 SSM-SMC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to SONET Minimum Clock Traceable (SMC) condition occurs when the synchronization message quality level changes to SMC.

2.6.175 SSM-ST2

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to Stratum 2 Traceable (ST2) condition occurs when the synchronization message quality level changes to ST2.

2.6.176 SSM-ST3

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-REF, OCN

The SSM Quality Level Changed to Stratum 3 Traceable (ST3) condition occurs when the synchronization message quality level changes to ST3.

2.6.177 SSM-ST3E

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to ST3E condition occurs when the synchronization message quality level changes to ST3E from a lower level of synchronization.

2.6.178 SSM-ST4

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to ST4 condition occurs when the synchronization message quality level changes to ST4.

2.6.179 SSM-STU

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Synchronization Traceability Unknown condition occurs when the reporting node is timed to a reference that does not support SSM, but the ONS 15600 has SSM support enabled. SSM-STU can also be raised if the timing source is sending out SSM messages but SSM is not enabled on the ONS 15600.

Clear the SSM-STU Condition

Step 1 Click the node view **Provisioning > Timing > BITS Facilities** tabs.

Step 2 If the **Sync. Messaging Enabled** check box is checked, click the box to deselect it.

Step 3 If the **Sync. Messaging Enabled** check box is unchecked, click the box to select it.

Step 4 Click **Apply**.

Step 5 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.180 SSM-TNC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, NE-SREF, OCN

The SSM Quality Level Changed to Transit Node Clock Traceable (TNC) condition occurs when the synchronization message quality level changes to TNC.

2.6.181 SWTOPRI

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Synchronization Switched to Primary Reference condition occurs when the ONS 15600 switches to the primary timing source (reference 1). The ONS 15600 uses three ranked timing references. The timing references are typically two BITS-level or line-level sources and an internal reference.

2.6.182 SWTOSEC

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Synchronization Switched to Second Reference condition occurs when the ONS 15600 has switched to a second timing source (reference 2). To clear the SWTOSEC condition, complete the "Clear the SYNCPRI Alarm" procedure on page 2-117.

2.6.183 SWTOTHIRD

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

The Synchronization Switched to Third Reference condition occurs when the ONS 15600 has switched to a third timing source (reference 3). To clear the SWTOTHIRD condition, complete the "Clear the SYNCPRI Alarm" procedure on page 2-117.

2.6.184 SW-VER

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: EQPT

The Software Version condition is reported when a new software version is activated on the ONS 15600. When a new version of software is uploaded, it results in the active TSC card running the new version and the standby TSC card running the old version. This situation raises the SW-VER condition. It remains until the user accepts the new version in the CTC. The acceptance causes the standby TSC card to reboot and upload the new version.

If the user does not accept the version, the active TSC card switches to the standby TSC card with the original version. After the switch, the new standby TSC card reverts to the previous version.

2.6.185 SYNCCLK

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: NE

A Synchronization Clock Unavailable alarm occurs when both TSC cards lose their timing function.

Clear the SYNCCLK Alarm

Step 1 From node view, click the **Provisioning > Timing > General** tabs.

Step 2 Check the current configuration for REF-1 of the NE Reference.

Step 3 If the primary reference is a BITS input, complete the "Clear the LOF (BITS) Alarm" procedure on page 2-81.

Step 4 If the primary reference clock is an incoming port on the ONS 15600, complete the "Clear the LOF (OCN) Alarm" procedure on page 2-81.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.186 SYNC-FREQ

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: BITS, OCN

The Synchronization Reference Frequency Out of Bounds alarm occurs when the synchronization frequency reference for the NE (node) is not within acceptable boundaries.

Clear the SYNC-FREQ Alarm

Step 1 Verify that the internal or BITS timing reference is stable. The timing reference is located on the active TSC card. Check for any alarms against this card and troubleshoot them.

Step 2 If the alarm does not clear, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Step 3 If the alarm clears, complete the "Replace a TSC Card" procedure on page 2-140.

Note It takes approximately 20 minutes for the active TSC card to transfer the system software to the newly installed TSC card. Software transfer occurs in instances where different software versions exist on the two cards. When the transfer completes, the TSC card reboots and goes into standby mode after approximately three minutes.

Note If the active and standby TSC cards have the same versions of software, it takes approximately three minutes for software to be updated on a standby TSC card.

Step 4 If the SYNC-FREQ alarm continues to report after replacing the TSC card, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.187 SYNCPRI

Default Severity: Minor (MN), Non-Service-Affecting (NSA) for EXT-SREF; Major (MJ), Service-Affecting (SA) for NE-SREF

Logical Objects: EXT-SREF, NE-SREF

A Primary Synchronization Reference Failure alarm occurs at the NE (node) level when the ONS 15600 loses the primary timing source (reference 1). The ONS 15600 uses three ranked timing references. The timing references are typically two BITS-level or line-level sources and an internal reference. If SYNCPRI occurs, the ONS 15600 should switch to its second timing source (reference 2). This switch also triggers the SWTOSEC alarm.

Clear the SYNCPRI Alarm

Step 1 From node view, click the **Provisioning > Timing > General** tabs and identify the timing source in REF-1 of the NE Reference.

Step 2 If REF-1 is Internal, this refers to the active TSC card. Look for any alarms related to the TSC card and troubleshoot them.

Step 3 If REF-1 is BITS, follow the "Clear the LOF (BITS) Alarm" procedure on page 2-81.

Step 4 If the primary reference clock is an incoming port on the ONS 15600, follow the "Clear the LOF (OCN) Alarm" procedure on page 2-81.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.188 SYNCSEC

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Objects: EXT-SREF, NE-SREF

A Second Synchronization Reference Failure Alarm occurs at the NE (node) level when the ONS 15600 loses the second timing source (reference 2). If SYNCSEC occurs, the ONS 15600 should switch to a third timing source (reference 3) to obtain valid timing for the ONS 15600. This switch also triggers the "SWTOTHIRD" condition on page 2-115.

Clear the SYNCSEC Alarm

Step 1 From node view, click the **Provisioning > Timing > General** tabs.

Step 2 Check the current configuration of REF-2 for the NE Reference.

Step 3 If the second reference is a BITS input, follow the "Clear the LOS (BITS) Alarm" procedure on page 2-85.

Step 4 If the second timing source is an incoming port on the ONS 15600, follow the "Clear the LOF (OCN) Alarm" procedure on page 2-81.

Step 5 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.189 SYNCTHIRD

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: EXT-SREF

A Loss of Timing on Third Reference alarm occurs when the ONS 15600 loses the third timing source (reference 3). If SYNCTHIRD occurs and the ONS 15600 uses an internal reference for source three, the TSC card might have failed. The ONS 15600 often reports either the "FRNGSYNC" alarm on page 2-66 or the "HLDOVRSYNC" condition on page 2-71 after a SYNCTHIRD alarm.

Clear the SYNCTHIRD Alarm

Step 1 In node view, click the **Provisioning > Timing > General** tabs.

Step 2 Verify that the current configuration of REF-3 for the NE Reference. For more information about references, refer to the "Change Node Settings" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 3 If the third timing source is a BITS input, complete the "Clear the LOS (BITS) Alarm" procedure on page 2-85.

Step 4 If the third timing source is an incoming port on the ONS 15600, complete the "Clear the LOF (OCN) Alarm" procedure on page 2-81.

Step 5 If the third timing source uses the internal ONS 15600 timing, complete the "Soft-Reset a Card Using CTC" procedure on page 2-134.

Wait ten minutes to verify that the card you reset completely reboots and becomes the standby card.

Step 6 If the reset card has not rebooted successfully, or the alarm has not cleared, call Cisco TAC (1-800-553-2447). If the Cisco TAC technician tells you to reseat the card, complete "Reset a Card with a Card Pull (Reseat)" procedure on page 2-136. If the Cisco TAC technician tells you to remove the card and reinstall a new one, follow the "Replace an OC-48 Card or OC-192 Card" procedure on page 2-138.

Caution Always use the supplied electrostatic discharge wristband when working with a powered ONS 15600. Plug the wristband cable into the ESD jack located on the lower-right edge of the shelf assembly.

2.6.190 SYSBOOT

Default Severity: Major (MJ), Service-Affecting (SA)

Logical Object: NE

The System Reboot alarm indicates that new software is booting on the node or shelf TSC card. No action is required. The alarm clears when all cards finish rebooting the new software. The reboot takes approximately three minutes.

2.6.191 TIM-P

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: STSMON

The STS TIM-P alarm occurs when the current expected STS-1 path trace string does not match the current received path trace string. Path Trace Mode must be set to manual for this alarm to occur.

In manual mode in the Path Trace area, the user can type a new expected string into the field. This string must match the string typed into the Current Received String field for the sending port. If these fields do not match, it is typically because of upstream PTE error.

Clear the TIM-P Alarm

Step 1 Log into CTC at the circuit source and note which slot and port is reporting the alarm in the Alarms window.

Step 2 Click the **Circuits > Circuits** tabs.

Step 3 Select the circuit reporting the alarm by identifying it according to its Source or Destination column slots and ports. This circuit has probably switched to the protect port.

Step 4 Click the **Edit** button.

Step 5 In the Edit Circuit window, check the **Show Detailed Circuit Map** check box and click **Apply**.

Step 6 On the detailed circuit map, right-click the drop/destination circuit port and choose **Edit Path Trace** from the shortcut menu.

Step 7 Compare the Current Received String and Current Expected String entries in the path trace dialog box.

Step 8 If the strings differ and the Current Received String is correct but the Current Expected String is not, correct the Transmit or Expected strings and click **Apply**.

Step 9 If the strings differ and the Current Expected String is correct but the Current Received String is not, there is a problem with the PTE upstream. Troubleshoot the problem in the PTE.

Step 10 Click **Close**.

Step 11 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.192 TPTFAIL (POS)

The TPTFAIL alarm for packet over SONET (POS) is not used in this platform in this release. It is reserved for future development.

2.6.193 UNEQ-P

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: STSMON

An SLMF Unequipped Path Signal Label Mismatch Failure alarm occurs when the path does not have a valid sender. The indicator is carried in the C2 signal path byte in the SONET overhead. The source of the problem is the node that is transmitting the signal into the node reporting the UNEQ-P.

UNEQ-P occurs in the node that terminates a path. The path layer is the segment between the originating equipment and the terminating equipment. This segment can encompass several consecutive line segments.

An UNEQ-P error message on the ONS 15600 indicates that the node reporting the "RFI-P" condition on page 2-104 is the terminating node on that path segment.

Note If you have created a new path but it has no signal, an UNEQ-P alarm is reported on the traffic (OC-N) cards and an AIS-P alarm is reported on the terminating cards. These alarms clear when the path carries a signal.

Clear the UNEQ-P Alarm

Step 1 From node view, navigate to the **Circuits > Circuits** tabs.

Under the State column, check for any circuit that has the status INCOMPLETE. (A completed circuit has ACTIVE status.)

Note Circuits have an incomplete status while they are in the process of being routed on the system. If you have created a large number of circuits, this status can remain for several minutes before it changes to active.

Step 2 If the alarm remains for some time and the circuit does not clear the alarm, delete the circuit by completing the following steps:

a. Click the incomplete circuit to highlight it.

b. Click **Delete**.

Step 3 Recreate the circuit as necessary; refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions.

Step 4 If the alarm does not clear after re-creation, ensure that the circuit continues to pass traffic using an optical test set; refer to the "Create Circuits" chapter in the *Cisco ONS 15600 Procedure Guide* for circuit test procedures.

Step 5 If the alarm does not clear, verify that the incoming signal is valid by testing with an optical test set.

Step 6 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447) to report a Service-Affecting (SA) problem.

2.6.194 UNPROT-SYNCCLK

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Unprotected Synchronization or Clock Equipment alarm indicates that only one TSC card has acquired the primary timing reference. The alarm is reported if there is no standby TSC card, or if the standby TSC card has restarted and 700 seconds (in FSTSYNC mode) have not elapsed.

This condition is normal following a change to the system timing reference (such as BITS to Line or Line to BITS). Changing the clock reference causes both TSC cards to raise the "FSTSYNC" condition on page 2-67, for 700 seconds. The UNPROT-SYNCCLK alarm occurs during this period. If both TSC cards are reset within 700 seconds of each other, this alarm occurs also and remains until both TSC cards attains the clock reference. If the alarm does not clear, follow the procedure below.

Clear the UNPROT-SYNCCLK Alarm

Step 1 Determine whether one or both TSC cards have the "FSTSYNC" condition on page 2-67 raised. If either TSC card has a FSTSYNC condition, wait 700 seconds for the condition and the UNPROT-SYNCCLK alarm to clear.

Step 2 If FSTSYNC was reported and continues after 700 seconds, replace the standby TSC card. Continue with Step 7.

Step 3 If FSTSYNC is not reported, from node view, click the **Provisioning > Timing > General** tabs.

Step 4 Verify the current configuration for REF-1 of the NE Reference.

If the primary reference clock is an incoming port on the ONS 15600, follow the "Clear the LOF (OCN) Alarm" procedure on page 2-81.

Step 5 If no protect TSC card is installed, install one. Refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide* for instructions.

Step 6 If the alarm persists, remove and reinsert (reseat) the standby TSC card by completing the following steps and wait 700 seconds for the TSC card to acquire the reference.

a. Open the card ejectors.

b. Slide the card out of the slot.

c. Slide the card into the slot along the guide rails.

d. Close the ejectors.

Step 7 If the alarm reappears after you perform the switch, complete the "2.8.5 Verify or Create Node DCC Terminations" procedure on page 2-143 on the standby TSC card and wait 700 seconds for the TSC card to acquire the reference.

Note It takes approximately 20 minutes for the active TSC card to transfer the system software to the newly installed TSC card. Software transfer occurs in instances where different software versions exist on the two cards. When the transfer completes, the TSC card reboots and goes into standby mode after approximately three minutes.

Note If the active and standby TSC cards have the same versions of software, it takes approximately three minutes for software to be updated on a standby TSC card.

2.6.195 UNPROT-XCMTX

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Unprotected Cross-Connection Matrix Equipment alarm indicates that only one functional SSXC card on the node supports the cross-connection. The alarm clears if the redundant SSXC card is installed. This alarm could be accompanied by the "2.6.98 IMPROPRMVL (EQPT for the SSXC or TSC Card)" procedure on page 2-74 or the "EQPT (EQPT)" alarm on page 2-44.

Clear the UNPROT-XCMTX Alarm

Step 1 If there is no protect SSXC card installed, install one.

Allow the newly installed SSXC card to boot.

Step 2 If the alarm does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.196 UNROUTEABLE-IP

Default Severity: Minor (MN), Non-Service-Affecting (NSA)

Logical Object: NE

The Exercise Span command issues span switching of the requested channel without completing the actual bridge and switch. The EXERCISE-SPAN-FAIL alarm is raised if the command was issued and accepted but the exercise did not take place.

Note If the exercise command gets rejected due to the existence of a higher-priority condition in the span or ring, EXERCISE-SPAN-FAIL is not reported.

Clear the EXERCISE-SPAN-FAIL Condition

Step 1 Look for and clear, if present, the "LOF (OCN)" alarm on page 2-81, the "LOS (OCN)" alarm on page 2-85, or a BLSR alarm.

Step 2 Complete the "Initiate an Exercise Ring Switch on a BLSR" procedure on page 2-133.

Step 3 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.197 UPGRADE

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Object: NE

The System Upgrade in Progress condition indicates that a system upgrade is occurring on the TSC card.

When software is downloaded, it is loaded into the available code volume on the active TSC card. The software is copied to the available code volume on the standby TSC card next. The "SFTWDOWN" condition on page 2-109 occurs at that time. When the user activates the load, the UPGRADE condition occurs.

Note Whenever TSC cards are changed from active to standby, it takes approximately 12 minutes to completely synchronize to the timing source because the Stratum 3E timing module is being adopted.

2.6.198 WKSWPR

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: OCN, STSMON

The Working Switched To Protection condition occurs when a line has a failure, the "LOS (OCN)" alarm on page 2-85 or the "SD-L" condition on page 2-106.

This condition is also raised when you use the FORCE RING, FORCE SPAN, or MANUAL SPAN command at the network level. WKSWPR is visible on the network view Alarms, Conditions, and History tabs.

Clear the WKSWPR Condition

Step 1 Complete the "Clear the LOF (OCN) Alarm" procedure on page 2-81. (It is also used for LOS.)

Step 2 If the condition does not clear, log into the Technical Support Website at http://www.cisco.com/techsupport for more information or call Cisco TAC (1-800-553-2447).

2.6.199 WTR

Default Severity: Not Alarmed (NA), Non-Service-Affecting (NSA)

Logical Objects: OCN, STSMON

The Wait to Restore condition indicates that revertive switching is specified and that a switch to protection occurred. When the working path is viable, this condition occurs while the wait to restore timer has not expired. The condition clears when the timer expires and traffic switches back to the working path.

2.6.200 XCMTX

Default Severity: Critical (CR), Service-Affecting (SA)

Logical Object: NE

The Unavailable Cross-Connection Matrix Equipment alarm indicates no cross-connection matrix on the NE (node). If there was previously a single SSXC card running in unprotected mode, that card fails. If there were two cards running in protected mode, the matrix has become unavailable on both. Troubleshoot with the "Clear the UNPROT-XCMTX Alarm" procedure on page 2-121.

2.7 LED Behavior

The following the subsections describe LED behaviors of the TSC card, SSXC card, and OC-N cards.

2.7.1 TSC Card-Level Indicators

Table 2-13 lists typical card-level TSC card LED behaviors. Table 2-14 lists typical network-level TSC card LED behaviors.

Table 2-13 TSC Card-Level Indicators

Indicator LED	Color	Definition
STAT	Red	Indicates a hardware fault; this LED is off during normal operation. Replace the card if the STAT LED persists. During diagnostics, the LED flashes quickly during initialization and slowly during configuration synchronization.
SRV	Green	The service mode of the card; green indicates that the card is in use and no light indicates that the card can be removed for service.
ACT/STBY	Green	The ACT/STBY (Active/Standby) LED indicates that the TSC card is active (green) or standby (off). It is not present on the optical cards.

2.7.2 TSC Card Network-Level Indicators

Table 2-14 TSC Card Network-Level Indicators

Indicator LED	Color	Definition
LINE	Green	Node timing is synchronized to a line timing reference.
EXTERNAL	Green	Node timing is synchronized to an external timing reference.
FREE RUN	Green	The node is not using an external timing reference. Indicated when the timing mode is set to an internal reference or after all external references are lost.
HOLDOVER	Amber	External/line timing references have failed. The TSC card has switched to internal timing and the 24-hour holdover period has not elapsed.
ACO	Amber	The alarm cutoff (ACO) push button has been activated. After pressing the ACO button, the amber ACO LED turns on. The ACO button opens the audible closure on the backplane. The ACO state is stopped if a new alarm occurs. After the originating alarm is cleared, the ACO LED and audible alarm control are reset.

2.7.3 SSXC Card-Level Indicators

Table 2-15 describes the functions of the card-level LEDs on the SSXC card faceplate.

Table 2-15 SSXC Card-Level Indicators

Indicators LED	Color	Definition
STAT	Red	Indicates a hardware fault; this LED is off during normal operation. Replace the card if the STAT LED persists. During diagnostics, the LED flashes quickly during initialization and flashes slowly during configuration synchronization.
SRV	Green	The service mode of the card. Green indicates the card is in use; no light indicates that the card can be removed for service.
	Amber	The service mode of the card. Amber indicates the card is in use; no light indicates that the card can be removed for service.

2.7.4 OC-N Card Indicators

Table 2-16 describes the functions of the card-level LEDs on the OC48 and OC-192 cards.

Note OC-N card SF and SD card-level LEDs are not displayed in CTC.

Table 2-16 OC-N Card-Level Indicators

Indicators	Color	Description
STAT LED	Red	Indicates a hardware fault; this LED is off during normal operation. Replace the card if the STAT LED persists. During diagnostics, the LED flashes quickly during initialization and flashes slowly during configuration synchronization.
SRV LED	Green	The service mode of the card; green indicates that the card is in use and no light indicates that the card can be removed for service.
LASER ON	Green	The green LASER ON LED indicates that at least one of the card's lasers is active.

2.8 Frequently Used Alarm Troubleshooting Procedures

This section gives common procedures that are frequently used when troubleshooting alarms. Most of these procedures are summarized versions of more detailed procedures in the *Cisco ONS 15600 Procedure Guide*.

2.8.1 Node and Ring Identification, Change, Visibility, and Termination

The following procedures relate how to identify or change BLSR names and node IDs, and how to verify visibility from other nodes.

Identify a BLSR Ring ID or Node ID Number

Step 1 In node view, click **View > Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 From the Ring ID column, record the Ring ID, or in the nodes column, record the Node IDs in the BLSR. The Node IDs are the numbers in parentheses next to the node name.

Change a BLSR Ring ID Number

Step 1 In node view, click **View > Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 Highlight the ring and click **Edit**.

Step 4 In the BLSR window, enter the new ID in the Ring ID field.

Step 5 Click **Apply**.

Step 6 Click **Yes** in the Changing Ring ID dialog box.

Change a BLSR Node ID Number

Step 1 In node view, click **View > Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 Highlight the ring and click **Edit**.

Step 4 In the BLSR window, right-click the node on the ring map.

Step 5 Select **Set Node ID** from the shortcut menu.

Step 6 Enter the new ID in the field.

Step 7 Click **Apply**.

Verify Node Visibility for Other Nodes

Step 1 In node view, click the **Provisioning > BLSR** tabs.

Step 2 Highlight a BLSR.

Step 3 Click **Ring Map**.

Step 4 Verify that each node in the ring appears on the ring map with a node ID and IP address.

Step 5 Click **Close**.

2.8.2 Protection Switching, Lock Initiation, and Clearing

The following sections give instructions for port, ring, and span switching and switch-clearing commands, as well as lock-ons and lockouts.

Initiate a 1+1 Protection Port Force Switch Command

This procedure switches 1+1 protection group traffic from one port in the group to the other using a Force switch.

Caution The Force command overrides normal protective switching mechanisms. Applying this command incorrectly can cause traffic outages.

Caution Traffic is not protected during a Force protection switch.

Note A Force command switches traffic on a working path even if the path has signal degrade (SD) or signal fail (SF) conditions. A Force switch does not switch traffic on a protect path. A Force switch preempts a Manual switch.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups area, select the protection group with the port you want to switch.

Step 3 In the Selected Groups area, select the port belonging to the card you are replacing. You can carry out this command for the working or protect port. For example, if you need to replace the card with the Protect/Standby port, click this port.

Step 4 In the Switch Commands area, click **Force**.

Step 5 Click **Yes** in the Confirm Force Operation dialog box.

Step 6 If the switch is successful, the group says "Force to working" in the Selected Groups area.

Initiate a 1+1 Protection Port Manual Switch Command

This procedure switches 1+1 protection group traffic from one port in the group to the other using a Manual switch.

Note A Manual command switches traffic if the path has an error rate less than the signal degrade. A Manual switch is preempted by a Force switch.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups area, select the protection group with the port you want to switch.

Step 3 In the Selected Groups area, select the port belonging to the card you are replacing. You can carry out this command for the working or protect port. For example, if you need to replace the card with the protect/standby port, click this port.

Step 4 In the Switch Commands area, click **Manual**.

Step 5 Click **Yes** in the Confirm Force Operation dialog box.

Step 6 If the switch is successful, the group now says "Manual to working" in the Selected Groups area.

Clear a 1+1 Protection Port Force or Manual Switch Command

Note If the 1+1 protection group is configured as revertive, clearing a Force switch to protect (or working) moves traffic back to the working port. In revertive operation, the traffic always switches back to working. There is no revert to protect. If ports are not configured as revertive, clearing a Force switch to protect does not move traffic back.

Note If the Force Switch was user-initiated, the reversion occurs immediately when the clear command is issued. The five-minute WTR period is not needed in this case. If the Force was system-initiated, allow the five-minute waiting period (during WTR) before the reversion occurs.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups area, choose the protection group containing the port you want to clear.

Step 3 In the Selected Group area, choose the port you want to clear.

Step 4 In the Switching Commands area, click **Clear**.

Step 5 Click **Yes** in the Confirmation Dialog box.

The Force switch is cleared. Traffic immediately reverts to the working port if the group was configured for revertive switching.

Initiate a Card or Port Lock On Command

Note For 1:1 and 1:N electrical protection groups, working or protect cards can be placed in the Lock On state. For a 1+1 optical protection group, only the working port can be placed in the Lock On state.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups list, click the protection group where you want to apply a lock-on.

Step 3 If you determine that the protect card is in standby mode and you want to apply the lock-on to the protect card, make the protect card active if necessary by completing the following steps:

a. In the Selected Group list, click the protect card.

b. In the Switch Commands area, click **Force**.

Step 4 In the Selected Group list, click the active card where you want to lock traffic.

Step 5 In the Inhibit Switching area, click **Lock On**.

Step 6 Click **Yes** in the confirmation dialog box.

Initiate a Card or Port Lock Out Command

Note For 1:1 or 1:N electrical protection groups, working or protect cards can be placed in the Lock Out state. For a 1+1 optical protection group, only the protect port can be placed in the Lock Out state.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups list, click the protection group that contains the card you want to lock out.

Step 3 In the Selected Group list, click the card that you want to lock traffic out of.

Step 4 In the Inhibit Switching area, click **Lock Out**.

Step 5 Click **Yes** in the confirmation dialog box.

The lockout has been applied and traffic is switched to the opposite card.

Clear a Card or Port Lock On or Lock Out Command

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 In the Protection Groups list, click the protection group that contains the card that you want to clear.

Step 3 In the Selected Group list, click the card that you want to clear.

Step 4 In the Inhibit Switching area, click **Unlock**.

Step 5 Click **Yes** in the confirmation dialog box.

The lock-on or lockout is cleared.

Initiate a 1:1 Card Switch Command

Note The Switch command only works on the Active card, whether it is Working or Protect. It does not work on the Standby card.

Step 1 In node view, click the **Maintenance > Protection** tabs.

Step 2 Click the protection group that contains the card you want to switch.

Step 3 Under Selected Group, click the active card.

Step 4 Next to Switch Commands, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby.

Initiate a Force Switch for All Circuits on a Path Protection Span

This procedure forces all circuits in a path protection from the working span to the protect. It is used to remove traffic from a card that originates or terminates path protection circuits.

Caution The Force command overrides normal protective switching mechanisms. Applying this command incorrectly can cause traffic outages.

Caution Traffic is not protected during a Force protection switch.

Step 1 Log into a node on the network. If you are already logged in, continue with Step 3.

Step 2 Click **View > Go to Network View**.

Step 3 Right-click a network span and choose **Circuits**.

The Circuits on Span dialog box shows the path protection circuits, including circuit names, locations, and a color code showing which circuits are active on the span.

Step 4 Click the **Perform UPSR span switching** field.

Step 5 Choose **Force Switch Away** from the drop-down list.

Step 6 Click **Apply**.

Step 7 In the Confirm UPSR Switch dialog box, click **Yes**.

Step 8 In the Protection Switch Result dialog box, click **OK**.

In the Circuits on Span dialog box, the switch state for all circuits is FORCE. Unprotected circuits do not switch.

Initiate a Manual Switch for All Circuits on a Path Protection Span

This procedure manually switches all circuits in a path protection from the working span to the protect. It is used to remove traffic from a card that originates or terminates path protection circuits.

Caution The Manual command does not override normal protective switching mechanisms.

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Right-click a network span and choose **Circuits**.

The Circuits on Span dialog box shows the path protection circuits, including circuit names, locations, and a color code showing which circuits are active on the span.

Step 3 Click the **Perform UPSR span switching** field.

Step 4 Choose **Manual** from the drop-down list.

Step 5 Click **Apply**.

Step 6 In the Confirm UPSR Switch dialog box, click **Yes**.

Step 7 In the Protection Switch Result dialog box, click **OK**.

In the Circuits on Span dialog box, the switch state for all circuits is Manual. Unprotected circuits do not switch.

Initiate a Lock Out of Protect Switch for All Circuits on a Path Protection Span

This procedure prevents all circuits in a path protection working span from switching to the protect span. It is used to keep traffic off cards that originate or terminate path protection circuits.

Caution The Lock Out of Protect command does not override normal protective switching mechanisms.

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Right-click a network span and choose **Circuits**.

The Circuits on Span dialog box shows the path protection circuits, including circuit names, locations, and a color code showing which circuits are active on the span.

Step 3 Click the **Perform UPSR span switching** field.

Step 4 Choose **Lock Out of Protect** from the drop-down list.

Step 5 Click **Apply**.

Step 6 In the Confirm UPSR Switch dialog box, click **Yes**.

Step 7 In the Protection Switch Result dialog box, click **OK**.

In the Circuits on Span dialog box, the switch state for all circuits is FORCE. Unprotected circuits do not switch.

Clear a Path Protection Span External Switching Command

Note If the ports terminating a span are configured as revertive, clearing a Force switch to protect (or working) moves traffic back to the working port. If ports are not configured as revertive, clearing a Force switch to protect does not move traffic back.

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Right-click a network span and choose **Circuits**.

The Circuits on Span dialog box shows the path protection circuits, including circuit names, locations, and a color code showing which circuits are active on the span.

Step 3 Initiate a Force switch for all circuits on the span by completing the following steps:

a. Click the **Perform UPSR span switching** field.

b. Choose **Clear** from the drop-down list.

c. Click **Apply**.

d. In the Confirm UPSR Switch dialog box, click **Yes**.

e. In the Protection Switch Result dialog box, click **OK**.

In the Circuits on Span dialog box, the switch state for all circuits is Clear. Unprotected circuits do not switch.

Initiate a Force Ring Switch on a BLSR

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 From the View menu, choose **Go to Network View**.

Step 3 In network view, click the **Provisioning > BLSR** tabs.

Step 4 Click the row of the BLSR you are switching, then click **Edit**.

Step 5 Right-click a BLSR node west port and choose **Set West Protection Operation**.

Step 6 In the Set West Protection Operation dialog box, choose **Force Ring** from the drop-down list.

Step 7 Click **OK**.

Step 8 Click **Yes** in the two Confirm BLSR Operation dialog boxes that appear.

Initiate a Force Span Switch on a Four-Fiber BLSR

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 From the View menu, choose **Go to Network View**.

Step 3 In network view, click the **Provisioning > BLSR** tabs.

Step 4 Click the row of the BLSR you are switching, then click **Edit**.

Step 5 Right-click a BLSR node west port and choose **Set West Protection Operation**.

Step 6 In the Set West Protection Operation dialog box, choose **Force Span** from the drop-down list.

Step 7 Click **OK**.

Step 8 Click **Yes** in the two Confirm BLSR Operation dialog boxes that appear.

Initiate a Manual Span Switch on a BLSR

Step 1 From the View menu, choose **Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 Choose the BLSR and click **Edit**.

Step 4 Right-click the BLSR node channel (port) and choose **Set West Protection Operation** (if you chose a west channel) or **Set East Protection Operation** (if you chose an east channel).

Step 5 In the Set West Protection Operation dialog box or the Set East Protection Operation dialog box, choose **Manual Span** from the drop-down list.

Step 6 Click **OK**.

Step 7 Click **Yes** in the two Confirm BLSR Operation dialog boxes.

Initiate a Manual Ring Switch on a BLSR

Step 1 From the View menu, choose **Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 Choose the BLSR and click **Edit**.

Step 4 Right-click the BLSR node channel (port) and choose **Set West Protection Operation**.

Step 5 In the Set West Protection Operation dialog box or the Set East Protection Operation dialog box, choose **Manual Ring** from the drop-down list.

Step 6 Click **OK**.

Step 7 Click **Yes** in the two Confirm BLSR Operation dialog boxes.

Initiate a Lock Out on a BLSR Protect Span

Step 1 From the View menu, choose **Go to Network View**.

Step 2 Click the **Provisioning > BLSR** tabs.

Step 3 Choose the BLSR and click **Edit**.

Step 4 Right-click the BLSR node channel (port) and choose **Set West Protection Operation** (if you chose a west channel) or **Set East Protection Operation** (if you chose an east channel).

Step 5 In the Set West Protection Operation dialog box or the Set East Protection Operation dialog box, choose **Lockout Protect Span** from the drop-down list.

Step 6 Click **OK**.

Step 7 Click **Yes** in the two Confirm BLSR Operation dialog boxes.

Initiate an Exercise Ring Switch on a BLSR

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Click **View > Go to Network View**.

Step 3 Click the **Provisioning > BLSR** tabs.

Step 4 Click the row of the BLSR you are exercising, then click **Edit**.

Step 5 Right-click the west port of a node and choose **Set West Protection Operation**.

Step 6 In the Set West Protection Operation dialog box, choose **Exercise Ring** from the drop-down list.

Step 7 Click **OK**.

Step 8 Click **Yes** in the Confirm BLSR Operation dialog box.

Initiate an Exercise Ring Switch on a Four Fiber BLSR

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Click **View > Go to Network View**.

Step 3 Click the **Provisioning > BLSR** tabs.

Step 4 Click the row of the BLSR you are exercising, then click **Edit**.

Step 5 Right-click the west port of a node and choose **Set West Protection Operation**.

Step 6 In the Set West Protection Operation dialog box, choose **Exercise Span** from the drop-down list.

Step 7 Click **OK**.

Step 8 Click **Yes** in the Confirm BLSR Operation dialog box.

Clear a BLSR External Switching Command

Step 1 Log into a node on the network. If you are already logged in, continue with Step 2.

Step 2 Click **View > Go to Network View**.

Step 3 Click the **Provisioning > BLSR** tabs.

Step 4 Click the BLSR you want to clear.

Step 5 Right-click the west port of the BLSR node where you invoked the switch and choose **Set West Protection Operation**.

Step 6 In the Set West Protection Operation dialog box, choose **Clear** from the drop-down list.

Step 7 Click **OK**.

Step 8 Click **Yes** in the Confirm BLSR Operation dialog box.

2.8.3 CTC Card Resetting and Switching

This section gives instructions for TSC cards and SSXC cross-connect cards.

Soft-Reset a Card Using CTC

This procedure is used to force system control from the active card, including the TSC card, SSXC, or optical (traffic) card. In this kind of reset, the card is rebooted but the flash memory is not cleared.

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note Whenever TSC cards are changed from active to standby, it takes approximately 12 minutes to completely synchronize to the timing source because the Stratum 3E timing module is being adopted.

Step 1 If you are resetting a TSC card, determine whether it is active and which is standby by positioning the cursor over the active card. An active TSC card has a green ACT/STBY LED illuminated.

Step 2 Right-click the card to display the shortcut menu.

Step 3 Click **Soft-reset Card**.

Step 4 Click **Yes** when the confirmation dialog box appears.

Step 5 Click **OK** when the "Lost connection to node, changing to Network View" dialog box appears.

Note The TSC card takes several minutes to reboot. Refer to the "Card Features and Functions" chapter in the *Cisco ONS 15600 Reference Manual* for more information about LED behavior during TSC card reboots.

Step 6 If you reset a TSC card, confirm that it is in standby mode after the reset.

Tip If you run the cursor over the TSC card in CTC, a popup displays the card's status (whether active or standby).

Hard-Reset a Card Using CTC

This procedure is used to force system control from the active TSC card to the standby TSC card, or it is used to reset the SSXC or an optical (traffic) card. This kind of reset reboots the card and clears the flash memory, making it appear like a newly inserted card.

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Caution Use hard resets with caution. There could be up to 15 other sets of bandwidth affected by a hard reset.

Note The hard-reset option is enabled only when the card is placed in the OOS-MA,MT service state.

Note When a TSC card changes from active to standby, the node takes approximately 12 minutes to synchronize completely to the timing source because of the more accurate Stratum 3E timing module being adopted.

Step 1 If you are resetting a TSC card, determine which one is the active card and which is the standby card. (Position the cursor over the active card. An active TSC card has a green ACT/STBY LED illuminated.)

Step 2 Right-click the card (or active TSC card) to display the shortcut menu.

Step 3 Click **Hard-reset Card**.

Step 4 Click **Yes** when the confirmation dialog box appears.

Step 5 Click **OK** when the "Lost connection to node, changing to Network View" dialog box appears.

Note The TSC card takes several minutes to reboot. Refer to the "Card Features and Functions" chapter in the *Cisco ONS 15600 Reference Manual* for more information about LED behavior during TSC card reboots.

Step 6 If you reset a TSC card, confirm that this TSC card you reset is in standby mod.

If you run the cursor over the TSC card in CTC, a popup displays the card's status (whether active or standby).

Tip If you run the cursor over the TSC card in CTC, a popup displays the card's status (whether active or standby).

Request a Cross-Connect Card Preferred Copy Switch

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Step 1 Determine which SSXC card is the preferred copy and which is currently in use.

In node view, click the **Maintenance > Preferred Copy** tabs.

Step 2 In the Set Preferred drop-down list, select the alternate copy. (For example, if the Slot 8 Copy B is preferred and in use, select the Slot 6 Copy A.

Caution Do not select the copy that you want to replace.

Step 3 Click **Apply**.

Step 4 Click **Yes** in the confirmation dialog box.

Note If you attempt a preferred copy switch and the switch is unsuccessful, it indicates a problem on the alternate SSXC card.

Step 5 Click **Refresh** until the tab shows that the alternate copy you selected is now the preferred copy. The Currently Used field dynamically changes to display the newly selected preferred copy.

2.8.4 Physical Card Reseating, Resetting, and Replacement

This section gives instructions for physically reseating and replacing TSC card, SSXC cards, and traffic cards.

Reset a Card with a Card Pull (Reseat)

Note If you are pulling a TSC card, determine whether a TSC card is active or standby by positioning the cursor over the TSC card graphic to view the status.

Note Resetting a standby TSC card does not change its status to active.

Step 1 Ensure that the card you want to reset is in standby mode.

(A TSC card that is ready for service has a green SRV LED illuminated. An active TSC card has a green ACT/STBY LED illuminated, but a standby card does not have this LED illuminated.)

If you run the cursor over the TSC card in CTC, a popup displays the card's status (whether active or standby).

Step 2 Unlatch the top and bottom ejector levers on the card.

Step 3 Physically pull the card at least partly out of the slot until the lighted LEDs turn off.

Step 4 Wait 30 seconds. Reinsert the card and close the ejector levers.

Note A TSC card takes several minutes to reboot. Refer to the "Card Features and Functions" chapter in the *Cisco ONS 15600 Reference Manual* for more information about LED behavior during TSC card reboots.

Note When a standby TSC card is removed and reinserted (reseated), all three fan lights might momentarily illuminate, indicating that the fan controller cards have also reset.

Replace an SSXC Card

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note The ONS 15600 system dynamically changes the preferred copy status from one SSXC to the redundant copy if an error is detected on a card port. You can see this change in the CTC node view Maintenance > Preferred Copy window Currently Used field. If errors are detected on both SSXC copies, the Currently Used field says Both.

Note You do not need to make any changes to the database if you are replacing it with a card of exactly the same type.

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is complete.

Step 1 Physically remove the card to be replaced from the ONS 15600 shelf by completing the following steps:

a. Open the card ejectors.

b. Slide the card out of the slot.

Step 2 Physically replace the SSXC card in the shelf by completing the following steps:

a. Open the ejectors on the replacement card.

b. Slide the replacement card into the slot along the guide rails until it contacts the backplane.

c. Close the ejectors.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Replace an OC-48 Card or OC-192 Card

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is completed.

Step 1 Ensure that the card you are replacing does not carry traffic in a 1+1 protection group by completing the following steps:

a. In node view, click the **Maintenance > Protection** tabs.

b. Choose the first group listed under Protection Groups.

c. Verify that the slot number for the card you are replacing does not appear in the Selected Groups list. For example, if you are replacing the OC-48 card in Slot 3, ensure Selected Groups does not contain any entries that start with s3, regardless of the port.

d. Repeat Steps b and c for each protection group.

e. If any of the groups contain a port on the card you want to replace, complete the "Initiate a 1+1 Protection Port Force Switch Command" procedure on page 2-126.

Step 2 Ensure that the card you are replacing does not carry path protection circuit traffic by completing the following steps:

Note A port can be part of a 1+1 protection group or part of a path protection, but it cannot be configured for both. However, different ports on one card can be configured in different ways. If you move all of the traffic off some 1+1 ports, you still need to check whether the remaining ports are carrying path protection traffic.

a. From the **View** menu, choose Go to Parent View.

b. Click the **Circuits** tab.

c. View the circuit source and destination ports and slots. If any circuits originate or terminate in the slot containing the card you are replacing, perform the "Initiate a Force Switch for All Circuits on a Path Protection Span" procedure on page 2-129.

Note If the card you are replacing is not configured for any port or circuit protection, but does carry traffic, bridge and roll this traffic onto another card. Follow the "Bridge and Roll Traffic" procedure in the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 3 Ensure that the card you are replacing does not carry BLSR circuit traffic by completing the following steps.

a. In the CTC node view, click **View > Go to Parent View**.

b. Click the **Circuits** tab.

c. View the circuit source and destination ports and slots. If any circuits originate or terminate in the slot containing the card you are replacing, perform the "Initiate a Force Span Switch on a Four-Fiber BLSR" procedure on page 2-132.

Note If the card you are replacing is not configured for any port or circuit protection, but does carry traffic, bridge and roll this traffic onto another card. Refer to the "Manage Circuits" chapter in the *Cisco ONS 15600 Procedure Guide*.

Step 4 Remove any fiber optic cables from the ports.

Step 5 Physically remove the card that you want to replace from the ONS 15600 shelf by completing the following steps:

a. Open the card ejectors.

b. Slide the card out of the slot.

Step 6 Physically replace the OC-48 or OC-192 card in the shelf by completing the following steps:

a. Open the ejectors on the replacement card.

b. Slide the replacement card into the slot along the guide rails until it contacts the backplane.

c. Close the ejectors.

Note When you replace a card with the identical type of card, you do not need to make any changes to the database.

Step 7 Clear the Force switches.

- To clear 1+1 Force switches, complete the "Clear a 1+1 Protection Port Force or Manual Switch Command" procedure on page 2-127.
- To clear path protection Force switches, complete the "Clear a Path Protection Span External Switching Command" procedure on page 2-131.

Step 8 When the card is in service and receiving traffic, reset the card's physical receive power level threshold in CTC by completing the following steps:

a. Double-click the newly installed card in CTC node view.

b. Click the **Provisioning > Threshold** tabs.

c. Click the **Physical** radio button.

d. Click **Set OPM** for each port on the card.

Replace a TSC Card

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note When an error is detected on a TSC card, the ONS 15600 system switches control to the second TSC card; therefore, so it should not be necessary to change control when you replace the card.

Note You do not need to make any changes to the database if you are replacing it with a card of exactly the same type.

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is completed.

Step 1 Ensure that the card you are replacing is not the active TSC card: Run the mouse over the card in CTC. If the card says Active, switch it to Standby by completing the following steps:

a. Right-click the active TSC card to display the shortcut menu.

b. Click **Soft-reset Card**.

c. Click **Yes** when the confirmation dialog box appears.

d. Click **OK** when the "Lost connection to node, changing to Network View" dialog box appears.

Note The TSC card takes several minutes to reboot. Refer to the "Card Features and Functions" chapter in the *Cisco ONS 15600 Reference Manual* for more information about LED behavior during TSC card reboots.

Note Whenever TSC cards are changed from active to standby, it takes approximately 12 minutes to completely synchronize to the new system clock source due to the more accurate Stratum 3E timing module being adopted.

Step 2 Confirm that the TSC card you reset is in standby mode after the reset.

A TSC card that is ready for service has a green SRV LED illuminated. An active TSC card has a green ACT/STBY LED illuminated, but a standby card does not have this LED illuminated.

Tip If you run the cursor over the TSC card in CTC, a popup displays the card's status (whether active or standby).

Step 3 Physically remove the card you want to replace from the ONS 15600 by completing the following steps:

a. Open the card ejectors.

b. Slide the card out of the slot.

Step 4 Insert the replacement TSC card into the empty slot by completing the following steps:

a. Open the ejectors on the replacement card.

b. Slide the replacement card into the slot along the guide rails until it contacts the backplane.

c. Close the ejectors.

Step 5 If you want to make the replaced TSC card active, complete Steps b through d in Step 2 again.

Replace an ASAP Carrier Module

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note You do not need to make any changes to the database if you are replacing it with a card of exactly the same type.

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is completed.

Step 1 Verify that the card is not carrying any traffic. If it is, switch it using the appropriate procedure.

Step 2 Physically remove the ASAP carrier module from the ONS 15600 by completing the following steps:

a. Open the card ejectors.

b. Slide the card out of the slot.

Step 3 Insert the replacement carrier module into the empty slot by completing the following steps:

a. Open the ejectors on the replacement card.

b. Slide the replacement card into the slot along the guide rails until it contacts the backplane.

c. Close the ejectors.

Replace an ASAP 4PIO (PIM) Module

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note You do not need to make any changes to the database if you are replacing it with a card of exactly the same type.

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is completed.

Step 1 Use a Phillips screwdriver to loosen the screws at the top right and bottom left of the 4PIO (PIM) module.

Step 2 Carefully slide the motherboard of the module along the top and bottom guide rails out of the slot.

Step 3 Carefully slide the motherboard of the new module into the slot.

Step 4 Tighten the screws at the top right and bottom left of the 4PIO (PIM) module.

Note The 4PIO (PIM) LEDs do not light until a fixed-rate PIM is installed in the associated slot or a multirate optical (MRO) PIM is installed and an optical rate is provisioned.

Note If you insert a card into a slot provisioned for a different card, all red LEDs turn on and you will see a mismatched equipment (MEA) alarm for that slot when you open CTC.

Step 5 After you have logged into CTC, verify that the card appears in CTC card view.

Replace an ASAP SFP (PPM) Module

Warning **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Note You do not need to make any changes to the database if you are replacing it with a card of exactly the same type.

Note Card removal raises an improper removal (IMPROPRMVL) alarm, but this clears after the card replacement is completed.

Step 1 Unlatch the bail clasp by moving it to the left before removing the bad SFP (PPM) from the slot.

Step 2 Slide the SFP (PPM) out of the slot.

Step 3 Verify that the new SFP (PPM) is correct for your network and ASAP card. Refer to the *Cisco ONS 15600 Reference Manual* for more information.

Step 4 Orient the new SFP so that the Cisco serial number label is facing away from the shelf (to the right).

Step 5 Slide the SFP into the slot and move the bail clasp to the right to secure the SFP.

Caution Do not remove the protective caps until you are ready to attach the network fiber-optic cable.

Note Multirate SFPs (PPMs) must be provisioned in CTC; single-rate SFPs (PPMs) do not need to be provisioned. Refer to the "Install Cards and Fiber-Optic Cable" chapter in the *Cisco ONS 15600 Procedure Guide* for provisioning instructions.

2.8.5 Verify or Create Node DCC Terminations

Step 1 In node view, click the **Provisioning > Comm Channels > SDCC** tabs (or other tab as appropriate).

Step 2 View the Port column entries to see where terminations are present for a node. If terminations are missing, proceed to Step 3.

Step 3 If necessary, create a DCC termination by completing the following steps:

a. Click **Create**.

b. In the Create SDCC Terminations dialog box, click the ports where you want to create the DCC termination. To select more than one port, press the Shift key.

c. In the Port State area, click the **Set to IS** radio button.

d. Verify that the Disable OSPF on Link check box is unchecked.

e. Click **OK**.

Set the Optical Power Received Nominal Value

Step 1 In node view, double-click the OC-N card that you want to provision. The card view appears.

Step 2 Click the **Provisioning > SONET Thresholds** tabs.

Step 3 From the Types list, choose **Physical** and click **Refresh**.

Step 4 For the port you want to provision, click the **Set** button in the Set OPR column. In the confirmation dialog box, click **OK**.

Transients Conditions

This chapter gives a description, entity, SNMP number, and trap for each commonly encountered Cisco ONS 15600 transient condition.

3.1 Transients Indexed By Alphabetical Entry

Table 3-1 alphabetically lists all ONS 15600 transient conditions and their entity, SNMP number, and SNMP trap.

Note The CTC default alarm profile might contain conditions that are not currently implemented but are reserved for future use.

Table 3-1 ONS 15600 Transient Condition Alphabetical Index

Transient Condition	Entity	SNMP Number	SNMP Trap
3.3.1 ADMIN-DISABLE, page 3-4	NE	5270	disableInactiveUser
3.3.2 ADMIN-DISABLE-CLR, page 3-4	NE	5280	disableInactiveClear
3.3.3 ADMIN-LOCKOUT, page 3-4	NE	5040	adminLockoutOfUser
3.3.4 ADMIN-LOCKOUT-CLR, page 3-4	NE	5050	adminLockoutClear
3.3.5 ADMIN-LOGOUT, page 3-4	NE	5020	adminLogoutOfUser
3.3.6 ADMIN-SUSPEND, page 3-4	NE	5340	suspendUser
3.3.7 ADMIN-SUSPEND-CLR, page 3-5	NE	5350	suspendUserClear
3.3.8 AUTOWDMANS, page 3-5	NE	5690	automaticWdmAnsFinished
3.3.9 BLSR-RESYNC, page 3-5	OCN	2100	blsrMultiNodeTableUpdateCompleted
3.3.10 DBBACKUP-FAIL, page 3-5	EQPT	3724	databaseBackupFailed
3.3.11 DBRESTORE-FAIL, page 3-5	EQPT	3726	databaseRestoreFailed
3.3.12 EXERCISING-RING, page 3-5	OCN	3400	exercisingRingSuccessfully
3.3.13 FIREWALL-DIS, page 3-6	NE	5230	firewallHasBeenDisabled

Table 3-1 ONS 15600 Transient Condition Alphabetical Index (continued)

3.3.14 FRCDWKSWBK-NO-TRFSW, page 3-6	OCN	5560	forcedSwitchBackToWorkingResultedInNoTrafficSwitch
3.3.15 FRCDWKSWPR-NO-TRFSW, page 3-6	OCn	5550	forcedSwitchToProtectResultedInNoTrafficSwitch
3.3.16 INTRUSION, page 3-6	NE	5250	securityIntrusionDetUser
3.3.17 INTRUSION-PSWD, page 3-6	NE	5240	securityIntrusionDetPwd
3.3.18 LOGIN-FAILURE-LOCKOUT, page 3-6	NE	5080	securityInvalidLoginLockedOutSeeAuditLog
3.3.19 LOGIN-FAILURE-ONALRDY, page 3-6	NE	5090	securityInvalidLoginAlreadyLoggedOnSeeAuditLog
3.3.20 LOGIN-FAILURE-PSWD, page 3-7	NE	5070	securityInvalidLoginPasswordSeeAuditLog
3.3.21 LOGIN-FAILURE-USERID, page 3-7	NE	3722	securityInvalidLoginUsernameSeeAuditLog
3.3.22 LOGOUT-IDLE-USER, page 3-7	—	5110	automaticLogoutOfIdleUser
3.3.23 MANWKSWBK-NO-TRFSW, page 3-7	OCN	5540	manualSwitchBackToWorkingResultedInNoTrafficSwitch
3.3.24 MANWKSWPR-NO-TRFSW, page 3-7	OCN	5530	manualSwitchToProtectResultedInNoTrafficSwitch
3.3.25 PARAM-MISM, page 3-7	OTS, OMS, OCH, AOTS	5840	pluginModuleRangeSettingsMismatch
3.3.26 PM-TCA, page 3-8	—	2120	performanceMonitorThresholdCrossingAlert
3.3.27 PS, page 3-8	EQPT	2130	protectionSwitch
3.3.28 PSWD-CHG-REQUIRED, page 3-8	NE	6280	userPasswordChangeRequired
3.3.29 RMON-ALARM, page 3-8	—	2720	rmonThresholdCrossingAlarm
3.3.30 RMON-RESET, page 3-8	—	2710	rmonHistoriesAndAlarmsResetReboot
3.3.31 SESSION-TIME-LIMIT, page 3-8	NE	6270	sessionTimeLimitExpired
3.3.32 SFTWDOWN-FAIL, page 3-8	EQPT	3480	softwareDownloadFailed
3.3.33 SPANLENGTH-OUT-OF-RANGE, page 3-9	OTS	6150	spanLengthOutOfRange
3.3.34 SWFTDOWNFAIL, page 3-9	EQPT	3480	softwareDownloadFailed
3.3.35 USER-LOCKOUT, page 3-9	NE	5030	userLockedOut
3.3.36 USER-LOGIN, page 3-9	NE	5100	loginOfUser

Table 3-1 ONS 15600 Transient Condition Alphabetical Index (continued)

3.3.37 USER-LOGOUT, page 3-9	NE	5120	logoutOfUser
3.3.38 WKSWBK, page 3-9	EQPT, OCN	2640	switchedBackToWorking
3.3.39 WKSWPR, page 3-10	2R, TRUNK, EQPT, ESCON, FC, GE, ISC, OCN, STSMON, VT-MON	2650	switchedToProtection
3.3.40 WRMRESTART, page 3-10	NE	2660	warmRestart
3.3.41 WTR-SPAN, page 3-10	—	3420	spanIsInWaitToRestoreState

3.2 Trouble Notifications

The ONS 15600 reports trouble by using standard condition characteristics that follow the rules in Telcordia GR-253 and graphical user interface (GUI) state indicators.

The ONS 15600 uses standard Telcordia categories to characterize levels of trouble. The system reports trouble notifications as alarms and reports status or descriptive notifications (if configured to do so) as conditions in the CTC Alarms window. Alarms typically signify a problem that you need to remedy, such as a loss of signal. Conditions do not necessarily require troubleshooting.

3.2.1 Condition Characteristics

Conditions include any problem detected on an ONS 15600 shelf. They can include standing or transient notifications. You can retrieve a snapshot of all currently raised conditions on the network, node, or card in the CTC Conditions window or by using the RTRV-COND commands in TL1.

Note Some cleared conditions are found on the History tab.

For a comprehensive list of conditions, refer to the *Cisco ONS SONET TL1 Command Guide*.

3.2.2 Condition States

The History tab state (ST) column indicates the disposition of the condition, as follows:

- A raised (R) event is active.
- A cleared (C) event is no longer active.
- A transient (T) event is automatically raised and cleared in CTC during system changes such as user login, log out, and loss of connection to node view. Transient events do not require user action.

3.3 Transient Conditions

This section lists in alphabetical order all the transient conditions encountered in Software Release 6.0. The description, entity, SNMP number, and SNMP trap accompany each condition.

3.3.1 ADMIN-DISABLE

The ADMIN-DISABLE (Disable Inactive User) condition occurs when the administrator disables the user or the account is inactive for a specified period.

This transient condition does not result in a standing condition.

3.3.2 ADMIN-DISABLE-CLR

The ADMIN-DISABLE-CLR (Disable Inactive Clear) condition occurs when the administrator clears the disable flag on the user account.

This transient condition does not result in a standing condition.

3.3.3 ADMIN-LOCKOUT

The ADMIN-LOCKOUT (Admin Lockout of User) condition occurs when the administrator locks a user account.

This transient condition does not result in a standing condition.

3.3.4 ADMIN-LOCKOUT-CLR

The ADMIN-LOCKOUT-CLR (Admin Lockout Clear) condition occurs when the administrator unlocks a user account or the lockout time expires.

This transient condition does not result in a standing condition.

3.3.5 ADMIN-LOGOUT

The ADMIN-LOGOUT (Admin Logout of User) condition occurs when the administrator logs off a user session.

This transient condition does not result in a standing condition.

3.3.6 ADMIN-SUSPEND

The ADMIN-SUSPEND (Suspend User) condition occurs when the password for a user account expires.

This transient condition does not result in a standing condition.

3.3.7 ADMIN-SUSPEND-CLR

The ADMIN-SUSPEND-CLR (Suspend User Clear) condition occurs when the user or administrator changes the password.

This transient condition does not result in a standing condition.

3.3.8 AUTOWDMANS

The AUTOWDMANS (Automatic WDM ANS Finish) condition indicates that an automatic node setup command has been initiated. It normally occurs when you replace DWDM cards in the Cisco ONS 15454; the condition is an indication that the system has regulated the card.

This transient condition does not result in a standing condition.

3.3.9 BLSR-RESYNC

The BLSR-RESYNC (BLSR Multinode Table Update Completed) condition might occur when you create or delete circuits on a bidirectional line switched ring (BLSR), change a ring topology (for example, add or delete a BLSR node), or change the BLSR circuit state and ring ID.

This transient condition does not result in a standing condition.

3.3.10 DBBACKUP-FAIL

The DBBACKUP-FAIL (Database Backup Failed) condition occurs when the system fails to back up the database when the backup command is initiated.

This condition can occur when the server is not able to handle the backup operation due to network or server issues. Repeat the same operation again and check to see if it is successful. If the backup fails, it could be due to a network issue or software program failure. Contact TAC for assistance; see the "Obtaining Technical Assistance" section on page xxxv as needed.

3.3.11 DBRESTORE-FAIL

The DBRESTORE-FAIL (Database Restore Failed) condition occurs when the system fails to restore the backed up database when the restore command is initiated.

This condition can be due to server issues, network issues, or human error (pointing to a file that does not exist, wrong file name, etc.). Retrying the database restore with the correct file will usually succeed. If the network issue persists, you must contact network lab support. If the condition is caused by a network element (NE) failure, contact TAC for assistance. See the "Obtaining Technical Assistance" section on page xxxv as needed.

3.3.12 EXERCISING-RING

The EXERCISING-RING (Exercising Ring Successfully) condition occurs whenever you issue an Exercise-Ring command from CTC or TL1. This condition indicates that a command is being executed. You must issue another command to clear the exercise and the condition.

3.3.13 FIREWALL-DIS

The FIREWALL-DIS (Firewall Has Been Disabled) condition occurs when you provision the firewall to Disabled.

This transient condition does not result in a standing condition.

3.3.14 FRCDWKSWBK-NO-TRFSW

The FRCDWKSWBK-NO-TRFSW (Forced Switch Back to Working Resulted in No Traffic Switch) condition occurs when you perform a Force Switch to the working port/card and the working port/card is already active.

This transient condition might result in a Force Switch (Ring or Span) standing condition for a BLSR.

3.3.15 FRCDWKSWPR-NO-TRFSW

The FRCDWKSWPR-NO-TRFSW (Forced Switch to Protection Resulted in No Traffic Switch) condition occurs when you perform a Force Switch to the protect port/card, and the protect port/card is already active.

This transient condition does not result in a standing condition.

3.3.16 INTRUSION

The INTRUSION (Invalid Login Username) condition occurs when you attempt to log in with an invalid user ID.

This transient condition does not result in a standing condition.

3.3.17 INTRUSION-PSWD

The INTRUSION -PSWD (Security Intrusion Attempt Detected) condition occurs when you attempt to login with an invalid password.

This transient condition does not result in a standing condition.

3.3.18 LOGIN-FAILURE-LOCKOUT

The LOGIN-FAILURE-LOCKOUT (Invalid Login–Locked Out) condition occurs when you attempt to log into a locked account.

This transient condition does not result in a standing condition.

3.3.19 LOGIN-FAILURE-ONALRDY

The LOGIN-FAILURE-ONALRDY (Security: Invalid Login–Already Logged On) condition occurs when you attempt to log in with an existing session and SUPN policy.

This transient condition does not result in a standing condition.

3.3.20 LOGIN-FAILURE-PSWD

The LOGIN-FAILURE-PSWD (Invalid Login–Password) condition occurs when you attempt to log in with an invalid password.

This transient condition does not result in a standing condition.

3.3.21 LOGIN-FAILURE-USERID

The LOGIN-FAILURE-USERID (Invalid Login–Username) condition occurs when a user login (CTC, CTM, or TL1) fails because the login username is not present on the node database. You must log in again with an existing user ID.

This transient condition is equivalent to a security warning. You must check the security log (audit log) for other security-related actions that have occurred.

3.3.22 LOGOUT-IDLE-USER

The LOGOUT-IDLE-USER (Automatic Logout of Idle User) condition occurs when a user session is idle for too long (the idle timeout expires) and the session terminates as a result. You must log in again to restart your session.

3.3.23 MANWKSWBK-NO-TRFSW

The MANWKSWBK-NO-TRFSW (Manual Switch Back To Working Resulted in No Traffic Switch) condition occurs when you perform a Manual switch to the working port/card and the working port/ card is already active.

This transient condition does not result in a standing condition.

3.3.24 MANWKSWPR-NO-TRFSW

The MANWKSWPR-NO-TRFSW (Manual Switch to Protect Resulted in No Traffic Switch) condition occurs when you perform a Manual switch to the protect port/card and the protect port/card is already active.

This transient condition results in a BLSR Manual Switch (Span or Ring) standing condition..

3.3.25 PARAM-MISM

The PARAM-MISM (Plug-in Module Range Settings Mismatch) condition occurs when the parameter range values stored on a small-form factor pluggable (SFP) device are different from the parameters stored in the TSC database.

The transient condition is not user-serviceable. Refer to the "Obtaining Technical Assistance" section on page xxxv.

3.3.26 PM-TCA

The PM-TCA (Performance Monitor Threshold Crossing Alert) condition occurs when network collisions cross the rising threshold for the first time.

3.3.27 PS

The PS (Protection Switch) condition occurs when the traffic switches from a working/active card to a protect/standby card.

3.3.28 PSWD-CHG-REQUIRED

The PSWD-CHG-REQUIRED (User Password Change Required) condition occurs when you are denied login for a shell function such as telnet or FTP because you did not change the login password. You can change the password through CTC or TL1.

3.3.29 RMON-ALARM

The RMON-ALARM (RMON Threshold Crossing Alarm) condition occurs when the remote monitoring variable crosses the threshold.

3.3.30 RMON-RESET

The RMON-RESET (RMON Histories and Alarms Reset Reboot) condition occurs when the time-of-day settings on the TSC card are increased or decreased by more than five seconds. This invalidates all the history data and remote monitoring (RMON) must restart. It can also occur when you reset a card.

3.3.31 SESSION-TIME-LIMIT

The SESSION-TIME-LIMIT (Session Time Limit Expired) condition occurs when a login session exceeds the time limit and you are logged out of the session. You must login again.

3.3.32 SFTWDOWN-FAIL

The SFTDOWN-FAIL (Software Download Failed) condition occurs when the system fails to download the required software.

An incorrect input that points to the wrong place or file, network issues, or a bad (corrupt) package can cause this failure. Retrying the operation with the correct name/location will usually succeed. If network issues persist, you must contact the network lab support. If the package is corrupt, contact Cisco TAC. See the "Obtaining Technical Assistance" section on page xxxv for details.

3.3.33 SPANLENGTH-OUT-OF-RANGE

The SPANLENGTH-OUT-OF-RANGE (Span Length Out of Range) condition occurs when the measured span loss does not fall within the limits of minimum and maximum expected span loss. It can also occur when the difference between MaxExpSpanLoss and MinExpSpanLoss is greater than 1dB.

When you perform a Calculate Span Loss operation on an ONS 15454 DWDM node, the software measures the real span loss in the field by comparing the far-end POSC power and the near-end OSC power.

3.3.34 SWFTDOWNFAIL

The SFTDOWN-FAIL (Software Download Failed) condition occurs when the system fails to download the required software.

An incorrect input that points to the wrong place or file, network issues, or a bad (corrupt) package can cause this failure. Retrying the operation with the correct name/location will usually succeed. If network issues persist, you must contact the network lab support. If the package is corrupt, contact Cisco TAC. See the "Obtaining Technical Assistance" section on page xxxv for details.

3.3.35 USER-LOCKOUT

The USER-LOCKOUT (User Locked Out) condition occurs when the system locks an account because of a failed login attempt. To proceed, the administrator must unlock the account or the lockout time must expire.

3.3.36 USER-LOGIN

The USER-LOGIN (Login of User) occurs when you begin a new session by verifying your User ID and password.

This transient condition does not result in a standing condition.

3.3.37 USER-LOGOUT

The USER-LOGOUT (Logout of User) condition occurs when you stop a login session by logging out of your account.

This transient condition does not result in a standing condition.

3.3.38 WKSWBK

The WKSWBK (Switched Back to Working) condition occurs when traffic switches back to the working port/card in a non-revertive protection group.

This transient condition does not result in a standing condition.

3.3.39 WKSWPR

The WKSWPR (Switched to Protection) condition occurs when traffic switches to the protect port/card in a non-revertive protection group.

This transient condition does not result in a standing condition.

3.3.40 WRMRESTART

The WRMRESTART (Warm Restart) condition occurs when the node restarts while powered up. A restart can be caused by provisioning, such as database-restore and IP changes, or software defects. A WRMRESTART is normally accompanied by MANRESET or AUTORESET to indicate whether the reset was initiated manually (MAN) or automatically (AUTO).

This is the first condition that appears after a TSC card is powered up. The condition changes to COLD-START if the TSC card is restarted from a physical reseat or a power loss.

3.3.41 WTR-SPAN

The WTR-SPAN (Span is in Wait To Restore State) condition occurs when a BLSR switches to another span due to a Signal Failure-Span command or a fiber is pulled from a four-fiber BLSR configuration. The condition is raised until the WaitToRestore (WTR) period expires.

This transient condition clears when the BLSR returns to a normal condition or the IDLE state.

Error Messages

Note The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

This chapter lists the Cisco ONS 15454, ONS 15454 SDH, ONS 15600, ONS 15327 and ONS 15310-CL error messages. Table 4-1 gives a list of all error message numbers, the messages, and a brief description of each message. The table lists two types of messages: error messages (EID-*nnnn*) and warning messages (WID-*nnnn*). Error messages are an alert that an unexpected or undesirable operation has occurred that either indicates the risk of loss of traffic or an inability to properly manage devices in the network. Warnings are an alert that the requested operation could lead to an error. Warnings are sometimes used to convey important information.

The error dialog box in Figure 4-1 consists of three parts: the error title, error ID, and the error message.

Figure 4-1 Error Dialog Box

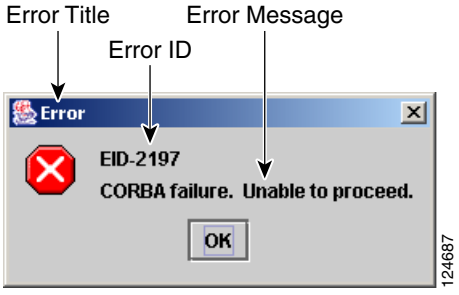


Table 4-1 Error Messages

Error or Warning ID	Error or Warning Message	Description
EID-0	Invalid error ID.	The error ID is invalid.
EID-1	Null pointer encountered in {0}.	Cisco Transport Controller (CTC) encountered a null pointer in the area described by the specified item.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-1000	The host name of the network element cannot be resolved to an address.	Refer to error or warning message text.
EID-1001	Unable to launch CTC due to applet security restrictions. Please review the installation instructions to make sure that the CTC launcher is given the permissions it needs. Note that you must exit and restart your browser in order for the new permissions to take effect.	Refer to error or warning message text.
EID-1002	The host name (e.g., for the network element) was successfully resolved to its address, but no route can be found through the network to reach the address.	The node is not reachable from CTC client station.
EID-1003	An error was encountered while attempting to launch CTC. {0}	Unexpected exception or error while launching CTC from the applet.
EID-1004	Problem Deleting CTC Cache: {0} {1}	Unable to delete the CTC cached JARs, because another application may have the JAR files running; for example, another instance of CTC.
EID-1005	An error occurred while writing to the {0} file.	CTC encountered an error while writing to log files, preference files, etc.
EID-1006	The URL used to download {0} is malformed.	The URL used to download the Launcher.jar file is malformed.
EID-1007	An I/O error occurred while trying to download {0}.	An input or output exception was encountered when CTC tried to download the GUI launcher.
EID-1018	Password must contain at least 1 alphabetic, 1 numeric, and 1 special character (+, # or %). Password shall not contain the associated user-ID.	The password is invalid.
EID-1019	Could not create {0}. Please enter another filename.	CTC could not create the file due to an invalid filename.
EID-1020	Fatal exception occurred, exiting CTC. Unable to switch to the Network view.	CTC was unable to switch from the node or card view to the network view, and is now shutting down.
EID-1021	Unable to navigate to {0}.	Failed to display the indicated view—node or network.
EID-1022	A session cannot be opened right now with this slot. Most likely someone else (using a different CTC) already has a session opened with this slot. Please try again later.	Refer to error message text.
EID-1023	This session has been terminated. This can happen if the card resets, the session has timed out, or if someone else (possibly using a different CTC) already has a session open with this slot.	Refer to error message text.
EID-1025	Unable to create Help Broker.	CTC was unable to create the help broker for the online help.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-1026	Unable to locate HelpSet.	CTC was unable to locate the help set for the online help.
EID-1027	Unable to locate Help ID: {0}	CTC was unable to locate the help ID for the online help.
EID-1028	Error saving table. {0}	There was an error while saving the specified table.
EID-1031	CTC cannot locate the online user manual files. The files may have been moved, deleted, or not installed. To install online user manuals, run the CTC installation wizard on the software or documentation CD.	Refer to error message text.
EID-1032	CTC cannot locate Acrobat Reader. If Acrobat Reader is not installed, you can install the Reader using the CTC installation wizard provided on the software or documentation CD.	Refer to error message text.
EID-1034	Unable to locate HelpSet when searching for Help ID "{0}".	CTC is unable to locate the specified help ID of the context sensitive help files.
EID-1035	CTC experienced an I/O error while working with the log files. Usually this means that the computer has run out of disk space. This problem may or may not cause CTC to stop responding. Ending this CTC session is recommended, but not required.	Refer to error message text.
WID-1036	WARNING: Deleting the CTC cache may cause any CTC running on this system to behave in an unexpected manner.	Refer to warning message text.
EID-1037	Could not open {0}. Please enter another filename.	Invalid file name. CTC is unable to open the file.
EID-1038	The file {0} does not exist.	The specified file does not exist.
EID-1039	The version of the browser applet does not match the version required by the network element. Please close and restart your browser in order to launch the Cisco Transport Controller.	Refer to error message.
WID-1040	WARNING: Running the CTC with a JRE version other than the recommended JRE version might cause the CTC to behave in an unexpected manner.	Refer to warning message.
EID-2001	No rolls selected. {0}	No rolls were selected for the bridge and roll.
EID-2002	The Roll must be completed or cancelled before it can be deleted.	You cannot delete the roll unless it has been completed or cancelled.
EID-2003	Error deleting roll.	There was an error when CTC tried to delete the roll.
EID-2004	No IOS slot selected.	You did not select a Cisco IOS slot.
EID-2005	CTC cannot find the online help files for {0}. The files may have been moved, deleted, or not installed. To install online help, run the setup program on the software or documentation CDs.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2006	Error editing circuit(s). {0} {1}.	An error occurred when CTC tried to open the circuit for editing.
EID-2007	Unable to save preferences.	CTC cannot save the preferences.
EID-2008	Unable to store circuit preferences: {0}	CTC cannot find the file needed to save the circuit preferences.
EID-2009	Unable to download package: {0}	Refer to error message text.
EID-2010	Delete destination failed.	CTC could not delete the destination.
EID-2011	Circuit destroy failed.	CTC could not destroy the circuit.
EID-2012	Reverse circuit destroy failed.	CTC could not reverse the circuit destroy.
EID-2013	Circuit creation error. Circuit creation cannot proceed due to changes in the network which affected the circuit(s) being created. The dialog will close. Please try again.	Refer to error message text.
EID-2014	No circuit(s) selected. {0}	You must select a circuit to complete this function.
EID-2015	Unable to delete circuit {0}as it has one or more rolls.	You must delete the rolls in the circuit before deleting the circuit itself.
EID-2016	Unable to delete circuit.	CTC could not delete the tunnel because there are circuits that use the tunnel.
EID-2017	Error mapping circuit. {0}	There was an error mapping the circuit.
EID-2018	Circuit roll failure. The circuit has to be in the DISCOVERED state in order to perform a roll.	There was a failure in circuit roll. Change the circuit state to DISCOVERED and proceed.
EID-2019	Circuit roll failure. Bridge and roll is not supported on a DWDM circuit.	Refer to error message text.
EID-2020	Circuit roll failure. The two circuits must have the same direction.	Refer to error message text.
EID-2021	Circuit roll failure. The two circuits must have the same size.	Refer to error message text.
EID-2022	Circuit roll failure. A maximum of two circuits can be selected for a bridge and roll operation.	Refer to error message text.
EID-2023	Unable to create new user account.	Refer to error message text.
EID-2024	Node selection error.	There was an error during node selection.
EID-2025	This feature cannot be used. Verify that each of the endpoints of this circuit are running software that supports this feature.	Refer to error or warning message text. This error is generated from the AnsOpticsParamsPane to indicate that the selected ring type is not supported by the endpoints of the circuit. In the VLAN tab it indicates that the back-end spanning tree protocol (STP) disabling is not supported.
EID-2026	Unable to apply {0} request. {1}	Error occurred while attempting to switch a path protection circuit away from a span.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2027	Error deleting circuit drop.	CTC could not delete the circuit drop.
EID-2028	Error removing circuit node.	CTC could not remove the circuit node.
EID-2029	The requested operation is not supported.	The task you are trying to complete is not supported by CTC.
EID-2030	Provisioning error.	There was an error during provisioning.
EID-2031	Error adding node.	There was an error while adding a node.
EID-2032	Unable to rename circuit. {0}	CTC could not rename the circuit.
EID-2033	An error occurred during validation. {0}	There was an internal error while validating the user changes after the Apply button was pressed. This error can occur in the Edit Circuit dialog box or in the BLSR table in the shelf view (rare condition).
EID-2034	Unable to add network circuits: {0}	Refer to error message text.
EID-2035	The source and destination nodes are not connected.	Refer to error message text.
EID-2036	Cannot delete this {0}. LAN Access has been disabled on this node and this {0} is needed to access the node.	You cannot delete the DCC/GCC link because it is needed to access the node.
EID-2037	Application error. Cannot find attribute for {0}.	CTC cannot find an attribute for the specified item.
EID-2038	Invalid protection operation.	The protection operation you tried to execute is invalid.
EID-2040	Please select a node first.	You must select a node before performing the task.
EID-2041	No paths are available on this link. Please make another selection.	You must select a link that has paths available.
EID-2042	This span is not selectable. Only the green spans with an arrow may be selected.	Refer to error message text.
EID-2043	This node is not selectable. Only the source node and nodes attached to included spans (blue) are selectable. Selecting a selectable node will enable its available outgoing spans.	Refer to error message text.
EID-2044	This link may not be included in the required list. Constraints only apply to the primary path. Each node may have a maximum of one incoming signal and one outgoing link.	You must select only one link going in and out of a node. Selecting more than one link is contradictory to the path selection algorithm.
EID-2045	This link may not be included in the required list. Only one outgoing link may be included for each node.	Refer to error message text.
EID-2047	Error validating slot number. Please enter a valid value for the slot number.	There was an error due to an invalid slot number.
EID-2048	Error validating port number. Please enter a valid value for the port number.	There was an error due to an invalid port number.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2050	New circuit destroy failed.	CTC could not destroy the new circuit.
EID-2051	Circuit cannot be downgraded. {0}	The specified circuit cannot be downgraded.
EID-2052	Error during circuit processing.	There was an error during the circuit processing.
EID-2054	Endpoint selection error.	There was an error during the endpoint selection.
EID-2055	No endpoints are available for this selection. Please make another selection.	This error occurs in the circuit creation dialog only during a race condition that has incorrectly allowed entities without endpoints to be displayed in the combo boxes.
EID-2056	Communication error. {0}	An internal error occurred in Network Alarm tab while synchronizing alarms with the nodes.
EID-2059	Node deletion Error. {0}	There was an error during the node deletion.
EID-2060	No PCA circuits found.	CTC could not find any protection channel access (PCA) circuits for this task.
EID-2061	Error provisioning VLAN.	There was an error defining the VLAN.
EID-2062	Cannot delete VLAN. No VLAN(s) are selected. Please select a VLAN.	Refer to error message text.
EID-2063	Cannot delete default VLAN.	The selected VLAN is the default VLAN, and cannot be deleted.
EID-2064	Error deleting VLANs. {0}	There was an error deleting the specified VLAN.
EID-2065	Cannot import profile. Profile "{0}" exists in the editor and the maximum number of copies (ten) exists in the editor. Aborting the import. The profile has already been loaded eleven times.	Cannot import the profile because the profile has reached the maximum number of copies in the editor.
EID-2066	Unable to store profile. Error writing to {0}.	CTC encountered an error while trying to store the profile.
EID-2067	File write error. {0}	CTC encountered an error while writing the specified file.
EID-2068	Unable to load alarm profile from node.	CTC encountered an error trying to load the alarm profile from the node.
EID-2069	File not found or I/O exception. (No such file or directory)	Either the specified file was not found, or there was an input/output exception.
EID-2070	Failure deleting profile. {0}	There was a failure in deleting the specified profile.
EID-2071	Only one column may be highlighted.	You cannot select more than one column during clone action.
EID-2072	Only one profile may be highlighted.	You cannot select more than one profile.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2073	This column is permanent and may not be removed.	You cannot delete a permanent column.
EID-2074	Select one or more profiles.	You have not selected any profile or column. Reset operation is done by right-clicking the selected column.
EID-2075	This column is permanent and may not be reset.	You cannot reset a permanent column.
EID-2077	This column is permanent and may not be renamed.	You cannot rename a permanent column.
EID-2078	At least two columns must be highlighted.	You cannot compare two profiles unless you select two columns.
EID-2079	Cannot load alarmables into table. There are no reachable nodes from which the list of alarmables may be loaded. Please wait until such a node is reachable and try again.	Refer to error message text.
EID-2080	Node {0} has no profiles.	The specified node does not have any profiles.
EID-2081	Error removing profile {0} from node {1}.	There was an error while removing the specified profile from the specified node.
EID-2082	Cannot find profile {0} on node {1}.	CTC cannot find the specified profile from the specified node.
EID-2083	Error adding profile {0} to node {1}.	There was an error adding the specified profile to the specified node.
EID-2085	Invalid profile selection. No profiles were selected.	You tried to select an invalid profile. Select another profile.
EID-2086	Invalid node selection. No nodes were selected.	You tried to select an invalid node. Select another node.
EID-2087	No profiles were selected. Please select at least one profile.	Refer to error message text.
EID-2088	Invalid profile name.	The profile name cannot be empty.
EID-2089	Too many copies of {0} exist. Please choose another name.	Select a unique name.
EID-2090	No nodes selected. Please select the node(s) on which to store the profile(s).	You must select one or more nodes on which you can store the profile.
EID-2091	Unable to switch to node {0}.	CTC is unable to switch to the specified node.
EID-2092	General exception error.	CTC encountered a general exception error while trying to complete the task.
EID-2093	Not enough characters in name. {0}	The name must have a minimum of six characters.
EID-2094	Password and confirmed password fields do not match.	You must make sure the two fields have the same password.
EID-2095	Illegal password. {0}	The password you entered is not allowed.
EID-2096	The user must have a security level.	You must have an assigned security level to perform this task.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2097	No user name specified.	You did not specify a user name.
EID-2099	Ring switching error.	There was an error during the ring switch.
EID-2100	Please select at least one profile to delete.	You have not selected the profile to delete.
EID-2101	Protection switching error.	There was an error during the protection switching.
EID-2102	The forced switch could not be removed for some circuits. You must switch these circuits manually.	The forced switch could not be removed for some circuits. You must switch these circuits manually.
EID-2103	Error upgrading span.	There was an error during the span upgrade.
EID-2104	Unable to switch circuits back as one or both nodes are not reachable.	This error occurs during the path protection span upgrade procedure.
EID-2106	The node name cannot be empty.	You must supply a name for the node.
EID-2107	Error adding {0}, unknown host.	There was an error adding the specified item.
EID-2108	{0} is already in the network.	The specified item exists in the network.
EID-2109	The node is already in the current login group.	The node you are trying to add is already present in the current login group.
EID-2110	Please enter a number between 0 and {0}.	You must enter a number in the range between 0 and the specified value.
EID-2111	This node ID is already in use. Please choose another.	Select a node ID that is not in use.
EID-2113	Cannot set extension byte for ring. {0}	CTC cannot set the extension byte.
EID-2114	Card communication failure. Error applying operation.	This error can occur during an attempt to apply a BLSR protection operation to a line.
EID-2115	Error applying operation. {0}	There was an error in applying the specified operation.
EID-2116	Invalid extension byte setting for ring. {0}	The extension byte set for the specified ring is invalid.
EID-2118	Cannot delete ring. There is a protection operation set. All protection operations must be clear for ring to be deleted.	Delete all the protection operations for the ring before it can be deleted.
EID-2119	Cannot delete {0} because a protection switch is in effect. Please clear any protection operations, make sure that the reversion time is not "never" and allow any protection switches to clear before trying again.	Clear all protection operations or switches before deleting the ring.
EID-2120	The following nodes could not be unprovisioned {0} Therefore you will need to delete this {1} again later.	The specified nodes could not be unprovisioned. Try deleting this BLSR or MS-SPRing later.
EID-2121	Cannot upgrade ring. {0}	CTC cannot upgrade the specified ring.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2122	Inadequate ring speed for upgrade. Only {0} (or higher) {1} can be upgraded to 4-fiber.	You have selected an incorrect ring speed for upgrade. Only rings within the specified parameters can be upgraded to 4-fiber BLSR.
EID-2123	Verify that the following nodes have at least two in-service ports with the same speed as the 2-fiber {0}. The ports cannot serve as a timing reference, and they cannot have DCC terminations or overhead circuits. {1}	Nonupgradable nodes. Verify that the specified nodes have at least two IS-NR ports with the same speed as the 2-fiber BLSR. The specified ports cannot serve as a timing reference, and they cannot have data communications channel (DCC) terminations or overhead circuits.
EID-2124	You cannot add this span because it is connected to a node that already has the east and west ports defined.	Refer to error message text.
EID-2125	You cannot add this span as it would cause a single card to host both the east span and the west span. A card cannot protect itself.	Refer to error message text.
EID-2126	OSPF area error. {0}	There is an Open Shortest Path First (OSPF) area error.
EID-2127	You cannot add this span. It would cause the following circuit(s) to occupy different STS regions on different spans. {0} Either select a different span or delete the above circuit(s).	A circuit cannot occupy different STS regions on different spans. You may add a different span or delete the specified circuit.
EID-2128	Illegal state error.	An internal error occurred while trying to remove a span from a BLSR. This alarm occurs in the network-level BLSR creation dialog box.
EID-2129	This port is already assigned. The east and west ports must be different.	Refer to error message text.
EID-2130	The ring ID value, {0}, is not valid. Please enter a valid number between 0 and 9999.	Enter a ring ID value between 0 and 9999.
EID-2131	Cannot set reversion to INCONSISTENT.	You must select another reversion type.
EID-2135	Unable to store overhead circuit preferences: {0}	Input/Output error. Unable to store overhead circuit preferences.
EID-2137	Circuit merge error. {0}	There was an error while merging the circuits.
EID-2138	Cannot delete all destinations. Please try again.	Refer to error message text.
EID-2139	Error updating destinations.	There was an error in updating the circuit destinations.
EID-2143	No online help version selected. Cannot delete the online help book.	Select the version of online help, and proceed.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2144	Error deleting online help book(s). {0}	You cannot delete the specified online help.
EID-2145	Unable to locate a node with an IOS card.	Refer to error message.
EID-2146	Security violation. You may only logout your own account.	You cannot logout of an account other than your own.
EID-2147	Security violation. You may only change your own account.	You cannot change an account other than your own.
EID-2148	Security violation. You may not delete the account under which you are currently logged in.	You cannot delete the account you are currently logged in.
WID-2149	There is nothing exportable on this view.	Refer to error message text.
WID-2150	Node {0} is not initialized. Please wait and try again.	Wait until the specified node is initialized and try again.
WID-2152	Spanning tree protection is being disabled for this circuit.	Refer to warning message text.
WID-2153	Adding this drop makes the circuit a PCA circuit.	Refer to warning message text.
WID-2154	Disallow creating monitor circuits on a port grouping circuit.	Refer to warning message text.
WID-2155	Only partial switch count support on some nodes. {0}	The specified nodes do not support switch counts completely.
WID-2156	Manual roll mode is recommended for dual rolls. For auto dual rolls, please verify that roll to facilities are in service and error free.	Refer to warning message text.
WID-2157	Cannot complete roll(s). {0}	CTC could not complete the roll because roll is destroyed, roll is in incomplete state, roll is in TL1_roll state, roll is cancelled, or roll is not ready to complete.
EID-2158	Invalid roll mode. {0}	There are two roll modes: auto and manual. For one-way circuit source roll, the roll mode must be auto and for one-way circuit destination roll, the roll mode must be manual.
EID-2159	Roll not ready for completion. {0}	The roll is not ready for completion.
EID-2160	Roll not connected. {0}	Refer to error message text.
EID-2161	Sibling roll not complete. {0}	One of the rolls is not completed for the dual roll. If it is auto roll, it will be completed when a valid signal is detected. If it is manual roll, you must complete the roll from CTC if Bridge and Roll is initiated from CTC, or from TL1 if Bridge and Roll is initiated from TL1.
EID-2162	Error during roll acknowledgement. {0}	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2163	Cannot cancel roll. {0}	CTC cannot cancel the roll.
EID-2164	Roll error. {0}	CTC encountered a roll error.
WID-2165	The MAC address of node {0} has been changed. All circuits originating from or dropping at this node will need to be repaired.	Repair the circuits that originate from or drop at the specified node, with the new MAC address.
WID-2166	Unable to insert node into the domain as the node is not initialized.	Initialize the node and proceed.
WID-2167	Insufficient security privilege to perform this action.	You do not have the privilege to perform this action.
WID-2168	Warnings loading{0}. {1}	CTC encountered warnings while loading the alarm profile import file.
WID-2169	One or more of the profiles selected do not exist on one or more of the nodes selected.	The profile selected does not exist on the node. Select another profile.
WID-2170	The profile list on node {0} is full. Please delete one or more profiles if you wish to add profile. {1}	The number of profile that can exist on a node has reached the limit. To add a profile, delete any of the existing profiles.
WID-2171	You have been logged out. Click OK to exit CTC.	Refer to warning message text.
WID-2172	The CTC CORBA (IIOP) listener port setting of {0} will be applied on the next CTC restart.	The Internet Inter-ORB Protocol (IIOP) listener port setting for the CTC Common Object Request Broker Architecture (CORBA) will be applied on the next CTC restart.
EID-2173	Port unavailable. The desired CTC CORBA (IIOP) listener port, {0}, is already in use or you do not have permission to listen on it. Please select an alternate port.	Select an alternate port because the current port is either in use or you do not have enough permission on it.
EID-2174	Invalid number entered. Please check it and try again.	You entered an invalid firewall port number.
WID-2175	Extension byte mismatch. {0}	There is a mismatch with the extension byte.
WID-2176	Not all spans have the same OSPF Area ID. This will cause problems with protection switching. To determine the OSPF Area for a given span, click on the span and the OSPF Area will be displayed in the pane to the left of the network map.	Refer to warning message text.
WID-2178	Only one edit pane can be opened at a time. The existing pane will be displayed.	Refer to warning message text.
WID-2179	There is no update as the circuit has been deleted.	Refer to warning message text.
EID-2180	CTC initialization failed in step {0}.	CTC initialization has failed in the specified step.
EID-2181	This link may not be included as it originates from the destination.	You must not include this link because it originates from destination of a circuit. It is against the path selection algorithm.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2182	The value of {0} is invalid.	The value of the specified item is invalid.
EID-2183	Circuit roll failure. Current version of CTC does not support bridge and roll on a VCAT circuit.	Refer to error message text.
EID-2184	Cannot enable the STP on some ports because they have been assigned an incompatible list of VLANs. You can view the VLAN/Spanning Tree table or reassign ethernet ports VLANs.	Refer to error message text.
EID-2185	Cannot assign the VLANs on some ports because they are incompatible with the Spanning Tree Protocol. You can view the VLAN/Spanning Tree table or reassign VLANs.	Refer to error message text.
EID-2186	Software download failed on node {0}.	The software could not be downloaded onto the specified node.
EID-2187	The maximum length for the ring name that can be used is {0}. Please try again.	You must shorten the length of the ring name.
EID-2188	The nodes in this ring do not support alphanumeric IDs. Please use a ring ID between {0} and {1}.	The ring ID should not contain alphanumeric characters, and must be in the specified range.
EID-2189	TL1 keyword "all" can not be used as the ring name. Please provide another name.	Refer to error message text.
EID-2190	Adding this span will cause the ring to contain more nodes than allowed.	You have reached the maximum number of nodes allowed.
EID-2191	Ring name must not be empty.	You must supply a ring name.
EID-2192	Cannot find a valid route for the circuit creation request.	CTC could not complete the circuit creation request either beacuse there are no physical links, or the bandwidth of the available links are already reserved.
EID-2193	Cannot find a valid route for the circuit drop creation request.	Refer to error message text.
EID-2194	Cannot find a valid route for the roll creation request.	Refer to error message text.
EID-2195	The circuit VLAN list cannot be mapped to one spanning tree. You can view the VLAN/Spanning Tree table or reassign VLANs.	Refer to error message text.
EID-2196	Unable to relaunch the CTC. {0}	There is an error relaunching CTC.
EID-2197	CORBA failure. Unable to proceed.	There was a CORBA failure, and the task cannot proceed. Verify the Java version.
EID-2198	Unable to switch to the {0} view.	CTC is unable to switch to the specified view.
EID-2199	Login failed on {0} {1}	The login failed on the specified tasks.
EID-2200	CTC has detected a jar file deletion. The jar file was used to manage one or more nodes. This CTC session will not be able to manage those nodes and they will appear gray on the network map. It is recommended that you exit this CTC session and start a new one.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2202	Intra-node circuit must have two sources to be Dual Ring Interconnect.	Intranode circuit must have two sources to be a dual ring interconnect (DRI).
EID-2203	No member selected.	You must select a member.
EID-2204	Number of circuits must be a positive integer	The number of circuits cannot be zero or negative.
EID-2205	Circuit Type must be selected.	You must select a circuit type.
EID-2206	Unable to autoselect profile! Please select profile(s) to store and try again.	Refer to error message text.
EID-2207	You cannot add this span. Either the ring name is too big (i.e., ring name length is greater than {0}) or the endpoints do not support alphanumeric IDs.	Reduce the length of the ring name, or remove the alphanumberic characters from the end points.
EID-2208	This is an invalid or unsupported JRE.	The version of Java Runtime Environment (JRE) is either invalid or unsupported.
EID-2209	The user name must be at least {0} characters long.	The user name must be at least of the specified character length.
EID-2210	No package name selected.	You must select a package name.
EID-2211	No node selected for upgrade.	You must select a node for the upgrade.
EID-2212	Protected Line is not provisionable.	The protected line cannot be provisioned. Choose another line.
WID-2213	The current type or state of some drops does not allow the new circuit state of {0} to be applied to them indirectly.	The circuit state, specified by {0} cannot be applied to the selected drops.
EID-2214	The node is disconnected. Please wait till the node reconnects.	Refer to error message text.
EID-2215	Error while leaving {0} page.	There was an error while leaving the specified page.
EID-2216	Error while entering {0} page.	There was an error while entering the specified page.
EID-2217	Some conditions could not be retrieved from the network view	Refer to error message text.
EID-2218	Bandwidth must be between {0} and {1} percent.	The bandwidth must be within the specified parameters.
EID-2219	Protection operation failed, XC loopback is applied on cross-connection.	As the protection operation failed, a cross-connect (XC) loopback will be applied on cross-connection.
EID-2220	The tunnel status is PARTIAL. CTC will not be able to change it. Please try again later	Refer to error message text.
EID-2221	Cannot find a valid route for the unprotected to {0} upgrade request.	Refer to error message text.
EID-2222	One or more of the following nodes are currently part of a 4-fiber {0}. Only a single 4-fiber {0} is supported per node. {1}	The nodes, specified by {1}, are already part of a 4-fiber ring type, specified by {0}.
EID-2223	Only one circuit can be upgraded at a time.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-2224	This link may not be included as it terminates on the source.	Refer to error message text.
EID-2225	No valid signal while trying to complete the roll. (0)	Roll can be completed only when a valid signal is detected. If not, the roll completion may result in an error.
EID-2226	Circuit roll failure. {0}	Refer to error message text.
EID-2320	This VCAT circuit does not support deletion of its member circuits.	You can not delete a circuit that is a member of VCAT circuit.
EID-2321	Error deleting member circuits. {0}	Refer to error message text.
WID-2322	Not all cross-connects from selected circuits could be merged into the current circuit. They may appear as partial circuits.	Refer to warning message text.
EID-2323	Circuit roll failure. Bridge and roll is not supported on a monitor circuit.	A monitor circuit does not support Bridge and Roll.
EID-2324	Circuit upgrade error. {0}	Refer to error message text.
EID-2325	You have failed {0} times to unlock this session. CTC will exit after you click OK or close this dialog box.	The maximum amount of attempts to unlock this session has been reached.
WID-2326	Currently, CTC does not support bridge and roll on circuits that are entirely created by TL1. To continue with bridge and roll in CTC, selected circuits must be upgraded. OK to upgrade selected circuits and continue bridge and roll operation?	Refer to warning message text.
WID-2327	Currently, CTC does not support bridge and roll on circuits that are partially created by TL1. To continue with bridge and roll in CTC, selected circuits must be upgraded. OK to upgrade selected circuits and continue bridge and roll operation?	Refer to warning message text.
EID-2328	Circuit reconfigure error. {0}	The attempt to reconfigure the specified circuit has failed.
EID-2329	{0} of {1} circuits could not be successfully created.	A few circuits could not be created.
EID-2330	Circuit verification: selected {0} invalid! {1}	The selected item, specified by {0}, is invalid as per the details, specified in {1}.
EID-2331	Deleting {0} may be service affecting.	Deleting the item can affect the service of CTC.
EID-2332	Hold-off timer validation error in row [0]. {1} hold-off timer for {2} must be between {3}-10,000 ms, in steps of 100 ms.	Refer to error message text.
EID-3001	An Ethernet RMON threshold with the same parameters already exists. Please change one or more of the parameters and try again.	Change a few parameters in an Ethernet remote monitoring (RMON) threshold and try again.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3002	Error retrieving defaults from the node: {0}	There was an error while retrieving the defaults from the specified node.
EID-3003	Cannot load file {0}.	CTC cannot load the specified file.
EID-3004	Cannot load properties from the node	Refer to error message text.
EID-3005	Cannot save NE Update values to file {0}	CTC cannot save the network element (NE) update values to the specified file.
EID-3006	Cannot load NE Update properties from the node	Refer to error message text.
EID-3007	Provisioning Error for {0}	There was a provisioning error for the specified item.
EID-3008	Not a valid Card	You cannot perform DWDM automatic node setup (ANS) from the Card view. Please navigate to the Node view and try again.
EID-3009	No {0} selected	Select the specified item, for example, VLAN, port, slot, etc.
EID-3010	Unable to create bidirectional optical link	Refer to error message text.
EID-3011	The file {0} doesn't exist or cannot be read.	The specified file does not exist or cannot be read.
EID-3012	The size of {0} is zero.	The size of the specified item is zero.
EID-3013	{0} encountered while restoring database.	The specified item was encountered while restoring the database.
EID-3014	The operation was terminated due to the following error: {0}	Refer to error message text.
EID-3015	{0} encountered while performing DB backup.	The specified item or condition was encountered while performing the DB backup.
EID-3016	Invalid subnet address.	Refer to error message text.
EID-3017	Subnet address already exists.	Refer to error message text.
EID-3018	Standby TSC not ready.	The standby Timing and Shelf Control card (TSC) not ready.
EID-3019	Incomplete internal subnet address.	Enter the complete internal subnet address.
EID-3020	TSC One and TSC Two subnet addresses cannot be the same.	A node's internal subnet must be different from one another as each TSC is on separate ethernet buses, isolated by broadcast domains.
EID-3021	An error was encountered while retrieving the diagnostics: {0}	Refer to error message text.
EID-3022	Requested action not allowed.	The requested action is not allowed.
EID-3023	Unable to retrieve low order cross connect mode.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3024	Unable to switch {0} cross connect mode. Please verify that the type and/or number of circuits provisioned does not exceed the criterion for switching modes.	CTC cannot switch the cross-connect mode for the specified item, as the type or the number of circuits does not match with the criterion for switching modes.
EID-3025	Error while retrieving thresholds.	There was an error retrieving the thresholds.
EID-3026	Cannot modify send DoNotUse.	You cannot modify the Send DoNotUse field.
EID-3027	Cannot modify SyncMsg.	You cannot modify the SyncMsg field.
EID-3028	Cannot change port type.	You cannot change the port type.
EID-3029	Unable to switch to the byte because an overhead change is present on this byte of the port.	Refer to error message text.
EID-3031	Error hard-resetting card.	There was an error while performing a hard reset on the card.
EID-3032	Error resetting card.	There was an error while resetting the card.
EID-3033	The lamp test is not supported on this shelf.	Refer to error message text.
EID-3035	The cross connect diagnostics cannot be performed	Refer to error message text.
EID-3036	The cross connect diagnostics test is not supported on this shelf.	The cross-connect diagnostics test is not supported on this shelf.
EID-3037	A software downgrade cannot be performed to the selected version while a SSXC card is inserted in this shelf. Please follow the steps to replace the SSXC with a CXC card before continuing the software downgrade.	Refer to error message text.
EID-3038	A software downgrade cannot be performed at the present time.	Refer to error message text.
EID-3039	Card change error.	There was an error while changing the card.
EID-3040	Invalid card type.	The selected card type is invalid.
EID-3041	Error applying changes.	CTC is unable to create a protection group. Check if the protect port supports circuits, a timing reference, SONET SDCC, orderwire, or a test access point.
EID-3042	The flow control low value must be less than the flow control high value for all ports in the card.	Refer to error message text.
EID-3043	Error while retrieving line info settings.	Refer to error message text.
EID-3044	Error while retrieving line admin info settings.	Refer to error message text.
EID-3045	Error while retrieving transponder line admin info settings.	Refer to error message text.
EID-3046	The flow control water mark value must be between {0} and {1}, inclusive.	The flow control watermark value must be between the two specified values.
EID-3047	The file named {0} could not be read. Please check the name and try again.	Refer to error message text.
EID-3048	There is no IOS startup config file available to download.	CTC could not find the configuration file for IOS startup.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3049	There is an update in progress so the download cannot be done at this time.	Refer to error message text.
EID-3050	An exception was caught trying to save the file to your local file system.	Check whether the file already exists and cannot be over written, or there is a space constraint in the file system.
EID-3051	The maximum size for a config file in bytes is: {0}	The size of the configuration file should not exceed the specified number of bytes.
EID-3052	There was an error saving the config file to the TCC.	Refer to error message text.
EID-3053	The value of {0} must be between {1} and {2}	The value of the item must be between the specified values.
EID-3054	Cannot remove provisioned input/output ports or another user is updating the card, please try later.	Another user may be updating the card. You can try again later.
EID-3055	Cannot create soak maintance pane.	Refer to error message text.
EID-3056	Cannot save defaults to file {0}	CTC cannot save the defaults to the specified file.
EID-3057	Cannot load default properties from the node.	Refer to error message text.
EID-3058	File {0} does not exist.	Refer to error message text.
EID-3059	Error encountered while refreshing.	There was an error while refreshing.
EID-3060	The ALS Recovery Pulse Interval must be between {0} seconds and {1} seconds.	The automatic laser shutdown (ALS) Recovery Interval must be between the specified range of seconds.
EID-3061	The ALS Recovery Pulse Duration must be between {0} seconds and {1} seconds.	The automatic laser shutdown (ALS) Recovery Duration must be between the specified range of seconds.
EID-3062	Error encountered while setting values.	Refer to error message text.
EID-3063	Unable to retriever bridge port settings.	Refer to error message text.
EID-3064	Not a G1000 Card.	This card is not a G1000-4 card.
EID-3065	An error was encountered while attempting to create RMON threshold: {0}	You must wait some time before you try again.
EID-3066	Minimum sample period must be greater than or equal to 10.	Refer to error message text.
EID-3067	Rising Threshold: Invalid Entry, valid range is from 1 to {0}	This is an invalid rising threshold entry. The valid range is from 1 to the specified value.
EID-3068	Falling Threshold: Invalid Entry, valid range is from 1 to {0}	This is an invalid falling threshold entry. The valid range is from 1 to the specified value.
EID-3069	Rising threshold must be greater than or equal to falling threshold.	Refer to error message text.
EID-3070	Error in data for ports {0} Exactly one VLAN must be marked untagged for each port. These changes will not be applied.	CTC encountered data error for the specified ports. Only one VLAN should be marked untagged for each port.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3071	Get Learned Address	Unable to retrieve the learned MAC address from the NE.
EID-3072	Clear Learned Address	Failure attempting to clear the learned MAC address from a specific card or Ether group.
EID-3073	Clear Selected Rows	Failure attempting to clear the learned MAC address from a specific card or Ether group.
EID-3074	Clear By {0}	Error encountered trying to clear the learned MAC address from either a VLAN or a port.
EID-3075	At least one row in param column needs to be selected.	Refer to error message text.
EID-3076	CTC lost its connection with this node. The NE Setup Wizard will exit.	Refer to error message text.
EID-3077	No optical link selected.	Refer to error message text.
EID-3078	Unable to create optical link.	Refer to error message text.
EID-3079	Cannot apply defaults to node: {0}	CTC cannot apply the defaults to the specified node.
EID-3080	Cannot go to the target tab {0}	CTC cannot go to the specified target tab.
EID-3081	Port type cannot be changed.	Refer to error message text.
EID-3082	Cannot modify the {0} extension byte.	You cannot modify the specified extension byte.
EID-3083	Error while retrieving stats.	Error in getting statistics.
EID-3084	Error encountered while trying to retrieve laser parameters for {0}	There is no card, or there was an internal communications error when attempting to get the laser parameters for the card.
EID-3085	No OSC Terminations selected	Select an OSC termination and proceed.
EID-3086	One or more Osc terminations could not be created.	Refer to error message text.
EID-3087	OSC termination could not be edited.	Refer to error message text.
EID-3088	No {0} card to switch.	No card of the specified type to switch.
EID-3089	Cannot use/change {0} state when {1} is failed or missing.	Cannot use or change the specified state when the card is failed or missing.
EID-3090	Cannot perform operation as {0} is {1}LOCKED_ON/LOCKED_OUT.	Cannot perform operation.
EID-3091	Cannot perform the operation as protect is active.	Refer to error message text.
EID-3092	Invalid service state. The requested action cannot be applied.	Select another service state and proceed.
EID-3093	Cannot perform the operation as duplex pair is {0}locked.	Refer to error message text.
EID-3094	Cannot perform the operation as no XC redundancy is available.	You cannot perform the requested operation on the cross connect card without having a backup cross connect card.
EID-3095	Deletion failed since the circuit is in use	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-3096	Internal communication error encountered while trying to retrieve laser parameters. This can happen when equipment is not present or when equipment is resetting. Check the equipment state and try to refresh the values again.	Refer to warning message text.
EID-3097	The ring termination is in use.	The ring termination you are trying to access is in use.
EID-3098	No ring terminations selected.	Select one of the ring terminations.
EID-3099	Sorry, entered key does not match existing authentication key.	Check the authentication key and reenter.
EID-3100	Error encountered during authentication.	There was an error in authentication. Verify that the key does not exceed the character limit .
EID-3101	DCC Metric is not in the range 1 - 65535.	The DCC metric should be in the range of 1 to 65535.
EID-3102	Invalid DCC Metric	There was an invalid DCC metric.
EID-3103	Invalid IP Address: {0}	The IP address is invalid.
EID-3104	Router priority is not in the range of 0 - 255	The router priority should be in the range of 0 to 255.
EID-3105	Invalid Router Priority	The router priority is invalid.
EID-3106	Hello Interval is not in the range of 1 - 65535	The hello interval should be in the range of 1 to 65535.
EID-3107	Invalid Hello Interval	The hello interval is invalid.
EID-3109	Invalid Dead Interval value. Valid range is 1 - 2147483647	The dead interval value must be between 1 and 2147483647.
EID-3110	Dead Interval must be larger than Hello Interval	Refer to error message text.
EID-3111	LAN transit delay is not in the range of 1 - 3600 seconds	The LAN transit delay should be in the range of 1 to 3600 seconds.
EID-3112	Invalid Transmit Delay	The transmit delay is invalid.
EID-3113	Retransmit Interval is not in the range 1 - 3600 seconds	The retransmit interval should be in the range of 1 to 3600 seconds.
EID-3114	Invalid Retransit Interval	The retransmit interval is invalid.
EID-3115	LAN Metric is not in the range 1 - 65535.	The LAN metric should be in the range of 1 to 65535.
EID-3116	Invalid LAN Metric	The LAN metric is invalid.
EID-3117	If OSPF is active on LAN, no DCC Area Ids may be 0.0.0.0. Please change all DCC Area Ids to non-0.0.0.0 values before enabling OSPF on the LAN.	Refer to error message text.
EID-3118	If OSPF is active on LAN, LAN Area ID may not be the same as DCC Area Id.	LAN must be part of a different OSPF area other than the DCC network.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3119	Validation Error	CTC was unable to validate the values entered by the user. This error message is common to several different provisioning tabs within CTC (examples include the SNMP provisioning tab, the General> Network provisioning tab, the Security > Configuration provisioning tab, etc.).
EID-3120	No object of type {0} selected to delete.	Choose an object of the specified type to delete.
EID-3121	Error Deleting {0}	There is an error deleting the item.
EID-3122	No object of type {0} selected to edit.	Choose an object of the specified type to edit.
EID-3123	Error Editing {0}	There was an error editing the item.
EID-3124	{0} termination is in use. Delete the associated OSPF Range Table Entry and try again	Refer to error message text.
EID-3125	No {0} Terminations selected.	No specified terminations are selected.
EID-3126	{0} termination could not be edited.	CTC could not edit the specified termination.
EID-3127	Unable to provision orderwire because E2 byte is in use by {0}.	Refer to error message text.
EID-3128	The authentication key may only be {0} characters maximum	The authentication key cannot exceed the specified number of characters.
EID-3129	The authentication keys do not match!	Refer to error message text.
EID-3130	Error creating OSPF area virtual link.	CTC encountered an error while creating the area virtual link.
EID-3131	Error creating OSPF virtual link.	CTC encountered an error creating the virtual link.
EID-3132	Error setting OSPF area range: {0}, {1}, false.	CTC encountered an error while setting the area range for the specified values.
EID-3133	Max number of OSPF area ranges exceeded.	OSPF area ranges exceeded the maximum number.
EID-3134	Invalid Area ID. Use DCC OSPF Area ID, LAN Port Area ID, or 0.0.0.0.	Refer to error message text.
EID-3135	Invalid Mask	Refer to error message text.
EID-3136	Invalid Range Address	The range address is invalid. Try again.
EID-3137	Your request has been rejected because the timing source information was updated while your changes were still pending. Please retry.	Refer to error message text.
EID-3138	Invalid clock source for switching.	You have selected an invalid clock source. Choose another clock.
EID-3139	Cannot switch to a reference of inferior quality.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3140	Higher priority switch already active.	You cannot switch the timing source manually when a higher priority switch is already active.
EID-3141	Attempt to access a bad reference.	Refer to error message text.
EID-3142	No Switch Active.	None of the switches are active.
EID-3143	Error creating static route entry.	CTC encountered an error while a creating static route entry.
EID-3144	Max number of static routes exceeded.	The number of static routes has exceeded its limit.
EID-3145	RIP Metric is not in the range 1-15.	The Routing Information Protocol (RIP) metric should be in the range of 1 to 15.
EID-3146	Invalid RIP Metric	Refer to error message text.
EID-3147	Error creating summary address.	There was an error while creating the summary address.
EID-3148	No Layer 2 domain has been provisioned.	You must provision any one of the layer 2 domain.
EID-3149	Unable to retrieve MAC addresses.	Refer to error message text.
EID-3150	The target file {0} is not a normal file.	The specified target file is not a normal file.
EID-3151	The target file {0} is not writeable.	The target file is not writeable. Specify another file.
EID-3152	Error creating Protection Group	CTC encountered an error creating Protection Group.
EID-3153	Cannot delete card, it is in use.	Cannot delete card. It is in use.
EID-3154	Cannot {0} card, provisioning error.	CTC cannot perform the task on the card.
EID-3155	Error Building Menu	CTC encountered an error building the menu.
EID-3156	Error on building menu (cards not found for {0} group)	CTC encountered an error while building the menu because cards could not be found for the specified group.
EID-3157	Unable to set selected model: unexpected model class {0}	CTC encountered an unexpected model class while trying to complete the task.
EID-3158	Unable to switch, a similar or higher priority condition exists on peer or far-end card.	Refer to error message text.
EID-3159[1]	Error applying operation.	CTC encountered an error while applying this operation.
EID-3160	{0} error encountered.	CTC encountered the specified error.
EID-3161	Ring Upgrade Error	An error was encountered while attempting to upgrade the BLSR. Refer to the details portion of the error dialog box for more information.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3162	This protection operation cannot be set because the protection operation on the other side has been changed but not yet applied.	Refer to error message text.
EID-3163	Cannot validate data for row {0}	CTC cannot validate the data for the specified row.
EID-3164	New Node ID ({0}) for Ring ID {1} duplicates ID of node {2}	The new specified node ID for the specified ring ID is the same as another node ID.
EID-3165	The Ring ID provided is already in use. Ring IDs must be unique	Refer to error message text.
EID-3166	Error refreshing {0} table	CTC encountered an error while refreshing the specified table.
EID-3167	Slot already in use	Refer to error message text.
EID-3168	Provisioning Error	An error was encountered while attempting the specified provisioning operation. Refer to the details portion of the error dialog box for more information.
EID-3169	Error Adding Card	CTC encountered an error while adding the card.
EID-3170	Cannot delete card, {0}	Refer to error message text.
EID-3171	Error creating Trap Destination	CTC encountered an error creating the trap destination.
EID-3172	No RMON Thresholds selected	Select an RMON threshold.
EID-3173	The contact "{0}" exceeds the limit of {1} characters.	The specified contact exceeds the specified character limit.
EID-3174	The location "{0}" exceeds the limit of {1} characters.	The specified location exceeds the specified character limit.
EID-3175	The operator identifier "{0}" exceeds the limit of {1} characters.	The specified operator identifier exceeds the specified character limit.
EID-3176	The operator specific information "{0}" exceeds the limit of {1} characters.	The specified operator specific information exceeds the specified character limit.
EID-3177	The node name cannot be empty.	The specified name is empty.
EID-3178	The name "{0}" exceeds the limit of {1} characters.	The specified name exceeds the specified character limit.
EID-3179	Protect card is in use.	Refer to error message text.
EID-3180	1+1 Protection Group does not exist.	Create a 1+1 protection group.
EID-3181	Y Cable Protection Group does not exist.	Refer to error message text.
EID-3182	The Topology Element is in use and cannot be deleted as requested	You cannot delete the topology element which is in use.
EID-3183	Error Deleting Protection Group	CTC encountered an error while deleting the protection group.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3184	No {0} selected.	You must select an item before completing this task.
EID-3185	There is a protection switch operation on this ring. Therefore, it cannot be deleted at this time.	Refer to error message text.
EID-3186	Busy: {0} is {1} and cannot be deleted as requested.	The request cannot be completed.
EID-3187	Error deleting trap destination.	CTC encountered an error deleting the trap destination.
EID-3214	Could not get number of HOs for line.	The number of High Orders for line is not available.
EID-3215	Error in refreshing.	Used frequently in pane classes to indicate a general error condition when trying to refresh from the model.
EID-3216	Invalid proxy port.	Refer to error message text.
EID-3217	Could not refresh stats.	CTC could not refresh statistics values.
EID-3218	Unable to launch automatic node setup.	Refer to error message text.
EID-3219	Unable to refresh automatic node setup information.	Failure trying to retrieve automatic node setup information.
EID-3220	Error refreshing row {0}	Error refreshing the specified row.
EID-3222	Could not clear stats.	Refer to error message text.
EID-3223	Error cancelling software upgrade.	CTC encountered an error while cancelling the upgrade. Software is not upgraded.
EID-3224	Error accepting load.	Refer to error message text.
EID-3225	Error while refreshing pane.	Used frequently in pane classes to indicate a general error condition when trying to refresh from the model.
EID-3226	{0} termination(s) could not be deleted. {1}	Refer to error message text.
EID-3227	Unable to record a baseline, performance metrics will remain unchanged.	CTC failed to set the baseline values while provisioning NE. Previous values remain unchanged.
EID-3228	{0} termination(s) could not be created. {1}	Refer to error message text.
EID-3229	RIP is active on the LAN. Please disable RIP before enabling OSPF.	Turn off the Routing Information Protocol (RIP) on the LAN, before enabling OSPF.
EID-3230	OSPF is active on the LAN. Please disable OSPF before enabling RIP.	Turn off the OSPF on the LAN before enabling RIP.
EID-3231	Error in Set OPR	An error was encountered while attempting to provision the optical power received (OPR).

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-3232	Cannot transition port state indirectly because the port is still providing services: if the port state should be changed, edit it directly via port provisioning.	Edit the port state while provisioning the port.
EID-3233	Current loopback provisioning does not allow this state transition.	Refer to error message text.
EID-3234	Current synchronization provisioning does not allow this state transition	You cannot transition the port state to the target date while in the current synchonization state.
EID-3235	Cannot perform requested state transition on this software version.	Refer to error message text.
EID-3236	Database Restore failed. {0}	CTC failed to restore the specified database.
EID-3237	Database Backup failed. {0}	CTC failed to backup the specified database.
EID-3238	Send PDIP setting on {0} is inconsistent with that of control node {1}	The send payload defect indicator path (PDI-P) setting on the specified item should be consistent with that of the specified control node.
EID-3239	The overhead termination is invalid	Refer to error message text.
EID-3240	The maximum number of overhead terminations has been exceeded.	Overhead terminations have exceeded the limit.
EID-3241	The {0} termination port is in use.	The specified termination port is in use. Select another port.
EID-3242	{1} exists on the selected ports. Please create {0} one by one.	The specified DCC already exists on the selected port. You may create a DCC of another type.
WID-3243	The port you have chosen as an {0} endpoint already supports an {1}. The port cannot support both DCCs. After the {0} is created, verify that no EOC alarms are present and then delete the {1} to complete the downgrade.	The same port can not be used by multiple DCCs.
EID-3244	{0} exists on the selected ports. Please create {1} one by one.	The specified DCC already exists on the selected port. You may create a DCC of another type.
WID-3245	The port you have chosen as an {1} endpoint already supports an {0}. The port cannot support both DCCs. After the {1} is created, verify that no EOC alarms are present and then delete the {0} to complete the upgrade.	The port selected as a DCC endpoint already supports another DCC. Refer to warning message text.
EID-3246	Wizard unable to validate data: {0}	CTC encountered an error.
EID-3247	Ordering error. The absolute value should be {0}	The absolute value entered was wrong.
EID-3248	Wrong parameter is changed: {0}	CTC changed the incorrect parameter.
EID-3249	Invalid voltage increment value.	Refer to error message text.
EID-3250	Invalid power monitor range.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3251	Unable to complete requested action. {0}	CTC could not complete the specified action.
EID-3252	No download has been initiated from this CTC session.	Refer to error message text.
EID-3253	Reboot operation failed. {0}	Refer to error message text.
EID-3254	Validation Error. {0}	The Cisco Transport Controller (CTC) was unable to validate the values entered by the user, specified by {0}. This error message is common to several different provisioning tabs within the CTC.
EID-3255	Cannot change timing configuration, manual/force operation is performed.	Refer to error message text.
WID-3256	Could not assign timing reference(s) because - at least one timing reference has already been used and/or - a timing reference has been attempted to be used twice. Please use the “Reset” button and verify the settings.	Refer to warning message text.
EID-3257	Duplicate DCC number detected: {0}.	CTC detected more than one occurene of the a DCC number. Remove one of them.
EID-3258	There was a software error attempting to download the file. Please try again later.	Refer to error message text.
EID-3259	Create FC-MR Threshold	You must create a Fibre Channel Multirate (FC_MR) card threshold.
EID-3260	An error was encountered while provisioning the internal subnet: {0}	The specified internal subnet could not be provisoned.
EID-3261	The port rate provisioning cannot be changed while circuits exist on this port.	Refer to error message text.
EID-3262	The port provisioning cannot be changed when the port status is not OOS.	You must provision the ports only when the port is Out of Service.
WID-3263	You are using Java version {0}. CTC should run with Java version {1}. It can be obtained from the installation CD or http://java.sun.com/j2se/	CTC is being launched with the wrong version of the JRE {0}. This version of CTC requires a particular version of the JRE {1}. The CTC and browser must be closed and restarted to allow the correct Java version to be loaded.
EID-3264	The port provisioning cannot be changed while the port is {0}.	You must modify the port provisioning only when the port is out of service.
EID-3265	Error modifying Protection Group	Protection Group could not be modified.
EID-3266	Conditions could not be retrieved from the shelf or card view.	Refer to error message text.
WID-3267	Cannot edit XTC protection group.	Refer to warning message text.
WID-3268	Invalid entry. {0}	The specified entry is invalid.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-3269	{0} was successfully initiated for {1} but its completion status was not able to be obtained from the node. {0} may or may not have succeeded. When the node is accessible, check its software version.	Refer to error message text.
WID-3270	The file {0} does not exist.	The specified file does not exist.
WID-3271	The value entered must be greater than {0}.	The value entered must be greater than the specified value.
WID-3272	Entry required	An entry is required to complete this task.
WID-3273	{0} already exists in the list.	The specified item already exists in the list.
WID-3274	A software upgrade is in progress. Network configuration changes that results a node reboot can not take place during software upgrade. Please try again after software upgrade is done.	Refer to warning message text.
WID-3275	Make sure the Remote Interface ID and the Local Interface ID on the two sides are matched. (Local Interface ID on this node should equal Remote Interface ID on the neighbor node and vice-versa.)	Refer to warning message text.
WID-3276	Both {0} and {1} exist on the same selected port. {2}	The specified port has both SDCC and LDCC.
WID-3277	The description cannot contain more than {0} characters. Your input will be truncated.	The input exceeds the character limit. The value will be truncated to the maximum chacter limit.
WID-3279	Card deleted, returning to shelf view.	CTC returns to node view.
WID-3280	ALS will not engage until both the protected trunk ports detect LOS.	Refer to warning message text.
WID-3281	A software upgrade is in progress. {0} can not proceed during a software upgrade. Please try again after the software upgrade has completed.	Refer to warning message text.
WID-3282	Performing a software upgrade while TSC 5 is active could result in a service disruption. It is recommended that you make TSC 10 the active TSC by performing a soft reset of TSC 5. The following 15600s are currently unsafe to upgrade...	Refer to warning message text.
WID-3283	Before activating a new version, make sure you have a database backup from the current version.	Refer to warning message text.
WID-3284	Reverting to an older version.	CTC is being reverted to an older version of application.
WID-3285	Applying FORCE or LOCKOUT operations may result in traffic loss.	Refer to warning message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-3286	The ring status is INCOMPLETE. CTC cannot determine if there are existing protection operations or switches in other parts of the ring. Applying a protection operation at this time could cause a traffic outage. Please confirm that no other protection operations or switches exist before continuing.	Refer to warning message text.
WID-3287	There is a protection operation or protection switch present on the ring. Applying this protection operation now will probably cause a traffic outage.	Refer to warning message text.
WID-3288	This ring status is INCOMPLETE. CTC will not be able to apply this change to all of the nodes in the {0}.	Change the ring status to apply the change to all nodes in the ring type.
EID-3290	Unable to delete specified provisionable patchcord(s).	Refer to error message text.
EID-3291	Cannot change revertive behavior due to an active protection switch.	Protection switch should not be active to change the revertive behaviour.
EID-3292	Error resetting shelf.	CTC encountered an error while resetting the node.
EID-3293	No such provisionable patchcord.	You are attempting to delete a provisionable patchcord that does not exist. This happens when multiple instances of CTC are running and attempting to delete the same provisionable patchcord concurrently.
EID-3294	No RMON thresholds available for selected port.	Refer to error message text.
EID-3295	This card does not support RMON thresholds.	Refer to error message text.
EID-3296	Buffer-to-buffer credit is only supported for Fibre Channel (FC) and FICON.	Refer to error message text.
EID-3298	ALS Auto Restart is not supported by this interface.	Refer to error message text.
EID-3300	Can not have duplicate OSPF area IDs.	OSPF area IDs should be unique.
EID-3301	LAN metric may not be zero.	Refer to error message text.
EID-3302	Standby {0} not ready.	Standby controller card is not ready.
EID-3303	DCC Area ID and {0} conflict. {1}	DCC Area ID and ring type, specified by {0}, conflict each other due to the details specified by {1}.
EID-3304	DCC number is out of range.	Enter a DCC number that is within the range.
EID-3305	Can not have OSPF turned on on the LAN interface and the back bone area set on a DCC interface.	You cannot have the default OSPF area on a DCC while OSPF is enabled on the LAN.
EID-3306	Ethernet circuits must be bidirectional.	Refer to error message text.
EID-3307	Error while creating connection object at {0}.	CTC encountered an error at the specified connection while creating the connection.
EID-3308	DWDM Link can be used only for optical channel circuits.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3309	OCH-NC circuit: link excluded - wrong direction.	The optical channel (circuit) does not allow the specified link to be included because it is in the wrong optical direction.
EID-3310	DWDM Link does not have wavelength available.	Refer to error message text.
EID-3311	Laser already on.	Refer to error message text.
EID-3312	Unable to change the power setpoint {0} {1}	CTC cannot change change the power setpoint. The new setpoint would either make the thresholds inconsistent or set the fail threshold outside the range.
EID-3313	Unable to modify offset. Amplifier port is in service state.	Refer to error message text.
EID-3314	Requested action not allowed. Invalid state value.	Refer to error message text.
EID-3315	Unable to perform operation.	CTC is unable to perform operation.
EID-3316	Wrong node side.	This task was applied to the wrong node side.
EID-3317	Name too long.	Reduce the number of charcters in the name.
EID-3318	Illegal name.	The name you entered is illegal.
EID-3319	Wrong line selection.	Select another line.
EID-3320	Unable to delete optical link.	CTC cannot delete the optical link.
EID-3321	This feature is unsupported by this version of software.	Refer to error message text.
EID-3322	Equipment is not plugged-in.	Plug-in the equipment and proceed.
EID-3323	APC system is busy.	Automatic Power Control (APC) system is busy.
EID-3324	No path to regulate.	There is no circuit path to regulate.
EID-3325	Requested action not allowed.	Generic DWDM provisioning failure message.
EID-3326	Wrong input value.	The input value is incorrect.
EID-3327	Error in getting thresholds.	There was an error retrieving the thresholds. This message is displayed only for the OSCM/OSC-CSM line thresholds.
EID-3328	Error applying changes to row {0}.Value out of range.	There was an error applying the changes to the specified row. The value is out of range.
EID-3330	Unable to switch to the byte because an overhead channel is present on this byte of the port.	Refer to error message text.
EID-3331	Error applying changes to row.	Refer to error message text.
EID-3334	Cannot change timing parameters on protect port.	You cannot change timing parameters on protect port.
EID-3335	The type of this port cannot be changed: SDH validation check failed. Check if this port is part of a circuit, protection group, SONET DCC, orderwire, or UNI-C interface.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3336	Error on reading a control mode value.	The Control Mode must be retrieved.
EID-3337	Error on setting a set point gain value.	The Gain Set Point must be set.
EID-3338	Error on reading a set-point gain value.	The Gain Set Point must be retrieved.
EID-3339	Error on setting a tilt calibration value.	The tilt calibration must be set.
EID-3340	Error on setting expected wavelength.	The expected wavelength must be set.
EID-3341	Error on reading expected wavelength.	The expected wavelength must be retrieved.
EID-3342	Error on reading actual wavelength.	The actual wavelength must be retrieved.
EID-3343	Error on reading actual band.	The actual band must be retrieved.
EID-3344	Error on reading expected band.	The expected band must be retrieved.
EID-3345	Error on setting expected band.	The expected band must be set.
EID-3346	Error retrieving defaults from the node: {0}.	There was an error retrieving defaults from the specified node.
EID-3347	Cannot load file {0}.	CTC cannot load the specified file.
EID-3348	Cannot load properties from the node.	Refer to error message text.
EID-3349	Cannot save NE Update values to file.	Check your file system for space constraint or any other problem.
EID-3350	Cannot load NE Update properties from the node:	Refer to error message text.
EID-3351	File {0} does not exist.	The specified file does not exist.
EID-3352	Error on setting value at {0}.	There was an error while setting the value at the specified location.
EID-3353	There is no such interface available.	The interface specified is not present in CTC.
EID-3354	Specified endpoint is in use.	Select another endpoint that is not in use.
EID-3355	Specified endpoint is incompatible.	Refer to error message text.
EID-3357	Unable to calculate connections.	Refer to error message text.
EID-3358	Optical link model does not exist for specified interface.	Create an optical linkmodel for the interface, and proceed.
EID-3359	Unable to set optical parameters for the node.	Refer to error message text.
EID-3361	Ring termination is in use. Error deleting ring termination	You cannot delete a ring in use.
EID-3362	Error deleting ring termination.	There was an error while deleting ring termination.
EID-3363	No ring terminations selected.	You must select a ring termination.
EID-3364	Error creating ring ID.	There was an error while creating the ring ID.
EID-3365	OSC termination is in use.	Select another optical service channel (OSC) which is not in use.
EID-3366	Unable to delete OSC termination.	There was an error deleting the OSC termination.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-3370	No optical link has been selected	You must select an optical link.
EID-3371	Error while calculating automatic optical link list.	Refer to error message text.
EID-3372	Attempt to access an OCH-NC connection that has been destroyed.	CTC destroyed an external attempt to access an optical channel network connection.
EID-3375	Expected span loss must be set.	Refer to error message text.
EID-3376	Unable to retrieve measured span loss.	Refer to error message text.
EID-3377	Wrong interface used.	The interface used for the card is wrong.
EID-3378	Duplicate origination patchcord identifier.	The provisionable patchcord identifier to the patchcord you are attempting to provision is already in use by another patchcord on the origination node.
EID-3379	Duplicate termination patchcord identifier.	The provisionable patchcord identifier to the patchcord you are attempting to provision is already in use by another patchcord on the remote node.
EID-3380	Unable to locate host.	Refer to error message text.
EID-3381	Maximum Frame size must be between {0} and {1} and may be increased in increments of {2}.	The frame size must be in the specified range. This can incremented by the specified value.
EID-3382	Number of credits must be between {0} and {1}.	The number of credits must be between the specified values.
EID-3383	GFP Buffers Available must be between {0} and {1} and may be increased in increments of {2}.	The GFP buffers must be in the specified range. This can incremented by the specified value.
WID-3384	You are about to force the use of Secure Mode for this chassis. You will not be able to undo this operation. OK to continue?	Refer to warning message text.
EID-3385	{0}. Delete circuits, then try again.	Refer to error message text.
EID-3386	Unable to provision transponder mode: {0}	The specified transponder mode canot be provisioned.
EID-3387	You must change port{0} to an out-of-service state before changing card parameters. Click Reset to revert the changes.	All the card ports should be changed to out-of-service before changing the parameters.
EID-3388	Unable to change the card mode because the card has circuits.	Refer to error message text.
EID-3389	Error encountered while changing the card mode.	Refer to error message text.
EID-3390	Port is in use.	Refer to error message text.
EID-3391	Unable to change the port rate because the port has been deleted.	You cannot change the port rate of a card that has been deleted.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-3392	Could not assign timing reference(s) because - with external timing, only a single protected, or two unprotected timing references per BITS Out may be selected. Please use the "Reset" button and verify the settings.	Refer to warning message text.
WID-3393	Could not assign timing reference(s) because - with line or mixed timing, only a single unprotected timing reference per BITS Out may be selected. Please use the "Reset" button and verify the settings.	Refer to warning message text.
EID-3394	Error refreshing Power Monitoring values.	Refer to error message text.
EID-3395	Invalid Configuration: {0}	CTC encountered an error in IP address, net mask length, or default router, or a restricted IIOP port was selected.
EID-3396	Invalid Configuration: The standby controller card is not a TCC2P card.	The standby controller card should be a TCC2P card.
EID-3397	Wrong version for file {0}.	The specified file is of wrong version.
EID-3398	Cannot delete PPM.	Refer to error message text.
EID-3399	Cannot delete PPM. It has port(s) in use.	Remove the ports coonected to the Pluggable Port Module before it can be deleted.
EID-3400	Unable to switch, force to Primary Facility not allowed.	Refer to error message text.
EID-3401	{0} cannot be provisioned for the port while {1} is enabled.	The relationship between parameters {0} and {1} are such that enabling either one, prevents the provisioning of the other.
EID-3402	Unable to complete the switch request. The protect card is either not present or is not responding. Try again after ensuring that the protect card is present and is not resetting.	Refer to error message text.
EID-3403	Admin state transition has not been attempted on the monitored port.	Refer to error message text.
EID-3404	The far end IP address could not be set on the {0} termination. The IP address cannot be: loopback (127.0.0.0/8) class D (224.0.0.0/4) class E (240.0.0.0/4) broadcast (255.255.255.255/32) internal {1}	Refer to error message text.
EID-4000	The {0} ring name cannot be changed now. A {0} switch is active.	You cannot change the ring name because a switch of the same ring type is active.
EID-4001	The {0} ring ID cannot be changed now. A {0} switch is active.	You cannot change the ring ID because a switch of the same ring type is active.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-4002	CAUTION: Reverting to an earlier software release may result in TRAFFIC LOSS and loss of connectivity to the node. It may require onsite provisioning to recover. If the node was running 7.0.0 before, reverting will restore the 7.0.0 provisioning, losing any later provisioning. If the node was running some other version, reverting will LOSE ALL PROVISIONING. Also, any FPGA downgrades that occur while reverting might affect traffic. OK to continue?	Refer to warning message text.
EID-5000	Cannot find a valid route for tunnel change request.	Refer to error message text.
EID-5001	Tunnel could not be changed.	Refer to error message text.
EID-5002	Tunnel could not be restored and must be recreated manually.	Refer to error message text.
EID-5003	Circuit roll failure. {0}	Refer to error message text.
EID-5004	There is already one 4F {0} provisioned on the set of nodes involved in {1}. The maximum number of 4F {0} rings has been reached for that node.	There is already one 4F BLSR provisioned on the set of nodes involved in the ring. The maximum number of 4F BLSR rings has been reached for that node.
WID-5005	A non-zero hold-off time can violate switching time standards, and should only be used for a circuit with multiple path selectors.	Refer to warning message text.
WID-5006	Warning: Different secondary {0} node should only be used for DRI or Open-ended path protected circuits.	You should use different secondary end point only for DRI or open-ended path protected circuits.
WID-5007	If you change the scope of this view, the contents of this profile editor will be lost.	Refer to warning message text.
WID-5008	Please make sure all the protection groups are in proper state after the cancellation.	Refer to warning message text.
WID-5009	Circuit {0} not upgradable. No {1} capable {2}s are available at node {3}.	No VT capable STSs are available at the node.
EID-5010	Domain name already exists.	Refer to error message text.
EID-5011	Domain name may not exceed {0} characters.	You may have reached the maximum number of charcters.
WID-5012	Software load on {0} does not support the addition of a node to a 1+1protection group.	Refer to warning message text.
EID-5013	{0} doesn't support Bridge and Roll Feature. Please select a different port.	The specified port does not support Bridge and Roll.
EID-5014	An automatic network layout is already in progress, please wait for it to complete for running it again.	You must for the automatic network layout to complete before running it again.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
WID-5015	{0} cannot be applied to {1}.	You cannot apply the admin state operation, specified by {0}, to port count, specified by {1}.
EID-5016	An error was encountered while attempting to provision the {0}. {1}	CTC encountered an error while provisioning the card.
EID-5017	Unable to rollback provisioning, the {0} may be left in an INCOMPLETE state and should be manually removed.	You may have to remove the BLSR manually as it was left incomplete.
EID-5018	{0} is {1} node and cannot be added to {2} network.	You cannot add the node {0} of type {1} to the host node of type {2}. This prevents you from hosting both SONET and SDH nodes in the same session.
EID-5019	Manual mode for this equipment does not support an expected string consisting of all null characters. Please change the expected string or the path trace mode.	The path trace mode does not support strings that consist of null characters. You must either change the expected string or the path trace mode.
WID-5020	Unable to transition port state indirectly because the port aggregates low order circuits: if the port state should be changed, edit it directly via port provisioning	Refer to warning message text.
EID-5021	No nodes are selected. Please choose a node.	Refer to error message text.
WID-5022	Warning: Ethergroup circuits are stateless (i.e., always in service). Current state selection of {0} will be ignored.	Refer to warning message text.
EID-5023	Unable to communicate with node. Operation failed.	CTC encountered a network communication error. Connectivity between CTC and the NE was disrupted, either transiently or permanently.
EID-5024	Overhead circuit will not be upgraded.	Refer to error message text.
WID-5025	The path targeted for this switch request is already active. The switch request can be applied, but traffic will not switch at this time.	Refer to warning message text.
EID-5026	A 15600 cannot serve as the primary or secondary node in a 4 Fiber {0} circuit. Please change your ring and/or node selections so that a 15600 is not chosen as the primary or secondary node in this 4 Fiber {1} circuit.	Refer to error message text.
WID-5027	The {0} Edit Window for {1} has been closed due to significant provisioning changes. These changes may only be transitory, so you may re-open the {0} Edit Window to view the updated state.	Re-open the BLSR/MS-SPRing edit window to view the updated state of the node.
WID-5028	Warning: This operation should only be used to clean up rolls that are stuck. It may also affect completeness of the circuit. Continue with deletion?	Refer to warning message text.
EID-5033	Unable to load profile. Error decoding characters.	CTC detected an error while decoding characters and could not load the profile.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-5034	Unable to load profile. File format error.	CTC detected an error and could not load the profile.
EID-5035	Unable to load profile. File read error.	CTC could not read the file and cannot load the profile.
EID-6000	Platform does not support power monitoring thresholds	Refer to error message text.
EID-6001	One of the XC cards has failures or is missing.	Check whether all the cross connect cards are installed and are working.
EID-6002	One of the XC cards is locked.	Unlock the cross connect card.
EID-6003	Unable to create OSC termination. Ring ID already assigned.	Enter a new ID for the ring and proceed.
EID-6004	Unable to perform a system reset while a BLSR ring is provisioned on the node.	Remove the BLSR ring from the node and proceed with the reset procedure.
EID-6005	Could not assign timing references: - Only two DS1 or BITS interfaces can be specified. - DS1 interfaces cannot be retimed and used as a reference - BITS-2 is not supported on this platform.	Refer to error message text.
EID-6006	Could not assign timing references: - NE reference can only be used if timing mode is LINE. - A BITS reference can only be used if timing mode is not LINE. - A line reference can only be used if timing mode is not EXTERNAL.	Refer to error message text.
WID-6007	Cancelling a software upgrade during standby TSC clock acquisition may result in a traffic outage.	Refer to warning message text.
EID-6008	SF BER and SD BER are not provisionable on the protect line of a protection group.	SF BER and SD BER cannot be provisioned in a protect card as these values are inherited by the protect card or group from the card for which it is offering protection.
WID-6009	If Autoadjust GFP Buffers is disabled, GFP Buffers Available must be set to an appropriate value based on the distance between the circuit end points.	Refer to warning message text.
WID-6010	If Auto Detection of credits is disabled, Credits Available must be set to a value less than or equal to the number of receive credits on the connected FC end point.	Refer to warning message text.
WID-6011	Idle filtering should be turned off only when required to operate with non-Cisco FibreChannel/FICON-over-SONET equipment.	Refer to warning message text.
EID-6012	Could not change the retiming configuration. There are circuits on this port.	You cannot change the timing configuration on this port unless the circuits on this port are deleted.
EID-6013	NTP/SNTP server could not be changed. {1}	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-6014	Operation failed. The reference state is OOS.	Change the Out-of-service state to Active.
EID-6015	Distance Extension cannot be disabled if the port media type is FICON 1Gbps ISL or FICON 2Gbps ISL.	Refer to error message text.
EID-6016	Card mode cannot be changed to Fibre Channel Line Rate if the port media type is FICON 1Gbps ISL or FICON 2Gbps ISL.	Refer to error message text.
EID-6017	The destination of a {0} route cannot be a node IP address.	A node IP address cannot be the destination for a static route.
EID-6018	The destination of a {0} route cannot be the same as the subnet used by the node.	Refer to error message text.
EID-6019	The destination of a static route cannot be 255.255.255.255	The network address such as 255.255.255.255 is not valid. Enter a valid address.
EID-6020	The destination of a static route cannot be the loopback network (127.0.0.0/8)	Refer to error message text.
EID-6021	The subnet mask length for a non-default route must be between 8 and 32.	Length of subnet mask must be within the specified range.
EID-6022	The subnet mask length for a default route must be 0.	Refer to error message text.
EID-6023	The destination of a {0} route cannot be an internal network{1}.	The destination of a static route must not be an internal network.
EID-6024	The destination of a {0} route cannot be a class D (224.0.0.0/4) or class E (240.0.0.0/4) address.	The destination of a static route must not be a class D or class E address.
EID-6025	The destination of a {0} route cannot be a class A broadcast address (x.255.255.255/8)	The destination of a static route must not be a class A broadcast address. It should be (xxx.0.0.0).
EID-6026	The destination of a {0} route cannot be a class B broadcast address (x.x.255.255/16)	The destination of a static route must not be a class B broadcast address.
EID-6027	The destination of a {0} route cannot be a class C broadcast address (x.x.x.255/24)	The destination of a static route must not be a class C broadcast address.
EID-6028	The destination of a {0} route cannot be the subnet broadcast address associated with a node IP address.	The destination of a static route must not be a subnet broadcast address of a node IP.
EID-6029	The next hop of a static route cannot be the same as the destination of the route or an internal network{0}.	Static route must have the default route as the next hop, and not destination of the route or internal network.
EID-6030	The next hop of a static default route must be the provisioned default router.	The default route is selected for networks that do not have a specific route.
EID-6031	No more static routes can be created.	You have reached the maximum number of static routes.
EID-6032	This static route already exists.	Refer to error message text.
EID-6033	Previous operation is still in progress.	Another operation is in progress. You must try after sometime.
EID-6035	Parent entity does not exist.	Refer to error message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-6036	Parent PPM entity does not exist.	Create a parent entity for PPM.
EID-6037	Equipment type is not supported.	CTC does not support this equipment.
EID-6038	Invalid PPM port.	Refer to error message text.
EID-6039	Card is part of a regeneration group.	Select another card.
EID-6040	Out of memory.	Refer to error message text.
EID-6041	Port is already present.	Refer to error message text.
EID-6042	Port is used as timing source.	Choose another port as the selected port is being used as timing source.
EID-6043	DCC or GCC is present.	Refer to error message text.
EID-6044	Card or port is part of protection group.	Refer to error message text.
EID-6045	Port has overhead circuit(s).	Refer to error message text.
EID-6046	G.709 configuration is not compatible with data rate.	Refer to error message text.
EID-6047	Port cannot be deleted because its service state is OOS-MA,LPBK&MT.	To delete the port, you must change the port state to OOS-DSBLD.
EID-6048	{0} is {1}.	Trunk port is in the wrong state to carry out the action.
EID-6049	Mode {0} is not supported.	CTC does not support the mode of operation requested on the card.
EID-6050	Some {0} terminations were not {1}d. {2}	Refer to error message text.
WID-6051	All {0} terminations were {1}d successfully. {2}	Refer to warning message text.
EID-6052	The authentication key can not be blank.	Enter an authentication key.
EID-6053	No more SNMP trap destinations can be created.	You have reached the maximum number of SNMP trap destinations.
EID-6054	{0} is not a valid IP address for an SNMP trap destination.	The IP address specified is invalid as the receiver of SNMP traps.
EID-6055	The IP address is already in use.	Refer to error message text.
EID-6056	Invalid SNMP trap destination. {0}	The specified SNMP trap destination is invalid. Choose another destination.
WID-6057	Changing the card mode will result in an automatic reset.	Refer to warning message text.
EID-6058	Max number of GRE tunnels exceeded.	Refer to error message text.
EID-6059	The specified GRE tunnel already exists!	Specify another GRE tunnel.
EID-6060	Cannot {0} GRE tunnel entry: {1}.	Refer to error message text.
EID-6061	Error deleting GRE tunnel entry.	CTC encountered an error while deleting the GRE tunnel entry.
EID-6062	Selected GRE tunnel does not exist.	Create a GRE tunnel and proceed.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-6063	Selected router does not exist.	Create a router and proceed.
EID-6064	MAA address list is full.	Refer to error message text.
EID-6065	Selected area address is duplicated.	Enter another area address.
EID-6066	Primary area address can not be removed.	Refer to error message text.
EID-6067	Selected area address does not exist.	Choose another area address.
EID-6068	The GRE NSEL may not be modified while there are GRE Tunnel Routes provisioned.	You can not change the NSEL address if there are tunnels provisioned.
EID-6069	The node is currently in ES mode. Only router #1 may be provisioned.	An End System needs only one provisioned router.
EID-6070	No router selected.	Select a router.
EID-6071	Cannot flush TARP data cache.	You cannot flush the cache in the Tunnel identifier Address Resolution Protocol (TARP) state.
EID-6072	Cannot add TARP data cache entry: {0}	You cannot add the specified cache entry.
WID-6073	TARP request has been initiated. Try refreshing TARP data cache later.	Refer to warning message text.
EID-6074	End System mode only supports one subnet.	Refer to error message text.
EID-6075	Trying to remove MAT entry that does not exit.	CTC is removing the non-existant MAT entry.
EID-6076	Cannot {0} TARP manual adjacency entry: {1}	CTC can not add the specified adjacency entry for reasons unknown.
EID-6077	Area address shall be 1 to 13 bytes long.	Area address should not be more than 13 characters.
EID-6078	TDC entry with TID {0} does not exist in the table.	The specified Tunnel Identifier does not exist.
EID-6079	Unable to remove TDC entry with TID {0}. Please verify that TARP is enabled.	You must enable TARP inorder to remove the TDC entry.
WID-6080	Router #{0} does not have an area address in common with router #1. Switching from IS L1/L2 to IS L1 in this case will partition your network.	Refer to warning message text.
EID-6081	The limit of 10 RADIUS server entries has been reached.	CTC does not allow more than 10 RADIUS servers.
EID-6082	{0} cannot be empty.	The Shared Secrets field should not be empty.
EID-6083	The entry you selected for editing has been altered by other. Changes cannot be committed.	Refer to error message text.
EID-6084	The RADIUS server entry already exists.	Specify another RADIUS server entry.
WID-6085	Disabling shell access will prevent Cisco TAC from connecting to the vxWork shell to assist users.	Refer to warning message text.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-6086	Cannot change card. Card resources are in use.	The card you are trying to remove is being used. Cannot change the card.
EID-6087	Cannot change card. The new card type is invalid or incompatible.	Refer to error message text.
EID-6088	This line cannot be put into loopback while it is in use as a timing source	Refer to error message text.
EID-6089	Interface not found. {0}	CTC cannot find the specified interface.
EID-6090	Interface type not valid for operation. {0}	Choose another interface.
EID-6091	The interface's current state prohibits this operation. {0}	The port is in an invalid state to set loopback.
EID-6092	Operation prohibited for this interface. {0}	CTC does not allow this operation for the specified interface.
EID-6093	Max number of Tarp Data Cache entry exceeded.	You have exceeded the allowed number of characters.
EID-6094	Max number of Manual Adjacency Table entry exceeded.	Refer to error message text.
EID-6095	Invalid Ais/Squelch mode.	Refer to error message text.
EID-6096	Default GRE tunnel route is only allowed on a node without a default static route and a default router of 0.0.0.0	Refer to error message text.
EID-6097	The authorization key does not comply with IOS password restrictions. {0}	Specify another authorization key.
EID-6098	Default static route is not allowed when default GRE tunnel exists	Refer to error message text.
EID-6099	You cannot create a subnet on a disabled router.	Create the subnet on an active router.
WID-6100	Disabling a router that has a provisioned subnet is not recommended.	Refer to warning message text.
EID-6101	The MAT entry already exists.	Refer to error message text.
WID-6102	The new card has less bandwidth than the current card. Circuits using VT15 and higher will be deleted.	Refer to warning message text.
EID-6103	The TDC entry already exists.	Specify another entry for TARP Data Cache.
EID-6104	APC ABORTED.	Automatic Power Control is aborted.
EID-6105	The 'Change Card' command is valid for MRC cards only when port 1 is the sole provisioned port.	Refer to error message text.
EID-6106	To delete all RADIUS server entries, RADIUS authentication must be disabled.	Disable Radius authentication and proceed.

Table 4-1 Error Messages (continued)

Error or Warning ID	Error or Warning Message	Description
EID-6107	The node failed to restart the TELNET service on the selected port. Try using another unreserved port that is not being used within the following ranges: 23, 1001-9999.	Refer to error message text.
EID-6108	There is an active TELNET session.	Restart a TELNET session.

1. EID-3159 can appear if you attempt to perform another switching operation within a certain time interval. This interval is an algorithm of three seconds per working card in the protection group. The maximum interval is 10 seconds.

CHAPTER 5

Performance Monitoring

Note The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

Use performance monitoring (PM) parameters to gather, store, threshold, and report performance data for early detection of problems. This chapter defines PM parameters and concepts for Cisco ONS 15600 optical cards.

Note For additional information regarding PM parameters, refer to Telcordia documents GR-1230-CORE, GR-820-CORE, GR-499-CORE, and GR-253-CORE and the ANSI T1.231 document entitled *Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring*.

For information about enabling and viewing PM values, refer to the *Cisco ONS 15600 Procedure Guide.*

Chapter topics include:

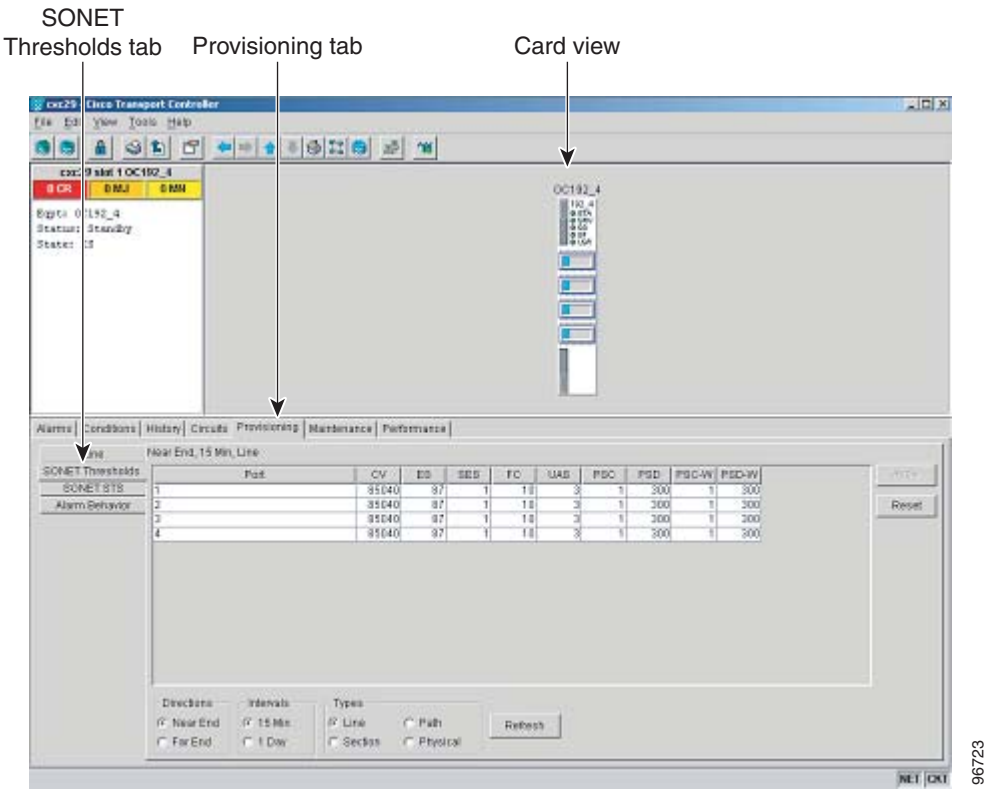
5.1 Threshold Performance Monitoring

Thresholds are used to set error levels for each PM. You can program PM threshold ranges from the Provisioning > SONET Thresholds tabs on the Cisco Transport Controller (CTC) card view. To provision card thresholds, such as line, path, and SONET thresholds, refer to the *Cisco ONS 15600 Procedure Guide*.

During the accumulation cycle, if the current value of a performance monitoring parameter reaches or exceeds its corresponding threshold value, a threshold crossing alert (TCA) is generated by the node and sent to CTC. TCAs provide early detection of performance degradation. When a threshold is crossed,

the node continues to count the errors during a given accumulation period. If 0 is entered as the threshold value, the performance monitoring parameter is disabled. Figure 5-1 shows the Provisioning > SONET Thresholds tabs for an OC-48/STM-16 card.

Figure 5-1 SONET Thresholds Tab for Setting Threshold Values



Change the threshold if the default value does not satisfy your error monitoring needs. For example, customers with a critical STS-1 installed for 911 calls must guarantee the best quality of service on the line; therefore, they lower all thresholds so that the slightest error raises a TCA.

5.2 Intermediate-Path Performance Monitoring

Intermediate-path performance monitoring (IPPM) allows a nonterminating node to transparently monitor a constituent channel of an incoming transmission signal. ONS 15600 networks only use line terminating equipment (LTE), not path terminating equipment (PTE). Table 5-1 shows ONS 15600 cards that are considered LTEs.

Table 5-1 Line Terminating Traffic Cards

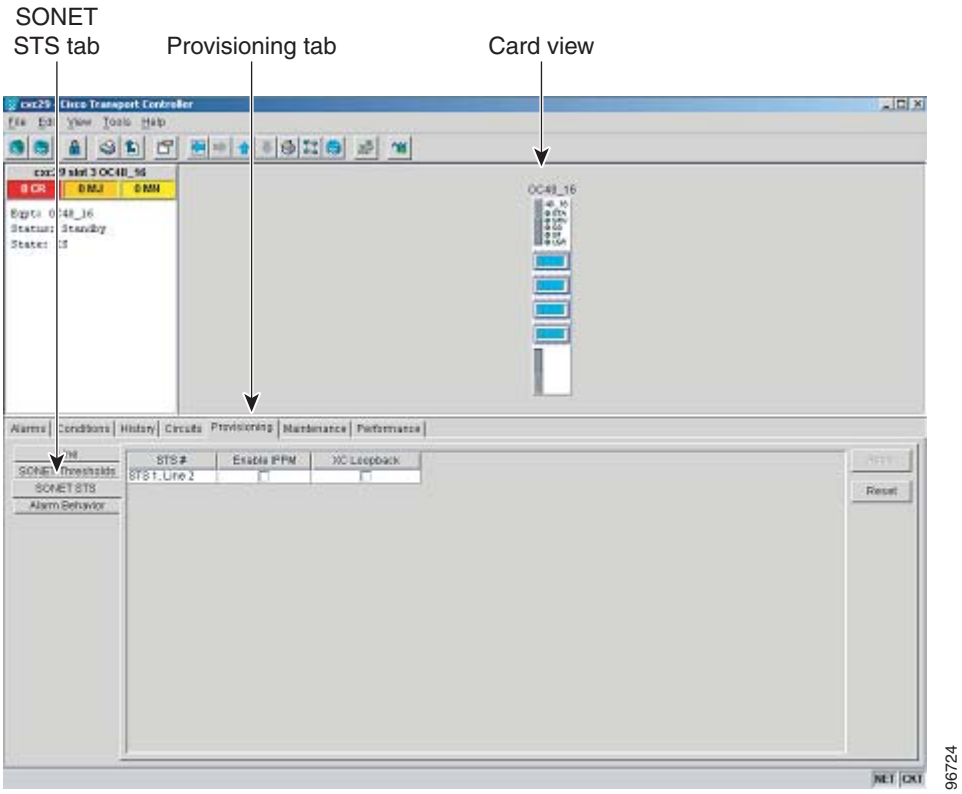
Line Terminating Equipment
OC48/STM16 SR/SH 16 Port 1310
OC48/STM16 LR/LH 16 Port 1550

Table 5-1 Line Terminating Traffic Cards

Line Terminating Equipment
OC192/STM64 SR/SH 4 Port 1310
OC192/STM64 LR/LH 4 Port 1550

Figure 5-2 shows the Provisioning > SONET STS tabs for an OC-48 card.

Figure 5-2 STS Tab for Enabling IPPM



Software Release 1.0 and later allows LTE cards to monitor near-end path PM data on individual synchronous transport signal (STS) payloads by enabling IPPM. After enabling IPPM on provisioned STS ports, service providers can monitor large amounts of STS traffic through intermediate nodes, thus making troubleshooting and maintenance activities more efficient.

IPPM occurs only on STS paths that have IPPM enabled, and TCAs are raised only for PM parameters on the selected IPPM paths. The monitored IPPMs are STS CV-P, STS ES-P, STS SES-P, STS UAS-P, and STS FC-P. To enable IPPM, refer to the *Cisco ONS 15600 Procedure Guide*.

The ONS 15600 performs IPPM by examining the overhead in the monitored path and reading all of the near-end path performance monitoring parameters in the incoming transmission direction. The IPPM process allows the path overhead to pass bidirectionally through the node completely unaltered.

For detailed information about specific performance monitoring parameters, see the "5.4 Performance-Monitoring Parameter Definitions" section on page 5-5.

5.3 Pointer Justification Count

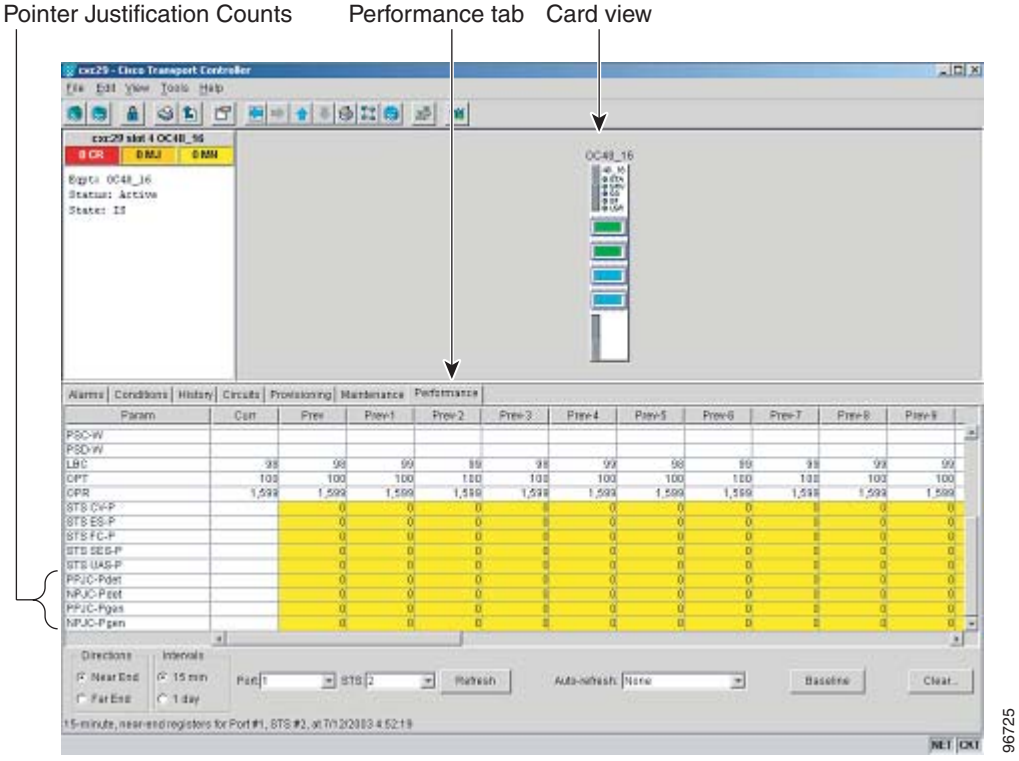
Pointers are used to compensate for frequency and phase variations. Pointer justification counts indicate timing differences on SONET networks. When a network is not synchronized, frequency and phase variations occur on the transported signal. Excessive frequency and phase variations can cause terminating equipment to slip. These variations also cause slips at the SDH and plesiosynchronous digital hierarchy (PDH) boundaries.

Slips cause different effects in service. Voice service has intermittent audible clicks. Compressed voice technology has short transmission errors or dropped calls. Fax machines lose scanned lines or experience dropped calls. Digital video transmission has distorted pictures or frozen frames. Encryption service loses the encryption key, which causes data to be transmitted again.

Pointers align the phase variations in STS and Virtual Tributary (VT) payloads. The STS payload pointer is located in the H1 and H2 bytes of the line overhead. Clocking differences are measured by the offset in bytes from the pointer to the first byte of the STS synchronous payload envelope (SPE) called the J1 byte. A small number of pointer justification counts per day is not cause for concern. If the pointer justification count continues to rise or becomes large, action must be taken to correct the problem.

Figure 5-3 shows pointer justification count parameters on the performance monitoring window. You can enable positive pointer justification count (PPJC) and negative pointer justification count (NPJC) performance monitoring parameters for LTE cards.

Figure 5-3 Viewing Pointer Justification Count Parameters



PPJC is a count of path-detected (PPJC-Pdet) or path-generated (PPJC-Pgen) positive pointer justifications depending on the specific PM name. NPJC is a count of path-detected (NPJC-Pdet) or path-generated (NPJC-Pgen) negative pointer justifications depending on the specific PM name.

A consistent pointer justification count indicates clock synchronization problems between nodes. A difference between the counts means the node transmitting the original pointer justification has timing variations with the node detecting and transmitting this count. Positive pointer adjustments occur when the frame rate of the SPE is too slow in relation to the rate of the STS-1.

For pointer justification count definitions, see the "5.4 Performance-Monitoring Parameter Definitions" section on page 5-5. In CTC, the PM count fields for PPJC and NPJC appear white and blank unless IPPM is enabled.

5.4 Performance-Monitoring Parameter Definitions

Table 5-2 gives definitions for each type of performance-monitoring parameter found in this chapter.

Table 5-2 Performance Monitoring Parameters

Parameter	Definition
CV-L	Line Code Violation (CV-L) indicates the number of coding violations occurring on the line. This parameter is a count of bipolar violations (BPVs) and excessive zeros (EXZs) occurring over the accumulation period.
CV-LFE	Far-End Line Code Violation (CV-LFE) is a count of bit interleaved parity (BIP) errors detected by the far-end LTE and reported back to the near-end LTE using the Line remote error indication (REI-L) in the line overhead. For SONET signals at rates below OC-48, up to 8 x n BIP errors per STS-N frame can be indicated using the RDI-L indication. For OC-48 signals, up to 255 BIP errors per STS-N frame can be indicated. The current CV-L second register is incremented for each BIP error indicated by the incoming REI-L.
CV-P	Near-End STS Path Coding Violations (CV-P) is a count of BIP errors detected at the STS path layer (that is, using the B3 byte). Up to eight BIP errors can be detected per frame; each error increments the current CV-P second register.
CV-PFE	Far-End STS Path Coding Violations (CV-PFE) is a count of BIP errors detected at the STS path layer (that is, using the B3 byte). Up to eight BIP errors can be detected per frame; each error increments the current CV-PFE second register.
CV-S	Section Coding Violation (CV-S) is a count of BIP errors detected at the section layer (that is, using the B1 byte in the incoming SONET signal). Up to eight section BIP errors can be detected per STS-N frame; each error increments the current CV-S second register.
ES-L	Line Errored Seconds (ES-L) is a count of the seconds containing one or more anomalies (BPV+EXZ) and/or defects (that is, loss of signal) on the line.
ES-LFE	Far-End Line Errored Seconds (ES-LFE) is a count of the seconds when at least one line-layer BIP error was reported by the far-end LTE or a RDI-L defect was present.
ES-P	Near-End STS Path Errored Seconds (ES-P) is a count of the seconds when at least one STS path BIP error was detected. An AIS-P defect (or a lower-layer, traffic-related, near-end defect) or an LOP-P defect can also cause an ES-P.
ES-PFE	Far-End STS Path Errored Seconds (ES-PFE) is a count of the seconds when at least one STS path BIP error was detected. An AIS-P defect (or a lower-layer, traffic-related, far-end defect) or an LOP-P defect can also cause an STS ES-PFE.
ES-S	Section Errored Seconds (ES-S) is a count of the number of seconds when at least one section-layer BIP error was detected or an SEF or LOS defect was present.

Table 5-2 Performance Monitoring Parameters (continued)

Parameter	Definition
FC-L	Line Failure Count (FC-L) is a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.
FC-LFE	Far-End Line Failure Count (FC-LFE) is a count of the number of far-end line failure events. A failure event begins when Line RFI-L failure is declared, and it ends when the RFI-L failure clears. A failure event that begins in one period and ends in another period is counted only in the period where it began.
FC-P	Near-End STS Path Failure Counts (FC-P) is a count of the number of near-end STS path failure events. A failure event begins when an AIS-P failure, an LOP-P failure, a UNEQ-P failure, or a TIM-P failure is declared. A failure event also begins if the STS PTE that is monitoring the path supports ERDI-P for that path. The failure event ends when these failures are cleared.
FC-PFE	Far-End STS Path Failure Counts (FC-PFE) is a count of the number of near-end STS path failure events. A failure event begins when an AIS-P failure, an LOP-P failure, a UNEQ-P failure, or a TIM-P failure is declared. A failure event also begins if the STS PTE that is monitoring the path supports ERDI-P for that path. The failure event ends when these failures are cleared.
LBC	Laser Bias Current (LBC) is represented by the percentage of the normal (100%) laser bias current of the laser on the card port. The high laser bias current (LBC-HIGH) threshold is the percentage of the normal laser bias current when a high current TCA occurs. The low laser bias current (LBC-LOW) threshold is the percentage of the normal laser bias current when a low current TCA occurs.
NPJC-PDET	Negative Pointer Justification Count, STS Path Detected (NPJC-Pdet-P) is a count of the negative pointer justifications detected on a particular path in an incoming SONET signal.
NPJC-PGEN	Negative Pointer Justification Count, STS Path Generated (NPJC-Pgen-P) is a count of the negative pointer justifications generated for a particular path to reconcile the frequency of the SPE with the local clock.
OPT	Optical Power Transmitted (OPT) is represented by the percentage of the normal (100%) optical transmit power of the laser on the card port. The high optical power transmitted (OPT-HIGH) threshold is the percentage of the normal transmit optical power when a high transmit power TCA occurs. The low optical power transmitted (OPT-LOW) threshold is the percentage of the normal transmit optical power when a low transmit power TCA occurs.
OPR	Optical Power Received (OPR) is represented by the percentage of the normal optical receive power of the card port. The high optical power received (OPR-HIGH) threshold is the percentage of the calibrated receive optical power when a high receive power TCA occurs. The low optical power received (OPR-LOW) threshold is the percentage of the calibrated receive optical power when a low receive power TCA occurs.
PPJC-PDET	Positive Pointer Justification Count, STS Path Detected (PPJC-Pdet-P) is a count of the positive pointer justifications detected on a particular path in an incoming SONET signal.

Table 5-2 Performance Monitoring Parameters (continued)

Parameter	Definition
PPJC-PGEN	Positive Pointer Justification Count, STS Path Generated (PPJC-Pgen-P) is a count of the positive pointer justifications generated for a particular path to reconcile the frequency of the SPE with the local clock.
PSC (1+1)	In a 1+1 protection scheme for a working port, Protection Switching Count (PSC) is a count of the number of times service switches from a working port to a protection port plus the number of times service switches back to the working port. For a protection port, PSC is a count of the number of times service switches to a working port from a protection port plus the number of times service switches back to the protection port. The PSC PM is only applicable if revertive line-level protection switching is used.
PSC (BLSR)	For a protect line in a two-fiber ring, Protection Switching Count (PSC) refers to the number of times a protection switch has occurred either to a particular span's line protection or away from a particular span's line protection. Therefore, if a protection switch occurs on a two-fiber BLSR, the PSC of the protection span to which the traffic is switched will increment, and when the switched traffic returns to its original working span from the protect span, the PSC of the protect span will increment again.
PSC-R	In a four-fiber bidirectional line switched ring (BLSR), Protection Switching Count-Ring (PSC-R) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to a working line. A count is only incremented if ring switching is used.
PSC-S	In a four-fiber BLSR, Protection Switching Count-Span (PSC-S) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to the working line. A count is only incremented if span switching is used.
PSC-W	For a working line in a two-fiber BLSR, Protection Switching Count-Working (PSC-W) is a count of the number of times traffic switches away from the working capacity in the failed line and back to the working capacity after the failure is cleared. PSC-W increments on the failed working line and PSC increments on the active protect line. For a working line in a four-fiber BLSR, PSC-W is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to the working line. PSC-W increments on the failed line and PSC-R or PSC-S increments on the active protect line.
PSD (1+1)	In a 1+1 protection scheme, Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service. The PSD PM is only applicable if revertive line-level protection switching is used.

Table 5-2 Performance Monitoring Parameters (continued)

Parameter	Definition
PSD (BLSR)	Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service. The PSD PM is only applicable if revertive line-level protection switching is used. Therefore, if a protection switch occurs on a two-fiber BLSR, the PSD of the protection span to which the traffic is switched will increment, and when the switched traffic returns to its original working span from the protect span, the PSD of the protect span will stop incrementing.
PSD-R	In a four-fiber BLSR, Protection Switching Duration-Ring (PSD-R) is a count of the seconds that the protection line was used to carry service. A count is only incremented if ring switching is used.
PSD-S	In a four-fiber BLSR, Protection Switching Duration-Span (PSD-S) is a count of the seconds that the protection line was used to carry service. A count is only incremented if span switching is used.
PSD-W	For a working line in a two-fiber BLSR Protection Switching Duration-Working (PSD-W) is a count of the number of seconds that service was carried on the protection line. PSD-W increments on the failed working line and PSD increments on the active protect line.
SEFS-S	Section Severely Errored Framing Seconds (SEFS-S) is a count of the seconds when an SEF defect was present. An SEF defect is expected to be present during most seconds when an LOS or loss of frame (LOF) defect is present. However, there can be situations when the SEFS-S parameter is only incremented based on the presence of the Severely Errored Framing (SEF) defect.
SES-L	Line Severely Errored Seconds (SES-L) is a count of the seconds containing more than a particular quantity of anomalies (BPV + EXZ $\geq$ 1544) and/or defects on the line.
SES-LFE	Far-End Line Severely Errored Seconds (SES-LFE) is a count of the seconds when K (see Telcordia GR-253-CORE for values) or more line-layer BIP errors were reported by the far-end LTE or an RDI-L defect was present.
SES-P	Near-End STS Path Severely Errored Seconds (SES-P) is a count of the seconds when K (2400) or more STS path BIP errors were detected. An AIS-P defect (or a lower-layer, traffic-related, near-end defect) or an LOP-P defect can also cause an SES-P.
SES-PFE	Far-End STS Path Severely Errored Seconds (SES-PFE) is a count of the seconds when K (2400) or more STS path BIP errors were detected. An AIS-P defect (or a lower-layer, traffic-related, far-end defect) or an LOP-P defect can also cause an SES-PFE.
SES-S	Section Severely Errored Seconds (SES-S) is a count of the seconds when K (see Telcordia GR-253-CORE for value) or more section-layer BIP errors were detected or an SEF or LOS defect was present.
UAS-L	Line Unavailable Seconds (UAS-L) is a count of the seconds when the line is unavailable. A line becomes unavailable when ten consecutive seconds occur that qualify as SES-Ls, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ls.

Table 5-2 Performance Monitoring Parameters (continued)

Parameter	Definition
UAS-LFE	Far-End Line Unavailable Seconds (UAS-LFE) is a count of the seconds when the line is unavailable at the far end. A line becomes unavailable at the onset of ten consecutive seconds that qualify as SES-LFEs, and continues to be unavailable until the onset of ten consecutive seconds occurs that do not qualify as SES-LFEs.
UAS-P	Near-End STS Path Unavailable Seconds (UAS-P) is a count of the seconds when the STS path was unavailable. An STS path becomes unavailable when ten consecutive seconds occur that qualify as SES-Ps, and continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ps.
UAS-PFE	Far-End STS Path Unavailable Seconds (UAS-PFE) is a count of the seconds when the STS path was unavailable. An STS path becomes unavailable when ten consecutive seconds occur that qualify as SES-PFEs, and continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-PFEs.

5.5 Optical Card Performance Monitoring

The following sections define performance monitoring parameters for the OC-48/STM16 and OC-192/STM64 optical cards.

5.5.1 OC-48/STM16 and OC-192/STM64 Card Performance Monitoring Parameters

Figure 5-4 shows where overhead bytes detected on the Application-Specific Integrated Circuits (ASICs) produce performance monitoring parameters for the OC-48/STM16 and OC-192/STM64 optical cards.

Figure 5-4 PM Read Points on the OC-48/STM16 and OC-192/STM64 Cards

Note For PM locations relating to protection switch counts, see the Telcordia GR-1230-CORE document.

Table 5-3 lists the near-end and far-end section layer PMs.

Table 5-3 OC48/STM16 and OC-192/STM64 Card PMs

Section (NE)	Line (NE)	STS Path (NE)[1, 2]	Line (FE)	Optics (NE)[3, 4]	STS Path (FE)
CV-S	CV-L	CV-P	CV-LFE	OPT	CV-PFE
ES-S	ES-L	ES-P	ES-LFE	OPR	ES-PFE
SES-S	SES-L	SES-P	SES-LFE	LBC[5]	SES-PFE
SEF-S	UAS-L	UAS-P	UAS-LFE		UAS-PFE
	FC-L	FC-P	FC-LFE		FC-PFE
	PSC (1+1)	PPJC-PDET			
	PSC (BLSR)	NPJC-PDET			
	PSD	PPJC-PGEN			
	PSC-W	NPJC-PGEN			
	PSD-W				

1. SONET path performance monitoring parameters increment only if IPPM is enabled. For additional information, see the "5.2 Intermediate-Path Performance Monitoring" section on page 5-2. To monitor SONET path performance monitoring parameters, log into the far-end node directly.
2. For information about troubleshooting path protection switch counts, see Chapter 1, "General Troubleshooting." For information about creating circuits with protection switching, refer to the *Cisco ONS 15600 Reference Manual*.
3. The normalized physical layer performance parameters are represented as a percentage of the nominal operating value, with 100 representing the nominal value
4. To set the threshold values for LBC, OPT, and OPR, and to reset the OPR nominal value for future calculation, refer to the *Cisco ONS 15600 Procedure Guide*.
5. As stated in Telcordia GR-253-CORE, the LBC (TCA) PM value is not appropriate for use with some optical transmitter technologies. Such is the case for Cisco's uncooled SR optical transmitters. The default LBC TCA provides safe operating parameter for both of Cisco's cooled and uncooled transmitters.

5.5.2 Physical Layer Parameters

The ONS 15600 retrieves the OPR, OPT, and LBC from the line card and stores these values with the PM counts for the 15-minute and 1-day periods. You can retrieve current OPR, OPT, and LBC values for each port by displaying the card view in CTC and clicking the Maintenance > Transceiver tabs.

The physical layer performance parameters consist of normalized and non-normalized values of LBC, OPT, and OPR. Table 5-4 defines the non-normalized values.

Table 5-4 Non-Normalized Transceiver Physical Optics for the OC-48/STM16 and OC-192/STM64 Cards

Parameter	Definition
Non-normalized LBC (mA)[1]	The actual operating value of laser bias current (mA) for the specified card port.
Non-normalized OPR (dbm)[2]	The actual operating value of optical power received (dBm) for the specified card port.
Non-normalized OPT (dbm)[1]	The actual operating value of optical power transmitted (dBm) for the specified card port.

1. This value should be somewhat consistent from port to port and cannot be configured.
2. This value will vary from port to port because of received optical signal power differences. This value can be configured by calibrating the nominal value to the initial receive power level when the port is put in service.

5.6 ASAP Card Performance Monitoring

The following sections define performance monitoring parameters for the Any Service Any Port (ASAP) card.

5.6.1 ASAP Card Optical Performance Monitoring Parameters

Table 5-5 lists the near-end and far-end section layer PMs.

Table 5-5 ASAP Card PMs

Section (NE)	Line (NE)	STS Path (NE)[1,2]	Line (FE)	Optics (NE)[3,4]	STS Path (FE)
CV-S	CV-L	CV-P	CV-L	OPT	CV-P
ES-S	ES-L	ES-P	ES-L	OPR	ES-P
SES-S	SES-L	SES-P	SES-L	LBC[5]	SES-P
SEF-S	UAS-L	UAS-P	UAS-L		UAS-P
	FC-L	FC-P	FC-L		FC-P
	PSC (1+1)	PPJC-PDET			
	PSC (BLSR)	NPJC-PDET			
	PSD (1+1)	PPJC-PGEN			
	PSD (BLSR)	NPJC-PGEN			
	PSC-W				
	PSD-W				

1. SONET path performance monitoring parameters increment only if IPPM is enabled. For additional information, see the "5.2 Intermediate-Path Performance Monitoring" section on page 5-2. To monitor SONET path performance monitoring parameters, log into the far-end node directly.

2. For information about troubleshooting path protection switch counts, see Chapter 1, "General Troubleshooting." For information about creating circuits with protection switching, refer to the *Cisco ONS 15600 Reference Manual*.
3. The normalized physical layer performance parameters are represented as a percentage of the nominal operating value, with 100 representing the nominal value
4. To set the threshold values for LBC, OPT, and OPR, and to reset the OPR nominal value for future calculation, refer to the *Cisco ONS 15600 Procedure Guide*.
5. As stated in Telcordia GR-253-CORE, the LBC (TCA) PM value is not appropriate for use with some optical transmitter technologies. Such is the case for Cisco's uncooled SR optical transmitters. The default LBC TCA provides safe operating parameter for both of Cisco's cooled and uncooled transmitters.

5.6.2 ASAP Card Ethernet Performance Monitoring Parameters

CTC provides Ethernet performance information, including line-level parameters, port bandwidth consumption, and historical Ethernet statistics. The ASAP card Ethernet performance information is divided into Ether Ports and POS Ports windows within the card view Performance tab window.

5.6.2.1 ASAP Card Ether Port Statistics Window

The Ethernet Ether Ports statistics window lists Ethernet parameters at the line level. The Statistics window provides buttons to change the statistical values. The Baseline button resets the displayed statistics values to zero. The Refresh button manually refreshes statistics. Auto-Refresh sets a time interval at which automatic refresh occurs. The ASAP Statistics window also has a Clear button. The Clear button sets the values on the card to zero, but does not reset the ASAP card.

During each automatic cycle, whether auto-refreshed or manually refreshed (using the Refresh button), statistics are added cumulatively and are not immediately adjusted to equal total received packets until testing ends. To see the final PM count totals, allow a few moments for the PM window statistics to finish testing and update fully. PM counts are also listed in the ASAP card Performance > History window.

Table 5-6 defines the ASAP card statistics parameters.

Table 5-6 ASAP Ethernet Statistics Parameters

Parameter	Meaning
Time Last Cleared	A time stamp indicating the last time statistics were reset.
Link Status	Indicates whether the Ethernet link is receiving a valid Ethernet signal (carrier) from the attached Ethernet device; up means present, and down means not present.
Rx Unicast Packets	Number of unicast packets received since the last counter reset.
Tx Unicast Packets	Number of unicast packets transmitted since the last counter reset.
Rx Multicast Packets	Number of multicast packets received since the last counter reset.
Tx Multicast Packets	Number of multicast packets transmitted since the last counter reset.
Rx Broadcast Packets	Number of broadcast packets received since the last counter reset.
Tx Multicast Packets	Number of broadcast packets transmitted since the last counter reset.
Rx Bytes	Number of bytes received since the last counter reset.

Table 5-6 ASAP Ethernet Statistics Parameters (continued)

Parameter	Meaning
Tx Bytes	Number of bytes transmitted since the last counter reset.
Rx Errors	The number of inbound packets (or transmission units), that could not be delivered to a higher-layer protocol because of errors.
Tx Errors	The number of outbound packets (or transmission units), that could not be transmitted because of errors.
Rx FCS errors	Number of packets with a frame check sequence (FCS) error. FCS errors indicate frame corruption during transmission.
Rx Align errors	Number of packets with received incomplete frames.
Rx Runts	The total number of packets received that were less than 64 bytes long (excluding framing bits, but including FCS bytes) and were otherwise well formed.
Rx Jabbers	The total number of packets received that were longer than 1518 bytes (excluding framing bits, but including FCS bytes), and had either a bad FCS with an integral number of bytes (FCS error) or a bad FCS with a nonintegral number of bytes (alignment error).
Rx Giants	The total number of packets received that were longer than 1518 bytes (excluding framing bits, but including FCS bytes) and were otherwise well formed.
Rx Discards	The number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.
Tx Discards	The number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free up buffer space.
Rx Pause Frames	Number of received Ethernet IEEE 802.3z pause frames.
Tx Pause Frames	Number of transmitted IEEE 802.3z pause frames.
Port Drop Counts	Number of received frames dropped at the port level.
etherStatsDropEvents	Number of received frames dropped at the port level.
etherStatsOctets	The total number of bytes of data (including those in bad packets) received on the network (excluding framing bits but including FCS bytes.
etherStatsPkts	The total number of packets (including bad packets, broadcast packets, and multicast packets) received.
etherStatsBroadcastPkts	The total number of good packets received that were directed to the broadcast address. Note that this does not include multicast packets.

Table 5-6 ASAP Ethernet Statistics Parameters (continued)

Parameter	Meaning
etherStatsMulticastPkts	The total number of good packets received that were directed to a multicast address. Note that this number does not include packets directed to the broadcast address.
etherStatsFragments	The total number of packets received that were less than 64 bytes in length (excluding framing bits but including FCS bytes) and had either a bad FCS with an integral number of bytes (FCS error) or a bad FCS with a nonintegral number of bytes (alignment error). **Note** It is entirely normal for etherStatsFragments to increment. This is because it counts both runts (which are normal occurrences due to collisions) and noise hits.
etherStatsPkts64Octets	The total number of packets (including bad packets) received that were 64 bytes in length (excluding framing bits but including FCS bytes).
etherStatsPkts65to127Octets	The total number of packets (including bad packets) received that were between 65 and 127 bytes in length inclusive (excluding framing bits but including FCS bytes).
etherStatsPkts128to255Octets	The total number of packets (including bad packets) received that were between 128 and 255 bytes in length inclusive (excluding framing bits but including FCS bytes).
etherStatsPkts256to511Octets	The total number of packets (including bad packets) received that were between 256 and 511 bytes in length inclusive (excluding framing bits but including FCS bytes).
etherStatsPkts512to1023Octets	The total number of packets (including bad packets) received that were between 512 and 1023 bytes in length inclusive (excluding framing bits but including FCS bytes).
etherStatsPkts1024to1518Octets	The total number of packets (including bad packets) received that were between 1024 and 1518 bytes in length inclusive (excluding framing bits but including FCS bytes).
Rx Utilization	The percentage of receive (Rx) line bandwidth used by the Ethernet ports during consecutive time segments.
Tx Utilization	Same as Rx Utilization, except calculated over the transmit (Tx) line bandwidth.
Rx Alignment Errors	A count of frames received on a particular interface that are not an integral number of bytes in length and do not pass the FCS check.
Rx FCS Errors	A count of frames received on a particular interface that are an integral number of bytes in length but do not pass the FCS check.

Table 5-6 ASAP Ethernet Statistics Parameters (continued)

Parameter	Meaning
dot3StatsInternalMacTransmitErrors	A count of frames for which transmission on a particular interface fails due to an internal MAC sublayer transmit error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object.
dot3StatsFrameTooLongs	A count of frames received on a particular interface that exceed the maximum permitted frame size.
dot3StatsInternalMacReceiveErrors	A count of frames for which reception on a particular interface fails due to an internal MAC sublayer receive error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of the dot3StatsFrameTooLongs object, the dot3StatsAlignmentErrors object, or the dot3StatsFCSErrors object. The precise meaning of the count represented by an instance of this object is implementation-specific. In particular, an instance of this object may represent a count of receive errors on a particular interface that are not otherwise counted.
dot3StatsSymbolErrors	A count of frames for which transmission on a particular interface fails due to an internal MAC sublayer transmit error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of either the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object. The precise meaning of the count represented by an instance of this object is implementation-specific. In particular, an instance of this object might represent a count of transmission errors on a particular interface that are not otherwise counted.

5.6.2.2 ASAP Card Ether Ports Utilization Window

The Ether Ports Utilization window shows the percentage of Tx and Rx line bandwidth used by the Ethernet ports during consecutive time segments. The Utilization window provides an Interval menu that enables you to set time intervals of 1 minute, 15 minutes, 1 hour, and 1 day. Line utilization is calculated with the following formulas:

Rx = (inOctets + inPkts * 20) * 8 / 100% interval * maxBaseRate

Tx = (outOctets + outPkts * 20) * 8 / 100% interval * maxBaseRate

The interval is defined in seconds. The maxBaseRate is defined by raw bits per second in one direction for the Ethernet port (that is,1 Gbps). Table 5-7 provides the maxBaseRate for ASAP Ethernet cards.

Table 5-7 maxBaseRate for STS Circuits

STS	maxBaseRate
STS-1	51840000
STS-3c	155000000
STS-6c	311000000
STS-12c	622000000

Note Line utilization numbers express the average of ingress and egress traffic as a percentage of capacity.

5.6.2.3 ASAP Card Ether Ports History Window

The Ethernet Ether Ports History window lists past Ethernet statistics for the previous time intervals. The History window displays the statistics for each port for the number of previous time intervals as shown in Table 5-8. The listed parameters are defined in Table 5-6 on page 5-12.

Table 5-8 Ethernet History Statistics per Time Interval

Time Interval	Number of Intervals Displayed
1 minute	60 previous time intervals
15 minutes	32 previous time intervals
1 hour	24 previous time intervals
1 day (24 hours)	7 previous time intervals

5.6.2.4 ASAP Card POS Ports Statistics Parameters

The Ethernet POS Ports statistics window lists Ethernet POS parameters at the line level.

Table 5-9 defines the ASAP card Ethernet POS Ports parameters.

Table 5-9 ASAP Card POS Ports Parameters

Parameter	Meaning
Time Last Cleared	A time stamp indicating the last time statistics were reset.
Link Status	Indicates whether the Ethernet link is receiving a valid Ethernet signal (carrier) from the attached Ethernet device; up means present, and down means not present.
Framing Type	Layer 1 framing, HDLC or GFP
Rx Packets	Number of packets received since the last counter reset.
Tx Packets	Number of packets transmitted since the last counter reset.
Rx Octets	Number of bytes received (from the SONET/SDH path) prior to the bytes undergoing high-level data link control (HLDC) decapsulation by the policy engine.

Table 5-9 ASAP Card POS Ports Parameters (continued)

Parameter	Meaning
Tx Octets	Number of bytes transmitted (to the SONET/SDH path) after the bytes undergoing HLDC encapsulation by the policy engine.
Rx Shorts	Number of packets below the minimum packet size received.
Rx Runts	Total number of frames received that are less than 5 bytes.
Rx Longs	Number of received frames that exceed the maximum transfer unit (MTU).
Rx CRC Errors/HDLC Errors	HDLC errors received from SONET/SDH.
Rx Single Bit Errors	Number of received frames with single bit errors.
Rx Multi Bit Errors	Number of received frames with multibit errors.
Rx Type Invalid	Number of received frames with invalid type.
Rx Input Abort Packets	Number of received packets aborted before input.
Rx Input Drop Packets	Number of received packets dropped before input.

5.6.2.5 ASAP Card POS Ports Utilization Window

The POS Ports Utilization window shows the percentage of Tx and Rx line bandwidth used by the POS ports during consecutive time segments. The Utilization window provides an Interval menu that enables you to set time intervals of 1 minute, 15 minutes, 1 hour, and 1 day. Line utilization is calculated with the following formulas:

Rx = (inOctets * 8) / interval * maxBaseRate

Tx = (outOctets * 8) / interval * maxBaseRate

The interval is defined in seconds. The maxBaseRate is defined by raw bits per second in one direction for the Ethernet port (that is,1 Gbps). The maxBaseRate for ASAP cards is shown in Table 5-7 on page 5-16.

Note Line utilization numbers express the average of ingress and egress traffic as a percentage of capacity.

5.6.2.6 ASAP Card Ether Ports History Window

The Ethernet POS Ports History window lists past Ethernet POS Ports statistics for the previous time intervals. The History window displays the statistics for each port for the number of previous time intervals as shown in Table 5-8. The listed parameters are defined in Table 5-9 on page 5-16.

SNMP

This chapter explains Simple Network Management Protocol (SNMP) as implemented by the Cisco ONS 15600.

For SNMP setup information, refer to the *Cisco ONS 15600 Procedure Guide*.

Chapter topics include:

6.1 SNMP Overview

SNMP is an application-layer communication protocol that allows ONS 15600 network devices to exchange management information among these systems and with other devices outside the network. Through SNMP, network administrators can manage network performance, find and solve network problems, and plan network growth.

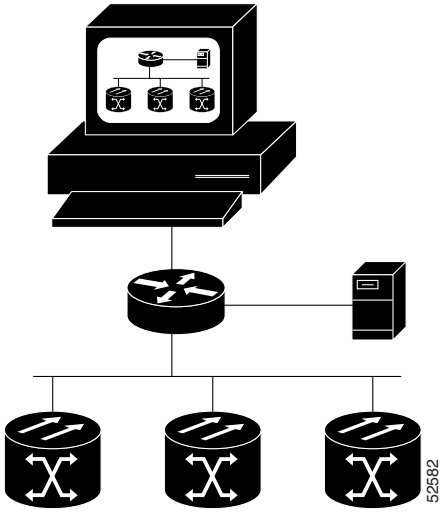
The ONS 15600 uses SNMP for asynchronous event notification to a network management system (NMS). ONS SNMP implementation uses standard Internet Engineering Task Force (IETF) management information bases (MIBs) to convey node-level inventory, fault, and performance management information for generic read-only management of SONET technologies. SNMP allows a generic SNMP manager such as HP OpenView Network Node Manager (NNM) or Open Systems Interconnection (OSI) NetExpert to be utilized for limited management functions.

The Cisco ONS 15600 supports SNMP Version 1 (SNMPv1) and SNMP Version 2c (SNMPv2c). These versions share many features, but SNMPv2c includes additional protocol operations and 64-bit performance monitoring support. This chapter describes both versions and gives SNMP configuration parameters for the ONS 15600.

Note The CERENT-MSDWDM-MIB.mib, CERENT-FC-MIB.mib, and CERENT-GENERIC-PM-MIB.mib in the CiscoV2 directory support 64-bit performance monitoring counters. The SNMPv1 MIB in the CiscoV1 directory does not contain 64-bit performance monitoring counters, but supports the lower and higher word values of the corresponding 64-bit counter. The other MIB files in the CiscoV1 and CiscoV2 directories are identical in content and differ only in format.

Figure 6-1 illustrates the basic layout idea of an SNMP-managed network.

Figure 6-1 Basic Network Managed by SNMP

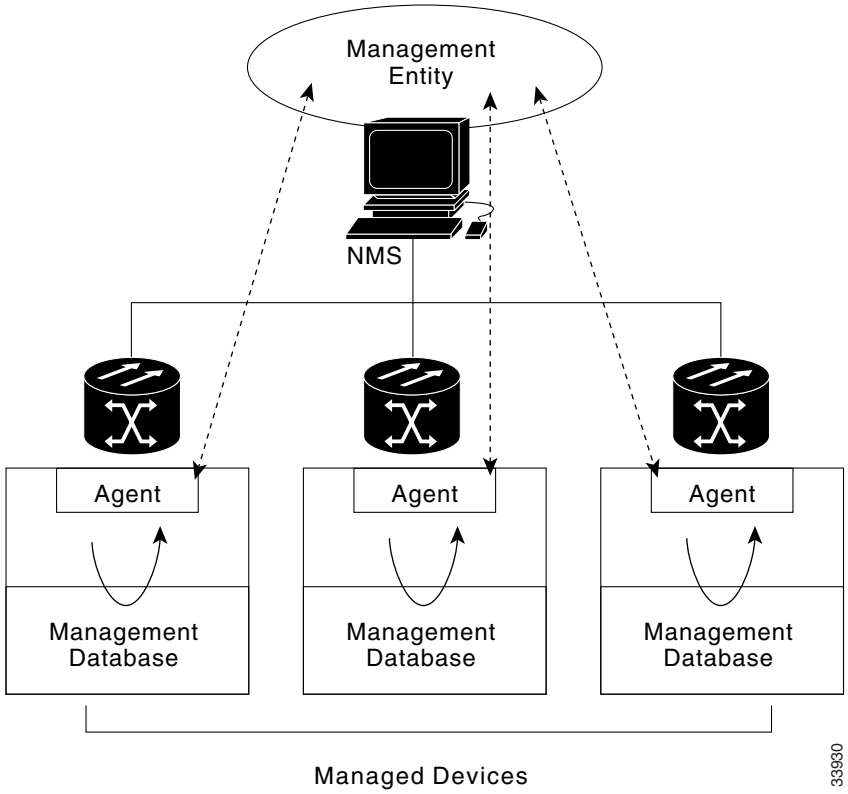


6.2 Basic SNMP Components

In general terms, an SNMP-managed network consists of a management system, agents, and managed devices.

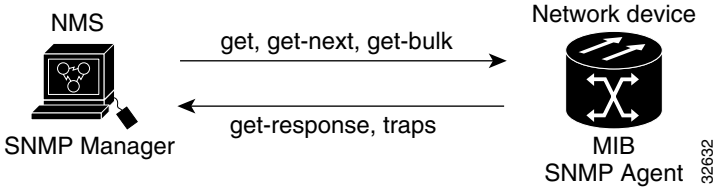
A management system such as HP OpenView executes monitoring applications and controls managed devices. Management systems execute most of the management processes and provide the bulk of memory resources used for network management. A network might be managed by one or more management systems. Figure 6-2 illustrates the relationship between the network manager, SNMP agent, and the managed devices.

Figure 6-2 Example of the Primary SNMP Components



An agent (such as SNMP) residing on each managed device translates local management information data, such as performance information or event and error information caught in software traps, into a readable form for the management system. Figure 6-3 illustrates SNMP agent get-requests that transport data to the network management software.

Figure 6-3 Agent Gathering Data from a MIB and Sending Traps to the Manager



The SNMP agent captures data from management information bases, or MIBs, which are device parameter and network data repositories, or from error or change traps.

A managed element—such as a router, access server, switch, bridge, hub, computer host, or network element (such as an ONS 15600)—is accessed through the SNMP agent. Managed devices collect and store management information, making it available through SNMP to other management systems having the same protocol compatibility.

6.3 SNMP External Interface Requirement

Since all SNMP requests come from a third-party application, the only external interface requirement is that a third-part SNMP client application can upload RFC 3273 SNMP MIB variables in the etherStatsHighCapacityTable, etherHistoryHighCapacityTable, or mediaIndependentTable.

6.4 SNMP Version Support

The ONS 15600 supports SNMPv1 and SNMPv2c traps and get requests. The ONS 15600 SNMP MIBs define alarms, traps, and status. Through SNMP, NMS applications can query a management agent for data from functional entities such as Ethernet switches and SONET multiplexers using a supported MIB.

Note ONS 15600 MIB files in the CiscoV1 and CiscoV2 directories are almost identical in content except for the difference in 64-bit performance monitoring features. The CiscoV2 directory contains three MIBs with 64-bit performance monitoring counters: CERENT-MSDWDM-MIB.mib, CERENT-FC-MIB.mib, and CERENT-GENERIC-PM-MIB.mib. The CiscoV1 directory does not contain any 64-bit counters, but it does support the lower and higher word values used in 64-bit counters. The two directories also have somewhat different formats.

6.5 SNMP Message Types

The ONS 15600 SNMP agent communicates with an SNMP management application using SNMP messages. Table 6-1 describes these messages.

Table 6-1 ONS 15600 SNMP Message Types

Operation	Description
get-request	Retrieves a value from a specific variable.
get-next-request	Retrieves the value following the named variable; this operation is often used to retrieve variables from within a table. With this operation, an SNMP manager does not need to know the exact variable name. The SNMP manager searches sequentially to find the needed variable from within the MIB.
get-response	Replies to a get-request, get-next-request, get-bulk-request, or set-request sent by an NMS.
get-bulk-request	Fills the get-response with up to the max-repetition number of get-next interactions, similar to a get-next-request.
set-request	Provides remote network monitoring (RMON) MIB.
trap	Indicates that an event has occurred. An unsolicited message is sent by an SNMP agent to an SNMP manager.

6.6 SNMP Management Information Bases

This section contains the following information:

- 6.6.1 IETF-Standard MIBs for ONS 15600, page 6-5 lists IETF-standard MIBs that are implemented in the ONS 15600 and shows their compilation order.
- 6.6.2 Proprietary ONS 15600 MIBs, page 6-6 lists proprietary MIBs for the ONS 15600 and shows their compilation order.

6.6.1 IETF-Standard MIBs for ONS 15600

Table 6-2 lists the IETF-standard MIBs implemented in the ONS 15600 SNMP agents.

First compile the MIBs in Table 6-2. Next, compile the MIBs in the order given in Table 6-3.

Caution If you do not compile MIBs in the correct order, one or more might not compile correctly.

Table 6-2 IETF Standard MIBs Implemented in the ONS 15600 System

RFC[1] Number	Module Name	Title/Comments
—	IANAifType-MIB.mib	Internet Assigned Numbers Authority (IANA) ifType
1213	RFC1213-MIB-rfc1213.mib	Management Information Base for Network
1907	SNMPV2-MIB-rfc1907.mib	Management of TCP/IP-based Internet: MIB-II Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2)
1253	RFC1253-MIB-rfc1253.mib	OSPF Version 2 Management Information Base
1493	BRIDGE-MIB-rfc1493.mib	Definitions of Managed Objects for Bridges (This defines MIB objects for managing MAC bridges based on the IEEE 802.1D-1990 standard between Local Area Network [LAN] segments.)
2819	RMON-MIB-rfc2819.mib	Remote Network Monitoring Management Information Base
2737	ENTITY-MIB-rfc2737.mib	Entity MIB (Version 2)
2233	IF-MIB-rfc2233.mib	Interfaces Group MIB using SNMPv2
2358	EtherLike-MIB-rfc2358.mib	Definitions of Managed Objects for the Ethernet-like Interface Types
2493	PerfHist-TC-MIB-rfc2493.mib	(Not applicable to the ONS 15600) Textual Conventions for MIB Modules Using Performance History Based on 15 Minute Intervals
2495	DS1-MIB-rfc2495.mib	Not applicable to the ONS 15600
2496	DS3-MIB-rfc2496.mib	Not applicable to the ONS 15600
2558	SONET-MIB-rfc2558.mib	Definitions of Managed Objects for the SONET/SDH Interface Type

Table 6-2 IETF Standard MIBs Implemented in the ONS 15600 System (continued)

RFC[1] Number	Module Name	Title/Comments
2674	P-BRIDGE-MIB-rfc2674.mib Q-BRIDGE-MIB-rfc2674.mib	Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions
3273	HC-RMON-MIB	The MIB module for managing RMON device implementations, augmenting the original RMON MIB as specified in RFC 2819 and RFC 1513, and RMON-2 MIB as specified in RFC 2021

1. RFC = Request for Comment

6.6.2 Proprietary ONS 15600 MIBs

Each ONS 15600 is shipped with a software CD containing applicable proprietary MIBs. The MIBs in Table 6-3 lists the proprietary MIBs for the ONS 15600.

Table 6-3 ONS 15600 Proprietary MIBs

MIB Number	Module Name
1	CERENT-GLOBAL-REGISTRY.mib
2	CERENT-TC.mib
3	CERENT-600.mib
4	CERENT-GENERIC.mib

Note If you cannot compile the proprietary MIBs correctly, log into the Cisco Technical Assistance Center (TAC) at http://www.cisco.com/techsupport or call Cisco TAC (800) 553-2447.

6.7 SNMP Trap Content

The ONS 15600 generates all alarms and events, such as raises and clears, as SNMP traps. These contain the following information:

- Object IDs that uniquely identify each event with information about the generating entity (the slot or port; synchronous transport signal [STS] and Virtual Tributary [VT], or bidirectional line switched ring [BLSR]).
- Severity and service effect of the alarm (Critical [CR], Major [MJ], Minor [MN], or event; Service-Affecting [SA] or Non Service Affecting [NSA]).
- Date and time stamp showing when the alarm occurred.

6.7.1 Generic and IETF Traps

Table 6-4 contains information about the generic threshold and performance monitoring MIBs that can be used to monitor any network element (NE) contained in the network. The ONS 15600 supports the generic IETF traps listed in Table 6-4.

Table 6-4 ONS 15600 Generic Traps

Trap	From RFC No. MIB	Description
coldStart	RFC1213-MIB	Agent up, cold start.
warmStart	RFC1213-MIB	Agent up, warm start.
entConfigChange	RFC2037/ ENTITY-MIB	The entLastChangeTime value has changed.

6.7.2 Variable Trap Bindings

Each SNMP trap contains variable bindings that are used to create the MIB tables. Variable bindings for the ONS 15600 are listed in Table 6-5. For each group (such as Group A), all traps within the group are associated with all of its variable bindings.

Table 6-5 15600 SNMPv2 Trap Variable Bindings

Group	Associated Trap Name(s)	(Variable Binding Number)	SNMPv2 Variable Bindings	Description
A	dsx1LineStatusChange (from RFC 2495, not applicable to ONS 15600 but applicable to other platforms)	(1)	dsx1LineStatus	This variable indicates the line status of the interface. It contains loopback, failure, received alarm and transmitted alarm information.
		(2)	dsx1LineStatusLastChange	The value of MIB II's sysUpTime object at the time this DS1 entered its current line status state. If the current state was entered prior to the last proxy-agent re-initialization, the value of this object is zero.
		(3)	cerentGenericNodeTime	The time that an event occurred.
		(4)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor (MN), Major (MJ), and Critical (CR). Service-affecting statuses are Service-Affecting (SA) and Non-Service Affecting (NSA).
		(5)	snmpTrapAddress	The address of the SNMP trap.

Table 6-5 15600 SNMPv2 Trap Variable Bindings (continued)

Group	Associated Trap Name(s)	(Variable Binding Number)	SNMPv2 Variable Bindings	Description
B	dsx3LineStatusChange (from RFC 2496, not applicable to ONS 15600 but applicable to other platforms)	(1)	dsx3LineStatus	This variable indicates the line status of the interface. It contains loopback state information and failure state information.
		(2)	dsx3LineStatusLastChange	The value of MIB II's sysUpTime object at the time this DS3/E3 entered its current line status state. If the current state was entered prior to the last reinitialization of the proxy-agent, then the value is zero.
		(3)	cerentGenericNodeTime	The time that an event occurred.
		(4)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor, Major, and Critical. Service-affecting statuses are Service-Affecting and Non-Service Affecting.
		(5)	snmpTrapAddress	The address of the SNMP trap.
C	coldStart (from RFC 1907)	(1)	cerentGenericNodeTime	The time that an event occurred.
	warmStart (from RFC 1907)	(2)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor (MN), Major (MJ), and Critical (CR). Service-affecting statuses are Service-Affecting (SA) and Non-Service Affecting (NSA).
	newRoot (from RFC)	(3)	snmpTrapAddress	The address of the SNMP trap (not supported for ONS 15600).
	topologyChange (from RFC)	—	—	(Not supported for ONS 15600)
	entConfigChange (from RFC 2737)	—	—	—
	authenticationFailure (from RFC 1907)	—	—	—

Table 6-5 15600 SNMPv2 Trap Variable Bindings (continued)

Group	Associated Trap Name(s)	(Variable Binding Number)	SNMPv2 Variable Bindings	Description
D	failureDetectedExternal ToTheNE (from CERENT-600-mib)	(1)	cerentGenericNodeTime	The time that an event occurred.
		(2)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor (MN), Major (MJ), and Critical (CR). Service-affecting statuses are Service-Affecting (SA) and Non-Service Affecting (NSA).
		(3)	cerentGenericAlarmObject Type	The entity that raised the alarm. The NMS should use this value to decide which table to poll for further information about the alarm.
		(4)	cerentGenericAlarmObject Index	Every alarm is raised by an object entry in a specific table. This variable is the index of objects in each table; if the alarm is interface-related, this is the index of the interface in the interface table.
		(5)	cerentGenericAlarmSlot Number	The slot of the object that raised the alarm. If a slot is not relevant to the alarm, the slot number is zero.
		(6)	cerentGenericAlarmPort Number	The port of the object that raised the alarm. If a port is not relevant to the alarm, the port number is zero.
		(7)	cerentGenericAlarmLine Number	The object line that raised the alarm. If a line is not relevant to the alarm, the line number is zero.
		(8)	cerentGenericAlarmObject Name	The TL1-style user-visible name that uniquely identifies an object in the system.
		(9)	cerentGenericAlarm AdditionalInfo	Additional information for the alarm object. In the current version of the MIB, this object contains provisioned description for alarms that are external to the NE. If there is no additional information, the value is zero.
		(10)	snmpTrapAddress	The address of the SNMP trap.

Table 6-5 15600 SNMPv2 Trap Variable Bindings (continued)

Group	Associated Trap Name(s)	(Variable Binding Number)	SNMPv2 Variable Bindings	Description
E	performanceMonitorThresholdCrossingAlert (from CERENT-600-mib)	(1)	cerentGenericNodeTime	The time that an event occurred.
		(2)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor (MN), Major (MJ), and Critical (CR). Service-affecting statuses are Service-Affecting (SA) and Non-Service Affecting (NSA).
		(3)	cerentGenericAlarmObjectType	The entity that raised the alarm. The NMS should use this value to decide which table to poll for further information about the alarm.
		(4)	cerentGenericAlarmObjectIndex	Every alarm is raised by an object entry in a specific table. This variable is the index of objects in each table; if the alarm is interface-related, this is the index of the interface in the interface table.
		(5)	cerentGenericAlarmSlotNumber	The slot of the object that raised the alarm. If a slot is not relevant to the alarm, the slot number is zero.
		(6)	cerentGenericAlarmPortNumber	The port of the object that raised the alarm. If a port is not relevant to the alarm, the port number is zero.
		(7)	cerentGenericAlarmLineNumber	The object line that raised the alarm. If a line is not relevant to the alarm, the line number is zero.
		(8)	cerentGenericAlarmObjectName	The TL1-style user-visible name that uniquely identifies an object in the system.
		(9)	cerentGenericThresholdMonitorType	This object indicates the type of metric being monitored.
		(10)	cerentGenericThresholdLocation	Indicates whether the event occurred at the near or far end.
		(11)	cerentGenericThresholdPeriod	Indicates the sampling interval period.
		(12)	cerentGenericThresholdSetValue	The value of this object is the threshold provisioned by the NMS.
		(13)	cerentGenericThresholdCurrentValue	—
		(14)	cerentGenericThresholdDetectType	—
		(15)	snmpTrapAddress	The address of the SNMP trap.

Table 6-5 15600 SNMPv2 Trap Variable Bindings (continued)

Group	Associated Trap Name(s)	(Variable Binding Number)	SNMPv2 Variable Bindings	Description
F	All other traps (from CERENT-600-MIB) not listed above	(1)	cerentGenericNodeTime	The time that an event occurred.
		(2)	cerentGenericAlarmState	The alarm severity and service-affecting status. Severities are Minor (MN), Major (MJ), and Critical (CR). Service-affecting statuses are Service-Affecting (SA) and Non-Service Affecting (NSA).
		(3)	cerentGenericAlarmObject Type	The entity that raised the alarm. The NMS should use this value to decide which table to poll for further information about the alarm.
		(4)	cerentGenericAlarmObject Index	Every alarm is raised by an object entry in a specific table. This variable is the index of objects in each table; if the alarm is interface-related, this is the index of the interface in the interface table.
		(5)	cerentGenericAalrmSlot Number	The slot of the object that raised the alarm. If a slot is not relevant to the alarm, the slot number is zero.
		(6)	cerentGenericAlarmPort Number	The port of the object that raised the alarm. If a port is not relevant to the alarm, the port number is zero.
		(7)	cerentGenericAlarmLine Number	The object line that raised the alarm. If a line is not relevant to the alarm, the line number is zero.
		(8)	cerentGenericAlarmObject Name	The TL1-style user-visible name that uniquely identifies an object in the system.
		(9)	snmpTrapAddress	The address of the SNMP trap.

6.8 Proxy Over Firewalls

SNMP and NMS applications have traditionally been unable to cross firewalls used for isolating security risks inside or from outside networks. Release 6.0 CTC enables network operations centers (NOCs) to access performance monitoring data such as RMON statistics or autonomous messages across firewalls by using an SMP proxy element installed on a firewall.

The application-level proxy transports SNMP protocol data units (PDU) between the NMS and NEs, allowing requests and responses between the NMS and NEs and forwarding NE autonomous messages to the NMS. The proxy agent requires little provisioning at the NOC and no additional provisioning at the NEs.

The firewall proxy is intended for use in a gateway network element-end network element (GNE-ENE) topology with many NEs through a single NE gateway. Up to 64 SNMP requests (such as get, getnext, or getbulk) are supported at any time behind single or multiple firewalls. The proxy interoperates with common NMS such as HP OpenView.

For security reasons, the SNMP proxy feature must be enabled at all receiving and transmitting NEs to function. For instructions to do this, refer to the *Cisco ONS 15600 Procedure Guide*.

6.8.1 Remote Monitoring

The ONS 15600 incorporates RMON to allow network operators to monitor Ethernet facility performance and events. Release 6.0 provides remote data communications channel (DCC) monitoring using 64-bit RMON over the DCC to gather historical and statistical Ethernet data. In general, ONS 15600 system RMON is based on the IETF-standard MIB RFC 2819 and includes the following five groups from the standard MIB: Ethernet Statistics, History Control, Ethernet History, Alarm, and Event.

6.8.2 64-Bit RMON Monitoring over DCC

The ONS 15600 DCC is implemented over the IP protocol, which is not compatible with Ethernet. The system monitors Ethernet equipment history and statistics using RMON. This release adds RMON DCC monitoring (for both IP and Ethernet) to monitor the health of remote DCC connections.

In R6.0, the implementation contains two MIBs for DCC interfaces. They are:

- cMediaIndependentTable—Standard, RFC 3273; the proprietary extension of the HC-RMON MIB used for reporting statistics
- cMediaIndependentHistoryTable—Proprietary MIB used to support history

6.8.2.1 Row Creation in MediaIndependentTable

The mediaIndependentTable is created automatically when the Ethernet facility is created on the ONS 15600 ASAP card.

6.8.2.2 Row Creation in cMediaIndependentHistoryControlTable

SNMP row creation and deletion for the cMediaIndependentHistoryControlTable follows the same processes as for the MediaIndependentTable; only the variables differ.

In order to create a row, the SetRequest PDU should contain the following:

- cMediaIndependentHistoryControlDataSource and its desired value
- cMediaIndependentHistoryControlOwner and its desired value
- cMediaIndependentHistoryControlStatus with a value of createRequest (2)

6.8.3 HC-RMON-MIB Support

For the ONS 15600, the implementation of the high-capacity remote monitoring information base (HC-RMON-MIB, or RFC 3273) enables 64-bit support of existing RMON tables. This support is provided with the etherStatsHighCapacityTable and the etherHistoryHighCapacityTable. An additional table, the mediaIndependentTable, and an additional object, hcRMONCapabilities, are also added for this support. All of these elements are accessible by any third-party SNMP client having RFC 3273 support.

6.8.4 Ethernet Statistics RMON Group

The Ethernet Statistics group contains the basic statistics monitored for each subnetwork in a single table called the etherStatsTable.

6.8.4.1 Row Creation in etherStatsTable

The SetRequest PDU for creating a row in this table should contain all the values needed to activate a row in a single set operation, and an assigned status variable to createRequest. The SetRequest PDU object ID (OID) entries must all carry an instance value, or type OID, of 0.

In order to create a row, the SetRequest PDU should contain the following:

- The etherStatsDataSource and its desired value
- The etherStatsOwner and its desired value (size of this value is limited to 32 characters)
- The etherStatsStatus with a value of createRequest (2)

The etherStatsTable creates a row if the SetRequest PDU is valid according to the above rules. When the row is created, the SNMP agent decides the value of etherStatsIndex. This value is not sequentially allotted or contiguously numbered. It changes when an Ethernet interface is added or deleted. The newly created row will have etherStatsStatus value of valid (1).

If the etherStatsTable row already exists, or if the SetRequest PDU values are insufficient or do not make sense, the SNMP agent returns an error code.

Note EtherStatsTable entries are not preserved if the SNMP agent is restarted.

6.8.4.2 Get Requests and GetNext Requests

Get requests and getNext requests for the etherStatsMulticastPkts and etherStatsBroadcastPkts columns return a value of zero because the variables are not supported by ONS 15600 Ethernet facilities.

6.8.4.3 Row Deletion in etherStatsTable

To delete a row in the etherStatsTable, the SetRequest PDU should contain an etherStatsStatus value of 4 (invalid). The OID marks the row for deletion. If required, a deleted row can be recreated.

6.8.5 History Control RMON Group

The History Control group defines sampling functions for one or more monitor interfaces in the historyControlTable. The values in this table, as specified in RFC 2819, are derived from the historyControlTable and etherHistoryTable.

6.8.5.1 History Control Table

The RMON is sampled at one of four possible intervals. Each interval, or period, contains specific history values (also called buckets). Table 6-6 lists the four sampling periods and corresponding buckets.

The historyControlTable maximum row size is determined by multiplying the number of ports on a card by the number of sampling periods. For example, an ONS 15600 E100 card contains 24 ports, which multiplied by periods allows 96 rows in the table. An E1000 card contains 14 ports, which multiplied by four periods allows 56 table rows.

Table 6-6 RMON History Control Periods and History Categories

Sampling Periods (historyControlValue Variable)	Total Values, or Buckets (historyControl Variable)
15 minutes	32
24 hours	7
1 minute	60
60 minutes	24

6.8.5.2 Row Creation in historyControlTable

The etherStats table and historyControl table are automatically created when the Ethernet facility is created. History size is based upon the default history bucket located in Table 6-6.

6.8.5.3 Get Requests and GetNext Requests

These PDUs are not restricted.

6.8.5.4 Row Deletion in historyControl Table

To delete a row from the table, the SetRequest PDU should contain a historyControlStatus value of 4 (invalid). A deleted row can be recreated.

6.8.5.5 Ethernet History RMON Group

The ONS 15600 implements the etherHistoryTable as defined in RFC 2819. The group is created within the bounds of the historyControlTable and does not deviate from the RFC in its design.

6.8.5.6 64-Bit etherHistoryHighCapacityTable

64-bit Ethernet history for the HC-RMON-MIB is implemented in the etherHistoryHighCapacityTable, which is an extension of the etherHistoryTable. The etherHistoryHighCapacityTable adds four columns for 64-bit performance monitoring data. These two tables have a one-to-one relationship. Adding or deleting a row in one table will effect the same change in the other.

6.8.5.7 Alarm RMON Group

The Alarm group consists of the alarmTable, which periodically compares sampled values with configured thresholds and raises an event if a threshold is crossed. This group requires the implementation of the event group, which follows this section.

6.8.5.8 Alarm Table

The NMS uses the alarmTable to determine and provision network performance alarmable thresholds.

6.8.5.9 Get Requests and GetNext Requests

These PDUs are not restricted.

6.8.5.10 Row Deletion in alarmTable

To delete a row from the table, the SetRequest PDU should contain an alarmStatus value of 4 (invalid). A deleted row can be recreated. Entries in this table are preserved if the SNMP agent is restarted.

6.8.5.11 Event RMON Group

The Event group controls event generation and notification. It consists of two tables: the eventTable, which is a read-only list of events to be generated, and the logTable, which is a writable set of data describing a logged event. The ONS 15600 implements the logTable as specified in RFC 2819.

6.8.5.12 Event Table

The eventTable is read-only and unprovisionable. The table contains one row for rising alarms and another for falling ones. This table has the following restrictions:

- The eventType is always “log-and-trap (4)”.
- The eventCommunity value is always a zero-length string, indicating that this event causes the trap to be despatched to all provisioned destinations.
- The eventOwner column value is always “monitor.”
- The eventStatus column value is always “valid(1)”.

6.8.5.13 Log Table

The logTable is implemented exactly as specified in RFC 2819. The logTable is based upon data that is locally cached in a controller card. If there is a controller card protection switch, the existing logTable is cleared and a new one is started on the newly active controller card. The table contains as many rows as provided by the alarm controller.