

Cisco ONS 15302 Quick Installation Guide

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- 1** Obtaining Documentation
- 2** Documentation Feedback
- 3** Cisco Product Security Overview
- 4** Obtaining Technical Assistance
- 5** Obtaining Additional Publications and Information
- 6** Quick Overview
- 7** Before Starting
- 8** Translated Warnings
- 9** Installation Materials for ONS 15302
- 10** Installing the ONS 15302
- 11** ONSCLI—ONS 15302 Command Line Interface
- 12** Initial Configuration



1 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/univercd/home/home.htm>

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

Documentation DVD

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

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

<http://www.cisco.com/en/US/partner/ordering/>

Cisco Marketplace:

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

Ordering Documentation

You can find instructions for ordering documentation at this URL:

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

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:
<http://www.cisco.com/en/US/partner/ordering/>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

2 Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

3 Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

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

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com



Tip

We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

<http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on>

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

4 Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

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

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

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

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



Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the Tools & Resources link under Documentation & Tools. Choose Cisco Product Identification Tool from the Alphabetical Index drop-down list, or click the Cisco Product Identification Tool link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting show command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

5 Obtaining Additional Publications and Information

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

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

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

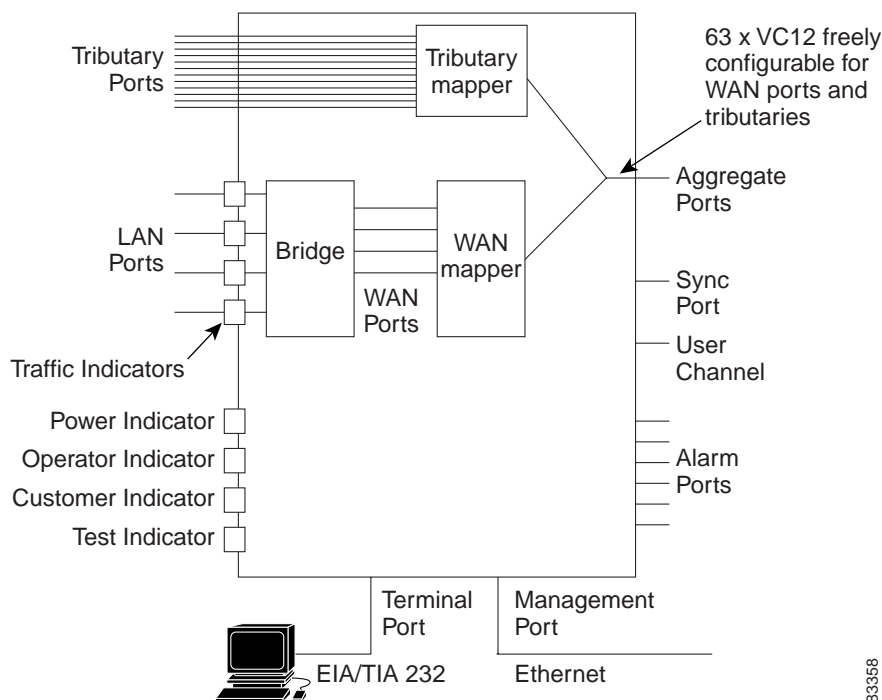
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

<http://www.ciscopress.com>

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:
<http://www.cisco.com/packet>
- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:
<http://www.cisco.com/go/iqmagazine>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:
<http://www.cisco.com/ipj>
- World-class networking training is available from Cisco. You can view current offerings at this URL:
<http://www.cisco.com/en/US/learning/index.html>

6 Quick Overview

Figure 1 ONS 15302 Functional Overview



The main R1.0 to R2.0 enhancement is the introduction of GFP/LCAS, which is an Ethernet framing standard to transport Ethernet packets in virtual containers through a SDH network. Additionally this edition introduces a new option for management connectivity, which will simplify design and configuration of a network supplied by Cisco. All features in this release are aligned with the new release of ONS 15305.

The ONS 15302 is an Integrated Access Device mainly intended for use in fibre optic networks, but can also be supplied as a hardware option with support for electrical STM-1. The ONS 15302 combine IP- and TDM-traffic, by running IP- along with TDM-channels inside an SDH STM-1 frame structure that can be easily carried across the network. The bandwidth of the IP-channel is configurable up to 100 Mb/s true “wire-speed”. The IP part of the ONS 15302 R2.0 consists of a L2/L3 switch. Each tributary interface (E1) is mapped into a VC-12 container while the WAN traffic can be transported via either nxVC-3 or nxVC12.

The ONS 15302 have room for a plug-in module, which adds more WAN-ports to achieve multiple connections with differentiated bandwidth per customer and/or service.

The ONS 15302 management solution is based on an embedded SNMP agent and a SNMP Craft utility (Cisco EdgeCraft) is supplied with the deliveries of ONS 15302. Minimum required to operate and configure the ONS 15302 is a simple VT100 command line interface (ONSCLI) for direct communication with the embedded SNMP agent.

7 Before Starting

This guide provides basic instructions for installing the Cisco ONS 15302 system. It contains two different parts:

- Installing the ONS 15302
- Configure the ONS 15302

Use this guide as a general reference when performing an installation.

For detailed installation instructions, refer to the most recent *Cisco ONS 15302 Installation and Operations Guide (Release 2.0)*.



Caution

Always use the supplied ESD wristband when working with an ONS 15302. Plug the wristband cable into the ESD jack of the rack assembly and ensure the rack assembly is properly grounded.

8 Translated Warnings

DC Power Disconnection Warning



Warning

Before performing any of the following procedures, ensure that power is removed from the DC circuit.

Waarschuwing	Voordat u een van de onderstaande procedures uitvoert, dient u te controleren of de stroom naar het gelijkstroom circuit uitgeschakeld is.
Varoitus	Varmista, että tasavirtapiirissä ei ole virtaa ennen seuraavien toimenpiteiden suorittamista.
Attention	Avant de pratiquer l'une quelconque des procédures ci-dessous, vérifier que le circuit en courant continu n'est plus sous tension.
Warnung	Vor Ausführung der folgenden Vorgänge ist sicherzustellen, daß die Gleichstromschaltung keinen Strom erhält.
Figyelem!	Mielőtt a következő eljárások bármelyikét végrehajtaná, feltétlenül szakítsa meg az egyenáramú áramkör tápellátását.
Avvertenza	Prima di svolgere una qualsiasi delle procedure seguenti, verificare che il circuito CC non sia alimentato.

Advarsel	Før noen av disse prosedyrene utføres, kontroller at strømmen er frakoblet likestrømkretsen.
Aviso	Antes de executar um dos seguintes procedimentos, certifique-se que desligou a fonte de alimentação de energia do circuito de corrente contínua.
¡Advertir	Antes de proceder con los siguientes pasos, comprobar que la alimentación del circuito de corriente continua (CC) esté cortada (OFF).
Varning!	Innan du utför någon av följande procedurer måste du kontrollera att strömförsörjningen till likströmskretsen är bruten.
Предупреждение	Перед выполнением любых описанных ниже действий убедитесь, что цепь питания постоянным током отключена.
警告	在进行下述任一操作过程之前，要确保将电源从直流电路上断开。
警告	次の手順を開始する前に、DC回路から電源が切断されていることを確認してください。

Main Disconnecting Device



Warning

The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Waarschuwing	De combinatie van de stekker en het elektrisch contactpunt moet te allen tijde toegankelijk zijn omdat deze het hoofdmechanisme vormt voor verbreking van de aansluiting.
Varoitus	Pistoke/liitinkohta toimii pääkatkaisumekanismina. Pääsy siihen on pidettävä aina esteettömänä.
Attention	La combinaison de prise de courant doit être accessible à tout moment parce qu'elle fait office de système principal de déconnexion.
Warnung	Der Netzkabelanschluß am Gerät muß jederzeit zugänglich sein, weil er als primäre Ausschaltvorrichtung dient.
Figyelem!	A dugaszolóaljzat és a dugasz együttesének mindig hozzáférhetőnek kell lennie, mivel ez szolgál főmegszakítóként.
Avvertenza	Il gruppo spina-presa deve essere sempre accessibile, poiché viene utilizzato come dispositivo di scollegamento principale.
Advarsel	Kombinasjonen støpsel/uttak må alltid være tilgjengelig ettersom den fungerer som hovedfrakoplingsenhet.
Aviso	A combinação ficha-tomada deverá ser sempre acessível, porque funciona como interruptor principal.

¡Advertencia!	El conjunto de clavija y toma ha de encontrarse siempre accesible ya que hace las veces de dispositivo de desconexión principal.
Varning!	Man måste alltid kunna komma åt stickproppen i uttaget, eftersom denna koppling utgör den huvudsakliga fråkopplingsanordningen.
Предупреждение	Штепсельная розетка всегда должна быть доступна, поскольку она служит основным устройством отключения.
警告	插销和插座必须便于随时插拔，因为它是主要断电设备。
警告	主要な切断装置となるので、プラグとソケットは常に手が届く場所に置く必要があります。

Laser Radiation Warning



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Waarschuwing

Losgekoppelde of losgeraakte glasvezels of aansluitingen kunnen onzichtbare laserstraling produceren. Kijk niet rechtstreeks in de straling en gebruik geen optische instrumenten rond deze glasvezels of aansluitingen.

Varoitus

Irrotetuista kuiduista tai liittimistä voi tulla näkymätöntä lasersäteilyä. Älä tuijota säteitä tai katso niitä suoraan optisilla välineillä.

Attention

Les fibres ou connecteurs débranchés risquent d'émettre des rayonnements laser invisibles à l'œil. Ne regardez jamais directement les faisceaux laser à l'œil nu, ni d'ailleurs avec des instruments optiques.

Warnung

Unterbrochene Fasern oder Steckerverbindungen können unsichtbare Laserstrahlung abgeben. Blicken Sie weder mit bloßem Auge noch mit optischen Instrumenten direkt in Laserstrahlen.

Figyelem!

A nem csatlakoztatott üvegszálak és csatlakozók láthatatlan lézersugárzást bocsáthatnak ki. Ne nézzen bele a sugárba, és ne nézze közvetlenül, optikai berendezések segítségével!

Avvertenza

Le fibre ottiche ed i relativi connettori possono emettere radiazioni laser. I fasci di luce non devono mai essere osservati direttamente o attraverso strumenti ottici.

Advarsel

Det kan forekomme usynlig laserstråling fra fiber eller kontakter som er frakoblet. Stirr ikke direkte inn i strålene eller se på dem direkte gjennom et optisk instrument.

Aviso

Radiação laser invisível pode ser emitida de conectores ou fibras desconectadas. Não olhe diretamente para os feixes ou com instrumentos ópticos.

¡Advertencia!

Es posible que las fibras desconectadas emitan radiación láser invisible. No fije la vista en los rayos ni examine éstos con instrumentos ópticos.

Varning! Osynlig laserstrålning kan avges från fränkopplade fibrer eller kontaktdon. Rikta inte blicken in i strålar och titta aldrig direkt på dem med hjälp av optiska instrument.

Предупреждение Отключенные световоды и разъемы могут испускать невидимое лазерное излучение. Не допускайте попадания лазерного луча в глаза и не смотрите на него через оптические приборы.

警告 断开的光纤或接头有可能发出不可见的激光辐射。请勿直视光束或直接用光学仪器观看光束。

警告 光ファイバ ケーブルまたはコネクタを取り外した状態では、目に見えないレーザー光が放射されていることがあります。光線をのぞきこんだり、光学機器を使用して光線を直接見たりしないでください。

Unterminated Fiber Warning



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.

Waarschuwing Er kunnen onzichtbare laserstralen worden uitgezonden vanuit het uiteinde van de onafgebroken vezelkabel of connector. Niet in de straal kijken of deze rechtstreeks bekijken met optische instrumenten. Als u de laseruitvoer met bepaalde optische instrumenten bekijkt (zoals bijv. een oogloep, vergrootglas of microscoop) binnen een afstand van 100 mm kan dit gevaar voor uw ogen opleveren.

Varoitus Päätämättömän kuitukaapelin tai -liittimen päästä voi tulla näkymätöntä lasersäteilyä. Älä tuijota sädeittä tai katso sitä suoraan optisilla välineillä. Lasersäteen katsominen tietyillä optisilla välineillä (esim. suurennuslasilla tai mikroskoopilla) 10 cm:n päästä tai sitä lähempää voi olla vaarallista silmille.

Attention Des émissions de radiations laser invisibles peuvent se produire à l'extrémité d'un câble en fibre ou d'un raccord sans terminaison. Ne pas fixer du regard le rayon ou l'observer directement avec des instruments optiques. L'observation du laser à l'aide certains instruments optiques (loupes et microscopes) à une distance inférieure à 100 mm peut poser des risques pour les yeux.

Warnung Eine unsichtbare Laserstrahlung kann vom Ende des nicht angeschlossenen Glasfaserkabels oder Steckers ausgestrahlt werden. Nicht in den Laserstrahl schauen oder diesen mit einem optischen Instrument direkt ansehen. Ein Betrachten des Laserstrahls mit bestimmten optischen Instrumenten, wie z.B. Augenhupen, Vergrößerungsgläsern und Mikroskopen innerhalb eines Abstands von 100 mm kann für das Auge gefährlich sein.

Figyelem! A lezáratlan optikai kábelek és a csatlakozók láthatatlan lézerefényt bocsáthatnak ki. Ne nézzen bele a sugárba, és ne nézze közvetlenül, optikai berendezések segítségével! Ha a kibocsátott lézert 100 mm-esnél kisebb távolságból nézi bizonyos optikai eszközökkel (például nagyítóval vagy mikroszkóppal), látáskárosodást szenvedhet.

Avvertenza	L'estremità del connettore o del cavo ottico senza terminazione può emettere radiazioni laser invisibili. Non fissare il raggio od osservarlo in modo diretto con strumenti ottici. L'osservazione del fascio laser con determinati strumenti ottici (come lupette, lenti di ingrandimento o microscopi) entro una distanza di 100 mm può provocare danni agli occhi.
Advarsel	Usynlig laserstråling kan emitte fra enden av den ikke-terminerte fiberkabelen eller koblingen. Ikke se inn i strålen og se heller ikke direkte på strålen med optiske instrumenter. Observering av laserutgang med visse optiske instrumenter (for eksempel øyelupe, forstørrelsesglass eller mikroskoper) innenfor en avstand på 100 mm kan være farlig for øynene.
Aviso	Radiação laser invisível pode ser emitida pela ponta de um conector ou cabo de fibra não terminado. Não olhe fixa ou diretamente para o feixe ou com instrumentos ópticos. Visualizar a emissão do laser com certos instrumentos ópticos (por exemplo, lupas, lentes de aumento ou microscópios) a uma distância de 100 mm pode causar riscos à visão.
;Advertencia!	El extremo de un cable o conector de fibra sin terminación puede emitir radiación láser invisible. No se acerque al radio de acción ni lo mire directamente con instrumentos ópticos. La exposición del ojo a una salida de láser con determinados instrumentos ópticos (por ejemplo, lupas y microscopios) a una distancia de 100 mm puede comportar lesiones oculares.
Varning!	Osynlig laserstrålning kan komma från änden på en oavslutad fiberkabel eller -anslutning. Titta inte rakt in i strålen eller direkt på den med optiska instrument. Att titta på laserstrålen med vissa optiska instrument (t.ex. lupper, förstoringsglas och mikroskop) från ett avstånd på 100 mm kan skada ögonen.
Предупреждение	Световоды и разъемы без заглушек могут испускать невидимое лазерное излучение. Не допускайте попадания лазерного луча в глаза и не смотрите на него через оптические приборы. Нельзя смотреть на источник лазерного излучения через некоторые оптические приборы (например увеличительное стекло, лупу или микроскоп) с расстояния ближе 100 мм: это может привести к травме органов зрения.
警告	无终端接头的光纤的末端或接头有可能发出不可见的激光辐射。请勿直视光束或直接用光学仪器观看。在 100 毫米的距离内用某些光学仪器（例如小型放大镜、放大镜和显微镜）观看激光输出有可能伤害眼睛。
警告	終端されていない光ファイバ ケーブルまたはコネクタの開口部からは、目に見えないレーザー光線が放射されていることがあります。光線をのぞきこんだり、光学機器を使用して直接見たりしないでください。ある種の光学機器（ルーペ、拡大鏡、顕微鏡など）を使用して 100 mm 以内の距離からレーザー光線を見ると、目を痛めることがあります。

Class 1 Laser Product Warning



Warning

Class 1 laser product.

Waarschuwing

Klasse-1 laser produkt.

Varoitus

Luokan 1 lasertuote.

Attention	Produit laser de classe 1.
Warnung	Laserprodukt der Klasse 1.
Figyelem!	Class 1 besorolású lézeres termék.
Avvertenza	Prodotto laser di Classe 1.
Advarsel	Laserprodukt av klasse 1.
Aviso	Produto laser de classe 1.
¡Advertencia!	Producto láser Clase I.
Varning!	Laserprodukt av klass 1.
Предупреждение	Лазерное устройство класса 1.
警告	这是 1 类激光产品。
警告	クラス1レーザー製品です。
	1급주위에서 제품.

9 Installation Materials for ONS 15302

Several items are needed to complete the installation of the ONS 15302. Some of these items are supplied by Cisco and some need to be supplied by the user. The following are the Cisco-supplied materials that are include in the 15302-SHIPKIT= (74-3173-01). The number in parentheses is the quantity of each included item.

- Bumper, 12mm diameter, 7 x 3.5 mm for table placing (4)
- 48-V 4-Pin power connector (1)
- Brackets L/R 19" (2)
- Brackets L/R ETSI (23") (2)
- ONSCLI cable (1)
- Blade terminal with screw and blade jack (1)
- ESD wrist strap (1)
- 230-V power cable (1)
- Registration card (1)
- Warranty card (1)

The following materials, tools, and equipment are recommended but are not supplied with the ONS 15302:

- Fuse panel
- Power cable (from fuse to power connector), #18 AWG (0.75 mm²) up to #16 AWG (1.5 mm²) with four rigid wire
- Yellow green flexible ground cable # 16 AWG (1.25 mm²) up to #14 AWG (2.50 mm²)
- Single-mode cable with SC connectors
- Fiber connector inspection instruments (Cisco recommends Video Microscopes)

- Cletop cleaning cassette (type A for SC connectors)
- Caps for optical connectors (SC)
- Labels
- #1 Phillips screwdriver
- #3 Phillips screwdriver
- 2.5-mm Allen key
- 4 screws, M6 (#12-24 x 3/4 pan head phillips) and nuts
- Voltmeter
- Power meter (for use with fiber optics only)
- Bit error rate (BER) tester

10 Installing the ONS 15302

To install the ONS 15302, complete the following procedures:

1. Installing the ONS 15302 in a 19-in. (485-mm) Rack
2. Installation in Restricted Access Locations
3. Installing 48-V Power and Ground to the ONS 15302
4. Install External Ground for 230 V Supply to the ONS 15302
5. Installing 230-V Power to the ONS 15302
6. Installing Fiber Patch Cords on the ONS 15302
7. Routing Fiber Patch Cords
8. Installing Electrical Cables to the ONS 15302
9. Routing Electrical Cables

Installing the ONS 15302 in a 19-in. (485-mm) Rack

The shelf assembly is allocated for installation in a 19-in. (485-mm) rack. The ONS 15302 is 17.5-in. (445-mm) wide by 9.4-in. (240-mm) deep by 1.7-in. (44-mm) high.

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- Step 1** Depending on access requirement, front or rear access, decide which side you want to use as the front side in the rack. Refer to Figure 2 and Figure 3.
- Step 2** Remove the four phillips screws on the left and right side of the ONS 15302 and install the brackets with the longer phillips screws that are provided.
- Step 3** Move the ONS 15302 to the desired rack position (Figure 2 and Figure 3).
- Step 4** Secure the ONS 15302 to the rack. Tighten the ONS 15302 with four screws (Figure 2 and Figure 3).

Figure 2 Install the ONS 15302 with the Connector Array in Front in a 19-in. Rack

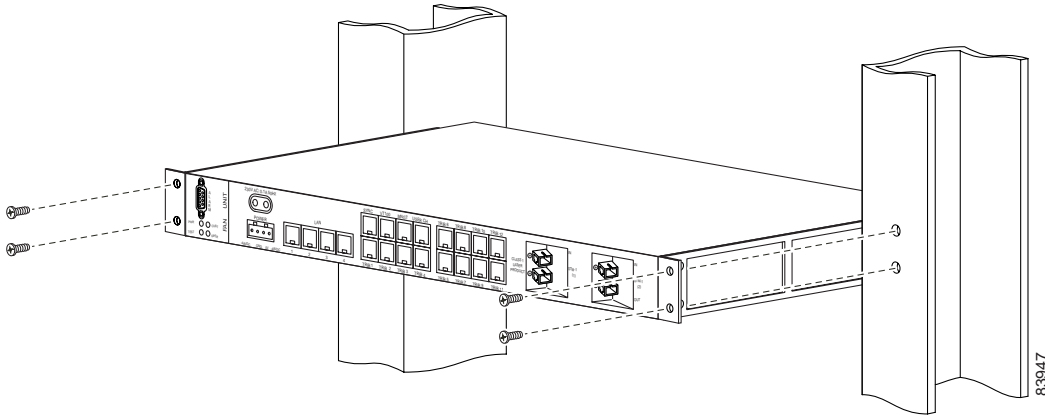
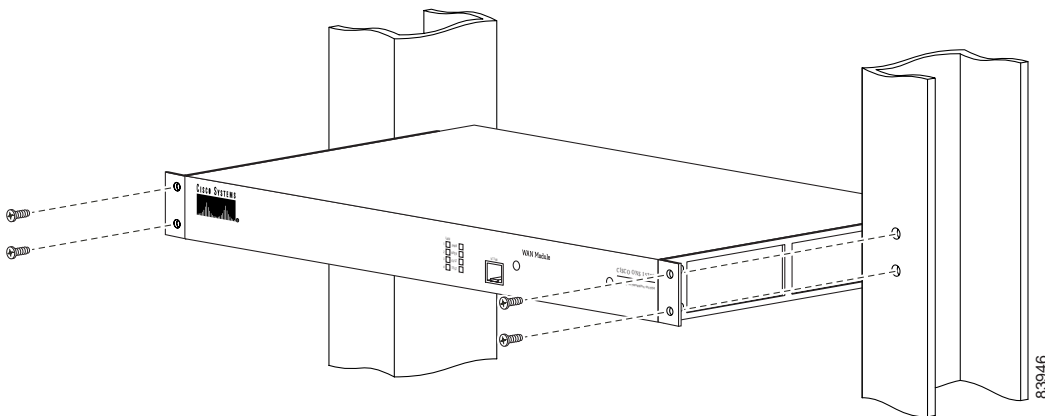


Figure 3 Install the ONS 15302 with the WAN Module in Front in a 19-in. Rack



Note You can also install the ONS 15302 in a ETSI 23.6-in. (600-mm) rack by using extension brackets to convert it. You need two 1-RU extension brackets to do this.

Installation in Restricted Access Locations

The ONS 15302 can be installed in a restricted access location (RAL) or outside of an RAL.

Definitions

Restricted Access Location

A restricted access location is a site location for equipment where both of the following paragraphs apply:

- Access can only be gained by service persons or by users who have been trained on the restrictions and the precautions for this specific site.
- Access is by means of at least one of the following, special tool, lock and key, or other means of security.

SELV Circuits

Safety Extra-Low Voltage (SELV) circuits are ports that have maximum DC working voltage level less than 60 V (42.4 VAC). In addition, the ports must not be connected to telecommunication networks as defined in EN 60950 (see CEI/ IEC 60950-1 2001-10, standard clause 1.2.13.8).

In practice, the electrical cables shall not exit the building. In addition, the electrical cables shall connect to equipment that meets one of the following requirements:

- Installed in the RAL.
- Does not have electrical cables that exit the building unless those ports are TNV (Telecommunication Networks Voltage) circuits.
- Has a written consent (or in other evidence) that its connecting port towards the SELV circuit port is not a telecommunication network.

Telecommunication Network

A telecommunication network is a metallically terminated transmission medium intended for communication between equipment that might be located in separate buildings, excluding:

- Main system for supply, transmission and distribution of electrical power, if used as a telecommunication transmission medium
- Cable distribution system
- SELV circuits connecting units of information technology equipment

TNV Circuit

A TNV circuit in the equipment to which the accessible area of contact is limited. A TNV circuit is so designed and protected that, under normal operating conditions and single fault conditions (see CEI/IEC 60950-1 2001-10, standard clause 1.4.14), the voltages do not exceed specified limit values.

Installation in Restricted Access Location

After installation in a RAL, such as in a telecommunications center, the ONS 15302 must be properly installed in a rack with brackets or in other ways properly connected to a safety ground. The ONS 15302 48-VDC power must not be powered from a source external to the RAL. The E1 interface used should be limited to SELV.

Installation Outside of a Restricted Access Location

After installation in a non-RAL location, the ONS 15302 48-V power and all communication ports used must be connected to SELV circuits, for example, a port on a personal computer or 10/100-Mbit Ethernet hub/router or other information technology (IT) equipment. The 48-VDC power must not exceed 60 VDC, and must be powered from a certified external power supply unit (PSU) or a battery unit (with no connection to -48 V telecommunications voltage).

The optical ports and 230-VAC power plug have no limitations regarding safety recommendations.

Installing 48-V Power and Ground to the ONS 15302

The power needs to be properly installed and grounded for operation of the ONS 15302. Figure 4 shows the location of the 48-V connector. Use the following procedure to install power and ground to the ONS 15302:



Warning

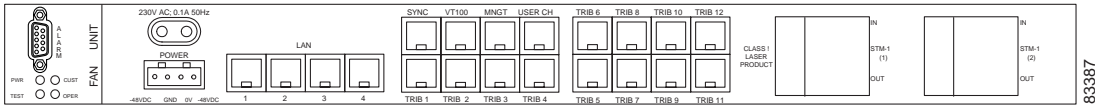
Before performing any of the following procedures, ensure that power is removed from the DC circuit.



Warning

The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Figure 4 ONS 15302 Faceplate (Connector Array)



- Step 1** Remove the A- and B-side fuses from the power distribution panel (PDP).
- Step 2** Make sure that -48 VDC (tolerance -36 to -72 VDC) power is present.
- Step 3** Press a slot screwdriver in the rectangular opening on top of the connector to open the inside contact (Figure 5).
- Step 4** Insert the wire in the contact and remove the screwdriver from the connector.
- Step 5** To verify that the wire is properly fix in the unit, pull on the wire.
- Step 6** Repeat Step 3 to Step 5 for the other three wires.
- Step 7** Affix the four wires on the connector using the two tie wraps to ensure strain relief (Figure 5).

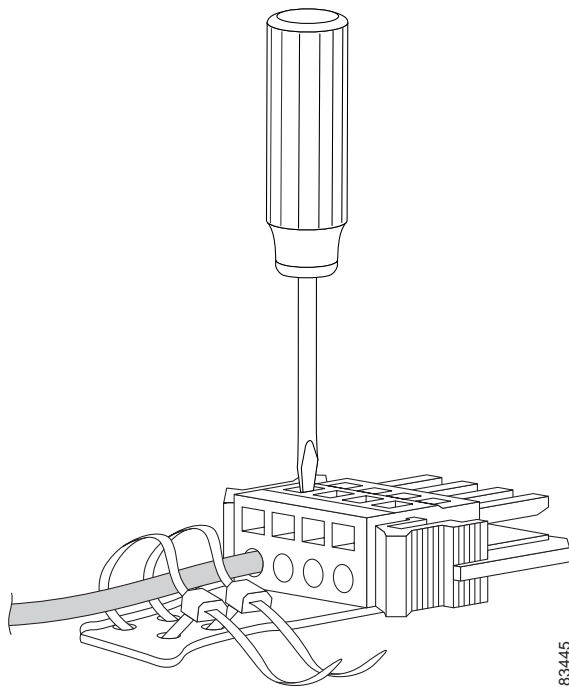


Note Be sure that the power cable is connected and verify the correct polarity. Check if is properly fused (1.5-A recommended).




Note Note that the ONS 15302 power cannot be switched off with a separate power switch.

Figure 5 Fixing the Wire into the Connector



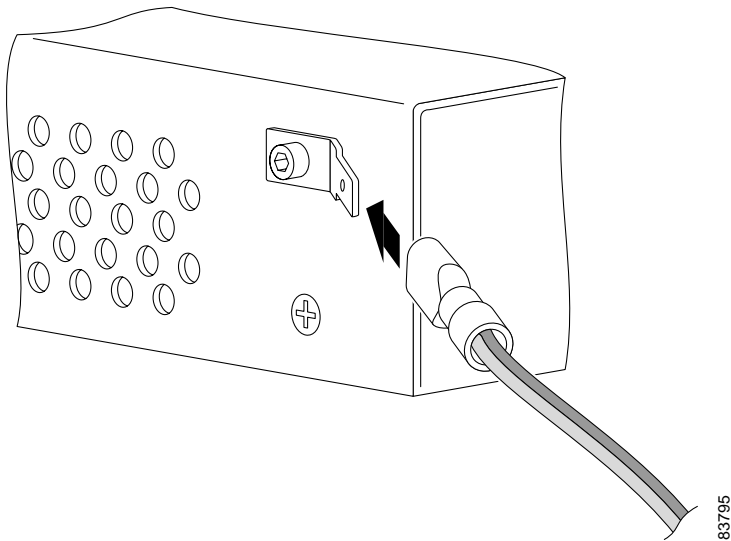
Install External Ground for 230 V Supply to the ONS 15302

 **Note** This ground connection is only used when the system is powered with 230 VAC and the system is not installed in a rack.

The ONS 15302 should be grounded to the rack ground via the external ground connector.

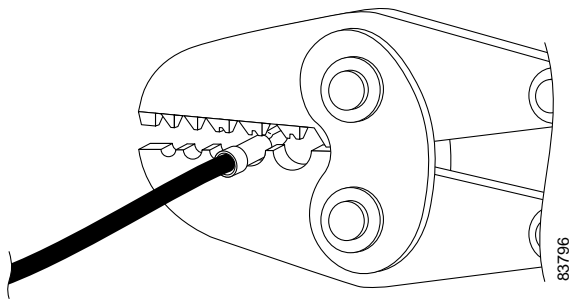
The location of the ground connector on the ONS 15302 is shown in Figure 6.

Figure 6 Ground Connector Position on the ONS 15302



- Step 1** Remove the Phillips screw from the ONS 15302 (Figure 6).
- Step 2** Fix the flat connector with the washer and the socket screw onto the ONS 15302 (Figure 6).
- Step 3** Insert the grounding cable in the flat cable plug and crimp the plug with a crimping tool (Figure 7).
- Step 4** Check whether the ground cable is fixed to the flat cable plug.
- Step 5** Connect the flat cable plug to the flat connector.
- Step 6** Route the ground cable securely to the local ground connector and connect it according to local site practice.


Figure 7 Connecting of the Ground Cable with a Crimp Tool



Installing 230-V Power to the ONS 15302

The ONS 15302 can also be used as a desk version. This means that it is possible to connect the ONS 15302 to a public power supply. Figure 4 shows the location of the 230-V connector.

 **Warning** The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

 **Note** Before installing power to the ONS 15302, be sure that you have the correct power supply recommendations (230 VAC 0.3 A 50Hz).

 **Note** Note that the ONS 15302 power cannot be switched off with a separate power switch.


Step 1 Connect the power cable to the 230-V connector on the ONS 15302.

Step 2 Connect the power cable to the 230-V power supply.

Step 3 To avoid accidents, route the power cable safely through the location.


Installing Fiber Patch Cords on the ONS 15302

The ONS 15302 is available in two different versions: protected and unprotected. In unprotected mode, transmit and receive fibers from the fiber termination rack are connected to STM-1 port 1. In protected mode, transmit and receive fibers from the fiber termination rack are connected to STM-1 port 1 and port 2, (Figure 4).

 **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.

 **Warning** Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

 **Warning** Class 1 laser product.

 **Note** Clean and inspect SC connectors prior to installation. Any dust particle or damaged connector will affect the optical transmission.

To avoid confusion in the future, label each end of the transmit and receive cables before installation. To install the fiber patch cords, gently push the SC connector into the connector.

For future use (in case of servicing) keep the dust caps in a clean location.

Routing Fiber Patch Cords

After connecting the fibers to and from the fiber termination rack, route the fibers through the rack. Wind the fibers to a loop with a diameter of approximately 3.15 in. (80-mm).

Installing Electrical Cables to the ONS 15302

The ONS 15302 has two different electrical connectors: one DS-9 connector for the alarm interface and 20 RJ-45 connectors for different functions, described in Table 1. The electrical ports on the ONS 15302 are shown in Figure 4.

To avoid confusion in the future, label each end of the cables before installation. To install the electrical cables, gently push the RJ-45 connector into the connector until it snaps in with a click. Screw in the screws from the connector of the alarm cable with a screwdriver.

Table 1 Recommended Cable Types for the ONS 15302

Port Name	Quantity	Recommended Cable Type	Used for
ALARM	1	UTP	External alarm management
LAN	4	UTP Category 5 for 100-Mbits/s (Mbps) Ethernet	LAN or WAN connections (10/100 Mbits/s [Mbps])
SYNC	1	UTP (The outer screen of the SYNC cable is always connected to ground [pin 6]).	Input and output synchronization
VT100 (CLI)	1	UTP (Category 1) supplied from Cisco	CLI connections (cable supplied by Cisco)
MNGT (Management)	1	UTP Category 5	Connection to a remote craft terminal
USER CH	1	UTP Category 1	User application
TRIB (Tributary)	12	STP	Tributary connections
STM-1	2 or 4	Single-mode fiber according to ITU-T G.652	Optical connections

Routing Electrical Cables

After connecting the cable to the ONS 15302, route the cable through the rack without damage it.

Installation Checklist for ONS 15302

The following list is an installation checklist. Use this list as a reference when performing an installation. For detailed installation instructions, refer to the *Cisco ONS 15302 Installation and Operations Guide (Release 2.0)*. To check the installation, verify the following items:

- ONS 15302 is mounted securely in the rack.
- Power runs to the ONS 15302.
- Transmit and receive fiber patch cords from the fiber termination are correctly connected to the ONS 15302.
- Fiber-optic patch cords route through the rack.
- Electrical cables route through the rack.
- Each cable is labeled.

11 ONSCLI—ONS 15302 Command Line Interface

Introduction to ONSCLI

ONSCLI is a line-oriented ASCII-based management interface to ONS 15302. It is used to issue simple commands—possibly with parameter—to access or modify the ONS 15302 configuration.

Accessing ONSCLI

ONSCLI is accessed via the VT100-port or via an IP connection (Telnet). The serial connection communications parameters are fixed (Table 2). VT100 terminal codes are used.

Table 2 EIA/TIA-232 Parameters

Parameter	Value
Speed	19200 bps
Data bits	8
Parity	None
Stop bits	1
Flow control	None

The VT100-port (Console port) for the ONS 15302 is provided using a RJ-45 connector.

Invoke an ONSCLI Session

An ONSCLI session is invoked by typing ONSCLI at the CLI terminal.

User authentication (a password containing between 8 and 12 ASCII characters, with no case sensitivity) is required, as the following session start-up sequence shows:

```
>
>ONSCLI

-----
                ONS 15302 Command Line Interface
-----

Enter ONSCLI password: *****

ONSCLI>
```



Note The default password for the ONS 15302 is ONSCLI.

Incorrect Password

Each password characters is echoed as *. An incorrect password is rejected with the message:

```
invalid password
```

After the password is rejected, the password prompt is re-issued.



Note The number of attempts is 3.

An authorized ONSCLI user has full access rights to the available management information.

Exit

The Exit command is used to terminate an ONSCLI session. The ONSCLI session is automatically terminated after a period of 30 minutes of inactivity. ONSCLI does not accept simultaneous sessions.

Syntax Rules

An ONSCLI command line begins with a prompt (issued by ONSCLI), which serves to indicate the current position in the command hierarchy.

An ONSCLI command is issued by typing the command followed by Enter. Optionally, and only at the lowest level in the command hierarchy, one or more parameters can also be supplied. These are identified by keywords. The command name, parameter keywords, and parameter values are delimited by one or more spaces. Command line editing features are listed in Table 3.



Note It is only necessary to type sufficient leading characters of the command name to avoid ambiguity—the same applies to keywords.

Table 3 *Command Line Editing Features*

Key	Result
Delete or Backspace	Erases the character in the command line.
Arrow left	Moves the cursor to the left side.
Arrow right	Moves the cursor to the right side.
Arrow Up	Recalls the previous command in command history.
Arrow Up	Recalls the previous command in command history.
Return or Enter	At the command line, processes a command.
..	Returns to the previous command level.
\	Goes to the top command level.
?	Issues a list of commands valid at the current level, or shows the command usage.

ONSCLI Commands are listed in Table 4

Table 4 *ONSCLI Commands*

Command	Result
Free	Shows VC-12 containers that are not yet utilized.
Used	Lists the VC-12 container(s) in use.
Status	Presents current device and port status.
Exit	Exits ONSCLI.

Some commands (in particular the show command) can potentially produce many lines of output. After a predetermined number of lines of output in response to a single command, the user is prompted to enter y(es) or n(o) to continue the output. The default line number limit is 23 and maximum is 998. For detailed information about the ONSCLI commands, refer to the *Cisco ONS 15302 Installation and Operations Guide (Release 2.0)*.

Basic Command Syntax

A basic command has the syntax shown in Example 1.

Example 1 *Basic Command Syntax*

```
<basic command> ::= [<path>]<command> [<parameter>]... <CR>
```

```

<path> ::= [\]<command>[\<command>]\..
<command> ::= <command name> |..
<parameter> ::= <spaces> <keyword>=<value> |?
<value> ::= <integer> |
            <choice> |
            <IP address> |
            <string> |
            <MAC address> |
            <NSAP address> |
            <time> |
            <date> |
            <KLM> |
            <portList> |
            <port>

<NSAP address> ::= <area address>:<system id>:<selector>
<portList> ::= <port>[,<port>]..
<areaAddressList> ::= <area address>[,<area address>]...

```

where:

```

<spaces> is a string of one or more ASCII spaces;

<integer> is a decimal integer in the range [m:n], where the values m and n are
context-dependent;

<choice> is a literal string, whose permissible values and their significance are
context-dependent and may be obtained by using the help (?) parameter;

<IP address> is an IP address of the form ddd.ddd.ddd.ddd, where d is a decimal digit.
Leading zeroes in each ddd may be omitted;

<string> is a string of graphical ASCII characters, excluding quotation marks (").
If the string contains one or more spaces, then it MUST be enclosed in
quotation marks. The maximum length of the string is context-dependent;

<MAC address> is exactly 12 hexadecimal digits;

<time> is a time-of-day of the form hh:mm:ss, where h, m and s are decimal digits;

<date> is a date of the form dd/mm/yy, where d, m and y are decimal digits;
<KLM> is a string of the form k.l.m, where k is a decimal digit in the range
[1:3], l is a decimal digit in the range [1:7], and m is a decimal digit
in the range [1:3].

<port> is a decimal integer;
<area address> is a hexadecimal string;
<system id> is a hexadecimal string;
<selector> is a hexadecimal string;

```

For a complete overview of the ONSCLI command hierarchy, please refer the Cisco ONS 15302 Installation and Operations Guide (Release 2.0).

The Help Command

The help command (?) displays all available commands at the current level, each with a short description. For example, typing? at the root level lists the commands that are available at this level, as shown in Example 2.

Example 2 Help Command

```

ONSCLI>?
*** current menu path:
<root>
*** valid commands:
Device:    Device configuration
Ports:     Port properties
Bridge:    Bridge/Spanning Tree Protocol settings
Router:    Router configuration

```

```

Security: Security settings
Statistics: Performance monitoring and statistics
Services: Utility functions
Alarms: Current alarms and alarm history
QoS: Quality of service
Running: Show Running Config
Exit: Exit from ONSCLI

```

Command Hierarchy

In the command hierarchy, the lowest level is represented by a basic command with one or more parameters.

If the help parameter (?) is supplied, then all other parameters are ignored and the basic command usage is displayed.

Table entries are accessed by introducing an additional command level giving access to the entire table. At this lowest level, the Add command (with the index and required table entries as parameters) can be used to add an element to the table and the Edit command can be used to replace an existing element in the table (if these operations are permitted on the table).

Similarly the Remove command (with the entry index as a parameter) can be used to remove an existing element from the table if this is permitted.

The Show command (with an entry index value as a parameter) displays the specified table entry. If no parameter is supplied with the Show command, the current contents of the entire table is displayed.

ONSCLI Error Messages

SNMP Errors

The general ONSCLI output string for SNMP errors is MIB access error. Additional SNMP error information might be printed depending on the return code (Table 5).

Table 5 Additional ONSCLI SNMP Error Messages

Error Message (Output String)	Description
No Such Object	Scalar or table entry not found
End Of MIB View	End of table reached
No Creation	Creation of new entry failed
Not Writable	Accessed instance write protected
Wrong Length	Wrong specified field length
Wrong Value	Wrong value used for specified field
Inconsistent Value	Wrong value used for specified field
Resource Unavailable	Instance status not free for update
General Error	No additional error info
No Write To CDB	Write to Flash failed
Instance Exists	Table entry already exists

Input Errors

Error messages due to mistyping or incorrect ONSCLI input format are shown in Table 6.

Table 6 ONSCLI Input Error Messages

Error Message (Output String)	Description
Unknown parameter specification	Input parameter incorrectly specified
Ambiguous parameter specification	Parameter value out of range

Table 6 *ONSCLI Input Error Messages (continued)*

Error Message (Output String)	Description
Multiple parameter specification	Input parameter specified twice
Missing parameter specification	Mandatory parameter missing
Incompatible parameter specification	Wrong combination of parameters
Missing value	Wrong formatted or empty input value
Invalid integer value	Wrong input integer value
Invalid choice value	Input value (set element name) not found
Invalid length of string value of	Input string too long
Badly-formed string value of	Input string incorrectly formatted
Invalid IP address	IP address incorrectly formatted
Invalid length of hex string	Length of hex string not according to input requirement
Invalid character in hex string	Hex value used to define a digit is out of range.
Invalid escape sequence in string	'\0' value detected inside the string
Bad value	Incorrectly formatted input value
Integer out of range	Input integer value is not within limits.
List too long	List of integers longer than 10
Badly-formed list	Incorrect integer value found in integer list
Table empty	No entries found in SNMP table
Element not in table	Specified entry not found in SNMP table
This command is not available in this release	Command not supported
No modification parameters found	Modification command with no modification values received

12 Initial Configuration

By following the guides below you should be able to do the most important configurations of ONS 15302.

Factory Preconfiguration

Since the ONS 15302 is a flexible product with a lot of possible network applications, the factory preconfiguration is limited when delivered. Ethernet ports 1 to 5 are members of VLAN 1, the aggregate (STM-1) is enabled, and one VC-12 container is allocated to the Ethernet WAN (port number 5). In addition, an entry in the SNMP community table is preconfigured so that when an IP address is assigned, the ONS 15302 is able to take advantage of the GUI element manager. This configuration persists, regardless of whether the WAN module is inserted or not.

Example 3 *Restore Factory Settings*

The factory settings can also be restored by use of the ONSCLI command:

```
ONSCLI>Device\Factory-Reset
```

This command will only restore the factory settings properly if the configuration is cleared before the command is given. To make sure reset configuration is done, following line appears on the system terminal when Factory-Reset command is given:

```
Are device configuration) erased (y/n)?
```

Important Commands

Follow the steps in this section to perform initial configuration of the ONS 15302. The following tasks are the most important tasks involved in the configuration of an ONS 15302:

- System-Mode
- Assign IP address
- Define SNMPv1 community
- Erase a community string

Assign an IP Address to the ONS 15302

The ONS 15302 supports remote management solutions by the means of Telnet and SNMP. The possibilities as regards connectivity can be rather advanced for the ONS 15302 so the only explained solution in this document is when directly connected to the management-port (MNGT). For more information please refer the *Cisco ONS 15302 Installation and Operations Guide* (Release 2.0).

To achieve one of the above mentioned management solutions it is necessary to assign an IP-address, subnet-mask and if required a default-gateway address must be defined.

System Mode

In ONS 15302 R2.0 an additional management mode, system mode is added. The System mode has two options, ip and ipunnumbered.

```
ONSCLI>...\Management-Configuration\sys?
```

Usage:

```
System-Mode  
[SYSTEM-MODE=<ip|ipunnumbered>]
```

System Mode - IP

```
ONSCLI>...\Management-Configuration\sys sys=ip  
Change management configuration, are you sure? (y/n)?
```

Example 4 Assign an IP-address:

If system mode is ip the command for IP configuration is:

```
ONSCLI>Device\Management-Configuration\Management-Port\IP-Configuration IP-ADDRESS=193.69.136.104,  
SUBNET-MASK=255.255.255.0.
```

System Mode - IP Unnumbered

```
ONSCLI>...\Management-Configuration\sys sys=ipunnum  
Change management configuration, are you sure? (y/n)?
```

Example 5 Assign an IP-address:

If system mode is ipunnumbered the command for IP configuration is:

```
ONSCLI>Device\Management-Configuration\IP-Configuration IP-ADDRESS=193.69.136.104, SUBNET-MASK=255.255.255.0.
```

Define SNMPv1 Community

Factory pre-configured community:

```
Manager: 0.0.0.0  
Community:public  
Access:Super  
Traps:Disabled
```

This is an insecure community, which enables all managers regardless of the IP-address for the SNMP manager to access the device with the community string “public”.

To add your own community string please use the following command:

```
ONSCLI>Security\Community-Table\add manager=10.0.0.20 community=admin access=super traps=enable  
"Enter"
```

Erase a Community String

To remove a community string the following command can be used:

```
ONSCLI>Security\Community-Table\remove manager=0.0.0.0 community=public  
"Enter"
```



Note Please see the Cisco EdgeCraft User Guide for further configuration and management of ONS 15302.

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