

Cisco Network Convergence System 2000 Series

The Cisco[®] Network Convergence System (NCS) family of products delivers an Evolved Programmable Network (EPN) that provides new levels of programmability, agility, and performance. Cisco NCS platforms let you simplify network operations, reduce network costs, and make your network more dynamic. All while providing the services and features your customers want in the Internet of Everything era. The Cisco NCS 2000 Series delivers an agile Flex Spectrum reconfigurable optical add/drop multiplexer (ROADM) platform that delivers touchless programmability and massive 100 Gbps scale and beyond for ultra-long-haul and metro performance.

Using the Cisco NCS 2000 Series you can deploy a simple, yet intelligent dense wavelength-division multiplexing (DWDM) network that can scale with operational ease. The Cisco NCS 2000 Series sets the industry benchmark for DWDM solutions.

Figure 1. Cisco NCS 2006 and NCS 2002



ROADM Leadership

A decade ago, the Cisco ONS 15454 MSTP brought ROADM technology mainstream, allowing service providers, governments, and enterprises to deploy a simple yet intelligent DWDM network that could scale with operational ease. The Cisco NCS 2000 Series evolves our ROADM portfolio by introducing Cisco nLight™ ROADM technology. By supporting touchless re-configurability via colorless, omni-directional, and contentionless add/drop, networks built using Cisco nLight, ROADM can instantly respond to new bandwidth requests, route around network failures, and dynamically adjust their topology. And they can do all of this without manual intervention. Highly meshed networks will benefit from support of up to 16 degrees per card, 32 degrees total, while flex spectrum capability dramatically improves network efficiency by flexibly optimizing system capacity versus reach. Ultimately, per-fiber pair capacities of up to 26 terabits per second can be achieved.

Next Generation Amplification

The Cisco NCS 2000 Series introduces hybrid amplifiers that are an optimal combination of Raman and erbium doped fiber amplifier (EDFA) technology. These are known as erbium doped Raman amplifiers (EDRAs).

EDRAs are compact, easy to deploy, and support an ultra-low noise figure critical for long distance, high bit-rate transmission. The platform supports a variety of optical amplifiers to meet varying network needs, including coherent-optimized EDFA's and high power counter and co-propagating Raman amplifiers.

Optimizing 100G

Continuing Cisco's innovation in 100G technology, Cisco nLight silicon now extends to the client-facing interface via the Cisco CPAK™ pluggable transceiver. The extremely compact dimensions and low power consumption of Cisco CPAK allow a single-slot 100G coherent DWDM line card with a standards-based 100GBASE-LR4 client interface, resulting in a superb system density of one 100G transponder per rack unit. State-of-the-art coherent digital signal processing technology with soft-decision forward error correction (SD-FEC) helps enable unregenerated distances of up to 6800 km.

Multi-Layer Network Intelligence

The Cisco NCS 2000 Series Wavelength Switched Optical Network (WSO) control plane architecture enhances GMPLS capabilities with awareness of wavelength properties and optical impairments, offering dynamic service provisioning and restoration over a touchless DWDM network. Using a Cisco nLight Control Plane, the Cisco NCS 2000 Series intelligently interacts with packet layer devices, automating service provisioning, eliminating human error, and allowing advanced failure recovery.

Smooth Platform Integration and Interoperability

The Cisco NCS 2000 Series transparently integrates with the Cisco NCS 4000 and Cisco NCS 6000 at the network element, network management, and control plane levels. The Cisco NCS 2000 Series also offers full support for ONS 15454 MSTP line cards, plus network level interoperability and unified management, helping to ensure a simple migration for customers with existing ONS 15454 MSTP networks.

Chassis

The Cisco NCS 2000 Series offers two chassis variants. The Cisco NCS 2006 chassis is 6RU in height and has 6 slots for service cards (Figure 3), whereas the NCS 2002 is 2RU tall and has 2 slots for service cards (Figure 4). Table 1 compares the features.

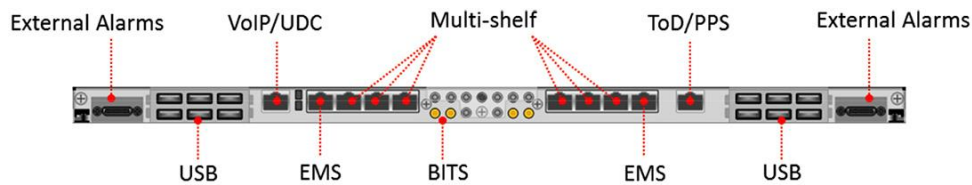
Table 1. Feature Comparison

Feature	Cisco NCS 2006	Cisco NCS 2002
Service slots	6	2
Shelf or node controller slots	2	1
Power modules supported	2	1
Multishelf management	Yes, up to 50 shelves	NA

You can configure the Cisco NCS 2000 Series chassis with DC or AC power inputs. The DC power module has connectors for both ANSI and ETSI style battery connections, making it universal. The AC power module has a single input and is universal in that it accepts a power input ranging from 110 to 240 VAC, 50 to 60 Hz.

Cisco NCS 2000 Series chassis have a built-in memory module to back up the software package, IP address, and circuit database, making simplex mode more attractive in cost-sensitive applications. This built-in backup memory improves mean time to repair (MTTR) and increases operational simplicity. Also available on Cisco NCS 2000 Series chassis is the ability to connect up to 12 passive devices for inventory management via USB. Some Cisco ONS 15216 and all Cisco NCS 2000 Series passive devices include ROM containing device information. When connected to the chassis ECU (Figure 2), these devices appear within Cisco Transport Controller inventory management. Multishelf management allows multiple (up to 50) NCS 2006 shelves to be managed as a single network element, with a single target identifier (TID) and IP address, facilitating the construction of nodes with a very large number of ROADM degrees and/or service cards.

Figure 2. Cisco NCS 2006 External Connection Unit



The Cisco NCS 2006 and Cisco NCS 2002 can be mounted into 19", 21", or 23" racks or cabinets. Brackets come with the shelf assembly and can also be ordered as spares. You can use optional air deflectors in 21" and 23" installations. Airflow is side-to-side, but you can add deflectors for front-to-back and front-to-front airflow. In the 21" configuration airflow could also be front-to-top. Additionally, an air plenum is available that can be used for front to back airflow in 19" rack configurations (Figures 3 and 4).

Figure 3. Cisco NCS 2006

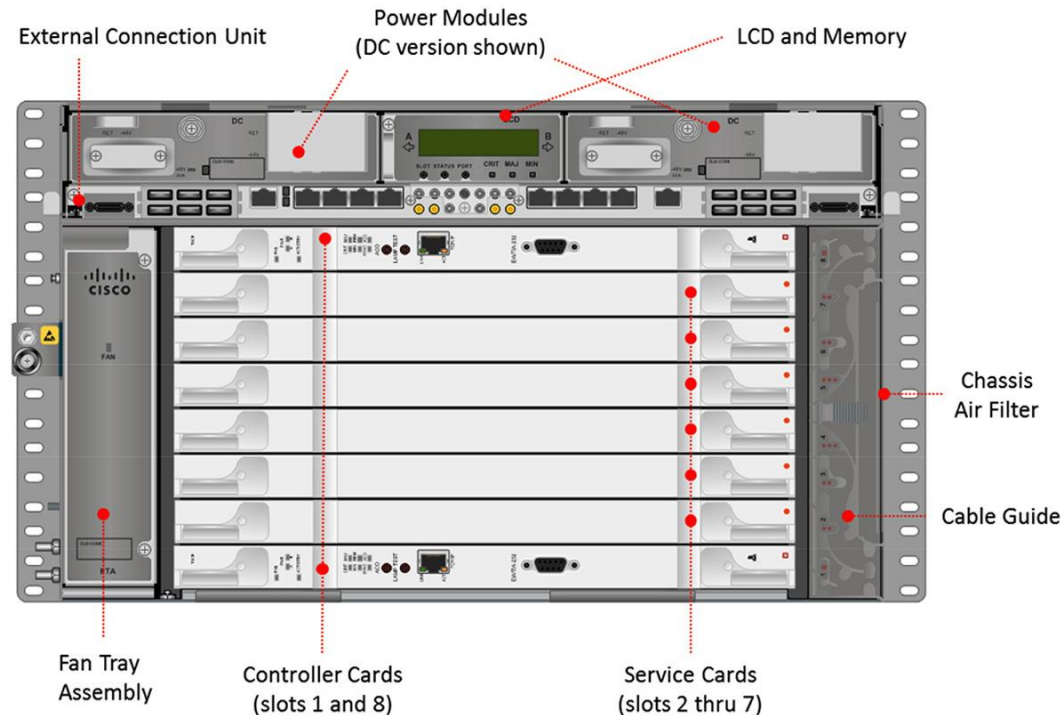
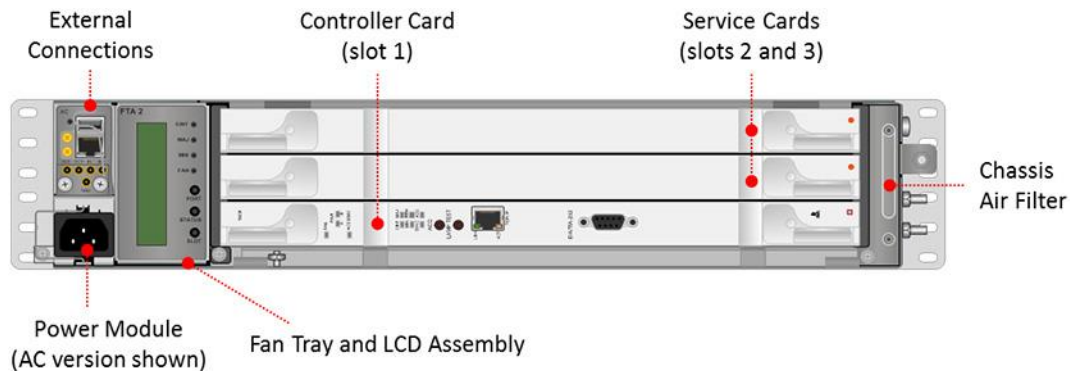


Figure 4. Cisco NCS 2002



Transport Shelf Controller and Transport Node Controller

The Cisco NCS 2000 Series uses the enhanced transport shelf controller (TSCE) and enhanced transport node controller (TNCE) of the Cisco ONS 15454 MSTP. The TSCE provides timing, communication, multi-shelf management, support for alarms, and the ability to connect to select passive devices for inventory management and control of the node. The TNCE optionally provides OSC termination, with support for Fast Ethernet and Gigabit Ethernet connections, in addition to OC-3/STM-1.

Management

The Cisco NCS 2000 Series is managed by Cisco Transport Controller and carries forward its existing features, including:

- Multilayer graphical network, node, and card visibility
- A-to-Z network-based service provisioning
- Graphical software wizards to simplify and speed user operations for such tasks as:
 - Initial network turn-up
 - Service provisioning
 - Network, node, and bandwidth upgrades

In addition to the integrated software features, the Cisco NCS 2000 Series is supported by an easy-to-use but powerful network design tool, Cisco Transport Planner. This tool is a user-friendly, Java-based application, fully developed and tested by Cisco for modeling and optimizing DWDM networks based on your network parameters.

Product Specifications

Tables 2 through 7 give specifications and other information about the Cisco NCS 2006 and 2002 platforms.

Table 2. Specifications for Cisco NCS 2006 Platforms

Module	Part Number
Common Equipment for the Cisco NCS 2006	
Shelf Assembly with brackets Chassis door (optional), and Deep Door (optional)	NCS2006-SA NCS2006-DR, NCS2006-DDR
Fan-Tray Assembly Chassis air filter	NCS2006-FTA NCS2006-FTF
External Connection Unit Integrated multishelf connection Cisco Element Management System connection UDC connection Voice-over-IP (VoIP) connection Alarms connection USB connection to passive Cisco ONS devices for inventory management Building Integrated Timing Supply (BITS) 1 and BITS 2 input and output (ANSI and ETSI) Time of Day (ToD)/Pulse Per Second (PPS)	NCS2006-ECU
LCD Status and Backup Memory	NCS2006-LCD
Power Options DC power module with ANSI and ETSI connectors AC power module with universal IEC power connector	NCS2006-DC, NCS2006-DC20 NCS2006-AC
Brackets and Air Deflectors (Optional spares) 19-in., 21-in., and 23-in. brackets 21-in. air deflectors 23-in. air deflectors NCS2006/M6 Front-to-Back air defl, 19, 21, 23 cabinets, 23 rack	15454-M6-BRKT 15454-M6-DEFL21 15454-M6-DEFL23 NCS2006-CAB-DEFL

Table 3. Specifications for Cisco NCS 2002 Platform

Module	Part Number
Common Equipment for the Cisco NCS2002	
Shelf Assembly with brackets Chassis door (optional), and deep door version	NCS2002-SA NCS2002-DR, NCS2002-DDR
Fan-Tray Assembly with LCD Status and Backup Memory Chassis air filter	NCS2002-FTA NCS2002-FTF
Power Options DC power module with ANSI power connector With element management solution connection With USB connection to passive Cisco device for inventory management With Building Integrated Timing Supply (BITS) 1 input and output DC power module with ETSI power connector With element management solution connection With USB connection to passive Cisco device for inventory management With BITS 1 input and output AC power module with universal IEC power connector With element management solution connection With USB connection to passive Cisco device for inventory management With BITS 1 input and output	NCS2002-DC NCS2002-DC-E NCS2002-AC

Module	Part Number
Brackets and Air Deflectors (Optional spares)	
19-in., 21-in., and 23-in. brackets	15454-M2-BRKT
21-in. air deflectors	15454-M2-DEFL21
23-in. air deflectors	15454-M2-DEFL23
NCS2002/M2 Front-to-Back air defl, 19, 21, 23 cabinets, 23 rack	NCS2002-CAB-DEFL
Wall-mount bracket	15454-M2-WM

Table 4. Common Equipment for the Cisco NCS 2006 and NCS 2002

Enhanced TNC card	15454-M-TNCE
Enhanced TSC card	15454-M-TSCE
Line-card blank	15454-BLANK
Cisco NCS 2006 Power Module blank filler	NCS2006-PWRFLR

Table 5. Cisco NCS 2000 Series Cables

Product Number	Description	Length	Gauge	Connector 1	Connector 2
15454-M-120TMGCBL(=)	BITS IN/OUT cable for ANSI	0.6 m	COAX 23 AWG	DIN 1.0/2.3	2 WIRE WRAP PINS
15454-M2-DCCBL-LE(=)	DC power cable for ETSI left exit	10 m	12 AWG	Power D-Sub 2 poles	None
NCS2006-DCCBL-LE(=)	DC power cable for ETSI left exit	10 m	6 AWG	Power D-Sub 3 poles	None
NCS2006-DCCBL-RE(=)	DC power cable for ETSI right exit	10 m	6 AWG	Power D-Sub 3 poles	None
15454-M-ACCBL2-L(=)	AC2 power cable ANSI 110Vac left exit	3 m	20A - 125V	C19	NEMA 5-20P
15454-M-ACCBL2-L2(=)	AC2 power cable ANSI 220Vac left exit	3 m	20A - 250V	C19	NEMA 6-20P
15454-M-ACCBL2-R(=)	AC2 power cable ANSI 110Vac right exit	3 m	20A - 125V	C19	NEMA 5-20P
15454-M-ACCBL2-R2(=)	AC2 power cable ANSI 220Vac right exit	3 m	20A - 250V	C19	NEMA 6-20P
15454-M-ALMCBL(=)	SCSI Alarm cable	20 m	28 AWG	Mini SCSI	None
15454-M-ALMCBL2(=)	SCSI Alarm cable limited to 8 inputs	20 m	24 AWG	Mini SCSI	None
15454-M-CBL2-LARG(=)	AC2 power cable - ARG left exit	3 m	16A - 250V	C19	IRAM 2073 - IEC 60884-1
15454-M-CBL2-LAUS(=)	AC2 power cable - AUS left exit	3 m	16A - 250V	C19	AS/NZS 3112: 2000
15454-M-CBL2L-CHI(=)	AC2 power cable - China left exit	3 m	16A - 250V	C19	GB2099.1/GB1002
15454-M-CBL2-L-EU(=)	AC2 power cable - EU left exit	3 m	16A - 250V	C19	CEE 7 STANDARD SHEET VII
15454-M-CBL2L-IND(=)	AC2 power cable - India left exit	3 m	16A - 250V	C19	IS 1293
15454-M-CBL2L-JPN(=)	AC2 power cable - Japan left exit	3 m	20A - 125V	C19	JIS C8303 & JIS C8306
15454-M-CBL2-LKOR(=)	AC2 power cable - KOR left exit	3 m	16A - 250V	C19	K60884-01
15454-M-CBL2-L-UK(=)	AC2 power cable - UK left exit	3 m	13A - 250V	C19	BS 1363/A & SS145/A
15454-M-CBL2-RARG(=)	AC2 power cable - ARG right exit	3 m	16A - 250V	C19	IRAM 2073 - IEC 60884-1
15454-M-CBL2-RAUS(=)	AC2 power cable - AUS right exit	3 m	16A - 250V	C19	AS/NZS 3112: 2000
15454-M-CBL2R-CHI(=)	AC2 power cable - China right exit	3 m	16A - 250V	C19	GB2099.1/GB1002
15454-M-CBL2-R-EU(=)	AC2 power cable - EU right exit	3 m	16A - 250V	C19	CEE 7 STANDARD SHEET VII
15454-M-CBL2R-IND(=)	AC2 power cable - India right exit	3 m	16A - 250V	C19	IS 1293
15454-M-CBL2R-JPN(=)	AC2 power cable - Japan right exit	3 m	20A - 125V	C19	JIS C8303 & JIS C8306

Product Number	Description	Length	Gauge	Connector 1	Connector 2
15454-M-CBL2-RKOR(=)	AC2 power cable - KOR right exit	3 m	16A - 250V	C19	K60884-01
15454-M-CBL2-R-UK(=)	AC2 power cable - UK right exit	3 m	13A - 250V	C19	BS 1363/A & SS145/A
15454-M-TMGCBLL(=)	BITS IN/OUT cable for ETSI	20 m	COAX 23 AWG	DIN 1.0/2.3	none
15454-M-USBCBL(=)	USB cable for passive devices	3 m	28#/1P + 24#/2C + AEB	USB "A" MALE	USB "A" MALE

Table 6. Cisco NCS 2006 Product Specifications

Item	Specification
Power Requirements	Maximum
AC power configuration	900W
DC power configuration	1400W
Power Consumption	
Fan-tray assemblies	120W
AC power module	15% of the sum of the max consumption of all populated cards
DC power modules	40W
Physical Dimensions	
Rack-mounting	19- or 23-in. (483- or 584-mm) EIA rack mounting 19-in. (483-mm) rack mounting or 21-in. (533-mm) cabinet mounting
Shelf Assembly	
Cisco NCS 2006 shelf assembly	(H x W x D): 10.45 x 17.45 x 11.02 in. (265.4 x 443.3 x 280 mm)
Environmental Conditions	
Storage temperature	-40 to 158°F (-40 to 70°C)
Operating temperature	
<ul style="list-style-type: none"> Normal Short-term¹ 	32 to 131°F (0 to 55°C) 23 to 131°F (-5 to 55°C)
Relative humidity	
<ul style="list-style-type: none"> Normal Short-term² 	5 to 85%, noncondensing 5 to 90% but not to exceed 0.024 kg water/kg of dry air

¹. Refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year.

². Refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.

Table 7. Cisco NCS 2002 Product Specifications

Item	Specification
Power Requirements	Maximum
AC power configuration	350W
DC power configuration	450W
Power Consumption	
Fan-tray assemblies	40W
AC power module	52W
DC power modules	30W
Physical Dimensions	
Rack mounting	19- or 23-in.(483- or 584-mm, respectively) EIA rack-mounting 19-in. (83-mm) rack-mounting or 21-in. (533-mm) cabinet mounting
Shelf Assembly	
Cisco NCS 2002 shelf assembly	(H x W x D): 3.46 x 17.18 x 11.02 in. (87.9 x 436.4 x 280 mm)

Item	Specification
Environmental Conditions	
Storage temperature	-40 to 158°F (-40 to 70°C)
Operating temperature	Normal: 32 to 131°F (0 to 55°C) Short-term ¹ : 23 to 131°F (-5 to 55°C)
Relative humidity	Normal: 5 to 85%, noncondensing Short-term ² : 5 to 90% but not to exceed 0.024 kg water/kg of dry air

Regulatory Standards Compliance

Table 8 summarizes regulatory standard compliance and agency approvals.

Table 8. Regulatory Standard Compliance and Agency Approvals

ANSI (Cisco NCS 2002) System	ETSI (Cisco NCS 2002) System
Supported Countries	
<ul style="list-style-type: none"> • Canada • United States • Korea 	<ul style="list-style-type: none"> • Europe • Latin America • Japan • Asia Pacific • Middle East and Africa
EMC (Class A)	
<ul style="list-style-type: none"> • ICES-003 Issue 4 (2004) • GR-1089-CORE, Issue 4 (Type 2 and Type 4 equipment) • GR-1089-CORE - Issue 03 (Oct 2002) (Objective O3-2 - Section 3.2.1 - Radiated Emissions requirements with all doors open) • FCC 47CFR15, Class A subpart B (2006) 	<ul style="list-style-type: none"> • EN 300 386 v1.3.3 (2005) and v1.4.1 (2007) • CISPR 22 - Fifth edition (2005-04) Class A and the amendment 1 (2005-07) • CISPR 24 - First edition (1997-09) and amendment 1 (2001-07) and amendment 2 (2002-10) • EN 55022:1998 Class A - CENELEC Amendment A2:2003 • EN 55024:1998 - CENELEC Amendment A1:2001 and Amendment A2:2003 • Resolution 237 (Brazil) • VCCI V-3/2006.04 • EN 61000-6-1:2001 • EN 61000-6-2:1999
Safety	
<ul style="list-style-type: none"> • UL/CSA 60950-1 2nd Ed. 2011 • GR-1089-CORE, Issue 6 (Type 2 and Type 4 equipment) 	<ul style="list-style-type: none"> • UL/CSA 60950-1 2nd Ed. 2011 • IEC 60950-1 2nd Ed. + Amendment 1:2009, EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 (with all country deviations)
Environmental	
<ul style="list-style-type: none"> • GR-63-CORE, Issue 3 (2006) 	<ul style="list-style-type: none"> • ETS 300-019-2-1 V2.1.2 (Storage, Class 1.1) • ETS 300-019-2-2 V2.1.2 (Transportation, Class 2.3) • ETS 300-019-2-3 V2.1.2 (Operational, Class 3.1E) • EU WEEE regulation • EU RoHS regulation
Power and Grounding	
<ul style="list-style-type: none"> • GR-1089-CORE, Issue 4 	<ul style="list-style-type: none"> • ETS 300 132-2
Optical Safety	
<ul style="list-style-type: none"> • EN or IEC-60825-2 Third edition (2004-06) • EN or IEC 60825-1 Consol. Ed. 1.2 - incl. am1+am2 (2001-08) • 21CFR1040 (2004/04) (Accession Letter and CDRH Report) • IEC-60825-2 Third edition (2004-06) • ITU-T G.664 (2006) 	

ANSI (Cisco NCS 2002) System	ETSI (Cisco NCS 2002) System
Miscellaneous	
<ul style="list-style-type: none"> • Acoustic noise <ul style="list-style-type: none"> ◦ GR-63-CORE, Issue 3 (2006) ◦ ETS 300 753 ed.1 (1997-10) • Mechanical shock and bumps <ul style="list-style-type: none"> ◦ AS1099- 2.27 • Customer-specific requirements <ul style="list-style-type: none"> ◦ AT&T Network Equipment Development Standards (NEDS) Generic Requirements, AT&T 802-900-260 ◦ SBC TP76200MP ◦ Verizon SIT.NEBS.NPI.2002.010 	

Ordering Information

To place an order, visit the Cisco Ordering homepage and refer to Tables 9 and 10. To download software, visit the Cisco Software Center: <http://www.cisco.com/cisco/software/type.html?mdfid=278281788&i=rm>.

Table 9. Cisco NCS 2006 Ordering Information

Product ID	Description
Common Equipment	
NCS2006-SA=	Shelf assembly with brackets, Cisco NCS 2006
NCS2006-DR=	Chassis Door, Cisco NCS 2006
NCS2006-DDR=	Chassis Deep Door, Cisco NCS 2006
NCS2006-FTA=	Fran Tray assembly, Cisco NCS 2006
NCS2006-FTF=	Chassis Air Filter, Cisco NCS 2006
NCS2006-DC=	30A DC Power Supply Module, Cisco NCS2006
NCS2006-DC20=	20A DC Power Supply Module, Cisco NCS2006
NCS2006-DC40=	NCS 2006 40A DC Power Filter
NCS2006-AC=	AC Power Supply Module, Cisco NCS2006
NCS2006-PWRFLR=	Power Module blank filler, Cisco NCS 2006
NCS2006-ECU=	External Connection Unit, Cisco NCS 2006
NCS2006-LCD=	LCD and Memory, Cisco NCS 2006
15454-M6-BRKT=	19-in./23-in. and 21-in. Brackets, Cisco NCS 2006
15454-M6-DEF21=	21-in. Air deflector, Cisco NCS 2006
15454-M6-DEF23=	23-in. Air deflector, Cisco NCS 2006
NCS2006-CAB-DEFL=	NCS2006/M6 Front-to-Back air defl, 19, 21, 23 cabinets, 23 rack
15454-M-SHIPKIT=	Shipkit, Cisco NCS 2006 and Cisco NCS2002
15454-M-TNCE-K9=	Enhanced Transport Node Controller
15454-M-TSCE-K9=	Enhanced Transport Shelf Controller
15454-BLANK=	Shelf slot-filler panel, fits any slot in NCS 2000 or Cisco ONS 15454 ANSI shelf assembly

Table 10. Cisco NCS 2002 Ordering Information

Product ID	Description
Common Equipment	
NCS2002-SA=	Shelf assembly, Cisco NCS2002
NCS2002-DR=	Chassis Door, Cisco NCS2002
NCS2002-DDR=	Chassis Deep Door, Cisco NCS2002
NCS2002-FTA=	Fran Tray assembly, Cisco NCS2002
NCS2002-FTF=	Chassis Air Filter, Cisco NCS2002
NCS2002-DC=	DC Power Supply Module, Cisco NCS2002
NCS2002-DC-E=	DC ETSI Power Supply Module, Cisco NCS2002
NCS2002-AC=	AC Power Supply Module, Cisco NCS2002
15454-M2-BRKT=	19"/23" and 21" Brackets, Cisco NCS2002
15454-M2-DEF21=	21" Air deflector, Cisco NCS2002
15454-M2-DEF23=	23" Air deflector, Cisco NCS2002
15454-M2-WM=	Wall mount bracket, Cisco NCS2002
15454-M-SHIPKIT=	Shipkit, Cisco NCS2006 and Cisco NCS2002
15454-M-TNCE-K9=	Enhanced Transport Node Controller
15454-M-TSCE-K9=	Enhanced Transport Shelf Controller
15454-BLANK=	Shelf slot-filler panel, fits any slot in Cisco ONS 15454 ANSI shelf assembly
15454-M-FILLER=	Shelf line-slot filler card, fits line-card slots in Cisco ONS 15454 M6 and NCS2002 chassis
15454-M-T-FILLER=	Shelf control-slot filler card, fits control-card slots in Cisco ONS 15454 M6 and NCS2002 chassis

Table 11. Cisco NCS 2000 Series Line Cards and Components

Product ID	Description
ROADM	
NCS2K-16-WXC-FS=	16-ports Wavelength X-Connect and Mux/Demux - Flex Spectrum
NCS2K-MF-1RU=	Mechanical Frame - 4 slots - 1 RU
NCS2K-MF-DEG-5=	Mesh Interconnection MF Unit - Up to 5 Degrees
NCS2K-MF-UPG-4=	Mesh Interconnection MF Unit - Upgrade - 4 Degrees
NCS2K-MF-16AD-CFS=	16-Ports Add/Drop MF Unit - Colorless and FlexSpectrum
NCS2K-MF-4X4-COFS=	4-Degree and 4-Ports Add/Drop MF Unit - CO and FlexSpectrum
NCS2K-MF-MPO-8LC=	MPO to 8x LC Fan-Out MF Unit - With Integrated Monitoring
EDRA	
NCS2K-EDRA1-26C=	21dBm Erbium Doped Raman Amplifier 26dB Span - C-Band
NCS2K-EDRA1-35C=	21dBm Erbium Doped Raman Amplifier 35dB Span - C-Band
NCS2K-EDRA2-26C=	21dBm Erbium Doped Raman Amplifier + Bst 26dB Span - C-Band
NCS2K-EDRA2-35C=	21dBm Erbium Doped Raman Amplifier + Bst 35dB Span - C-Band
Transponder	
NCS2K-100GS-CK-C	100G - CPAK Multi-Rate Line Card -SD FEC - C-Band
NCS2K-100G-CK-C=	100G CPAK Multi-Rate Line Card - CP-DQPSK - C-Band
NCS2K-100G-CK-C	100G CPAK Multi-Rate Line Card - CP-DQPSK - C-Band
NCS2K-100ME-CKC=	100G CPAK Multi-Rate Line Card - CP-DQPSK - Metro - C-Band
NCS2K-100ME-CKC	100G CPAK Multi-Rate Line Card - CP-DQPSK - Metro - C-Band
L-NCS2K-100G-FFU=	NCS 2K/MSTP License 100G LC - Full Feature Upg e-Delivery
L-NCS2K-100G-10G=	NCS 2K/MSTP License 100G MXP - 1x 10G MR Port e-Delivery

Warranty

The following warranty terms apply to the Cisco NCS 2006 as well as services you may use during the warranty period. Your formal warranty statement appears in the Cisco Information Packet that accompanies your Cisco product.

- Hardware warranty duration: Five years
- Software warranty duration: One year
- Hardware replacement, repair, or refund procedure: Cisco or our service center will use commercially reasonable efforts to ship a replacement part for delivery within 15 working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products may vary depending on customer location.

Product warranty terms and other information applicable to Cisco products are available at:

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

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