



Preface



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

This section provides the following information:

- [Revision History](#)
- [Document Objectives](#)
- [Audience](#)
- [Document Organization](#)
- [Related Documentation](#)
- [Document Conventions](#)
- [Obtaining Optical Networking Information](#)
- [Obtaining Documentation, Obtaining Support, and Security Guidelines](#)

Revision History

Date	Notes
August 2011	<ul style="list-style-type: none"> • Updated the table “OTU2_XP Line Settings” in the chapter “Provision Transponder and Muxponder Cards”. • Updated the table “FC Variables of the 40G-MXP-C, 40E-MXP-C, and 40ME-MXP-C Cards” in the chapter “Provision Transponder and Muxponder Cards”. • Updated “DLP-G629 Create a MEP Using CTC” in the chapter “Provision Transponder and Muxponder Cards”. • Updated the table “Ranges, Values, and Edit Options for the ANS Parameters” in the chapter “Node Reference”. • Updated the section “DLP-G681 Modify an ANS Parameter” in the chapter “Turn Up a Node”. • Updated the "Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Card Ethernet Settings" procedure in the chapter "Provision Transponder and Muxponder Cards". • Updated the sections “40E-TXP-C and 40ME-TXP-C Cards” and “40G-MXP-C, 40E-MXP-C, and 40ME-MXP-C Cards” in the chapter "Provision Transponder and Muxponder Cards".
September 2011	<ul style="list-style-type: none"> • Updated the key features section of TXP_MR_10G, TXP_MR_10E, TXP_MR_10E_C, TXP_MR_10E_L, TXP_MR_10EX_C, and OTU2_XP cards in the chapter “Provision Transponder and Muxponder Cards”. • Updated a note in “NTP-G198 Create 1+1 Protection for GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE Cards” in the chapter “Provision Transponder and Muxponder Cards”. • Replaced G.975.1 with G.975.1 I.7 and added a note in the "Enhanced FEC (E-FEC) Feature" section in the appendix, "Card Features". • Created a “Summary Pane” section in the chapter “Cisco Transport Controller Operation, Information, and Shortcuts”.

Date	Notes
October 2011	<ul style="list-style-type: none"> • Updated the “DLP-G384 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE QinQ Settings”, “DLP-G470 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Class of Service (CoS) Settings”, “DLP-G380 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Card Ethernet Settings”, and “DLP-G460 Enable MAC Address Learning on SVLANs for GE_XPE or 10GE_XPE Cards” procedures in the chapter "Provision Transponder and Muxponder Cards". • Updated the MPLS Inner Label and MPLS Outer Label range values in the table "GE_XPE Card PDH Ethernet Settings " in the chapter "Provision Transponder and Muxponder Cards". • Updated the “DLP-G471 Create a SVLAN or CVLAN Profile” in the chapter "Provision Transponder and Muxponder Cards". • Removed the Temperature table and updated the Temperature section with standard operating temperature values, removed the Environmental section from all the 15454 card specifications, and added "Environmental Exception" to “40G-MXP-C, 40E-MXP-C and 40ME-MXP-C Card Specifications” section in the appendix "Hardware Specifications." • Updated information related to IB_5G in the chapter “Provision Transponder and Muxponder Cards”. • Updated the figure “Scenario 3: Using Proxy ARP with Static Routing (ANSI and ETSI)” in the chapter “Management Network Connectivity”.
December 2011	<ul style="list-style-type: none"> • Updated the procedure “DLP-G76 Provision DCC/GCC Terminations” in the chapter “Create Optical Channel Circuits and Provisionable Patchcords”. • Updated the section “Termination Modes” in the chapter “Card Features”.
January 2012	<ul style="list-style-type: none"> • Added a note to step 3 in NTP-G144 in the chapter, “Turn Up a Node”. • Updated the card description for the RAMAN-CTP and RAMAN-COP cards in the chapter, “Provision Optical Amplifier Cards”. • Updated the section “DLP-G645 Create a Segment Using CTC” in the chapter “Provision Transponder and Muxponder Cards”.
February 2012	<ul style="list-style-type: none"> • Updated the procedure “DLP-G379 Change the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Card Mode” in the chapter “Provision Transponder and Muxponder Cards”. • Removed the autonegotiation support statement for ADM-10G card from the “Key Features” section and updated the Mode parameter in the table “ADM-10G Card Ethernet Settings” in the chapter “Provision Transponder and Muxponder Cards”. • Updated the procedure “DLP-G278 Provision the Optical Line Rate” in the chapter “Provision Transponder and Muxponder Cards”.
March 2012	<ul style="list-style-type: none"> • Updated the bandwidth parameter in the procedure, “DLP-G383 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Quality of Service Settings”. • Updated the section, “Multishelf Node” in the chapter, “ Node Reference”. • Added a note in the procedure “NTP-G242 Create an Internal Patchcord Manually” in the chapter “Turn Up a Node”.

Date	Notes
April 2012	<ul style="list-style-type: none"> • Updated the “Functional View for an Eight-Sided Node” diagram in the chapter “Node Reference”. • Added a note in the “Displaying Optical Power” section of chapter, “Node Reference”. • Updated the "Faceplate and Block Diagram" section of "GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Cards" in the chapter, “Provision Transponder and Muxponder Cards”. • Added a note in the procedure “DLP-G368 Change the 10G Multirate Transponder Trunk Wavelength Settings” in the chapter “Provision Transponder and Muxponder Cards”. • Added a new procedure "DLP-G713 Provision Administrative VLAN for Ports in a REP Segment Using CTC" and updated "DLP-G384 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE QinQ Settings" in the chapter, "Provision Transponder and Muxponder Cards".
May 2012	<ul style="list-style-type: none"> • Added a note in the procedure “DLP-G507 Enable a Different GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE Card as the Master Card” in the chapter “Provision Transponder and Muxponder Cards”. • Updated the section “Optical Channel Circuits” in the chapter “Create Optical Channel Circuits and Provisionable Patchcords”. • Updated the “Set Up SNMP” procedure in the chapter “Turn Up a Node”.
June 2012	Updated the section “OTU2_XP Card Configuration Rules” in the chapter “Provision Transponder and Muxponder Cards”.
July 2012	<ul style="list-style-type: none"> • Document Part Number revisioned to 78-19909-02 and a full-length book PDF was generated. • Updated the table “Gigabit Ethernet RMON Variables” in the chapter “Provision Transponder and Muxponder Cards”.
August 2012	<ul style="list-style-type: none"> • Updated the table “Platform and Software Release Compatibility for Control Cards” in the chapter “Install the Control Cards”. • Added a section “Important Notes Regarding Patchcord Installation” in the chapter “Provision Optical Amplifier Cards”. • Updated the section “TCC2P Card” in the chapter “Install the Control cards” and “Supported Node Configurations for OPT-RAMP-C and OPT-RAMP-CE Cards” in the chapter “Node Reference”.
September 2012	<ul style="list-style-type: none"> • Added the “NTP-G333 Add an ADM-10G Card to an Existing Topology” in the chapter “Provision Transponder and Muxponder Cards”. • Updated the procedures “NTP-G60 Create and Delete Overhead Circuits” and “DLP-G76 Provision DCC/GCC Terminations” in the chapter “Create Optical Channel Circuits and Provisionable Patchcords”. • Updated the procedure “NTP-G38 Provision OSC Terminations” in the chapter “Turn Up a Node”.

Date	Notes
October 2012	<ul style="list-style-type: none"> • Updated the “Circuit Provisioning” section of ADM-10G card in the chapter “Provision Transponder and Muxponder Cards”. • Updated the section, “Selecting the Circuit” in the chapter, “Node Reference”. • Added a note to “DLP -G264 Enable Node Security Mode” in the chapter, “Turn Up a Node”. • Added a caution to the section, “IP Addressing with Secure Mode Enabled” in the chapter, “Management Network Connectivity”.
December 2012	<ul style="list-style-type: none"> • Updated “NTP-G244 Perform the Four Degree ROADM Node with 40-SMR-2-C Cards Acceptance Test” in the chapter, “Perform Node Acceptance Tests”. • Updated the "TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE Card Reset" section in the chapter, "CTC Operation, Information, and Shortcuts". • Renamed chapter "Management Network Connectivity" to "Manage Network Connectivity".
January 2013	<ul style="list-style-type: none"> • Updated the procedure “DLP-G351 Delete a Card in CTC” in the chapter, “Turn Up a Node”.
February 2013	<ul style="list-style-type: none"> • In the chapter “Provision Transponder and Muxponder Cards,” added a note after “Table 11-22 Supported SDH Circuit Sizes of ADM-10G card on ONS 15454 SDH”. • In the chapter “Create Optical Channel Circuits and Provisionable Patchcords,” updated the procedures “NTP-G245 Create an Automatically Routed VCAT Circuit” and “NTP-G246 Create a Manually Routed VCAT Circuit”.
March 2013	<ul style="list-style-type: none"> • Updated step 6 in the task, "DLP-G381 Provision the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Layer 2 Protection Settings" in the chapter, “Provision Transponder and Muxponder Cards”. • Updated step 3 in the task, "DLP-G95 Set Up External or Line Timing" in the chapter, “Turn Up a Network”. • Added a note to the procedure, “NTP-G38 Provision OSC Terminations” in the chapter, “Turn Up a Node”.
April 2013	<ul style="list-style-type: none"> • Updated the section “External Firewalls” in the chapter “Manage Network Connectivity”. • Updated step 4 in the procedure, "DLP-G713 Provision Administrative VLAN for Ports in a REP Segment Using CTC" in the chapter, “Provision Transponder and Muxponder Cards”.

Date	Notes
May 2013	<ul style="list-style-type: none"> • Updated the "NTP-G38 Provision OSC Terminations" procedure in the chapter, "Turn Up a Node" and the "DLP-G605 Provision PPM and Port for the TNC and TNCE Cards" procedure in the chapter, "Install the Control Cards". • Modified a note in the procedure, "NTP-G104 Restore the Database" in the chapter, "Maintain the Node". • Updated the section, " REP Limitations and Restrictions" in the chapter, " Provision Transponder and Muxponder Cards". • Added the procedure, "NTP-G341 Set Up Secure Access to the ONS 15454 TL1" in the chapter, "Turn Up a Node".
June 2013	Added a footnote to the table, "MXP_MR_10DME_C or MXP_MR_10DME_L Ethernet Variables" in the chapter, "Provision Transponder and Muxponder Cards".
September 2013	Updated "DLP-G604 Install the TNC, TNCE, TSC, or TSCE Card" in the chapter, "Install the Control Cards".
October 2013	Created a new table "Revision Number Compatibility for Transponder and Muxponder Cards " in the chapter, "Provision Transponder and Muxponder Cards".
November 2013	Updated the section "Trunk Interface" of OTU2_XP card in the chapter "Provision Transponder and Muxponder Cards".
April 2014	The full length book-PDF was generated.
October 2014	Added "DLP-G771 Changing the WXC Line Thresholds for the 80-WXC-C Card." in the chapter, "Change DWDM Card Settings".

Document Objectives

The Cisco ONS 15454 DWDM Configuration Guide includes content previously found in two separate guides—Cisco ONS 15454 DWDM Reference Manual and Cisco ONS 15454 DWDM Procedure Guide.

The new Cisco ONS 15454 DWDM Configuration Guide, Release 9.3 and later releases will now include background and reference material, installation, turn up, provisioning, and maintenance procedures for the Cisco ONS 15454, Cisco ONS M2, and Cisco ONS M6 dense wavelength division (DWDM) systems. Use this document in conjunction with the appropriate publications listed in the [Related Documentation](#) section.

Audience

To use this publication, you should be familiar with Cisco or equivalent optical transmission hardware and cabling, telecommunications hardware and cabling, electronic circuitry and wiring practices, and preferably have experience as a telecommunications technician

Document Organization

Table 1 *Cisco ONS 15454 Configuration Guide Chapters*

Title	Summary
"Cisco ONS Documentation Roadmap for Release 9.3"	Provides a link to quickly access publications of Cisco ONS Release 9.3.
Chapter 1, "Install the Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 Shelf"	Explains how to install the Cisco ONS 15454 ETSI, Cisco ONS 15454 ANSI, Cisco ONS 15454 M2, and Cisco ONS 15454 M6 shelf assemblies.
Chapter 2, "Connecting the PC and Logging into the GUI"	Explains how to connect Windows PCs and Solaris workstations to the Cisco ONS 15454 and how to log into Cisco Transport Controller (CTC) software.
Chapter 3, "Install the Control Cards"	Explains how to install the control cards needed for the Cisco ONS 15454, Cisco ONS 15454 M2, and Cisco ONS 15454 M6 shelf assemblies.
Chapter 4, "Setup Optical Service Channel Cards"	Includes descriptions of OSCM and OSC-CSM cards. Also provides references to related procedures.
Chapter 5, "Provision Optical Amplifier Cards"	Includes descriptions of the optical amplifier cards. Also provides references to related procedures.
Chapter 6, "Provision Multiplexer and Demultiplexer Cards"	Includes descriptions of the 32-MUX-O, 32DMX-O, and 4MD-xx.x cards. Also provides references to related procedures.
Chapter 7, "Setup Tunable Dispersion Compensating Units"	Explains the Tunable Dispersion Compensating Units (T-DCU) used in Cisco ONS 15454 dense wavelength division multiplexing (DWDM) networks. Also provides references to related procedures.
Chapter 8, "Provision Protection Switching Module"	Includes descriptions of the Protection Switching Module (PSM) card used in Cisco ONS 15454 DWDM networks. Also provides references to related procedures.

Table 1 Cisco ONS 15454 Configuration Guide Chapters (Continued)

Title	Summary
Chapter 9, “Provision Optical Add/Drop Cards”	Includes descriptions of the AD-1C-xx.x, AD-2C-xx.x, AD-4C-xx.x, AD-1B-xx.x, and AD-4B-xx.x cards. Also provides references to related procedures.
Chapter 10, “Provision Reconfigurable Optical Add/Drop Cards”	Includes descriptions of the ROADM cards. Also provides references to related procedures.
Chapter 11, “Provision Transponder and Muxponder Cards”	Includes descriptions of transponder (TXP), muxponder (MXP), Xponder (GE_XP, 10GE_XP, GE_XPE and 10GE_XPE), and ADM-10G cards. Also provides references to related procedures.
Chapter 12, “Node Reference”	Explains the DWDM node types available for the ONS 15454. The DWDM node type is determined by the type of amplifier and filter cards that are installed in an ONS 15454. Also explains the DWDM automatic power control (APC), reconfigurable optical add/drop multiplexing (ROADM) power equalization, span loss verification, and automatic node setup (ANS) functions.
Chapter 13, “Network Reference”	Explains the DWDM network applications and topologies. Also provides network-level optical performance references.
Chapter 14, “Turn Up a Node”	Explains how to provision a single Cisco ONS 15454 DWDM node and turn it up for service.
Chapter 15, “Perform Node Acceptance Tests”	Provides test procedures to verify that installed cards are operating correctly in a Cisco ONS 15454 DWDM node.
Chapter 16, “Turn Up a Network”	Explains how to turn up and test a Cisco ONS 15454 DWDM network.
Chapter 17, “Create Optical Channel Circuits and Provisionable Patchcords”	Explains how to create Cisco ONS 15454 DWDM optical channel client connections (OCHCCs), optical channel network connections (OCHNCs), and optical trail circuits.
Chapter 18, “Monitor Performance”	Explains how to enable and view performance monitoring (PM) statistics for the Cisco ONS 15454.
Chapter 19, “Manage the Node”	Explains how to modify node provisioning for the Cisco ONS 15454 and perform common management tasks such as monitoring the DWDM automatic power control (APC) and span loss values.
Chapter 20, “Alarm and TCA Monitoring and Management”	Contains the procedures for viewing and managing the alarms and conditions on a Cisco ONS 15454.
Chapter 21, “Change DWDM Card Settings”	Explains how to change line, performance monitoring (PM), and threshold settings on Cisco ONS 15454 DWDM cards.
Chapter 22, “Manage Network Connectivity”	Provides an overview of ONS 15454 data communications network (DCN) connectivity. Cisco Optical Networking System (ONS) network communication is based on IP, including communication between Cisco Transport Controller (CTC) computers and ONS 15454 nodes, and communication among networked ONS 15454 nodes. The chapter shows common Cisco ONS 15454 IP network configurations and includes detailed data communications network (DCN) case studies.
Chapter 23, “Upgrade, Add, and Remove Cards and Nodes”	Provides procedures for adding and removing DWDM cards and nodes

Table 1 Cisco ONS 15454 Configuration Guide Chapters (Continued)

Title	Summary
Chapter 24, “Maintain the Node”	Provides procedures for maintaining the Cisco ONS 15454, including database backup and restoration, removing and replacing cards, viewing the ONS 15454 audit trail, and hardware maintenance procedures.
Chapter 25, “Security Reference”	Provides information about Cisco ONS 15454 users and security.
Chapter 26, “Timing Reference”	Provides information about Cisco ONS 15454 users and node timing.
Chapter 27, “SNMP”	Explains Simple Network Management Protocol (SNMP) as implemented by the Cisco ONS 15454.
Appendix A, “CTC Operation, Information, and Shortcuts”	Describes the Cisco Transport Controller (CTC) views, menus options, tool options, shortcuts, and table display options.
Appendix B, “Hardware Specifications”	Contains hardware specifications for the ONS 15454 ANSI and ETSI shelf assemblies and cards.
Appendix C, “Administrative and Service States”	Describes the administrative and service states for Cisco ONS 15454 DWDM cards, optical payload ports, out-of-band optical service channel (OSC) ports, optical channel network connections (OCHNCs), and transponder/muxponder cards and ports.
Appendix D, “Configuring GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE Cards Using PCLI”	Describes how to provision GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards using Pseudo Command Line Interface (PCLI).
Appendix E, “Pseudo Command Line Interface Reference”	Describes Pseudo-IOS command line interface (PCLI) for GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards.
Appendix F, “Fiber and Connector Losses in Raman Link Configuration”	Describes guidelines to be followed when configuring a Raman link.
Appendix G, “Card Features”	Describes the card features.
Appendix H, “Network Element Defaults”	Describes the defaults for the network element settings for Cisco ONS 15454, Cisco ONS 15454 M2, and Cisco ONS 15454 M6 platforms.

Related Documentation

Use the *Cisco ONS 15454 DWDM Configuration Guide* in conjunction with the following referenced Release 9.3 publications:

- *Release Notes for Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 DWDM, Release 9.3*
- *Cisco CPT and Cisco ONS 15454 Hardware Installation Guide*
- *Cisco ONS 15454 DWDM Troubleshooting Guide*
- *Cisco ONS SONET TL1 Command Guide*
- *Cisco ONS SONET TL1 Reference Guide*
- *Cisco ONS SONET TL1 Command Quick Reference Guide*
- *Cisco ONS SONET TL1 for Beginners*
- *Cisco ONS SDH TL1 Command Guide*
- *Cisco ONS SDH TL1 Reference Guide*
- *Cisco ONS SDH TL1 Command Quick Reference Guide*

- *Cisco ONS SDH TLI for Beginners*
- *Cisco Transport Planner – DWDM Operations Guide*

For an update on End-of-Life and End-of-Sale notices, refer to

http://www.cisco.com/en/US/products/hw/optical/ps2006/prod_eol_notices_list.html.

Document Conventions

This publication uses the following conventions:

Convention	Application
boldface	Commands and keywords in body text.
<i>italic</i>	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 käsittelyyn 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

FONTOS BIZTONSÁGI ELOÍRÁSOK

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

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

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 legemeskade. 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 آخر 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 συνηθισμένες 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 במגעלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כדי 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 ОБИЕ 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

Obtaining Optical Networking Information

This section contains information that is specific to optical networking products. For information that pertains to all of Cisco, refer to the [Obtaining Documentation, Obtaining Support, and Security Guidelines](#) section.

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 15454 system. It also includes translations of the safety warnings that appear in the ONS 15454 system documentation.

Cisco Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including Cisco ONS 15xxx product documentation, is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM is updated periodically and may be more current than printed documentation.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly [What's New in Cisco Product Documentation](#), which also lists all new and revised Cisco technical documentation.

Subscribe to the [What's New in Cisco Product Documentation](#) as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.