# Cisco NCS 2000 Deploying 96-Channel Flex Spectrum

**Varighed: 3 Days** **Kursus Kode: OPT201** **Version: 3.0** **Leveringsmetode: Virtuel deltagelse**

## Beskrivelse:

**Learn to configure optical networks using Cisco® Network Convergence System 2000 series Flex Spectrum platform.**

The Cisco NCS2000 Deploying 96-Channel Flex Spectrum (OPT201) v3.0 course shows you how to plan, configure, and control optical networks using the Cisco® Network Convergence System (NCS) 2000 series Flex Spectrum platform.
The course teaches you how to design Flex Spectrum networks with multi-degree Reconfigurable Optical Add-Drop Multiplexer (ROADM) multi-shelf nodes using the Cisco Transport Planner (CTP) software.
You'll learn how to:
- Install the Cisco NCS 2000 series hardware
- Configure an optical network and circuits using the Cisco Transport Controller (CTC) software
- Learn which components and configurations take advantage of and/or are required for the Flex Spectrum 96-channel feature
- Configure optical networks with multidegree ROADM multishelf nodes
- Configure optical networks with colorless, contentionless, omnidirectional, and MPO cross-connect advanced features
- Describe and configure the NCS 2000 400-Gbps Xponder line card

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Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

## Målgruppe:

This course is designed for technical professionals who need to know how to deploy a Cisco NCS 2000 Series Dense Wavelength-Division Multiplexing (DWDM) network with Flex Spectrum.
The primary audience for this course includes:
- Designers
- Systems engineers and implementation staff
- Network operations center personnel
- Technical support personnel who are involved with the deployment, operations, and maintenance of the Cisco NCS 2000 Series
- Channel partners and resellers

## Agenda:

- After taking this course, you should be able to:
- Describe the hardware and components required and used with the Flex Spectrum feature
- Design optical networks in the Cisco Transport Planner software
- Install the hardware, including multishelf nodes
- Perform node turn-up and create circuits using the Cisco Transport Controller software
- Configure optical networks with multidegree ROADM multishelf nodes
- Configure optical networks with colorless, contentionless, omnidirectional, and MPO cross-connect advanced features
- Describe and configure the NCS 2000 400-Gbps Xponder line card
- Add a node to an existing DWDM ring
- Describe the NCS 2000 Troubleshooting Guide
- Use the features and documentation with Transport Controller to perform maintenance, testing, and basic troubleshooting

## Forudsætninger:

## Test og certificering

Before taking this training, it is recommended to take the Cisco Optical Technology Foundations (OPTFND) training first. However, if you have some knowledge of optical fiber networking, single and multimode fibers, and small form-factor pluggables (SFPs), you should already have the necessary skills to complete this training.

- *None*

## Yderligere Kurser:

- *None Recommended*

## Indhold:

COURSE OUTLINE

Module 1: DWDM and Flex Spectrum Foundation

- Introducing DWDM Terminology and Components
- What Is DWDM? ? DWDM Shelf Common Components
- Multishelf Node Basics ? Exploring Flex Spectrum Features
- What Is Flex Spectrum?
- Additional Flex Spectrum Features Introducing Network Topologies and Nodes
- DWDM Topologies
- Five Common 96-Channel Node Types
- Introducing the Management Software and Documentation
- Software for Design, O;M, and Network Management
- NCS 2000 Series Documentation

Module 2: NCS 2000 Chassis and Cards

- Investigating the NCS 2000 Series Chassis and Common Equipment
- NCS 2000 Series Shelves for Flex Spectrum
- Common Equipment
- Investigating NCS 2000 Series Cards
- NCS 2000 Series Flex Spectrum Nodes and Cards
- Controller Cards ? Transponder, Muxponder, and Crossponder Cards
- Add/Drop (Multiplexer/Demultiplexer) Cards
- Amplifier Cards ? Miscellaneous Cards
- Passive Auxiliary Modules
- Flex Spectrum Chassis and Card Summary

Module 3: Design ROADM Networks with Transport Planner

- Getting Started with Transport Planner
- Using Transport Planner for Network Design
- Generating the Installation Package
- Designing a 2-Degree ROADM Network
- Cisco Transport Planner
- Examining the Connections

Module 4: Hardware Installation and Multishelf

- Installing NCS 2000 Series Hardware
- Equipment to Rack-Mount
- NCS 2015 and NCS 2006 Basic Installation Steps
- NCS 2002 Basic Installation Steps Configuring Multishelf Networks
- Multishelf Configuration Notes
- Provisioning 2015 Multishelf
- Provisioning 2006 Multishelf

Module 5: Node Turn-Up and Circuit Creation

- Performing Node Turn-Up in Transport Controller
- Four Phases of Multiservice Transport Platform (MSTP) Network Building
- Node Turn-Up Steps
- Creating Optical Channel Network Connection (OCHNC) Circuits
- OCHNC Basics and Prerequisites
- Create an OCHNC in a Wavelength Switched Optical Network (WSON)
- Post-Creation Verification
- Creating an Optical Channel Client Connection (OCHCC) Circuit
- OCHCC Creation Prerequisites
- OCHCC Circuit Results
- Install and Provision 10G Transponder Card
- Create Internal Connections/Patchcords
- Create an OCHCC Circuit

Module 6: Advanced Feature Networks and Circuits

- Creating Colorless and Contentionless Add/Drop Networks
- Colorless Port Basics
- Contentionless Port Basics
- Creating Colorless Demands
- Complex Colorless Designs
- Creating a Colorless OCHCC
- Creating Omnidirectional and Contentionless Add/Drop Networks
- Omnidirectional Add/Drop Basics
- Omnidirectional 4-, 8-, and 12-Degree Mesh
- 4-, 8-, and 12-Degree Omnidirectional and Colorless
- Contentionless Add/Drop
- Creating Mesh Nodes with MPO Cross-Connects
- Create a Mesh Node
- Create an 8-Degree Node
- Building Blocks for Mesh Nodes Verifying Installed Cabling Connections for 20-SMR-FS-CV Cards
- Connections Verification (CV) Feature
- Initial Setup for CV
- Install a Test Passive Unit

Module 8: Spectrum Switched Optical Network

- Examine the Terminology and Technology
- Supported SSON circuits types
- Provisioning GMPLS Optical Channels Using SSON
- Configuring SSON Circuits

LAB

OUTLINE

- Cisco Transport Controller
- Cisco Transport Planner
- Adding a Node to Existing DWDM Ring Network
- Optical Channel Network Connection (OCHNC) Circuits
- Optical Channel Client Connection (OCHCC) Circuits
- Colorless Ports and Circuits
- Contentionless Circuits
- Connection Verification
- Performing the Optical Time Domain Reflectometer (OTDR) Test
- Maintenance and Performance Monitoring
- MSTP Troubleshooting
- Configuring the 400XP card

- Monitor a Loss Verification Test
- Power Levels in MF Modules

Module 7: Testing, Maintenance, and Basic Troubleshooting

- Testing Optical Time Domain Reflectometers (OTDRs)
- OTDR Fundamentals
- Running OTDR
- Maintaining the Network, Shelf, and Cards
- Network Maintenance Features
- Node Maintenance Features
- Shelf Maintenance Features
- Card Maintenance and Performance Features
- Performing Basic Troubleshooting
- Troubleshooting Guide Layout
- Hierarchy of Alarms
- Using Functional View

## Flere Informationer:

For yderligere informationer eller booking af kursus, kontakt os på tlf.nr.: 44 88 18 00

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