



Customer Training Catalog

Training Programs

Transmission Network Product Technology Training



HUAWEI
HUAWEI Learning Service
2015



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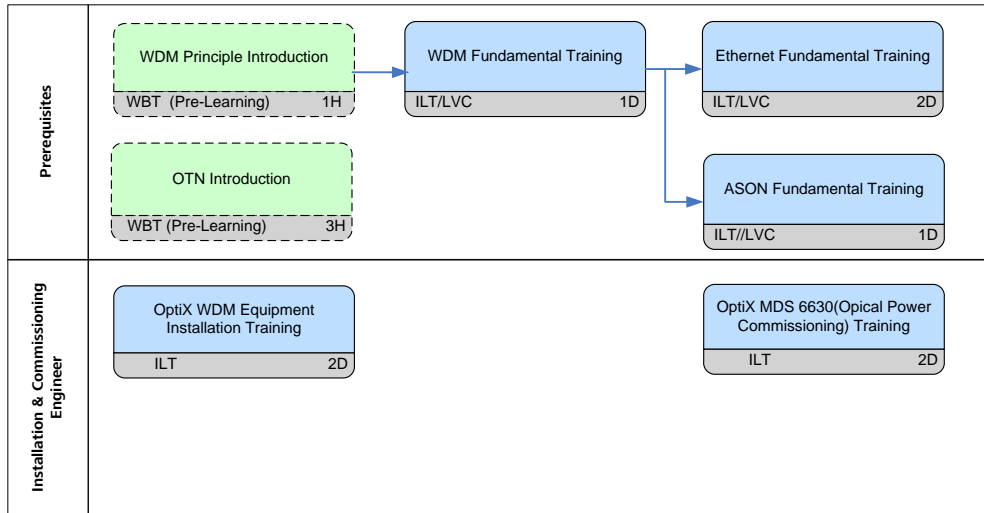
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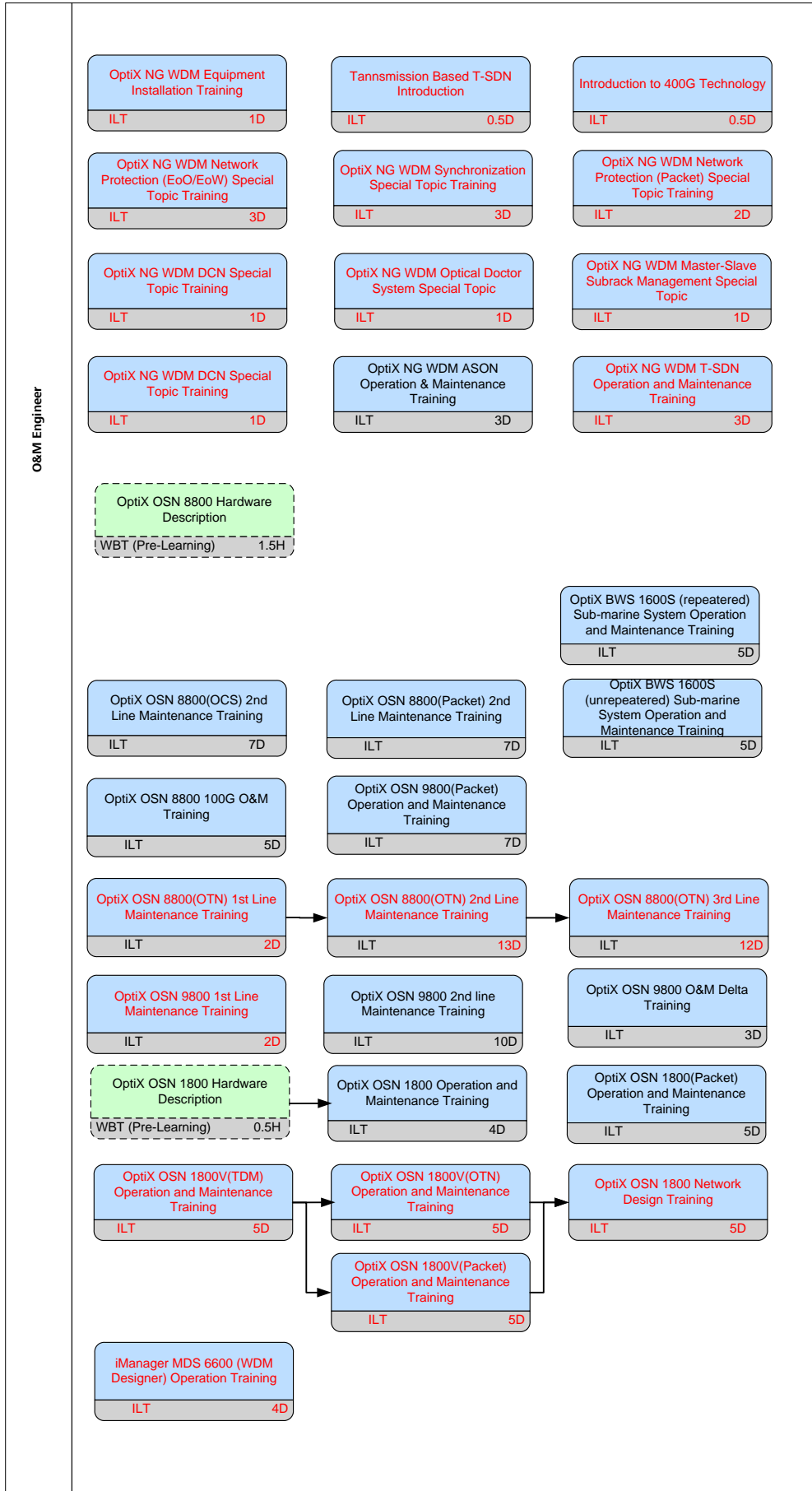


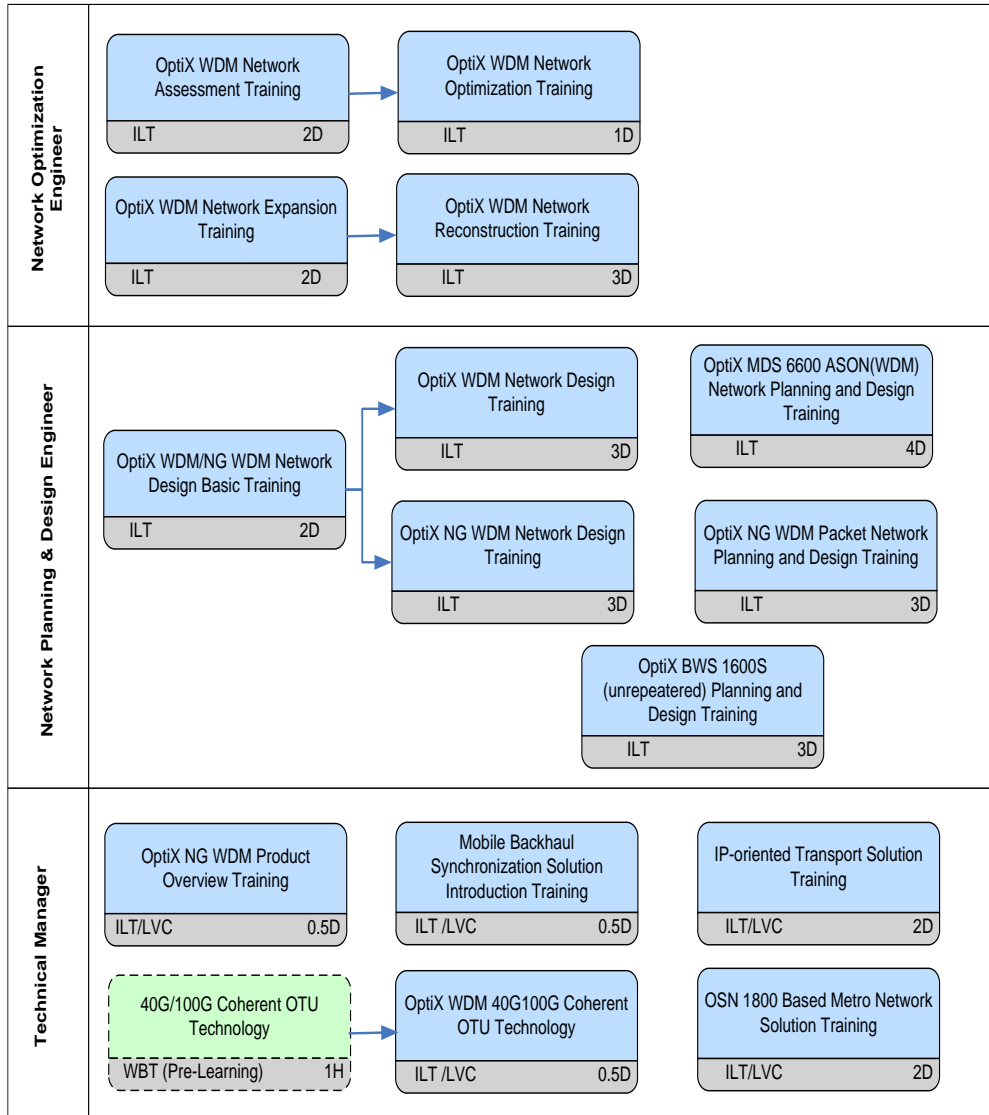
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1 Training Path

1. WDM Training Path

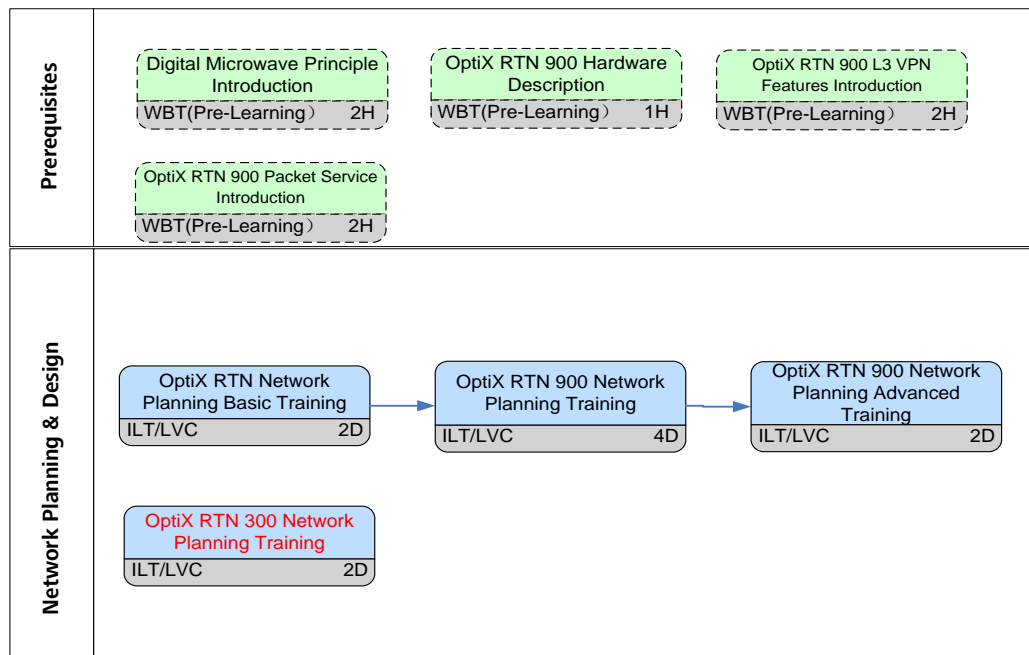


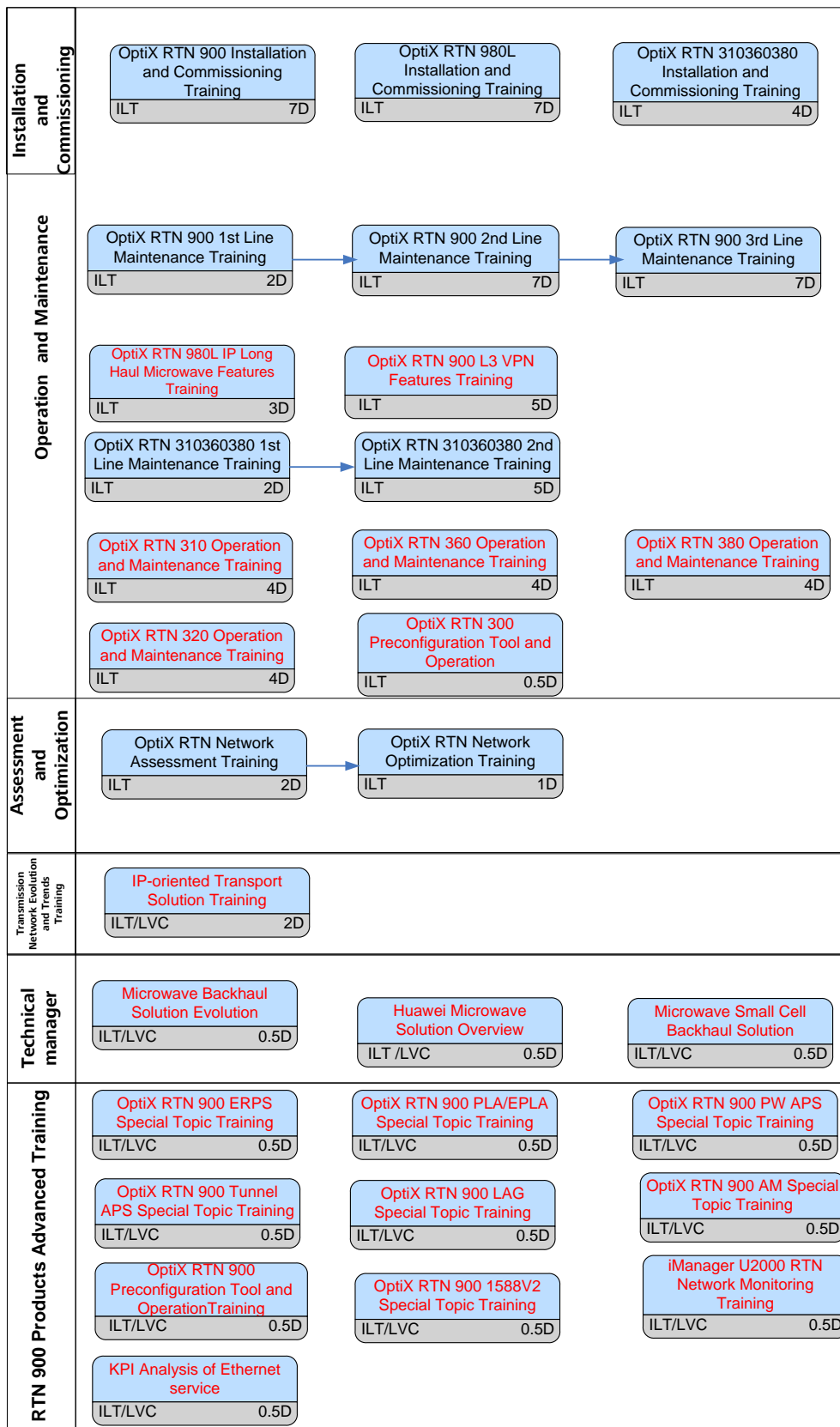




The WBT indicates optional module

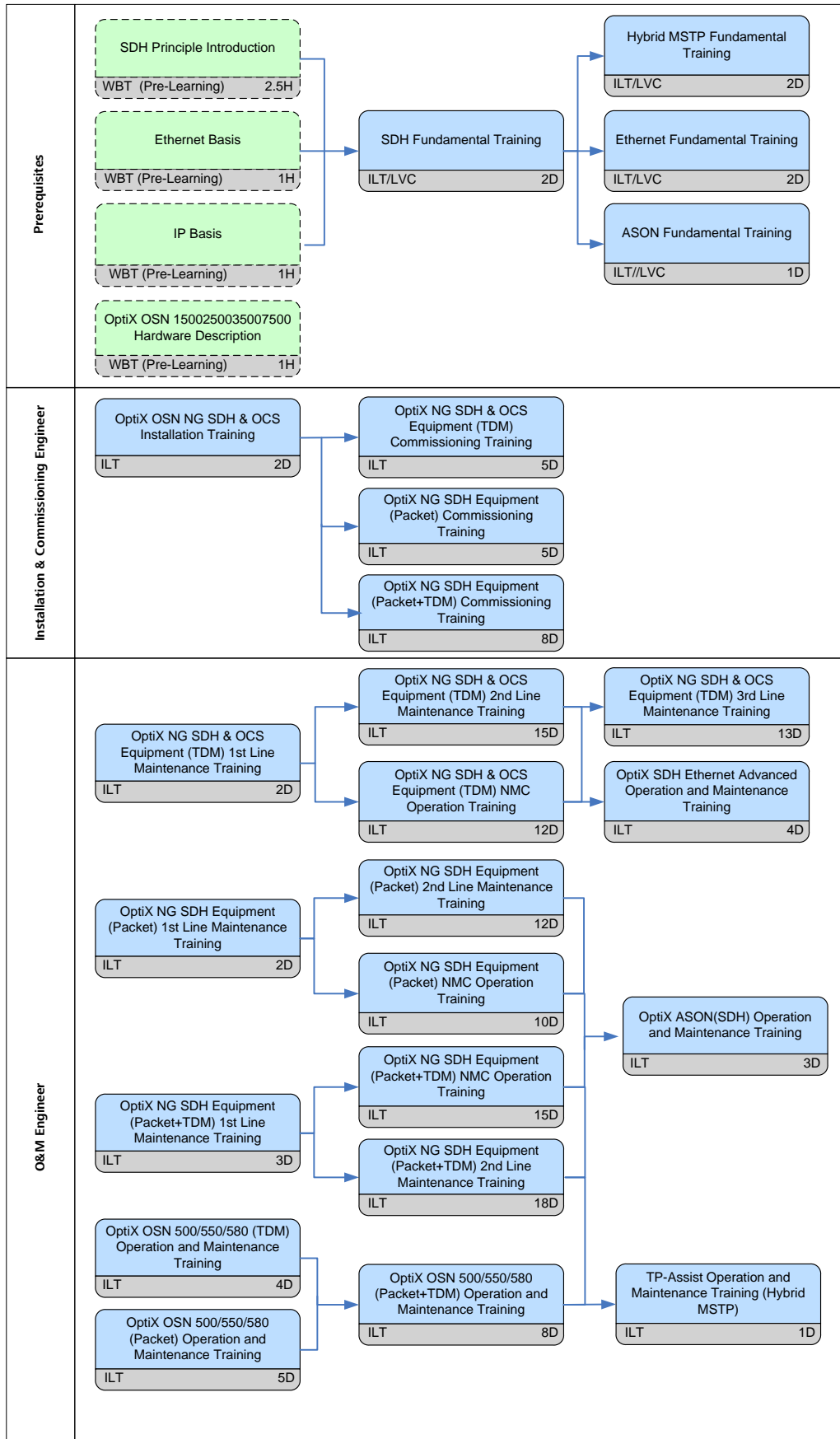
2. RTN Training Path

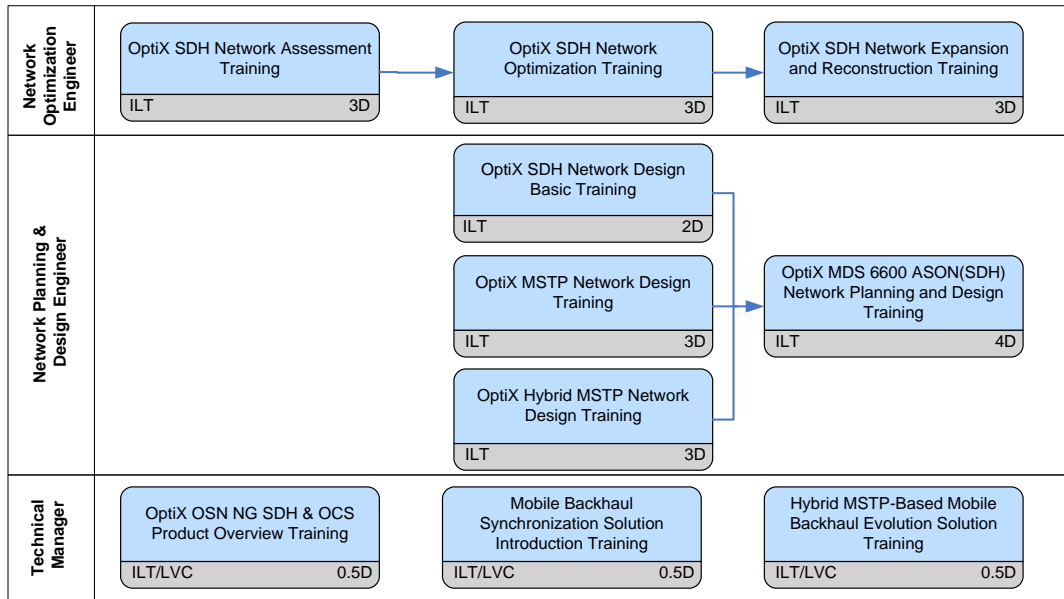




The WBT indicates optional module

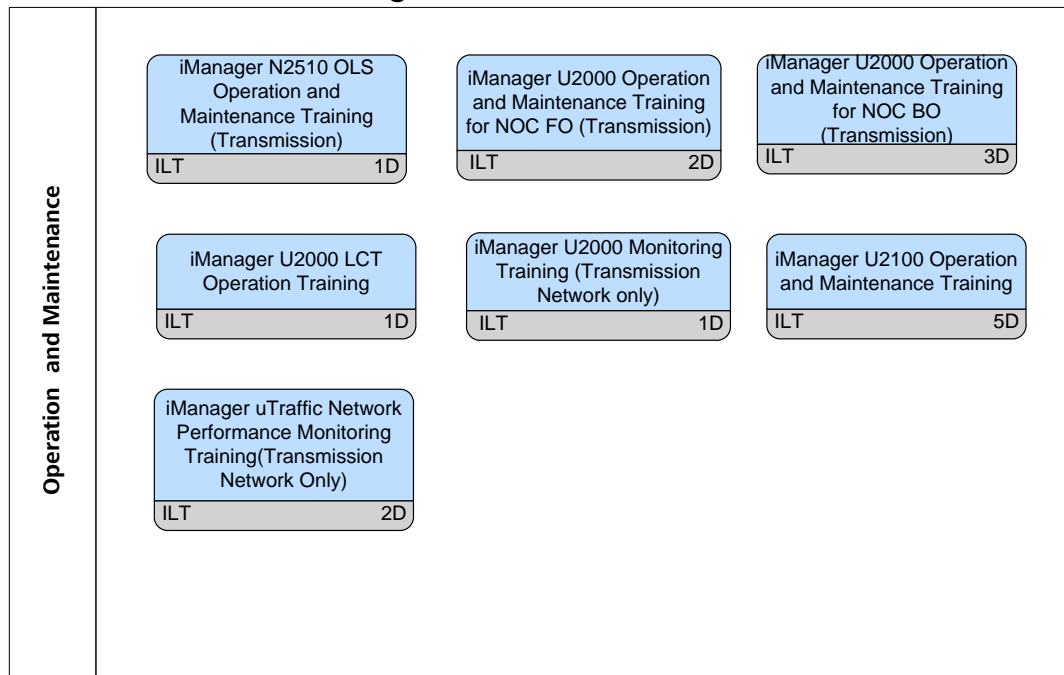
3. MSTP Training Path





The WBT indicates optional module

4. Transmission OSS Training Path



2 Training Programs

Transmission Network Training Programs are designed as follows:

Training Programs	Level	Duration (working days)	Training Location	Class Size
Transmission Network Evolution and Trends Training				
IP-oriented Transport Solution Training	II	2		6 ~ 12
40G/100G Coherent OTU Technology	II	0.5		6 ~ 12
Transmission Based T-SDN Introduction	III	0.5		6 ~ 12
Introduction to 400G Technology	III	0.5		6 ~ 12
OptiX OSN 1800 Based Metro Network Solution Training	III	0.5		6 ~ 12
Mobile Backhaul Evolution and Trends Training				
Microwave Backhaul Solution Evolution	III	0.5		6 ~ 12
Huawei Microwave Solution Overview	III	0.5		6 ~ 12
Microwave Small Cell Backhaul Solution	III	0.5		6 ~ 12
Transmission Network Planning and Design Training				
OptiX SDH Network Design Basic Training	II	2		6 ~ 12
OptiX MSTP Network Design Training	III	3		6 ~ 12
OptiX Hybrid MSTP Network Design Training	III	3		6 ~ 12
OptiX MDS 6600 ASON(SDH) Network Planning and Design Training	IV	4		6 ~ 12
OptiX WDM/NG WDM Network Design Basic Training	II	2		6 ~ 12
OptiX WDM Network Design Training	III	3		6 ~ 12
OptiX NG WDM Network Design Training	IV	3		6 ~ 12
OptiX MDS 6600 ASON (WDM) Network Planning and Design Training	IV	4		6 ~ 12
OptiX RTN Network Planning Basic Training	III	2		6 ~ 12
OptiX RTN 900 Network Planning Training	III	4		6 ~ 12
OptiX RTN 900 Network Planning Advanced Training	III	2		6 ~ 12

OptiX RTN 300 Network Planning Training	III	2		6 ~ 12
OptiX BWS 1600S (unrepeated) Planning and Design Training	IV	3		6 ~ 12
OptiX NG WDM Packet Network Planning and Design Training	IV	3		6 ~ 12
OptiX OSN 1800 Network Design Training	III	3		6 ~ 12
iManager MDS 6600 (WDM Designer) Operation Training	III	4		6 ~ 12
Transmission Network Assessment and Optimization Training				
OptiX SDH Network Assessment Training	IV	3		4 ~ 8
OptiX SDH Network Optimization Training	IV	3		4 ~ 8
OptiX SDH Network Expansion and Reconstruction Training	IV	3		4 ~ 8
OptiX WDM Network Assessment Training	IV	2		4 ~ 8
OptiX WDM Network Optimization Training	IV	1		4 ~ 8
OptiX WDM Network Expansion Training	IV	2		4 ~ 8
OptiX WDM Network Reconstruction Training	IV	3		4 ~ 8
Transmission Network Assessment and Optimization Training				
OptiX RTN Network Assessment Training	IV	2		4 ~ 12
OptiX RTN Network Optimization Training	IV	1		4 ~ 12
Transmission Network Principle Training				
SDH Fundamental Training	II	2		6 ~ 12
WDM Fundamental Training	II	1		6 ~ 12
Ethernet Fundamental Training	II	2		6 ~ 12
ASON Fundamental Training	II	1		6 ~ 12
Hybrid MSTP Fundamental Training	II	2		6 ~ 12
WDM Products Training				
OptiX OSN 8800(OTN) 1st Line Maintenance Training	I	2		6 ~ 12
OptiX OSN 8800(OTN) 2nd Line Maintenance Training	II	13		6 ~ 12
OptiX OSN 8800(OTN) 3rd Line Maintenance Training	III	12		6 ~ 12
OptiX OSN 8800(Packet) Operation and Maintenance Training	II	7		6 ~ 12

OptiX OSN 8800(OCS) Operation and Maintenance Training	II	7		6 ~ 12
OptiX OSN 8800 100G O&M Training	II	5		6 ~ 12
OptiX NG WDM Equipment Installation Training	I	1		6 ~ 12
OptiX WDM Equipment Installation Training	I	2		6 ~ 12
OptiX NG WDM ASON Operation & Maintenance Training	III	3		6 ~ 12
OptiX OSN 1800 Operation and Maintenance Training	II	4		6 ~ 12
OptiX OSN 1800(Packet) Operation and Maintenance Training	II	5		6 ~ 12
OptiX OSN 1800V(Packet) Operation and Maintenance Training	II	5		6 ~ 12
OptiX OSN 1800V(OTN) Operation and Maintenance Training	II	5		6 ~ 12
OptiX OSN 1800V(TDM) Operation and Maintenance Training	II	5		6 ~ 12
OptiX OSN 9800 1st Line Maintenance Training	I	2		6 ~ 12
OptiX OSN 9800 2nd line Maintenance Training	II	10		6 ~ 12
OptiX OSN 9800 O&M Delta Training	II	3		6 ~ 12
OptiX BWS 1600S (repeated) Sub-marine System Operation and Maintenance Training	IV	5		6 ~ 12
OptiX BWS 1600S (unrepeated) Sub-marine System Operation and Maintenance Training	IV	5		6 ~ 12
OptiX MDS 6630(Opical Power Commissioning) Training	IV	2		6 ~ 12
OptiX OSN 9800(Packet) Operation and Maintenance Training	II	7		6 ~ 12
OptiX NG WDM T-SDN Operation and Maintenance Training	III	3		6 ~ 12
OptiX NG WDM Network Protection (EoO/EoW) Special Topic Training	III	3		6 ~ 12
OptiX NG WDM Synchronization Special Topic Training	III	4		6 ~ 12
OptiX NG WDM Network Protection (Packet) Special Topic Training	III	2		6 ~ 12

OptiX NG WDM DCN Special Topic Training	III	2		6 ~ 12
OptiX NG WDM Optical Doctor System Special Topic	III	1		6 ~ 12
OptiX NG WDM Master-Slave Subrack Management Special Topic	III	1		6 ~ 12
RTN 900 Products Training				
OptiX RTN 900 Installation and Commissioning Training	II	7		6 ~ 12
OptiX RTN 900 1st Line Maintenance Training	I	2		6 ~ 12
OptiX RTN 900 2nd Line Maintenance Training	II	7		6 ~ 12
OptiX RTN 900 3rd Line Maintenance Training	III	7		6 ~ 12
OptiX RTN 900V1R8 2nd Line Maintenance Training	II	7		6 ~ 12
OptiX RTN 900 L3 VPN Features Training	III	5		6 ~ 12
OptiX RTN 980L IP Long Haul Microwave Features Training	III	3		6 ~ 12
OptiX RTN 980L Installation and Commissioning Training	II	7		6 ~ 12
RTN 900 Products Advanced Training				
OptiX RTN 900 ERPS Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 PLA/EPLA Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 PW APS Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 Tunnel APS Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 LAG Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 AM Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 Preconfiguration Tool and Operation Training	II	0.5		6 ~ 12
OptiX RTN 900 ERPS Special Topic Training	III	0.5		6 ~ 12
OptiX RTN 900 1588V2 Special Topic Training	III	0.5		6 ~ 12
iManager U2000 RTN Network Monitoring Training	II	1		6 ~ 12
KPI Analysis of Ethernet service	III	0.5		6 ~ 12
RTN 300 Products Training				
OptiX RTN 310360380 Installation and Commissioning Training	II	4		6 ~ 12
OptiX RTN 310360380 1st Line Maintenance Training	I	2		6 ~ 12

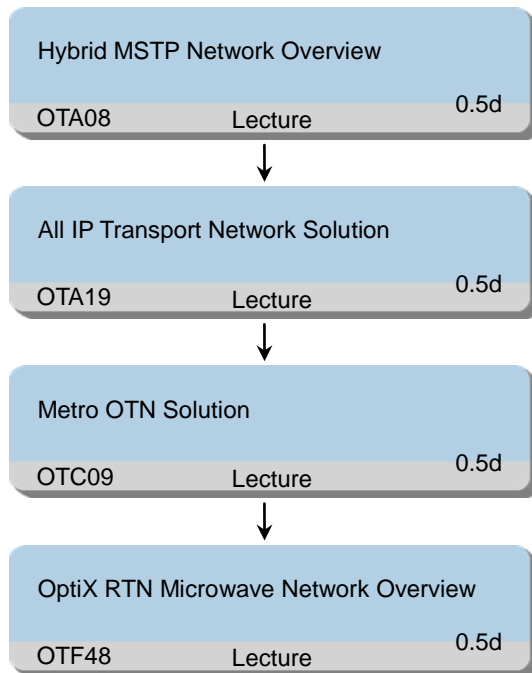
OptiX RTN 310360380 2nd Line Maintenance Training	II	3		6 ~ 12
OptiX RTN 300 Preconfiguration Tool and Operation	II	0.5		6 ~ 12
OptiX RTN 320 Operation and Maintenance Training	II	4		6 ~ 12
OptiX RTN 310 Operation and Maintenance Training	II	4		6 ~ 12
OptiX RTN 380 Operation and Maintenance Training	II	4		6 ~ 12
OptiX RTN 360 Operation and Maintenance Training	II	4		6 ~ 12
MSTP Products Training				
OptiX OSN NG SDH & OCS Product Overview Training	I	0.5		6 ~ 12
OptiX OSN NG SDH & OCS Installation Training	I	2		6 ~ 12
OptiX NG SDH & OCS Equipment (TDM) Commissioning Training	II	5		6 ~ 12
OptiX NG SDH & OCS Equipment (TDM) 1st Line Maintenance Training	I	2		6 ~ 12
OptiX NG SDH & OCS Equipment (TDM) NMC Operation Training	II	12		6 ~ 12
OptiX NG SDH & OCS Equipment (TDM) 2nd Line Maintenance Training	II	15		6 ~ 12
OptiX NG SDH & OCS Equipment (TDM) 3rd Line Maintenance Training	III	13		6 ~ 12
OptiX NG SDH Equipment (Packet) Commissioning Training	II	5		6 ~ 12
OptiX NG SDH Equipment (Packet) 1st Line Maintenance Training	I	2		6 ~ 12
OptiX NG SDH Equipment (Packet) NMC Operation Training	II	10		6 ~ 12
OptiX NG SDH Equipment (Packet) 2nd Line Maintenance Training	II	12		6 ~ 12
OptiX NG SDH Equipment (Packet+TDM) Commissioning Training	II	8		6 ~ 12
OptiX NG SDH Equipment (Packet+TDM) 1st Line Maintenance Training	I	3		6 ~ 12
OptiX NG SDH Equipment (Packet+TDM) NMC Operation Training	II	15		6 ~ 12

OptiX NG SDH Equipment (Packet+TDM) 2nd Line Maintenance Training	II	18		6 ~ 12
OptiX OSN 500/550/580 (TDM) Operation and Maintenance Training	II	4		6 ~ 12
OptiX OSN 500/550/580 (Packet) Operation and Maintenance Training	II	5		6 ~ 12
OptiX OSN 500/550/580 (Packet+TDM) Operation and Maintenance Training	II	8		6 ~ 12
OptiX SDH Ethernet Advanced Operation and Maintenance Training	III	4		6 ~ 12
OptiX ASON(SDH) Operation and Maintenance Training	II	3		6 ~ 12
TP-Assist Operation and Maintenance Training (Hybrid MSTP)	II	1		6 ~ 12
Transmission Network OSS Training				
iManager U2000 Monitoring Training (Transmission Network only)	I	1		6 ~ 16
iManager U2000 LCT Operation Training	II	1		6 ~ 16
iManager N2510 OLS Operation and Maintenance Training (Transmission)	II	1		6 ~ 12
iManager U2000 Operation and Maintenance Training for NOC FO (Transmission)	I	2		6 ~ 12
iManager U2000 Operation and Maintenance Training for NOC BO (Transmission)	II	3		6 ~ 12
iManager U2100 Operation and Maintenance Training	II	5		6 ~ 12
iManager uTraffic Network Performance Monitoring Training (Transmission Network Only)	II	2		6 ~ 12
Transmission Engineer Certification				
Huawei Certified Network Associate-Transmission Technologies and Device Training	II	15		6 ~ 16
Huawei Certified Network Professional-Building Carrier MSTP Transmission Network Training	III	10		6 ~ 16
Huawei Certified Network Professional-Building Carrier OTN Transmission Network Training	III	10		6 ~ 16

2.1 Transmission Network Evolution and Trends Training Programs

2.1.1 IP-oriented Transport Solution Training

Training Path



Target Audience

Technical manager

Personnel who requires a general understanding of Huawei OptiX RTN equipment and solution

Prerequisites

- Having the basic knowledge about telecommunications network, especially transmission network.
- Having the experience for telecommunications equipment

Objectives

On completion of this program, the participants will be able to:

- Describe the background of OptiX Hybrid MSTP
- Explain the service characters of OptiX Hybrid MSTP
- Describe the networking characters of OptiX Hybrid MSTP
- Outline the difference of OptiX Hybrid MSTP network from other network technology
- List the trend of Metro transmission network
- Illustrate the features of OTN
- Describe the application of Huawei OTN products
- List the equipment types of OptiX RTN

- Outline main functions of OptiX RTN equipment
- Describe typical networking and protection of OptiX RTN equipment
- Know the typical solutions of OptiX RTN equipment
- Outline the technologies of the transmission network for All-IP service
- Describe the solutions for All-IP network
- Compare the All-IP transport solutions and figure out the difference

Duration

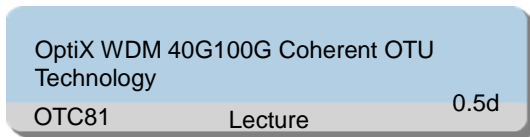
2 working days

Class Size

Min 6, Max 12

2.1.2 40G/100G Coherent OTU Technology

Training Path



Target Audience

Technical manager

Prerequisites

Having the basic knowledge for communication network

Objectives

On completion of this program, the participants will be able to:

- Describe the key technologies for 40G/100G transmission
- Describe the PDM-BPSK and PDM-QPSK modulation method
- Describe the basic principle of coherent detection
- List the main functions and features of the 40G/100G coherent OTU board

Duration

0.5 working day

Class Size

Min 6, Max 12

2.1.3 Transmission Based T-SDN Introduction

Training Path

Transmission Based T-SDN Introduction		
OTC156	Lecture	0.5d

Target Audience

Technical manager

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Understand the development and origin of T-SDN
- Describe the T-SDN structure
- Understand the application scenarios of T-SDN

Duration

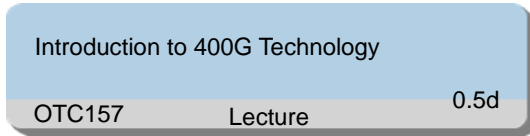
0.5 working day

Class Size

Min 6, Max 12

2.1.4 Introduction to 400G Technology

Training Path



Target Audience

Technical manager

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Understand the key technologies of 400G

Duration

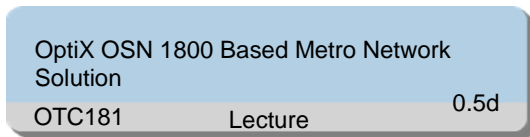
0.5 working day

Class Size

Min 6, Max 12

2.1.5 OptiX OSN 1800 Based Metro Network Solution Training

Training Path



Target Audience

Technical manager

Prerequisites

- Having working experience in WDM transmission network
- Upon completion of OptiX OSN 1800 2nd Line Maintenance Training or having equivalent knowledge
- Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- List the future direction of Transmission network.
- List the value of OptiX OSN 1800 product.
- Describe the application solutions of OptiX OSN1800 product.

Duration

0.5 working day

Class Size

Min 6, Max 12

2.2 Mobile Backhaul Evolution and Trends Training Programs

2.2.1 Microwave Backhaul Solution Evolution

Training Path

Microwave Backhaul Solution Evolution		
OTF87	Lecture	0.5d

Target Audience

Technical manager

Prerequisites

- Having the basic knowledge for communication network

Objectives

On completion of this program, the participants will be able to:

- Describe mobile backhaul trends
- Describe the mobile backhaul evolution strategy based on the current network
- Describe the microwave backhaul solution

Duration

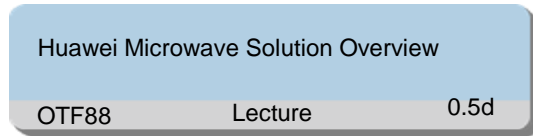
0.5 working day

Class Size

Min 6, Max 12

2.2.2 Huawei Microwave Solution Overview

Training Path



Target Audience

Technical manager

Prerequisites

- Having the basic knowledge for communication network

Objectives

On completion of this program, the participants will be able to:

- Describe microwave evolution trend
- Describe huawei microwave solution
- Outline the features of huawei microwave products

Duration

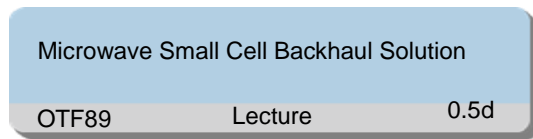
0.5 working day

Class Size

Min 6, Max 12

2.2.3 Microwave Small Cell Backhaul Solution

Training Path



Target Audience

Technical manager

Prerequisites

- Having the basic knowledge for communication network

Objectives

On completion of this program, the participants will be able to:

- Describe the small cell features
- Outline huawei microwave small cell backhaul solution

Duration

0.5 working day

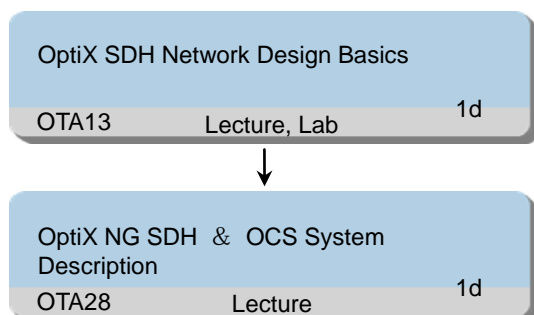
Class Size

Min 6, Max 12

2.3 Transmission Network Planning and Design Training Programs

2.3.1 OptiX SDH Network Design Basic Training

Training Path



Target Audience

SDH network junior planning & design engineer

Prerequisites

- Having the basic knowledge of telecommunications and SDH network

Objectives

On completion of this program, the participants will be able to:

- Describe the structure of SDH network
- Outline the service types of SDH network
- Illustrate the common protection mechanism of SDH network
- List the procedures of SDH network design
- Describe the basic factors that should be involved in the SDH network design
- Accomplish the SDH/PDH service design
- Illustrate the networking applications of the OptiX NG SDH & OCS equipment
- Describe the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection schemes of the OptiX NG SDH & OCS equipment

Duration

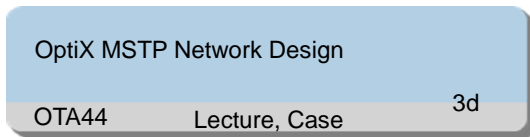
2 working days

Class Size

Min 6, Max 12

2.3.2 OptiX MSTP Network Design Training

Training Path



Target Audience

SDH network planning & design engineer

Prerequisites

Having the basic knowledge of telecommunications and MSTP network

Having working experience in the planning and design of MSTP networks

Objectives

On completion of this program, the participants will be able to:

- Describe the application of OptiX NG SDH & OCS system
- Outline the equipment capacity of OptiX NG SDH & OCS system
- Choose the right equipment according to the service demand
- List the procedures of SDH network design
- Outline network protection types
- Describe the key point of complicated network design
- Figure out the details of network reliability design
- Perform SDH network design including the network reliability and clock trace design
- List the factors of data service design
- Describe the key point of the data service planning according to the bandwidth requirement
- Perform data service design in the SDH network

Duration

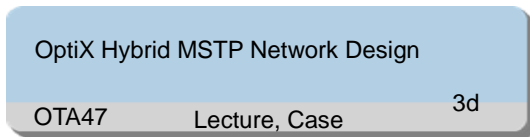
3 working days

Class Size

Min 6, Max 12

2.3.3 OptiX Hybrid MSTP Network Design Training

Training Path



Target Audience

Hybrid MSTP network planning & design engineer

Prerequisites

Having the basic knowledge of telecommunications and Hybrid MSTP network

Having working experience in the planning and design of Hybrid MSTP networks

Objectives

On completion of this program, the participants will be able to:

- Describe the application of OptiX NG SDH system
- Outline the equipment capacity for packet service access of OptiX NG SDH system
- Outline the common boards for packet service of OptiX NG SDH equipment
- Choose the right equipment according to the service demand
- Consider all the required main points for planning a Hybrid MSTP network
- List the procedure for designing the Hybrid MSTP network
- Perform the Hybrid MSTP network design

Duration

3 working days

Class Size

Min 6, Max 12

2.3.4 OptiX MDS 6600 ASON(SDH) Network Planning and Design Training

Training Path

iManager MDS 6600 ASON (SDH) Network Design		
OTA33	Lecture, Case	4d

Target Audience

OptiX SDH ASON senior network planning & design engineer

Prerequisites

Having the basic knowledge of telecommunications and SDH network

Having a general knowledge of ASON

Having working experience in the planning and design of SDH networks

Objectives

On completion of this program, the participants will be able to:

- Describe the structure of iManager MDS 6600
- List the configuration of iManager MDS 6600
- Describe the characters of iManager MDS 6600
- Perform SDH ASON network design through iManager MDS 6600
- Describe the considerations of ASON planning
- List the steps of ASON planning
- Describe the function of ASON planning tool
- Accomplish SDH ASON network design according to the service demand
- Perform data import/export operation between iManager MDS 6600 and NMS
- Verify the import/export operation

Duration

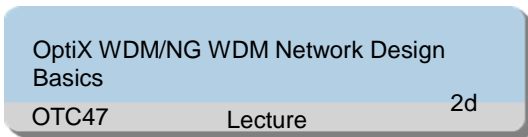
4 working days

Class Size

Min 6, Max 12

2.3.5 OptiX WDM/NG WDM Network Design Basic Training

Training Path



Target Audience

WDM network junior planning
design engineer

Prerequisites

Having a general understanding of telecommunications

Objectives

On completion of this program, the participants will be able to:

- Describe the function module and network structure of WDM system
- Outline the characteristics of various fibers
- Explain the functions and characteristics of various optical components
- Explain the key technologies of WDM system, for example optical source, optical amplifiers, etc
- Describe the characteristics of optical interface in WDM system
- Outline the functions and features of the different units in OptiX WDM/NG WDM products
- Illustrate the main factors involved in WDM network planning, such as power budget, dispersion compensation, OSNR calculation and nonlinearity
- Outline the design process of WDM network

Duration

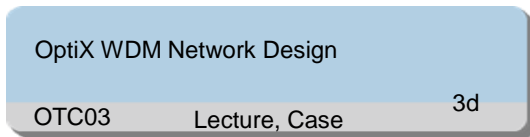
2 working days

Class Size

Min 6, Max 12

2.3.6 OptiX WDM Network Design Training

Training Path



Target Audience

WDM network planning
design engineer

Prerequisites

Having basic knowledge of telecommunications

Objectives

On completion of this program, the participants will be able to:

- Outline the functions and features of the different units in OptiX WDM products
- Evaluate the WDM networks including the network architecture, protection mechanism, signal flow and network capacity
- Analyze typical configuration of OptiX WDM series products
- Analyze the design process of WDM network
- Design a complete OptiX WDM network according to requirements

Duration

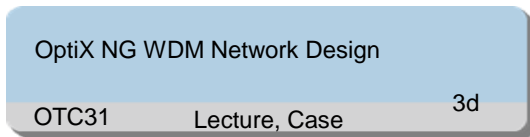
3 working days

Class Size

Min 6, Max 12

2.3.7 OptiX NG WDM Network Design Training

Training Path



Target Audience

OptiX NG WDM network planning & design engineer

Prerequisites

Having working experience in the planning and design of WDM products

Upon completion of OptiX WDM/NG WDM Network Design Basic Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe OSN 8800/6800/3800 product networking
- Outline OSN 8800/6800/3800 product functions
- Describe OSN 8800/6800/3800 product capacity and features
- Describe WDM network topologies and system applications
- Outline the designing procedure of WDM network
- Fulfill the hardware configuration of OptiX NG WDM
- Memorize the OptiX OSN 6800/8800 system capacity with different traffics
- Apply the OptiX OSN 6800/8800 system functions and configuration principles in network planning
- Describe the designing procedure of NG WDM FOADM network
- Fulfill the hardware configuration of NG WDM FOADM network

Duration

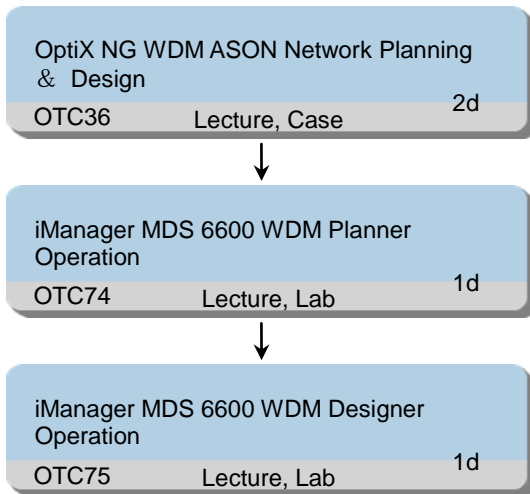
3 working days

Class Size

Min 6, Max 12

2.3.8 OptiX MDS 6600 ASON (WDM) Network Planning and Design Training

Training Path



Target Audience

OptiX NG WDM ASON senior network planning & design engineer

Prerequisites

Having working experience in the planning and design of WDM products

Upon completion of OptiX WDM/NG WDM Network Design Basic Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON
- Describe NG WDM ASON network features
- Outline NG WDM ASON network planning steps
- Complete the NG WDM ASON network node design
- Understand the special topics of NG WDM ASON network planning and design
- Understand NG WDM ASON network features
- Outline NG WDM ASON network planning steps
- Complete the NG WDM ASON network node design
- Describe features and functions of the iManager MDS 6600 WDM Planner
- Plan WDM network
- Fulfill the MDS 6600 WDM Planner operation
- Implement the WDM network plan by the MDS 6600 WDM Planner
- Outline system architecture of iManager MDS 6600
- Describe features and functions of the iManager MDS 6600 WDM Designer
- Complete WDM network design

- Fulfill the MDS 6600 WDM Designer operation
- Implement the WDM network design by the MDS 6600 WDM Designer

Duration

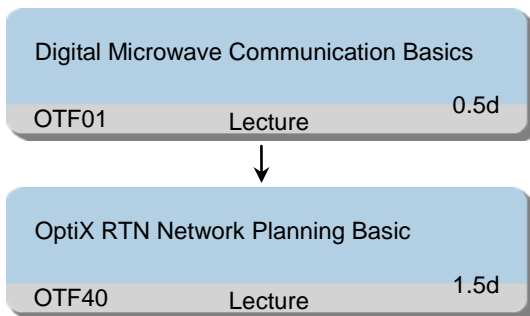
4 working days

Class Size

Min 6, Max 12

2.3.9 OptiX RTN Network Planning Basic Training

Training Path



Target Audience

Microwave network junior planning engineer

Prerequisites

Having a general knowledge of Digital Microwave Communication

Having the general knowledge of IP, MPLS and QinQ

Having the general knowledge of Ethernet and QoS

Objectives

On completion of this program, the participants will be able to:

- Describe the concept and characters of digital microwave communication
- Describe the theory and function of every part in the digital microwave system
- List the networking application for digital microwave system
- List the fading in microwave propagation
- List the common technologies of antifading
- Familiar with the microwave network design contents
- Know the basic information about microwave planning

Duration

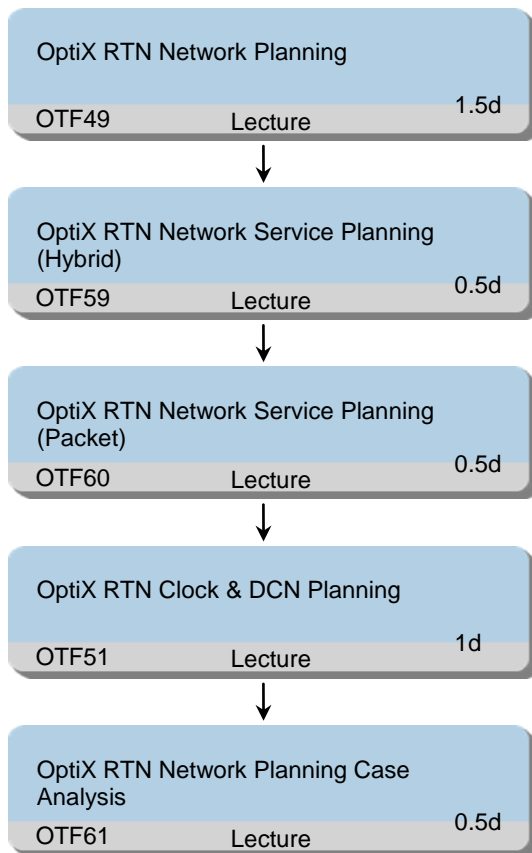
2 working days

Class Size

Min 6, Max 12

2.3.10 OptiX RTN 900 Network Planning Training

Training Path



Target Audience

Microwave network planning engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of IP, MPLS and QinQ
- Having the general knowledge of Ethernet and QoS

Objectives

On completion of this program, the participants will be able to:

- Familiar with the microwave network design contents
- Describe the theory and function of every part in the digital microwave system for details
- Know the microwave planning principles
- Familiar the interference analysis methods
- Familiar with the principles for Ethernet service and TDM service planning
- Know how to select the proper equipment type and functions for different scenarios
- Implement network design according to the guideline to ensure the high and efficient hybrid service delivery
- Familiar with the principles for Ethernet service, CES service, ATM/IMA service and MPLS tunnel

planning

- Implement network design according to the guideline to ensure the high and efficient packet service delivery
- Familiar with the working mechanism of clock & DCN
- Know how to select the proper clock & DCN mode for different scenarios
- Familiar with the clock & DCN planning guidelines
- Implement clock & DCN design according to the guideline to ensure the high and efficient planning delivery
- Understand basic principle of frequency planning and operation procedure.
- Master planning to reduce the skills and methods of relay station.
- Master planning method, which design appropriate SD spacing to improve the reliability of the link by planning software antenna.

Duration

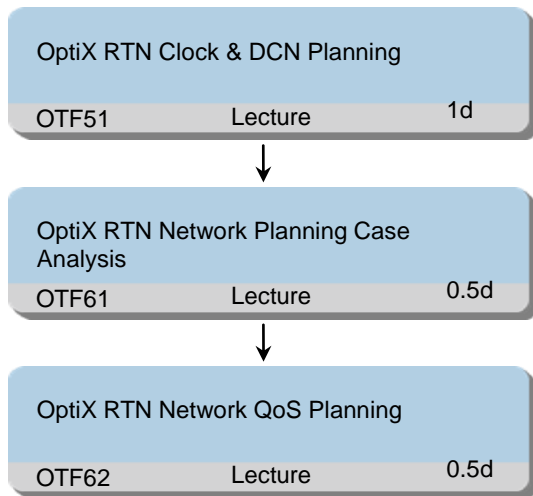
4 working days

Class Size

Min 6, Max 12

2.3.11 OptiX RTN 900 Network Planning Advanced Training

Training Path



Target Audience

Microwave senior network planning engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of IP, MPLS and QinQ
- Having the general knowledge of Ethernet and QoS
- Be familiar with RTN product

Objectives

On completion of this program, the participants will be able to:

- Familiar with the working mechanism of clock & DCN
- Know how to select the proper clock & DCN mode for different scenarios
- Familiar with the clock & DCN planning guidelines
- Implement clock & DCN design according to the guideline to ensure the high and efficient planning delivery
- Understand basic principle of frequency planning and operation procedure.
- Master planning to reduce the skills and methods of relay station.
- Master planning method, which design appropriate SD spacing to improve the reliability of the link by planning
- Familiar with the principles for Ethernet service, CES service, ATM/IMA service and MPLS tunnel planning
- Know how to select the proper equipment type and functions for different scenarios
- Implement network design according to the guideline to ensure the high and efficient packet service delivery

Duration

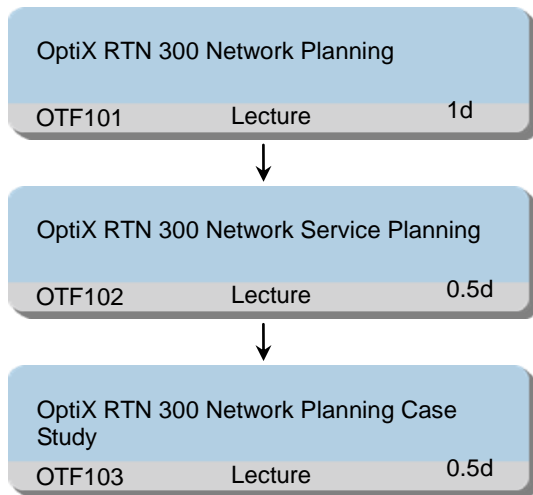
2 working days

Class Size

Min 6, Max 12

2.3.12 OptiX RTN 300 Network Planning Training

Training Path



Target Audience

RTN 300 Network planning engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having a good foundation of Ethernet knowledge
- Having the general knowledge of RTN 300 product

Objectives

On completion of this program, the participants will be able to:

- Familiar with the RTN 300 network design contents
- Know the microwave planning principles
- Familiar the interference analysis methods
- Familiar with the principles for protection and AM planning
- Familiar with the principles for Ethernet service planning
- Understand basic principle of frequency planning and operation procedure.
- Implement network design after the case analysis to ensure the high and efficient service delivery

Duration

2 working days

Class Size

Min 6, Max 12

2.3.13 OptiX BWS 1600S (unrepeated) Planning and Design Training

Training Path

OptiX BWS 1600S (unrepeated) Planning and Design		
OTC71	Lecture, Case	3d

Target Audience

OptiX BWS 1600S senior network planning & design engineer

Prerequisites

Upon completion of OptiX WDM/NG WDM Network Design Basic Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the functions and features of OptiX BWS 1600S products
- Describe OptiX BWS 1600S system access capacity
- Identify wavelength distribution and service process ability for OptiX BWS 1600S products
- Evaluate the network resilience, which include network architecture, protection mechanisms, signal flow and network capacity
- Outline the designing procedure of OptiX BWS 1600S network
- Fulfill the hardware configuration of OptiX BWS 1600S products
- Complete the exercises of OptiX BWS 1600S network design

Duration

3 working days

Class Size

Min 6, Max 12

2.3.14 OptiX NG WDM Packet Network Planning and Design Training

Training Path

OptiX NG WDM Packet Network Planning and Design		
OTC110	Lecture, Case	3d

Target Audience

OptiX NG WDM packet network planning & design engineer

Prerequisites

Having working experience in the planning and design of NG WDM Packet Network

Objectives

On completion of this program, the participants will be able to:

- Describe the application of OptiX NG WDM packet system
- Outline the equipment capacity for packet service access of OptiX NG WDM system
- Outline the common boards for packet service of OptiX NG WDM equipment
- Choose the right equipment according to the service demand
- Consider all the required main points for planning a OptiX NG WDM packet network
- List the procedure for designing the OptiX NG WDM packet network
- Perform the OptiX NG WDM packet network design

Duration

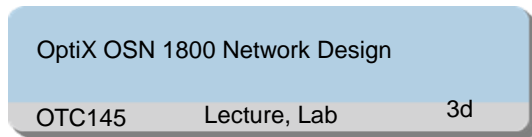
3 working days

Class Size

Min 6, Max 12

2.3.15 OptiX OSN 1800 Network Design Training

Training Path



Target Audience

OptiX OSN 1800 network planning design engineer

Prerequisites

Having working experience in the planning and design of WDM/MS-OTN products

Upon completion of OptiX WDM/NG WDM Network Design Basic Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe OptiX OSN 1800 product networking
- Outline OptiX OSN 1800 product functions
- Describe OptiX OSN 1800 product capacity and features
- Describe OptiX OSN 1800 network topologies and system applications
- Outline the designing procedure of OptiX OSN 1800 network
- Fulfill the hardware configuration of OptiX OSN 1800
- Memorize the OptiX OSN 1800 system capacity with different traffics
- Apply the OptiX OSN 1800 system functions and configuration principles in network planning
- Describe the designing procedure of OptiX OSN 1800 FOADM network

Duration

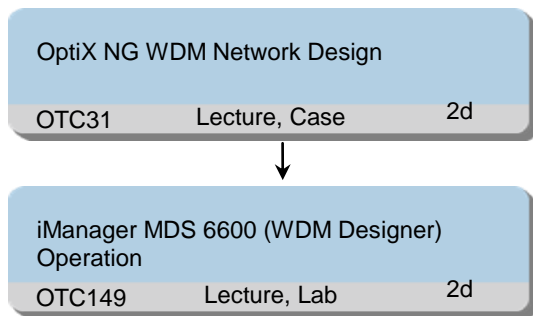
3 working days

Class Size

Min 6, Max 12

2.3.16 iManager MDS 6600 (WDM Designer) Operation Training

Training Path



Target Audience

OptiX WDM network planning design engineer

Prerequisites

Having working experience in the planning and design of WDM products

Upon completion of OptiX WDM/NG WDM Network Design Basic Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Outline system architecture of iManager MDS 6600.
- Describe features and functions of the iManager MDS 6600 WDM Designer.
- Complete WDM network design.
- Simulate the fault and analyze the survivability for ASON network

Duration

4 working days

Class Size

Min 6, Max 12

2.4 Transmission Network Assessment and Optimization Training Programs

2.4.1 OptiX SDH Network Assessment Training

Training Path

SDH Network Assessment		
OTA93	Lecture, Case	3d

Target Audience

OptiX SDH network optimization engineer or senior maintenance engineer

Prerequisites

- Be familiar with OptiX SDH equipment
- Having working experience with at least 2 years in the maintenance of optical transport network

Objectives

On completion of this program, the participants will be able to:

- List the main items of SDH network resource
- List the main items of SDH network assessment
- Describe the requirement of SDH network resource assessment
- Describe the main contents about SDH service capacity and efficiency assessment
- Describe the items and contents about SDH network security assessment
- Describe the measures about SDH survivable network assessment
- List the methods about trail usability assessment
- Describe the items and contents about SDH network O&M assessment
- Describe the methods about ECC subnetwork assessment
- Describe the methods about clock subnetwork assessment
- Describe the methods about spare part assessment

Duration

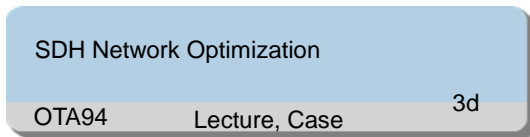
3 working days

Class Size

Min 4, Max 8

2.4.2 OptiX SDH Network Optimization Training

Training Path



Target Audience

OptiX SDH network optimization engineer or senior maintenance engineer

Prerequisites

Be familiar with OptiX SDH equipment

Having working experience with at least 2 years in the maintenance of optical transport network

Upon completion of OptiX SDH Network Assessment Training

Objectives

On completion of this program, the participants will be able to:

- Describe the causes and effects of discrete services
- Recognize the discrete services of the network
- Eliminate discrete services
- Optimize the lower level cross-connection of SDH equipment
- Optimize the trails to improve the network usage efficiency
- Describe the items and contents about SDH network security optimization
- Describe the measures about SDH survivable network optimization
- List the methods about trail usability optimization
- Describe the items and contents about SDH network O&M optimization
- Describe the methods about ECC subnetwork optimization
- Describe the methods about clock subnetwork optimization
- Describe the methods about spare part optimization

Duration

3 working days

Class Size

Min 4, Max 8

2.4.3 OptiX SDH Network Expansion and Reconstruction Training

Training Path

SDH Network Expansion & Reconstruction		3d
OTA43	Lecture, Lab	

Target Audience

OptiX SDH network optimization engineer or senior maintenance engineer

Prerequisites

Having working experience in the maintenance of SDH products

Having been attend SDH series 2nd Line maintenance training

Objectives

On completion of this program, the participants will be able to:

- Outline the scenario of SDH network expansion
- List the key point of network expansion
- Interpret the operation of SDH network expansion
- Perform SDH network expansion and verify the service interconnection
- Outline the scenario of SDH network reconstruction
- List the key point of network reconstruction
- Interpret the operation of SDH network reconstruction
- Perform SDH network reconstruction and verify the service interconnection

Duration

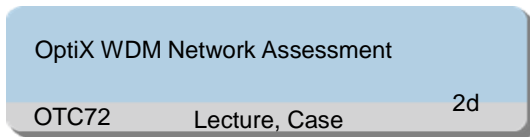
3 working days

Class Size

Min 4, Max 8

2.4.4 OptiX WDM Network Assessment Training

Training Path



Target Audience

OptiX WDM network optimization engineer or senior maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800(OTN) Second Line Maintenance Training program or OptiX BWS 1600G Second Line Maintenance Training program

Objectives

On completion of this program, the participants will be able to:

- Describe methods of assessing WDM network design performance
- Analyze and assess WDM network design performance
- Provide suggestions on optimizing WDM network design performance
- Describe methods of assessing running performance of a WDM network
- Analyze and assess running performance of a WDM network
- Provide suggestions for optimizing running performance of a WDM network

Duration

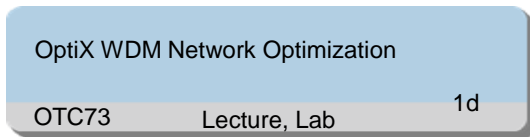
2 working days

Class Size

Min 4, Max 8

2.4.5 OptiX WDM Network Optimization Training

Training Path



Target Audience

OptiX WDM network optimization engineer or senior maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800(OTN) Second Line Maintenance Training program or OptiX BWS 1600G Second Line Maintenance Training program

Objectives

On completion of this program, the participants will be able to:

- Describe the method for optimizing design performance of a WDM network
- Describe the procedure for designing a solution to design performance optimization of a WDM network
- Complete the solution to the design performance optimization of a WDM network
- Describe how to optimize operating performance of a WDM network
- Describe the process of optimizing operating performance of a WDM network
- Design solutions to optimizing operating performance of a WDM network

Duration

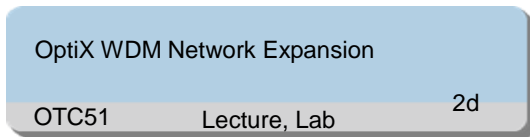
1 working day

Class Size

Min 4, Max 8

2.4.6 OptiX WDM Network Expansion Training

Training Path



Target Audience

OptiX WDM network optimization engineer or senior maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800(OTN) Second Line Maintenance Training program or OptiX BWS 1600G Second Line Maintenance Training program or OptiX Metro 6100 Second Line Maintenance Training program

Objectives

On completion of this program, the participants will be able to:

- Illustrate OptiX WDM system optical power calculation
- Outline the process of OptiX WDM network expansion
- Implement the indices testing during network expansion
- Complete the OptiX WDM network service expansion of OTM/OADM stations

Duration

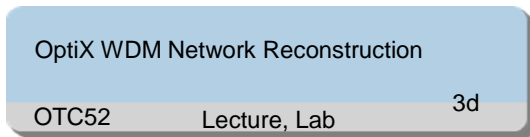
2 working days

Class Size

Min 4, Max 8

2.4.7 OptiX WDM Network Reconstruction Training

Training Path



Target Audience

OptiX WDM network optimization engineer or senior maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800(OTN) Second Line Maintenance Training program or OptiX BWS 1600G Second Line Maintenance Training program

Objectives

On completion of this program, the participants will be able to:

- Describe OptiX WDM system upgrade & reconstruction methods, which include 2 5G upgrading to 10G, 10G upgrading to 40G and 400G upgrading to 800G
- Describe OptiX WDM equipment software upgrade methods
- Describe OptiX WDM network reconstruction methods, which include the site type reconstruction, the protection type reconstruction and wavelength reconstruction
- Complete the OptiX WDM network reconstruction

Duration

3 working days

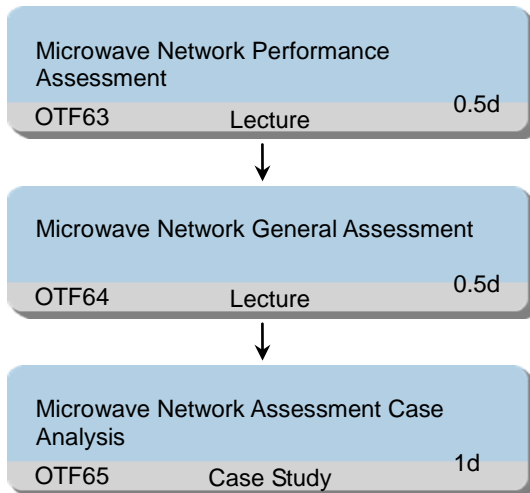
Class Size

Min 4, Max 8

2.5 Transmission Network Assessment and Optimization Training Programs

2.5.1 OptiX RTN Network Assessment Training

Training Path



Target Audience

OptiX RTN network optimization engineer or senior maintenance engineer

Prerequisites

- Be familiar with OptiX RTN series equipment
- Having working experience with at least 1 years in the maintenance of microwave transport network

Objectives

On completion of this program, the participants will be able to:

- Describe methods of assessing microwave network performance
- Analyze and access microwave network performance
- Complete microwave network performance assessment
- Describe the methods about capacity assessment
- Describe the methods about frequency assessment
- Describe the methods about reliability assessment
- Describe the methods about NMS DCN assessment
- Complete microwave network performance assessment
- Complete microwave network capacity assessment
- Complete microwave network frequency assessment
- Complete microwave network reliability assessment
- Complete microwave network NMS DCN assessment

Duration

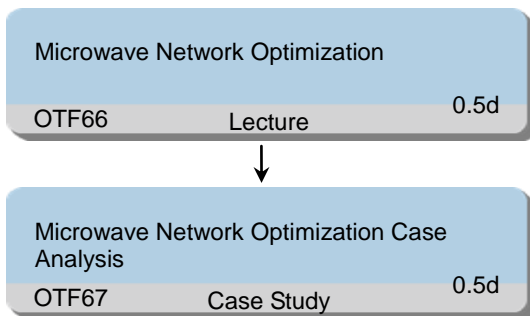
2 working days

Class Size

Min 4, Max 12

2.5.2 OptiX RTN Network Optimization Training

Training Path



Target Audience

OptiX RTN network optimization engineer or senior maintenance engineer

Prerequisites

Be familiar with OptiX RTN equipment

Having working experience with at least 2 years in the maintenance of microwave transport network

Upon completion of OptiX RTN Network Assessment Training

Objectives

On completion of this program, the participants will be able to:

- Describe the microwave network optimization procedure
- Complete the solution to the design performance optimization of a RTN network
- Describe how to optimize the capacity of a RTN network
- Describe the methods about frequency optimization
- Describe the methods about topology optimization
- Describe the methods about NMS DCN optimization
- Complete microwave network performance optimization
- Complete microwave network capacity optimization
- Complete microwave network frequency optimization
- Complete microwave network reliability optimization
- Complete microwave network NMS DCN optimization

Duration

1 working day

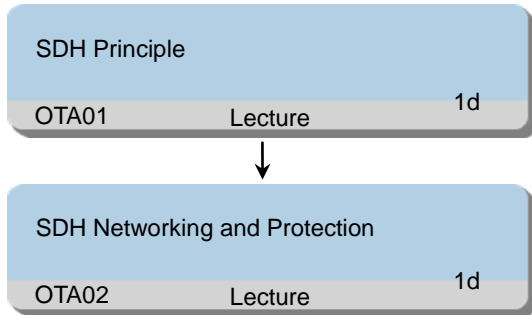
Class Size

Min 4, Max 12

2.6 Transmission Network Principle Training Programs

2.6.1 SDH Fundamental Training

Training Path



Target Audience

SDH series equipment operation and maintenance engineer
SDH series equipment operation and maintenance engineer

Prerequisites

- NA

Objectives

On completion of this program, the participants will be able to:

- Describe the structure of the SDH frame
- Illustrate the multiplexing procedure of PDH signal to SDH signal
- Outline the function of section and path overhead
- Explain the working mechanism of the pointer
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of linear MSP
- Explain the protection mechanism of MS shared protection ring
- Explain the protection mechanism of SNCP in ring/mesh topology
- Analyze the service signal flow before/after the protection switch takes place

Duration

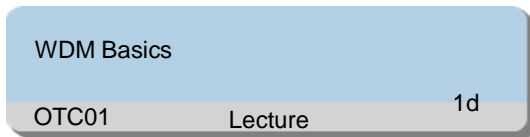
2 working days

Class Size

Min 6, Max 12

2.6.2 WDM Fundamental Training

Training Path



Target Audience

WDM network operation and maintenance engineer

Prerequisites

Having working experience in the planning and design of WDM networks

Upon completion of OptiX WDM/NG WDM Network Design Basic Training and OptiX NG WDM Network Design Training or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the function module and network structure of WDM system
- Outline the characteristics of various fibers
- Explain the functions and characteristics of various optical components
- Explain the key technologies of WDM system, for example optical source, optical amplifiers, etc
- Describe the characteristics of optical interface in WDM system

Duration

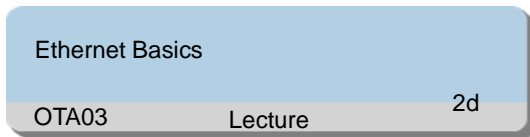
1 working day

Class Size

Min 6, Max 12

2.6.3 Ethernet Fundamental Training

Training Path



Target Audience

Personnel who requires a general knowledge of Ethernet over SDH technology

Prerequisites

Having a general knowledge of data telecommunications

Objectives

On completion of this program, the participants will be able to:

- Outline the types and applications of Ethernet
- Explain the technical background of the Ethernet and its basic concepts
- Illustrate the Ethernet frame structure
- Describe the function of VLAN and L2 switching
- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service
- Outline the basic concepts of data traffic
- List basic concepts of network and internet
- Describe the applications of familiar protocol and standard
- Illustrate basic structure of IP network
- Tell the basic knowledge of IP address

Duration

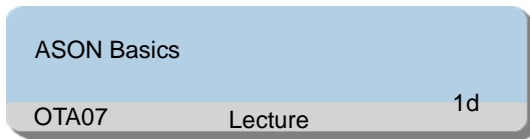
2 working days

Class Size

Min 6, Max 12

2.6.4 ASON Fundamental Training

Training Path



Target Audience

Technical manager, ASON operation and maintenance engineer

Prerequisites

Having a general knowledge of SDH and data telecommunications basics

Objectives

On completion of this program, the participants will be able to:

- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON

Duration

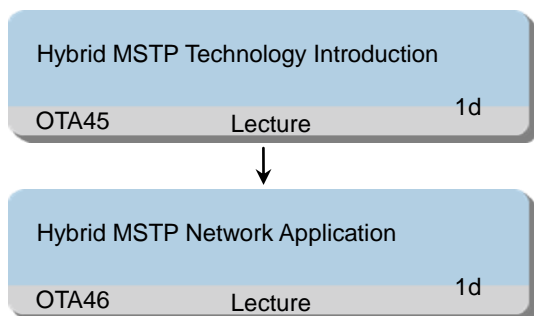
1 working day

Class Size

Min 6, Max 12

2.6.5 Hybrid MSTP Fundamental Training

Training Path



Target Audience

Hybrid MSTP operation and maintenance engineer
Hybrid MSTP novice

Prerequisites

Having a general knowledge of SDH and Ethernet communications basics

Objectives

On completion of this program, the participants will be able to:

- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Outline the QinQ application scenarios of OptiX Hybrid MSTP
- Describe the basic concepts of PWE3
- Outline the typical PWE3 encapsulation format for Ethernet
- Outline the typical PWE3 encapsulation format for TDM E1
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet

Duration

2 working days

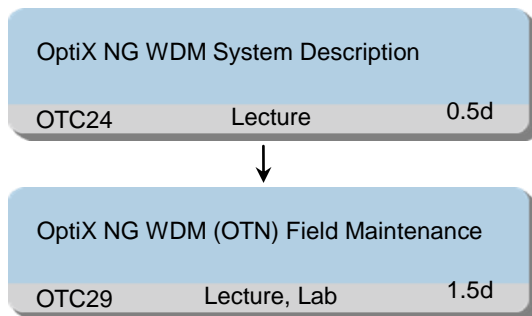
Class Size

Min 6, Max 12

2.7 WDM Products Training Programs

2.7.1 OptiX OSN 8800(OTN) 1st Line Maintenance Training

Training Path



Target Audience

OptiX NG WDM equipment field maintenance engineer

Prerequisites

Be familiar with Windows operating system

Having a general knowledge of WDM basics

Objectives

On completion of this program, the participants will be able to:

- Describe the position of OptiX OSN 6800/8800(OTN) systems in an optical transport network
- Describe the functions and features of OptiX OSN 8800(OTN) systems
- Illustrate the functions of different units in OptiX OSN 8800(OTN) systems, which include OTU, MUX/DEMUX, OA, OSC/ESC, XCS etc
- Describe the protection and features of OptiX OSN i8800(OTN) systems
- Describe the status of OptiX OSN 8800(OTN) products alarm indicators
- Describe the running environment of OptiX OSN 8800(OTN) products
- List the routine maintenance items of OptiX OSN 8800(OTN) products
- Perform the basic maintenance operations of OptiX OSN 8800(OTN) products, such as board replacement, fiber connection, optical power adjusting, etc
- Complete the maintenance records of OptiX OSN 8800(OTN) products
- Outline the common menus of OptiX iManager U2000/Web LCT
- Perform the NE configuration, board configuration, and protection configuration of OptiX OSN 8800(OTN) products via iManager U2000/Web LCT
- Perform the routine maintenance of OptiX OSN 8800(OTN) products via iManager U2000/Web LCT

Duration

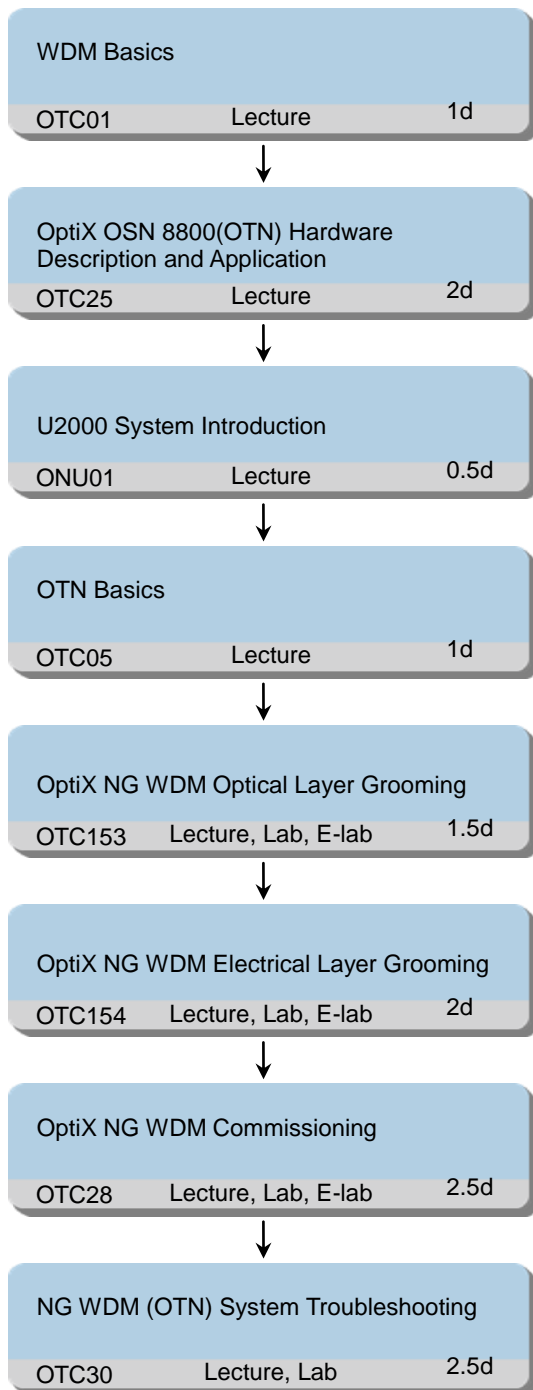
2 working days

Class Size

Min 6, Max 12

2.7.2 OptiX OSN 8800(OTN) 2nd Line Maintenance Training

Training Path



Target Audience

OptiX NG WDM equipment field maintenance engineer

Prerequisites

Be familiar with Windows operating system

Having a general knowledge of WDM basics

Objectives

On completion of this program, the participants will be able to:

- Describe the function module and network structure of WDM system
- Outline the characteristics of various fibers
- Explain the functions and characteristics of various optical components
- Explain the key technologies of WDM system, for example optical source, optical amplifiers, etc
- Describe the characteristics of optical interface in WDM system
- Describe the system structure and features of OptiX OSN 8800(OTN) systems
- Describe the main functions of the boards
- Outline the system protection modes of OptiX OSN 8800(OTN) systems
- List the common network topologies and network elements of OptiX OSN 8800(OTN) systems
- Describe the network applications of OptiX OSN 8800(OTN) systems
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Describe OTN frame structure, maintenance signals and function for different layers
- Outline alarm and performance events generation mechanism
- Analyze the alarm and performance events and locate the failures in OTN
- Describe the advantages of OTN
- Describe the OTN frame structure and list the different components' function
- Describe the main features of the optical layer grooming and electrical layer grooming
- Describe OptiX OSN 8800(OTN) system signal flow and fiber connection, which include OTM, OLA, OADM, etc
- Outline the supervisory channel signal flow in different network elements
- Describe the functions, architecture and the menus of iManager U2000
- Implement iManager U2000 basic operations, OptiX OSN 8800(OTN) data configuration and system management
- Configure OptiX OSN 8800(OTN) products through iManager U2000
- Configure the typical protection for the equipment
- Check the data configuration correctness and validity
- Check the equipment running condition such as power connections, fiber connections, mounted boards, etc
- Outline and perform the commissioning procedure for OptiX OSN /8800(OTN) equipment
- Perform the single station commissioning of OptiX OSN 8800(OTN) equipment
- Perform the commissioning of supervisory channel
- Perform the main path commissioning of OptiX OSN 8800(OTN) equipment
- Perform indices testing during the commissioning process
- Eliminate the fault occurring during the commissioning process
- Explain the troubleshooting ideas and methods for OptiX OSN 8800(OTN) products
- Illustrate basic operation for OptiX OSN 8800(OTN) troubleshooting
- Describe the fault handling flow
- Analyze and eliminate the common faults of OptiX OSN 8800(OTN) products

- Improve the ability of eliminating faults through case analysis and practice

Duration

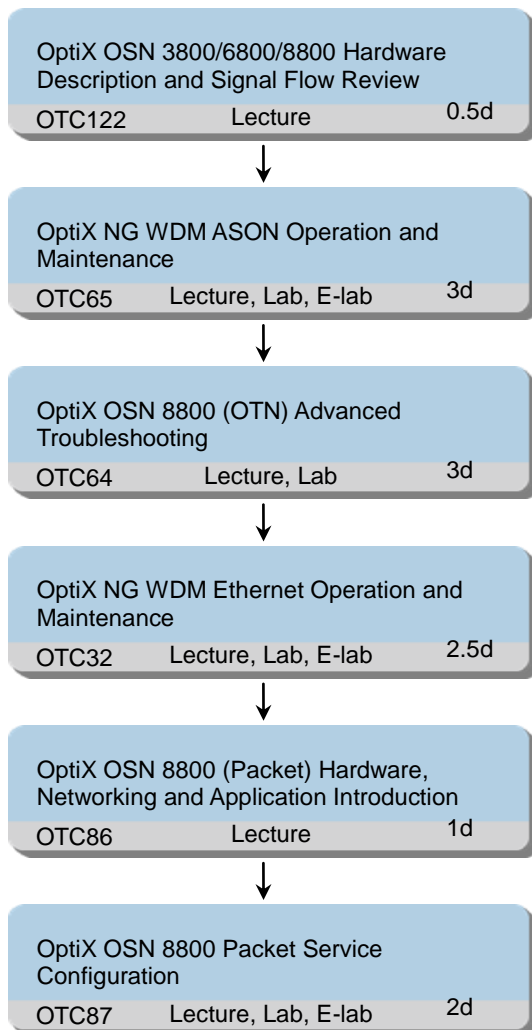
13 working days

Class Size

Min 6, Max 12

2.7.3 OptiX OSN 8800(OTN) 3rd Line Maintenance Training

Training Path



Target Audience

OptiX NG WDM senior operation and maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800 (OTN) 2nd Line Maintenance or NMC Operation Training

Objectives

On completion of this program, the participants will be able to:

- Describe the position and networking ability of OptiX OSN 8800
- List the main functions and features of OptiX OSN 8800
- Generalize the categories of boards
- List the main functions and features of the boards
- Outline typical node signal flow of OptiX OSN 8800
- Perform the commissioning for OptiX NG WDM systems

- Describe the characteristics of various protection types and their application scenarios
- Understand the operations related to the OSN 8800 product protection
- Fulfilled the service configuration and verify the characteristics of various protection types
- Locate and eliminate the trouble based on maintenance rules
- Illustrate troubleshooting common operation
- List the troubleshooting methods
- Briefly introduce the general workflow in OptiX OSN 8800 equipment troubleshooting
- Enhance the troubleshooting analyze and reaction ability through case discussion and practice
- Explain the IP over WDM principle
- Describe the Ethernet service and protection of NG WDM equipment
- Configure the Ethernet service and protection through iManager U2000
- Implement the routine maintenance and troubleshooting of NG WDM Ethernet service
- Describe the OSN 8800 hardware
- List the OSN 8800 packet boards
- Describe the networking application of OSN 8800 (Packet)
- Illustrate the service and protection type of OSN 8800 (Packet)
- Implement the data configuration through iManager U2000 for OSN 8800 packet service and protection

Duration

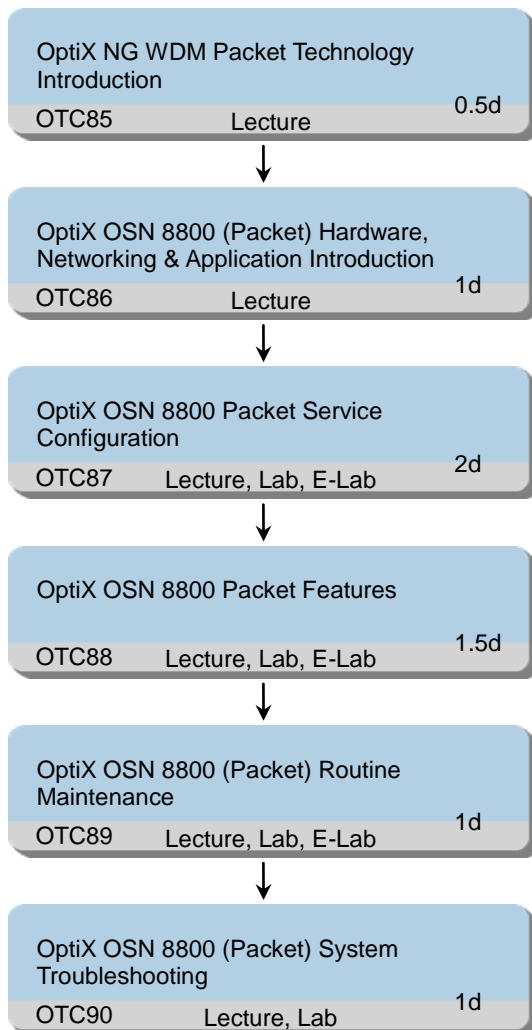
12 working days

Class Size

Min 6, Max 12

2.7.4 OptiX OSN 8800(Packet) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 8800 packet network operation and maintenance engineer

Prerequisites

Having working experience in WDM transmission network

Upon completion of OptiX OSN 6800/8800(OTN) 2nd Line Maintenance Training or having equivalent knowledge

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts of Ethernet, VLAN and QinQ
- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP

- Describe the basic concepts of PWE3
- Describe the OSN 8800 hardware
- List the OSN 8800 packet boards
- Describe the networking application of OSN 8800 (Packet)
- Illustrate the service and protection type of OSN 8800 (Packet)
- Implement the data configuration through iManager U2000 for OSN 8800 packet service and protection
- Describe the function and features of QoS in OSN 8800 (Packet)
- Implement the QoS configuration through iManager U2000
- Describe the function and features of OAM in OSN 8800 (Packet)
- Implement the OAM configuration through iManager U2000
- Implement the NMS side routine maintenance for OSN 8800 (Packet)
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors,etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faulty of the OSN 8800 (Packet) network

Duration

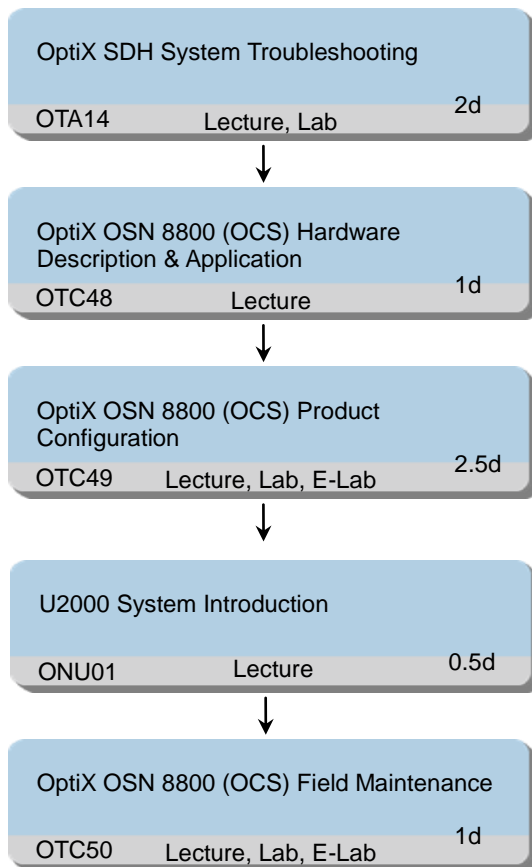
7 working days

Class Size

Min 6, Max 12

2.7.5 OptiX OSN 8800(OCS) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 8800 (OCS) operation and maintenance engineer

Prerequisites

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the system structure and features of OptiX OSN 8800(OCS) system
- Describe the main functions of the boards
- Outline the system protection modes of OptiX OSN 8800(OCS) system
- Describe the network applications of OptiX OSN 8800(OCS) system
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of linear MSP
- Explain the protection mechanism of MS shared protection ring
- Explain the protection mechanism of SNCP in ring/mesh topology
- Analyze the service signal flow before/after the protection switch takes place
- Configure OptiX OSN 8800(OCS) product

- Configure the required SDH/Synchronization/Overhead units
- Configure the typical protection for the network and equipment
- Configure the common services for the typical SDH networks
- Analyze and maintain the configured equipment/units/services
- Describe the status of OptiX OSN 8800(OCS) product indicators
- Describe the operation environment of OptiX OSN 8800(OCS) equipment
- Perform the NE configuration, board configuration, service provisioning and protection configuration for equipment via NMS
- Perform the routine maintenance via NMS
- Perform the basic maintenance operations of OptiX OSN 8800(OCS) equipment such as board replacement, resetting etc
- Complete the routine maintenance records of OptiX OSN 8800(OCS) equipment
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- List the common analysis methods of fault locating
- Outline the fault handling flow
- Analyze the typical faults: traffic interruption, error bit, etc
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Analyze common faulty of the network consist of OptiX NG SDH & OCS series
- Locate and eliminate faults, get experience from troubleshooting practice

Duration

7 working days

Class Size

Min 6, Max 12

2.7.6 OptiX OSN 8800 100G O&M Training

Training Path

OptiX OSN 8800 100G Operations and Maintenance		
OTC128	Lecture, Lab, E-Lab	5d

Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

Completion of OptiX NG WDM relative technical training

Objectives

On completion of this program, the participants will be able to:

- Describe the position and networking ability of OptiX OSN 8800
- Outline the layout of OptiX OSN 8800 subrack
- Generalize the categories of boards
- List different usage of the common NG WDM network node types
- Describe NG WDM network application modes and main features
- Describe the key technologies for 40G/100G transmission
- Describe the PDM-BPSK and PDM-QPSK modulation method
- Describe the basic principle of coherent detection
- List the main functions and features of the 40G/100G coherent OTU board
- Configure the common data configuration by U2000
- Configure the OCh trail by U2000
- Configure 100G board electrical layer services by iManager U2000
- List the Items of Routine Maintenance;
- Grasp the basic operation of maintenance on U2000
- Implement routine operation and maintenance on NMS side
- Describe the optical power commissioning requirements
- List the optical power commissioning procedures
- Perform the optical power commissioning for 100Gbit/s and mixed transmission system
- List the items of testing the network
- Master the common methods for trouble shooting
- Analyze common faults
- Handle typical faults

Duration

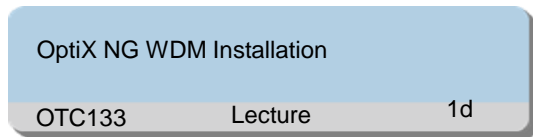
5 working days

Class Size

Min 6, Max 12

2.7.7 OptiX NG WDM Equipment Installation Training

Training Path



Target Audience

OptiX NG WDM network installation engineer

Prerequisites

Having basic knowledge of telecommunications

Objectives

On completion of this program, the participants will be able to:

- Outline the functions and features of the different units in OptiX NG WDM products
- Describe the hardware installation procedure
- Describe cable routing and related installation specifications for the equipment
- Outline the safety precautions to be taken during the installation
- Perform the hardware installation inspection according to the checklist

Duration

1 day

Class Size

Min 6, Max 12

2.7.8 OptiX WDM Equipment Installation Training

Training Path

OptiX WDM Installation		
OTC04	Lecture, WBT	2d

Target Audience

WDM network installation engineer

Prerequisites

Having basic knowledge of telecommunications

Objectives

On completion of this program, the participants will be able to:

- Outline the functions and features of the different units in OptiX WDM products
- Describe the hardware installation procedure
- Describe cable routing and related installation specifications for the equipment
- Outline the safety precautions to be taken during the installation
- Perform the hardware installation inspection according to the checklist

Duration

2 days

Class Size

Min 6, Max 12

2.7.9 OptiX NG WDM ASON Operation & Maintenance Training

Training Path

OptiX NG WDM ASON Operation#Maintenance		
OTC65	Lecture, Lab	3d

Target Audience

OptiX NG WDM ASON operation and maintenance engineer

Prerequisites

Completion of OptiX OSN 6800/8800 (OTN) 2nd Line Maintenance or NMC Operation Training.

Objectives

On completion of this program, the participants will be able to:

- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON
- Fulfill the WDM ASON trail configuration
- Complete the ASON routine maintenance items
- Describe The Basic Thoughts and Methods of NG WDN ASON Fault Locating
- Quickly restore interrupted ASON services under emergency conditions.

Duration

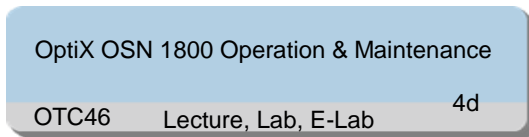
3 working days

Class Size

Min 6, Max 12

2.7.10 OptiX OSN 1800 Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 1800 operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Upon completion of OTC01 WDM Basics course or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the system structure and features of OptiX OSN 1800
- Describe the main functions of the boards
- Outline the system protection modes of OptiX OSN 1800
- List the common network topologies and network elements of OptiX OSN 1800
- Describe the network applications of OptiX OSN 1800
- Check the equipment running condition such as power connections, fiber connections, mounted boards, etc
- Describe OptiX OSN 1800 system signal flow and fiber connection
- Implement NMS basic operations, OptiX OSN 1800 data configuration and system management
- Configure OptiX OSN 1800 through NMS
- Configure the typical protection for the equipment
- Check the data configuration correctness and validity
- Perform the single station commissioning of OptiX OSN 1800
- Perform the main path commissioning of OptiX OSN 1800
- Eliminate the fault occurring during the commissioning process
- Apply different troubleshooting methods according to actual faults
- Perform the common troubleshooting operations of WDM network
- Explain the possible reasons of all kinds of OptiX WDM network faults
- Describe the fault handling flow
- Analyze and locate the complex fault of OptiX WDM network
- Improve the ability of eliminating faults through case analysis and practice

Duration

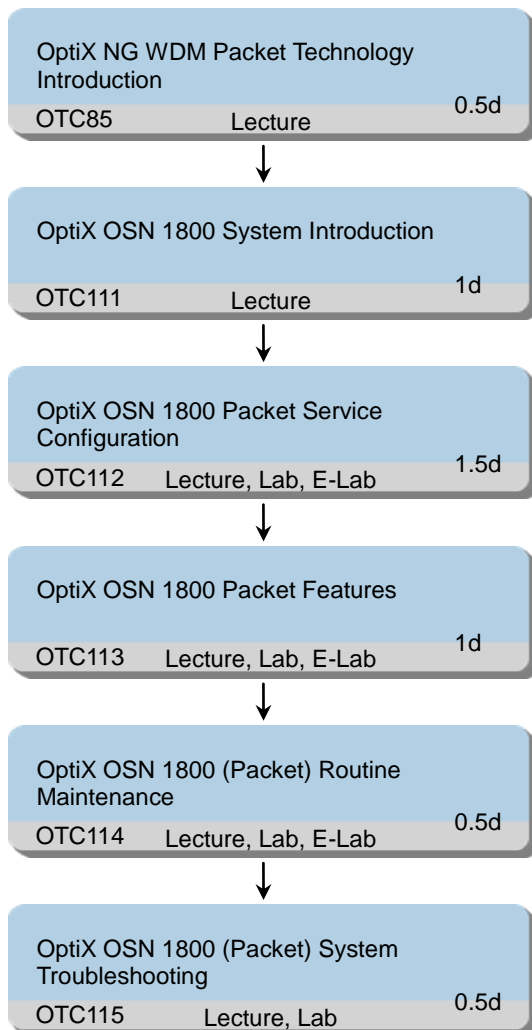
4 working days

Class Size

Min 6, Max 12

2.7.11 OptiX OSN 1800(Packet) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 1800 operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts of Ethernet, VLAN and QinQ
- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Describe the basic concepts of PWE3

- Describe the network applications of OptiX OSN 1800 equipment.
- Explain the system structure and features of OptiX OSN 1800 equipment.
- State the main functions of the cards in the OptiX OSN 1800 equipment.
- System signal flow of OSN 1800
- The protection and design principle of OSN 1800
- Metro access backhaul application acenes of OSN 1800
- Key factors in networking of OSN 1800
- Describe OSN 1800 product feature (packet)
- Master packet services configuration
- Outline the configuration of protection for OSN 1800 (packet)
- Describe the function and features of QoS in OSN 1800 (Packet)
- Implement the QoS configuration through iManager U2000
- Describe the function and features of OAM in OSN 1800 (Packet)
- Implement the OAM configuration through iManager U2000
- List the items of routine maintenance
- Grasp the basic operation of maintenance on U2000
- Implement routine operation and maintenance
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors,etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faulty of the OSN 1800 (Packet) network

Duration

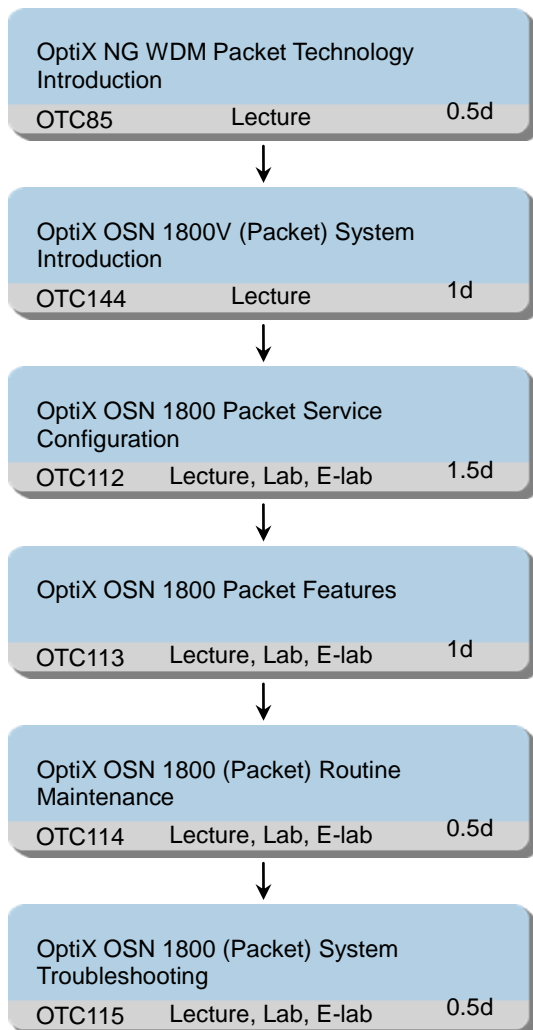
5 working days

Class Size

Min 6, Max 12

2.7.12 OptiX OSN 1800V(Packet) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 1800V (Packet) operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts of Ethernet, VLAN and QinQ
- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Describe the basic concepts of PWE3

- Describe the network applications of OptiX OSN 1800V (Packet) equipment.
- Explain the system structure and features of OptiX OSN 1800V (Packet) equipment.
- State the main functions of the cards in the OptiX OSN 1800V (Packet) equipment.
- Metro access backhaul application scenes of OSN 1800V (Packet)
- Describe OSN 1800V (Packet) product feature
- Master packet services configuration
- Outline the configuration of protection for OSN 1800V(Packet)
- Describe the function and features of QoS in OSN 1800V(Packet)
- Implement the QoS configuration through iManager U2000
- Describe the function and features of OAM in OSN 1800V(Packet)
- Implement the OAM configuration through iManager U2000
- List the items of routine maintenance
- Grasp the basic operation of maintenance on U2000
- Implement routine operation and maintenance
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors, etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faulty of the OSN 1800V (Packet) network

Duration

5 working days

Class Size

Min 6, Max 12

2.7.13 OptiX OSN 1800V(OTN) Operation and Maintenance Training

Training Path

OptiX OSN 1800V (OTN) Operation and Maintenance		
OTC147	Lecture, Lab	5d

Target Audience

OptiX OSN 1800V (OTN) operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the function module and network structure of WDM system
- Outline the characteristics of various fibers
- Explain the functions and characteristics of various optical components
- Explain the key technologies of WDM system, for example optical source, optical amplifiers, etc
- Describe the characteristics of optical interface in WDM system
- Describe the system structure and features of OptiX OSN 1800V(OTN)
- Describe the main functions of the boards
- Outline the system protection modes of OptiX OSN 1800V(OTN)
- List the common network topologies and network elements of OptiX OSN 1800V(OTN)
- Describe the network applications of OptiX OSN 1800V(OTN)
- Check the equipment running condition such as power connections, fiber connections, mounted boards, etc
- Describe OptiX OSN 1800V(OTN) system signal flow and fiber connection
- Implement NMS basic operations, OptiX OSN 1800V(OTN) data configuration and system management
- Configure OptiX OSN 1800V(OTN) through NMS
- Configure the typical protection for the equipment
- Check the data configuration correctness and validity
- Perform the single station commissioning of OptiX OSN 1800V(OTN)
- Perform the main path commissioning of OptiX OSN 1800V(OTN)
- Eliminate the fault occurring during the commissioning process
- Apply different troubleshooting methods according to actual faults
- Perform the common troubleshooting operations of WDM network
- Explain the possible reasons of all kinds of OptiX WDM network faults
- Describe the fault handling flow
- Analyze and locate the complex fault of OptiX WDM network
- Improve the ability of eliminating faults through case analysis and practice

Duration

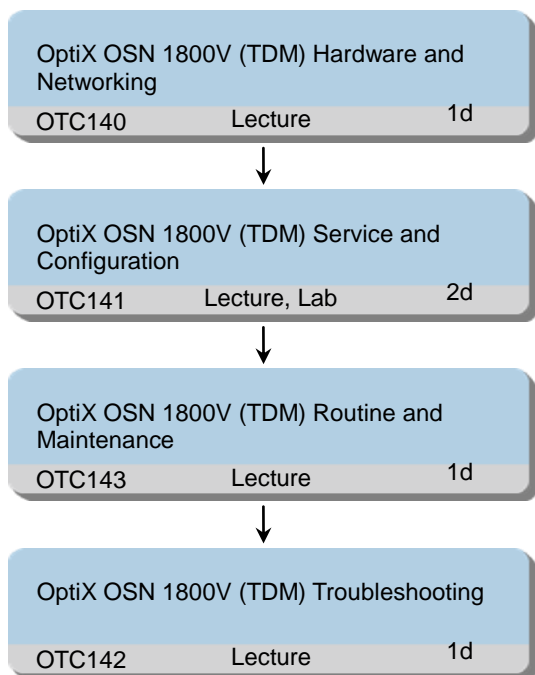
5 working days

Class Size

Min 6, Max 12

2.7.14 OptiX OSN 1800V(TDM) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 1800V (TDM) operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Appreciate the networking applications of the OptiX OSN 1800V(TDM)
- Describe the system structure and features of the OptiX OSN 1800V(TDM)
- Describe the main functions of the boards used on the OptiX OSN 1800V(TDM)
- Outline the system protection schemes of the OptiX OSN 1800V(TDM)
- Outline the operation environment of OptiX OSN 1800V(TDM) series equipment
- List the status description of OptiX OSN 1800V(TDM) equipment indicators
- List the maintenance items of OptiX OSN 1800V(TDM) equipment
- Perform the basic maintenance operations of OptiX OSN 1800V(TDM) equipment
- Complete the maintenance records of OptiX OSN 1800V(TDM) equipment
- Configure protection attributes in OptiX OSN 1800V(TDM) network, such as SNCP, LMP, RMP etc
- Configure services of OSN 1800V(TDM)

Duration

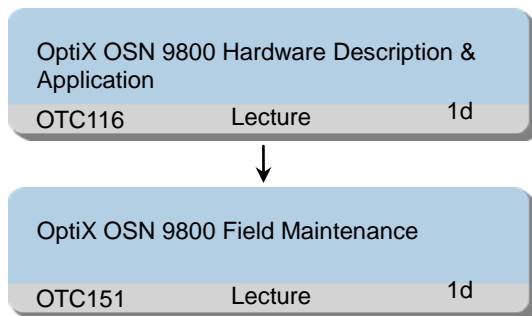
5 working days

Class Size

Min 6, Max 12

2.7.15 OptiX OSN 9800 1st Line Maintenance Training

Training Path



Target Audience

OptiX OSN 9800 equipment field maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the position and networking ability of OptiX OSN 9800
- List the main functions and features of OptiX OSN 9800
- Outline the layout of OptiX OSN 9800 subrack
- Generalize the categories of boards
- List the main functions and features of the boards
- Outline the equipment operation precautions
- Perform the basic maintenance operations
- Replace the boards
- List the items of routine maintenance

Duration

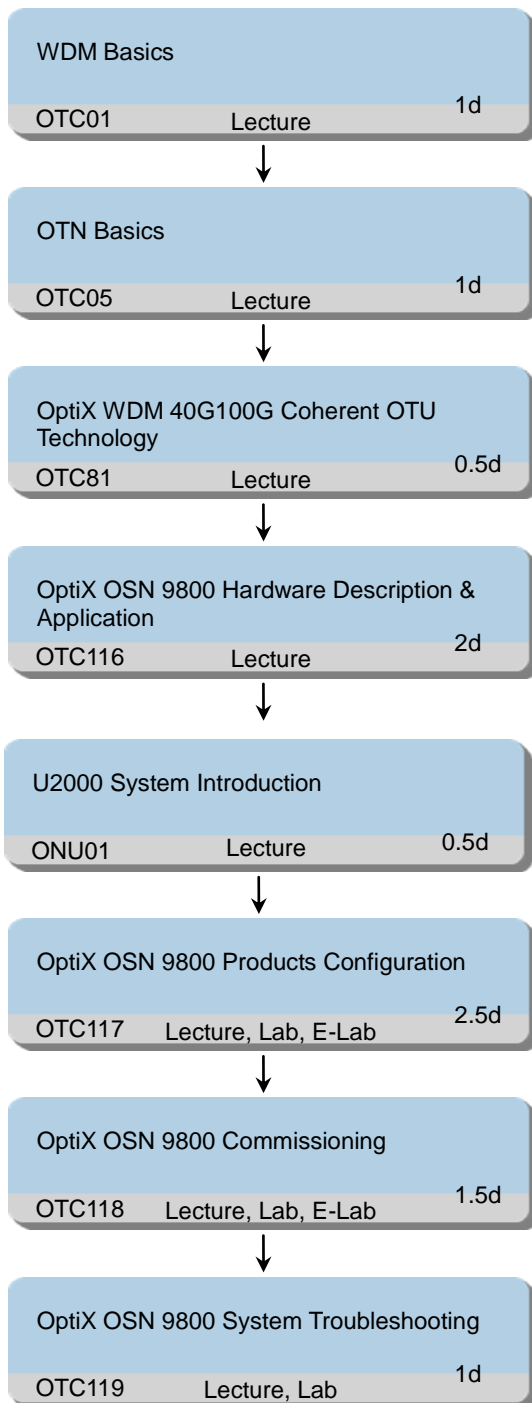
2 working days

Class Size

Min 6, Max 12

2.7.16 OptiX OSN 9800 2nd line Maintenance Training

Training Path



Target Audience

OptiX OSN 9800 operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the function module and network structure of WDM system
- Outline the characteristics of various fibers
- Explain the functions and characteristics of various optical components
- Explain the key technologies of WDM system, for example optical source, optical amplifiers, etc
- Describe the characteristics of optical interface in WDM system
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Describe OTN frame structure, maintenance signals and function for different layers
- Outline alarm and performance events generation mechanism
- Analyze the alarm and performance events and locate the failures in OTN
- Describe the advantages of OTN
- Describe the OTN frame structure and list the different components' function
- Describe the key technologies for 40G/100G transmission
- Describe the PDM-BPSK and PDM-QPSK modulation method
- Describe the basic principle of coherent detection
- List the main functions and features of the 40G/100G coherent OTU board
- List the main functions and features of OptiX OSN 9800
- Outline the layout of OptiX OSN 9800 subrack
- Generalize the categories of boards
- List the main functions and features of the boards
- List different usage of the common OptiX OSN 9800 network node Types.
- Describe OptiX OSN 9800 network application modes and main features.
- List key factors in OptiX OSN 9800 networking
- Explain the principles of various protection types applied in the OSN 9800 products
- Describe the characteristics of various protection types and their application scenarios
- Perform the operations related to the OSN 9800 product protection
- Configure client 1+1 protection and ODUk subnet connection protection (SNCP)
- Able to create an OptiX OSN 9800 network by iManager U2000
- Backup database by iManager U2000
- Describe the FOADM and ROADM features
- Describe the FOADM and ROADM application scope
- Understand the FOADM and ROADM functional units and the matching relations of these functional units
- Configure optical layer services by U2000
- Diagram the electrical layer service grooming model of OptiX OSN 9800
- List the boards which have electrical layer cross-connect function
- Configure electrical layer services independently by station
- Configure end-to-end electrical layer services independently by trail

- Outline the equipment operation precautions
- Perform the basic maintenance operations
- Replace the boards
- List the items of routine maintenance.
- Grasp the basic operation of maintenance on U2000
- Implement routine operation and maintenance on NMS side
- Review NG WDM network node signal flow
- List the common indices on optical power calculation
- Calculate the optical power
- Perform the Optical Power Commissioning
- List the Optical Power Commissioning Procedures
- Perform the Optical Power Commissioning for 100Gbit/s, 40Gbit/s and Hybrid Transmission System
- Understand the Operations Related to Tests Performing
- Describe the basic thoughts and methods of fault
- Locating Comprehend the methods of rectifying different types of faults
- List the common methods for trouble shooting
- Analyze common faults independently.
- Handle typical faults

Duration

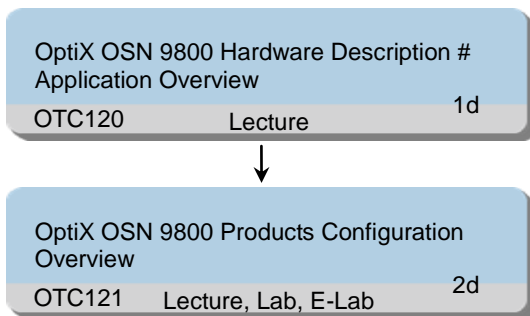
10 working days

Class Size

Min 6, Max 12

2.7.17 OptiX OSN 9800 O&M Delta Training

Training Path



Target Audience

OptiX OSN 9800 operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- List the main functions and features of OptiX OSN 9800
- Outline the layout of OptiX OSN 9800 subrack
- Generalize the categories of boards
- List the main functions and features of the boards
- List different usage of the common OptiX OSN 9800 network node Types.
- Describe OptiX OSN 9800 network application modes and main features.
- List key factors in OptiX OSN 9800 networking
- Explain the principles of various protection types applied in the OSN 9800 products
- Describe the characteristics of various protection types and their application scenarios
- Perform the operations related to the OSN 9800 product protection
- Configure client 1+1 protection and ODUk subnet connection protection (SNCP)
- Able to create an OptiX OSN 9800 network by iManager U2000
- Backup database by iManager U2000
- Describe the FOADM and ROADM features
- Describe the FOADM and ROADM application scope
- Understand the FOADM and ROADM functional units and the matching relations of these functional units
- Configure optical layer services by U2000
- Diagram the electrical layer service grooming model of OptiX OSN 9800
- List the boards which have electrical layer cross-connect function
- Configure electrical layer services independently by station
- Configure end-to-end electrical layer services independently by trail
- Outline the equipment operation precautions

- Perform the basic maintenance operations
- Replace the boards
- List the items of routine maintenance.
- Grasp the basic operation of maintenance on U2000
- Implement routine operation and maintenance on NMS side

Duration

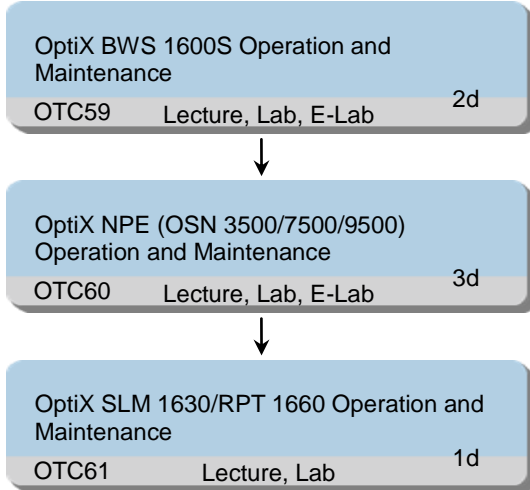
3 working days

Class Size

Min 6, Max 12

2.7.18 OptiX BWS 1600S (repeated) Sub-marine System Operation and Maintenance Training

Training Path



Target Audience

OptiX BWS 1600S operation and maintenance engineer

Prerequisites

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Explain the functions, characteristics of optical components and the key technologies of WDM sub-marine system
- Describe the characteristics of optical interfaces in WDM sub-marine system
- Describe the structure, functions and features of OptiX BWS 1600S equipment
- Describe the functions and specifications of different boards
- Describe the network topologies, system applications and network protection mechanisms
- Perform iManager U2000 operation and maintenance, such as alarms and performance browsing, parameters setting, database restoration/back-up, security/user management, etc
- Implement the equipment hardware configuration
- Draw the LTE/REG signal flow of OptiX BWS 1600S system
- Implement data configuration, optical power adjustment, protection configuration and network expansion through iManager U2000
- List the common indices of OptiX BWS 1600S equipment and perform the WDM products testing
- Illustrate the application of common troubleshooting methods, such as optical power testing, alarm and performance events analysis, replacement, etc
- Locate and eliminate faults, get experience from troubleshooting practice
- Describe the structure, functions and features of OptiX NPE equipment
- Explain the functions and specifications of different boards

- Outline the capacity and ability of OptiX NPE equipment
- Describe the network topologies, system applications and network protection mechanisms
- Implement the service configuration, alarm and performance monitoring through iManager U2000
- State the service application and protection mechanism
- Implement the clock, orderwire, protection configurations and network expansion through iManager U2000
- Execute the on-site operation, such as board replacement, board or equipment resetting and fiber connection
- Perform iManager U2000 operation and maintenance, such as alarms and performance browsing, parameters setting, etc
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Locate and eliminate faults, get experience from troubleshooting practice
- Describe the structure, functions and features of OptiX SLM/RPT equipment
- Describe the functions and specifications of different boards
- Describe the network topologies, system applications and network protection mechanisms
- Perform iManager U2000 operation and maintenance, such as alarms and performance browsing, parameters setting, etc
- Implement the equipment hardware configuration
- Implement data configuration through iManager U2000
- Illustrate the application of common troubleshooting methods
- Locate and eliminate faults, get experience from troubleshooting practice

Duration

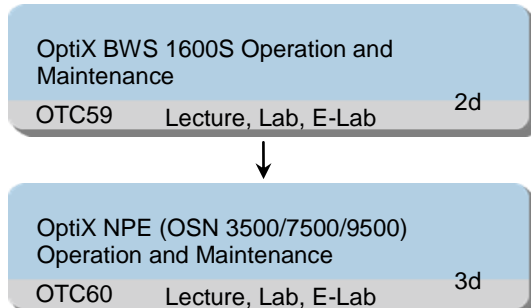
6 working days

Class Size

Min 6, Max 12

2.7.19 OptiX BWS 1600S (unrepeated) Sub-marine System Operation and Maintenance Training

Training Path



Target Audience

OptiX BWS 1600S operation and maintenance engineer

Prerequisites

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Explain the functions, characteristics of optical components and the key technologies of WDM sub-marine system
- Describe the characteristics of optical interfaces in WDM sub-marine system
- Describe the structure, functions and features of OptiX BWS 1600S equipment
- Describe the functions and specifications of different boards
- Describe the network topologies, system applications and network protection mechanisms
- Perform iManager U2000 operation and maintenance, such as alarms and performance browsing, parameters setting, database restoration/back-up, security/user management, etc
- Implement the equipment hardware configuration
- Draw the LTE/REG signal flow of OptiX BWS 1600S system
- Implement data configuration, optical power adjustment, protection configuration and network expansion through iManager U2000
- List the common indices of OptiX BWS 1600S equipment and perform the WDM products testing
- Illustrate the application of common troubleshooting methods, such as optical power testing, alarm and performance events analysis, replacement, etc
- Locate and eliminate faults, get experience from troubleshooting practice
- Describe the structure, functions and features of OptiX NPE equipment
- Explain the functions and specifications of different boards
- Outline the capacity and ability of OptiX NPE equipment
- Describe the network topologies, system applications and network protection mechanisms
- Implement the service configuration, alarm and performance monitoring through iManager U2000
- State the service application and protection mechanism

- Implement the clock, orderwire, protection configurations and network expansion through iManager U2000
- Execute the on-site operation, such as board replacement, board or equipment resetting and fiber connection
- Perform iManager U2000 operation and maintenance, such as alarms and performance browsing, parameters setting, etc
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Locate and eliminate faults, get experience from troubleshooting practice

Duration

5 working days

Class Size

Min 6, Max 12

2.7.20 OptiX MDS 6630(Optical Power Commissioning) Training

Training Path

OptiX MDS 6630(Optical Power Commissioning)		
OTC123	Lecture, Lab	2d

Target Audience

OptiX NG WDM commissioning engineer

Prerequisites

Having working experience in the maintenance of WDM products

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the main functions of MDS 6630
- Outline the optical commissioning procedure by MDS 6630
- Perform the basic operations of MDS 6630
- Describe the Attention Matters for Commissioning
- Master the common methods for troubleshooting
- Analyze and handle the common commissioning faults

Duration

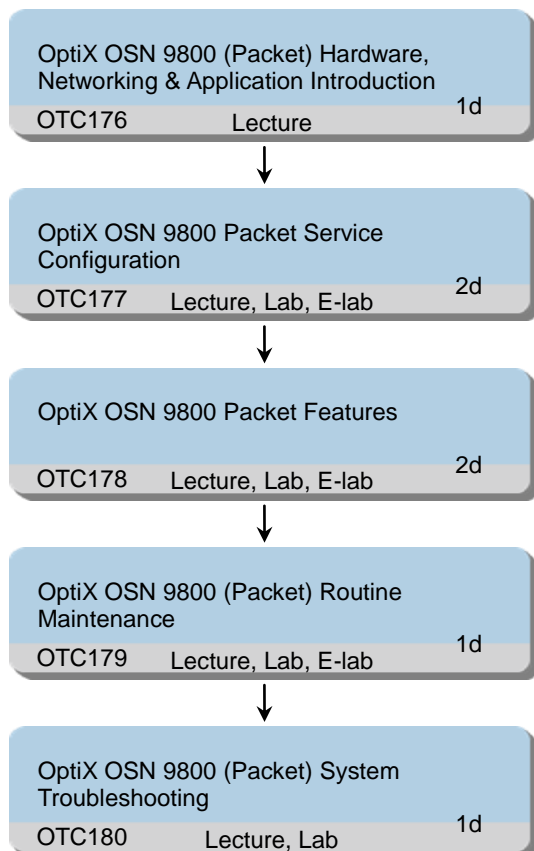
2 working days

Class Size

Min 6, Max 12

2.7.21 OptiX OSN 9800(Packet) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 9800 packet network operation and maintenance engineer

Prerequisites

- Having working experience in WDM transmission network
- Upon completion of OptiX OSN 9800(OTN) 2nd Line Maintenance Training or having equivalent knowledge
- Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts of Ethernet, VLAN and QinQ
- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Describe the basic concepts of PWE3
- Describe the OptiX OSN 9800 hardware
- List the OptiX OSN 9800 packet boards

- Describe the networking application of OSN 9800 (Packet)
- Illustrate the service and protection type of OptiX OSN 9800 (Packet)
- Implement the data configuration through iManager U2000 for OSN 9800 packet service and protection
- Describe the function and features of QoS in OptiX OSN 9800 (Packet)
- Implement the QoS configuration through iManager U2000
- Describe the function and features of OAM in OptiX OSN 9800 (Packet)
- Implement the OAM configuration through iManager U2000
- Implement the NMS side routine maintenance for OptiX OSN 9800 (Packet)
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors,etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faulty of the OptiX OSN 9800 (Packet) network

Duration

7 working days

Class Size

Min 6, Max 12

2.7.22 OptiX NG WDM T-SDN Operation and Maintenance Training

Training Path

OptiX NG WDM T-SDN Operation and Maintenance		
OTC182	Lecture, Lab	3d

Target Audience

OptiX NG WDM T-SDN Operation and maintenance Engineer

Prerequisites

- Completion of OptiX OSN 3800/6800/8800(OTN) Hardware Description & Application and OptiX OSN 3800/6800/8800(OTN) Products Configuration courses or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Understand the development and origin of T-SDN
- Describe the T-SDN structure
- Understand the application scenarios of T-SDN
- Master the T-SDN commissioning
- Master the T-SDN service configuration

Duration

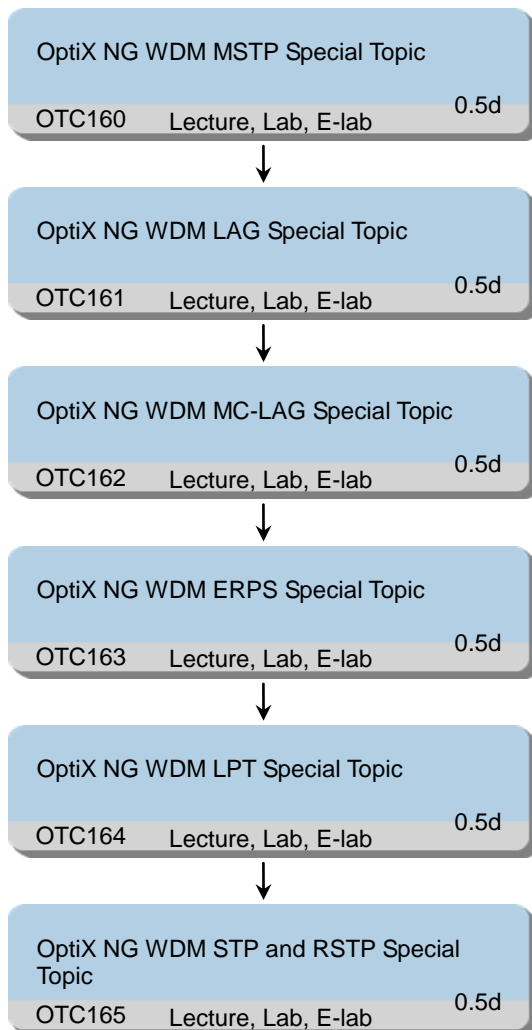
3 working days

Class Size

Min 6, Max 12

2.7.23 OptiX NG WDM Network Protection (EoO/EoW) Special Topic Training

Training Path



Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the application of MC-LAG
- Outline the working principles of the MC- LAG
- Understand the Relevant Alarms and Events of the MC-LAG
- Describe the two aggregation types of the LAG
- Outline the working principles of the LAG

- Understand the Relevant Alarms and Events of the LAG
- Describe the ERPS working principle
- Understand the functions of R-APS Messages
- Describe the four timers of application
- Describe the LPT working principle
- Understand the application of LPT
- Master the configuration of LPT
- Describe the STP/RSTP working principle
- Understand the functions of STP/RSTP
- Describe the alarm of STP/RSTP

Duration

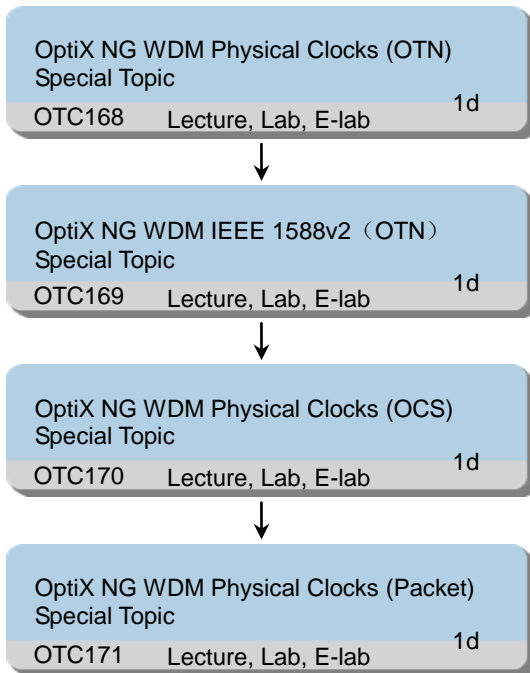
3 working days

Class Size

Min 6, Max 12

2.7.24 OptiX NG WDM Synchronization Special Topic Training

Training Path



Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the Physical Clocks (OTN) working principle
- Understand the functions of Physical Clocks (OTN)
- Describe the alarm of Physical Clocks (OTN)
- Describe the IEEE 1588v2 (OTN) working principle
- Understand the functions of IEEE 1588v2 (OTN)
- Describe the alarm of IEEE 1588v2 (OTN)
- Describe the Physical Clocks (OCS) working principle
- Understand the functions of Physical Clocks (OCS)
- Describe the alarm of Physical Clocks (OCS)
- Describe the Physical Clocks (Packet) working principle
- Understand the functions of Physical Clocks (Packet)
- Describe the alarm of Physical Clocks (Packet)

Duration

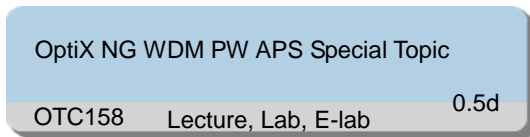
3 working days

Class Size

Min 6, Max 12

2.7.25 OptiX NG WDM Network Protection (Packet) Special Topic Training

Training Path



Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the PW APS working principle
- Outline the PW APS switching conditions
- Understand the Relevant Alarms and Events of the PW APS
- Describe the Tunnel APS working principle
- Outline the Tunnel APS switching conditions
- Understand the Relevant Alarms and Events of the Tunnel APS

Duration

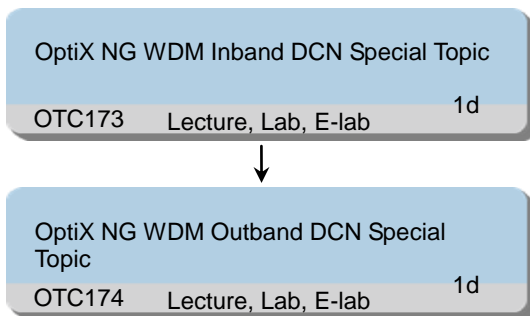
2 working days

Class Size

Min 6, Max 12

2.7.26 OptiX NG WDM DCN Special Topic Training

Training Path



Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the Inband DCN working principle
- Understand the functions of Inband DCN
- Describe the alarm of Inband DCN
- Describe the Outband DCN working principle
- Understand the functions of Outband DCN
- Describe the alarm of Outband DCN

Duration

1 working day

Class Size

Min 6, Max 12

2.7.27 OptiX NG WDM Optical Doctor System Special Topic

Training Path

OptiX NG WDM Optical Doctor System Special Topic		
OTC172	Lecture, Lab, E-lab	1d

Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the Optical Doctor System working principle
- Understand the functions of Optical Doctor System
- Describe the alarm of Optical Doctor System

Duration

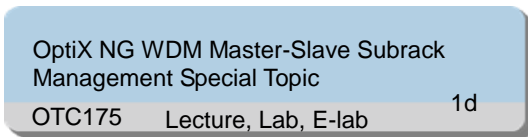
1 working day

Class Size

Min 6, Max 12

2.7.28 OptiX NG WDM Master-Slave Subrack Management Special Topic

Training Path



Target Audience

OptiX NG WDM operation and maintenance engineer

Prerequisites

- Having knowledge of OTN, WDM and IP technology
- Having experience of IP, WDM network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the Master-Slave Subrack Management working principle
- Understand the functions of Master-Slave Subrack Management
- Describe the alarm of Master-Slave Subrack Management

Duration

1 working day

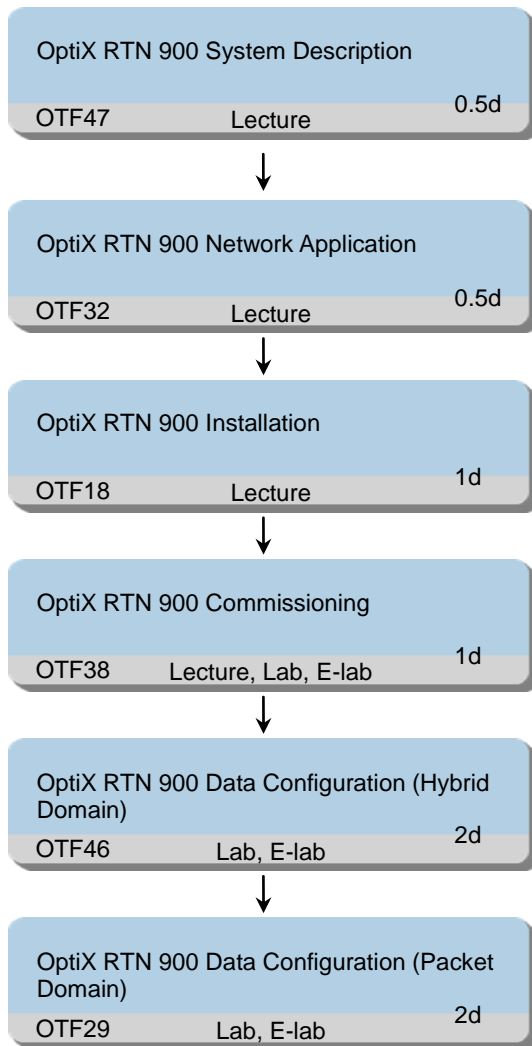
Class Size

Min 6, Max 12

2.8 RTN 900 Products Training Programs

2.8.1 OptiX RTN 900 Installation and Commissioning Training

Training Path



Target Audience

OptiX RTN 900 series installation and commissioning engineer

Prerequisites

- Having basic experience of telecommunications equipment installation criterion
- Having working experience in the optical transport network and microwave products
- Be familiar with Windows operating system
- Having equivalent knowledge of digital microwave communication basics

Objectives

On completion of this program, the participants will be able to:

- Describe the relation among the different parts of OptiX RTN 900
- Illustrate the installation procedures and steps of antenna, ODU/hybrid coupler and IDU
- Implement the outdoor and indoor components installation of OptiX RTN 900
- Describe the installation criterions for each part of OptiX RTN 900
- Describe the main characteristics of OptiX RTN 900
- Describe the system structure, functions and application of every unit
- Explain the functions of AM, hybrid, packet microwave
- Describe the networking application under PDH/SDH, hybrid and packet microwave modes
- List out the protection technologies in OptiX RTN 900 network
- Describe the features and applications of the protection technologies
- Finish proper preparations before the commissioning
- Perform site commissioning of the OptiX RTN 900
- Perform system commissioning of the OptiX RTN 900
- Configure radio links of the OptiX RTN 900
- Configure TDM services of the OptiX RTN 900
- Configure Ethernet services of the OptiX RTN 900
- Describe the basic concepts of IP & MPLS
- Outline the steps of RTN 900 service configuration in packet plane
- Implement Ethernet service / CES service / ATM / IMA services configuration in packet plane via NMS
- Describe the parameters' meaning in service configuration of packet plane

Duration

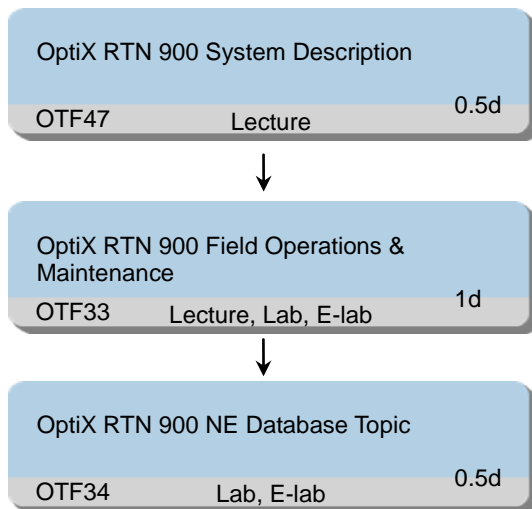
7 working days

Class Size

Min 6, Max 12

2.8.2 OptiX RTN 900 1st Line Maintenance Training

Training Path



Target Audience

OptiX RTN 900 series field maintenance engineer

Prerequisites

Be familiar with Windows operating system.

Having the general knowledge of Microwave basics

Having the general knowledge of IP, MPLS and QinQ

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 900
- Describe the system structure, functions and application of every unit
- Explain the functions of AM, hybrid, packet microwave
- Outline the general safety precautions of OptiX RTN 900
- List the routine maintenance items of OptiX RTN 900
- Implement the maintenance operations of OptiX RTN 900
- Judge the common faulty in OptiX RTN 900
- Describe the functions of CF card
- Routing maintenance of NE database
- Backup NE database

Duration

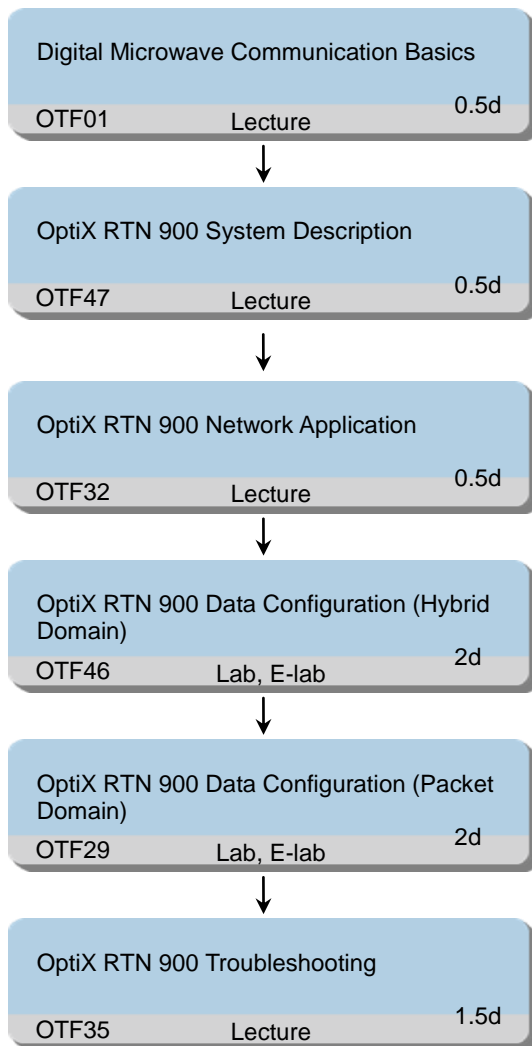
2 working days

Class Size

Min 6, Max 12

2.8.3 OptiX RTN 900 2nd Line Maintenance Training

Training Path



Target Audience

OptiX RTN series operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of Microwave products

Be familiar with Windows operating system

Having the general knowledge of IP, MPLS and QinQ

Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the concept and characters of digital microwave communication
- Describe the theory and function of every part in the digital microwave system
- List the networking application for digital microwave system

- List the fading in microwave propagation
- List the common technologies of antifading
- Describe the basic concepts of IP & MPLS
- Outline the steps of RTN 900 service configuration in packet plane
- Implement Ethernet service / CES service / ATM / IMA services configuration in packet plane via NMS
- Describe the parameters' meaning in service configuration of packet plane
- Describe the main characteristics of OptiX RTN 900
- Describe the system structure, functions and application of every unit
- Explain the functions of AM, hybrid, packet microwave
- Describe the networking application under PDH/SDH, hybrid and packet microwave modes
- List out the protection technologies in OptiX RTN 900 network
- Describe the features and applications of the protection technologies
- Describe the general troubleshooting flow of OptiX RTN 900
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 900
- Configure radio links of the OptiX RTN 900
- Configure TDM services of the OptiX RTN 900
- Configure Ethernet services of the OptiX RTN 900

Duration

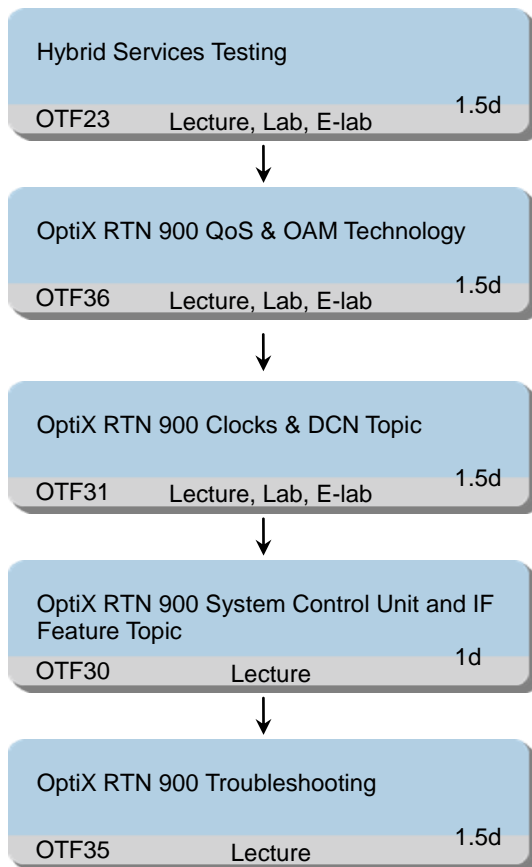
7 working days

Class Size

Min 6, Max 1

2.8.4 OptiX RTN 900 3rd Line Maintenance Training

Training Path



Target Audience

OptiX RTN series senior operation and maintenance engineer

Prerequisites

Completion of OptiX RTN 900 2nd Line Maintenance or NMC Operation Training

Objectives

On completion of this program, the participants will be able to:

- Outline the types and applications of Ethernet
- Know the technical background of the Ethernet and its basic concepts
- Draw the Ethernet frame structure
- Describe the function of VLAN and L2 switching
- State the purpose of Ethernet performance testing
- List the common indices of Ethernet service performance testing
- Explain the concept of common testing indices
- Outline the testing methods of Ethernet service performance testing
- Outline the basic concept of QoS and ETH-OAM
- Describe the working principles of QoS

- Outline the QoS functions of the Ethernet service boards on the OptiX RTN 900
- List the planning principles of QoS
- Describe the configuration flow of QoS
- Describe the usage of ETH-OAM
- Configure clock tracing
- Configure clock protection
- Configure SSM byte in RTN 900
- Check clock status in RTN 900 network
- Manage and configure ECC link
- Configure extended ECC
- Enable/disable ECC link
- Configure IP over DCC, inband DCC
- Configure DCC transparent transmission
- Describe the general troubleshooting flow of OptiX RTN 900
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 900
- Describe system architecture and functions of the SCC unit
- Outline the new features supported by OptiX RTN 900
- Describe the function and application of the new features

Duration

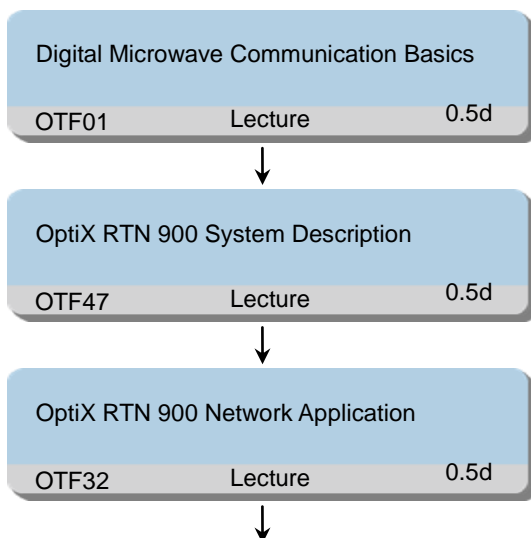
7 working days

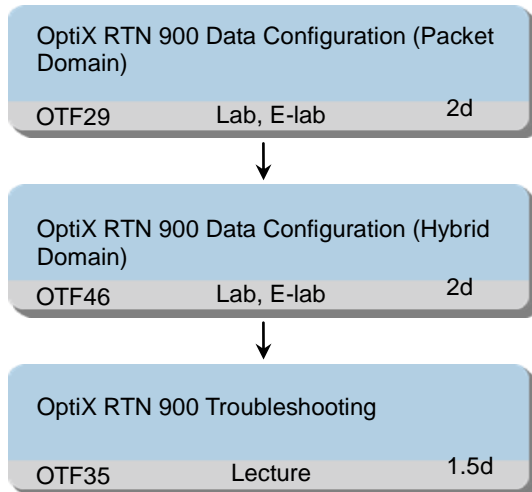
Class Size

Min 6, Max 12

2.8.5 OptiX RTN 900V1R8 2nd Line Maintenance Training

Training Path





Target Audience

OptiX RTN series operation and maintenance engineer

Prerequisites

- Having working experience in the maintenance of Microwave products
- Be familiar with Windows operating system
- Having the general knowledge of IP, MPLS and QinQ
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the concept and characters of digital microwave communication
- Describe the theory and function of every part in the digital microwave system
- List the networking application for digital microwave system
- List the fading in microwave propagation
- List the common technologies of antifading
- Describe the basic concepts of IP & MPLS
- Outline the steps of RTN 900 service configuration in packet plane
- Describe the main characteristics of OptiX RTN 900
- Describe the system structure, functions and application of every unit
- Explain the functions of AM, hybrid, packet microwave
- Describe the networking application under PDH/SDH and hybrid microwave modes
- List out the protection technologies in OptiX RTN 900 network
- Describe the features and applications of the protection technologies
- Describe the SDN feature application
- Implement Ethernet service / CES service / ATM / IMA services configuration in packet plane via NMS
- Describe the parameters' meaning in service configuration of packet plane
- Configure radio links of the OptiX RTN 900
- Configure TDM services of the OptiX RTN 900
- Configure Ethernet services of the OptiX RTN 900

- Describe the general troubleshooting flow of OptiX RTN 900
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 900

Duration

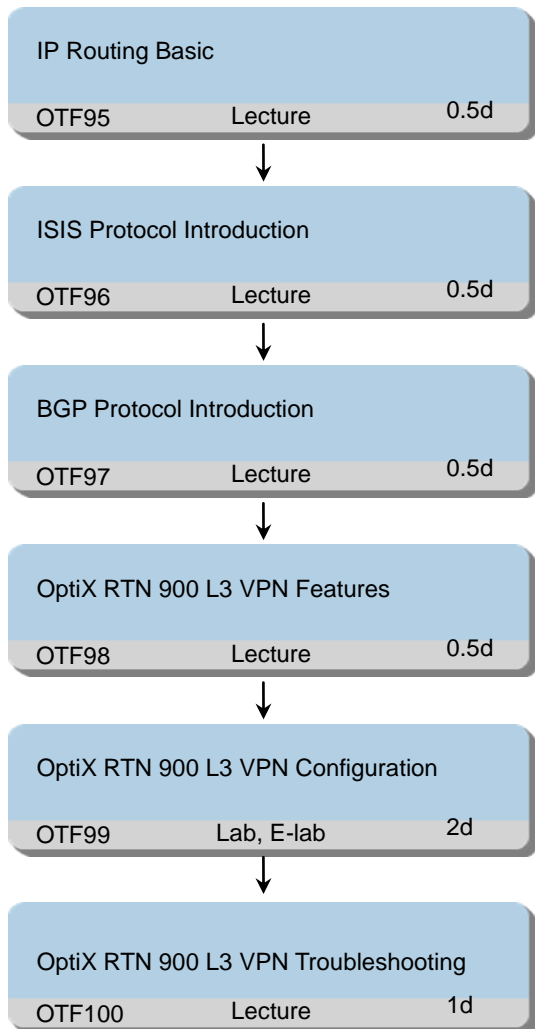
7 working days

Class Size

Min 6, Max 12

2.8.6 OptiX RTN 900 L3 VPN Features Training

Training Path



Target Audience

OptiX RTN 900 L3 VPN network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe basic structure of IP network
- Describe basic knowledge of IP address
- Understand what is router and route

- Describe the classification of routing protocols
- Understand the origin of the IS-IS protocol
- Describe the principles of the IS-IS protocol
- Describe the principles of the BGP protocol
- Implement BGP Route Selection
- Understand the model of BGP MPLS VPN
- Understand the basic concepts referred to BGP MPLS VPN
- Understand the mechanisms of the route and label distribution in BGP MPLS VPN
- Understand the process of data forwarding in BGP MPLS VPN
- Understand the protection schemes of MPLS BGP VPN service
- Implement L3 VPN configuration on RTN 900
- Implement L3 VPN troubleshooting on RTN 900

Duration

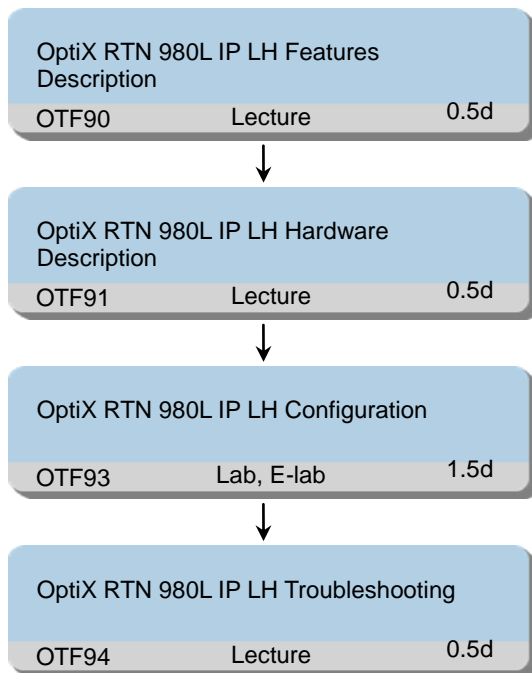
5 working days

Class Size

Min 6, Max 12

2.8.7 OptiX RTN 980L IP Long Haul Microwave Features Training

Training Path



Target Audience

OptiX RTN 980L operation and maintenance engineer

Prerequisites

- Having working experience in the maintenance of RTN 900 products
- Be familiar with Windows operating system
- Having the general knowledge of IP and MPLS
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the product positioning of the RTN 980L
- List the components and boards of the RTN 980L
- Describe the function and feature of the RTN 980L
- Describe the microwave features in OptiX RTN 980L long haul network
- Describe the protection features in OptiX RTN 980L long haul network
- Illustrate the installation procedures and steps of antenna, RFU, branch, IDU
- Implement the outdoor and indoor components installation of OptiX RTN 980L
- Describe the installation criterions for each part of OptiX RTN 980L
- Implement radio configuration of OptiX RTN 980L
- Implement service configuration of OptiX RTN 980L
- Describe general troubleshooting flow of OptiX RTN 980L

- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 980L

Duration

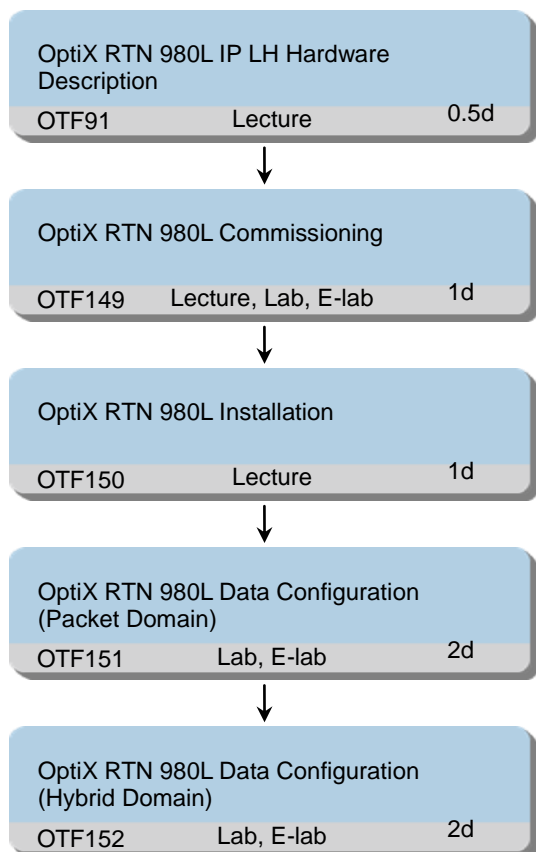
3 working days

Class Size

Min 6, Max 12

2.8.8 OptiX RTN 980L Installation and Commissioning Training

Training Path



Target Audience

OptiX RTN 980L installation and commissioning engineer

Prerequisites

- Having basic experience of telecommunications equipment installation criterion
- Having working experience in the optical transport network and microwave products
- Be familiar with Windows operating system
- Having equivalent knowledge of digital microwave communication basics

Objectives

On completion of this program, the participants will be able to:

- Describe the relation among the different parts of OptiX RTN 980L
- Illustrate the installation procedures and steps of antenna, RFU/branch and IDU
- Implement the outdoor and indoor components installation of OptiX RTN 980L
- Describe the installation criterions for each part of OptiX RTN 980L
- Describe the basic concepts of IP & MPLS
- Outline the steps of RTN 980L service configuration in packet plane

- Implement Ethernet service / CES service / ATM / IMA services configuration in packet plane via NMS
- Describe the parameters' meaning in service configuration of packet plane
- Describe the main characteristics of OptiX RTN 980L
- Describe the system structure, functions and application of every unit
- Explain the functions of AM, hybrid, packet microwave
- Describe the networking application under PDH/SDH and hybrid microwave modes
- List out the protection technologies in OptiX RTN 980L network
- Describe the features and applications of the protection technologies
- Finish proper preparations before the commissioning
- Perform site commissioning of the OptiX RTN 980L
- Perform system commissioning of the OptiX RTN 980L
- Configure radio links of the OptiX RTN 980L
- Configure TDM services of the OptiX RTN 980L
- Configure Ethernet services of the OptiX RTN 980L

Duration

7 working days

Class Size

Min 6, Max 12

2.9 RTN 900 Products Advanced Training

2.9.1 OptiX RTN 900 ERPS Special Topic Training

Training Path

OptiX RTN 900 ERPS Special Topic		
OTF129	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Having knowledge of Ethernet technology and ELAN service

Objectives

On completion of this program, the participants will be able to:

- Describe the ERPS working principal
- Understand the functions of R-APS Messages
- Describe the four timers of application

Duration

0.5 working day

Class Size

Min 6, Max 12

2.9.2 OptiX RTN 900 PLA/EPLA Special Topic Training

Training Path

OptiX RTN 900 PLA/EPLA Special Topic		
OTF130	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the PLA/EPLA working principal
- Outline the differences between PLA, EPLA, and LAG
- Describe the Relevant Alarms and Events of the PLA/EPLA

Duration

0.5 working day

Class Size

Min 6, Max 12

2.9.3 OptiX RTN 900 PW APS Special Topic Training

Training Path

OptiX RTN 900 PW APS Special Topic		
OTF131	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the PW APS working principal
- Outline the PW APS switching conditions
- Understand the Relevant Alarms and Events of the PW APS

Duration

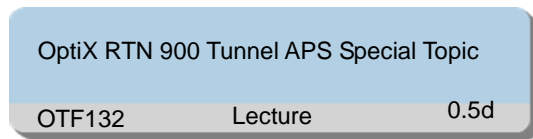
0.5 working day

Class Size

Min 6, Max 12

2.9.4 OptiX RTN 900 Tunnel APS Special Topic Training

Training Path



Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the Tunnel APS working principal
- Outline the Tunnel APS switching conditions
- Understand the Relevant Alarms and Events of the Tunnel APS

Duration

0.5 working day

Class Size

Min 6, Max 12

2.9.5 OptiX RTN 900 LAG Special Topic Training

Training Path

OptiX RTN 900 LAG Special Topic		
OTF133	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the two aggregation types of the LAG
- Outline the working principles of the LAG
- Understand the Relevant Alarms and Events of the LAG

Duration

0.5 working day

Class Size

Min 6, Max 12

2.9.6 OptiX RTN 900 AM Special Topic Training

Training Path

OptiX RTN 900 AM Special Topic		
OTF134	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the AM working principal
- Outline the AM switching conditions
- Understand the Relevant Alarms and Events of the AM

Duration

0.5 working day

Class Size

Min 6, Max 12

2.9.7 OptiX RTN 900 Preconfiguration Tool and Operation Training

Training Path

OptiX RTN 900 Preconfiguration Tool and Operation		
OTF135	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure for Using the Preconfiguration Tool
- Outline GUI function
- Understand the Relevant operation of the Error Handling

Duration

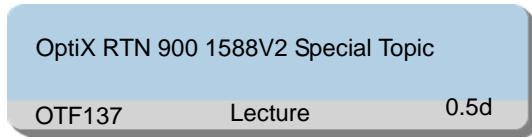
0.5 working day

Class Size

Min 6, Max 12

2.9.8 OptiX RTN 900 1588V2 Special Topic Training

Training Path



Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the 1588V2 application
- Outline the Basic Concepts of the 1588V2
- Describe the 1588V2 working principal
- Understand the Relevant Alarms and Events of the 1588V2

Duration

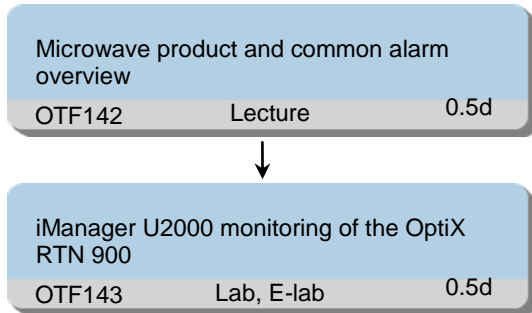
0.5 working day

Class Size

Min 6, Max 12

2.9.9 iManager U2000 RTN Network Monitoring Training

Training Path



Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Having working experience in the U2000 operating and maintenance
- Having the general knowledge of Microwave

Objectives

On completion of this program, the participants will be able to:

- Describe the typical products of Microwave equipments
- Describe the common alarm of the Microwave Link and service
- Describe the common performance of the Microwave Link and service

Duration

1 working day

Class Size

Min 6, Max 12

2.9.10 KPI Analysis of Ethernet Service Training

Training Path

KPI Analysis of Ethernet Service		
OTF142	Lecture	0.5d

Target Audience

OptiX RTN 900 maintenance engineer

Prerequisites

- Having working experience in the U2000 operating and maintenance
- Having working experience in the optical transport network and microwave products

Objectives

On completion of this program, the participants will be able to:

- Explain the RMON functions of different boards
- Implement the Ethernet service performance monitoring through iManager U2000

Duration

0.5 working day

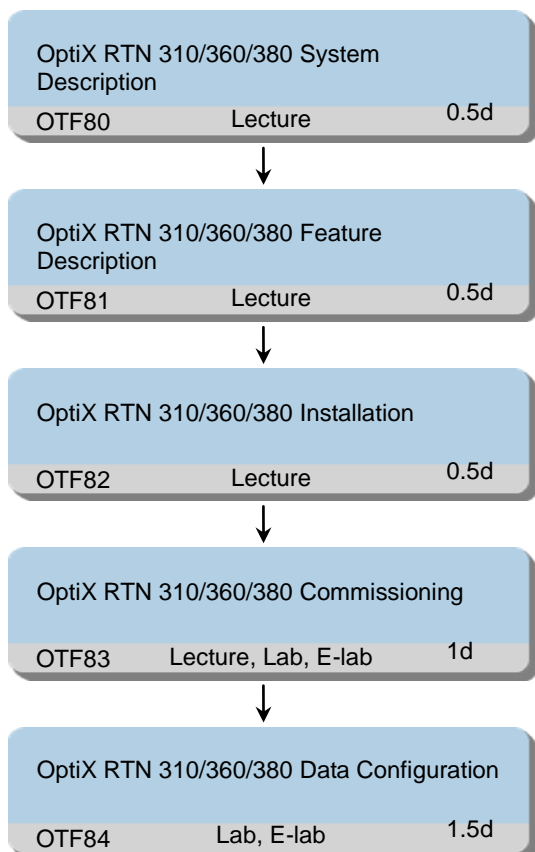
Class Size

Min 6, Max 12

2.10 RTN 300 Products Training Programs

2.10.1 OptiX RTN 310360380 Installation and Commissioning Training

Training Path



Target Audience

OptiX RTN 310/360/380 installation and commissioning engineer

Prerequisites

- Having basic experience of telecommunications equipment installation criterion
- Having equivalent knowledge of digital microwave communication basics
- Be familiar with windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 310/360/380
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 310/360/380
- Describe the features and application of OptiX RTN 310/360/380
- Illustrate the installation procedures and steps of antenna, RTN 310/360/380 and PI
- Implement the installation of OptiX RTN 310/360/380

- Describe the installation criteria for each part of OptiX RTN 310/360/380
- Finish proper preparations before the commissioning
- Perform site commissioning of the OptiX RTN 310/360/380
- Perform system commissioning of the OptiX RTN 310/360/380
- Configure radio links of the OptiX RTN 310/360/380
- Configure services of the OptiX RTN 310/360/380

Duration

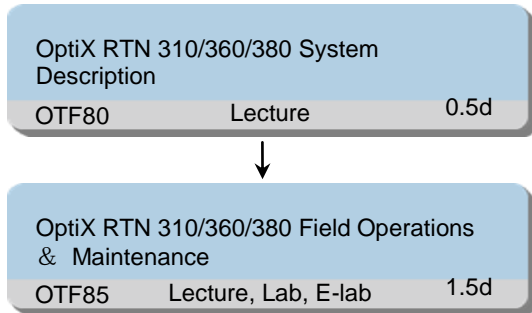
4 working days

Class Size

Min 6, Max 12

2.10.2 OptiX RTN 310360380 1st Line Maintenance Training

Training Path



Target Audience

OptiX RTN 310/360/380 field maintenance engineer

Prerequisites

- Having a general knowledge of microwave basics

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 310/360/380
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 310/360/380
- List the routine maintenance items of OptiX RTN 310/360/380
- Implement the maintenance operation of OptiX RTN 310/360/380
- Judge the common faulty in OptiX RTN 310/360/380

Duration

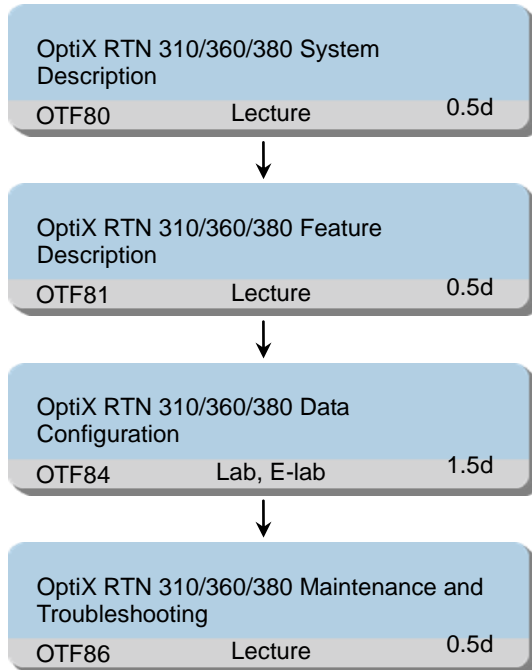
2 working days

Class Size

Min 6, Max 12

2.10.3 OptiX RTN 310360380 2nd Line Maintenance Training

Training Path



Target Audience

OptiX RTN 310/360/380 operation and maintenance engineer

Prerequisites

- Having working experience in the maintenance of Microwave products
- Having the general knowledge of Ethernet
- Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 310/360/380
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 300
- Describe the features and application of OptiX RTN 310/360/380
- Illustrate the installation procedures and steps of antenna, RTN 310/360/380 and PI
- Configure radio links of the OptiX RTN 310/360/380
- Configure services of the OptiX RTN 310/360/380
- Implement the routine maintenance via NMS
- Describe the general troubleshooting flow of OptiX RTN 310/360/380
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 310/360/380

Duration

3 working days

Class Size

Min 6, Max 12

2.10.4 OptiX RTN 300 Preconfiguration Tool Operation

Training Path

OptiX RTN 300 Preconfiguration Tool Operation		
OTF136	Lecture	0.5d

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure for Using the Preconfiguration Tool
- Outline GUI function
- Understand the Relevant operation of the Error Handling

Duration

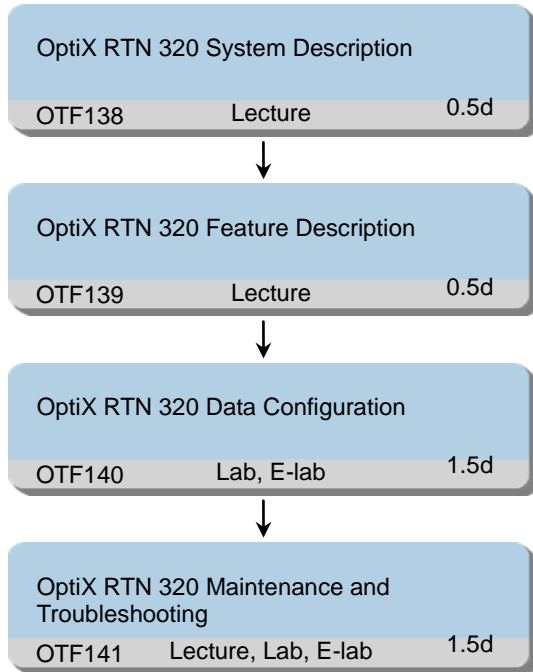
0.5 working day

Class Size

Min 6, Max 12

2.10.5 OptiX RTN 320 Operation and Maintenance Training

Training Path



Target Audience

OptiX RTN 320 operation and maintenance engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 320
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 320
- Describe the features and application of OptiX RTN 320
- Configure radio links of the OptiX RTN 320
- Configure services of the OptiX RTN 320
- Implement the routine maintenance via NMS
- Describe the general troubleshooting flow of OptiX RTN 320
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 320

Duration

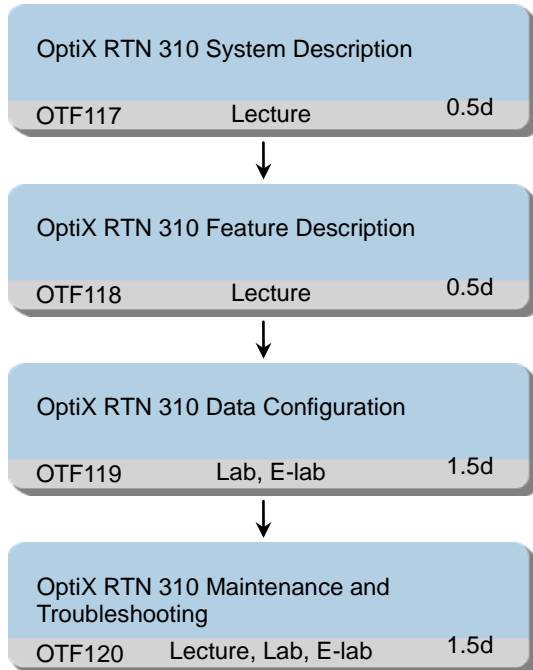
4 working days

Class Size

Min 6, Max 12

2.10.6 OptiX RTN 310 Operation and Maintenance Training

Training Path



Target Audience

OptiX RTN 310 operation and maintenance engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 310
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 310
- Describe the features and application of OptiX RTN 310
- Configure radio links of the OptiX RTN 310
- Configure services of the OptiX RTN 310
- Implement the routine maintenance via NMS
- Describe the general troubleshooting flow of OptiX RTN 310
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 310

Duration

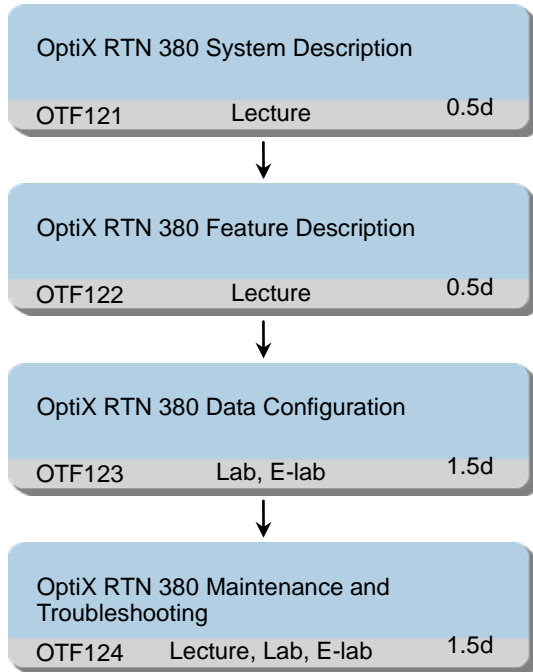
4 working days

Class Size

Min 6, Max 12

2.10.7 OptiX RTN 380 Operation and Maintenance Training

Training Path



Target Audience

OptiX RTN 380 operation and maintenance engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 380
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 380
- Describe the features and application of OptiX RTN 380
- Configure radio links of the OptiX RTN 380
- Configure services of the OptiX RTN 380
- Implement the routine maintenance via NMS
- Describe the general troubleshooting flow of OptiX RTN 380
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 380

Duration

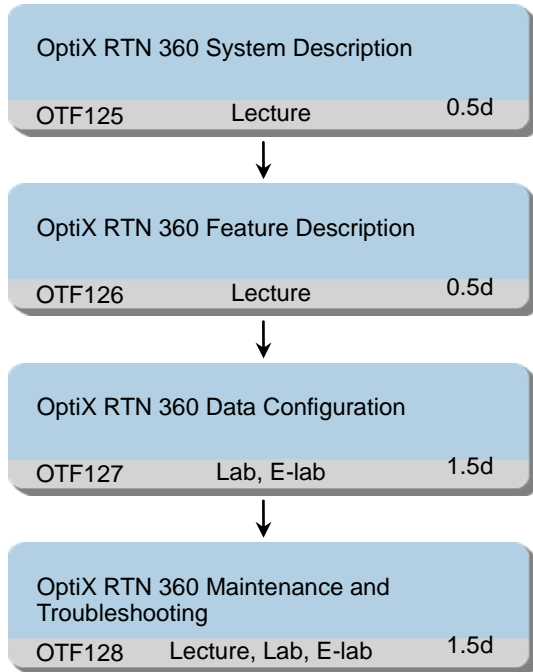
4 working days

Class Size

Min 6, Max 12

2.10.8 OptiX RTN 360 Operation and Maintenance Training

Training Path



Target Audience

OptiX RTN 360 operation and maintenance engineer

Prerequisites

- Having a general knowledge of Digital Microwave Communication
- Having the general knowledge of Ethernet

Objectives

On completion of this program, the participants will be able to:

- Describe the main characteristics of OptiX RTN 360
- Describe the system structure, functions and application of every unit
- Describe the relation among the different parts of OptiX RTN 360
- Describe the features and application of OptiX RTN 360
- Configure radio links of the OptiX RTN 360
- Configure services of the OptiX RTN 360
- Implement the routine maintenance via NMS
- Describe the general troubleshooting flow of OptiX RTN 360
- Outline the methods of faults analyzing and locating
- Perform the common troubleshooting for OptiX RTN 360

Duration

4 working days

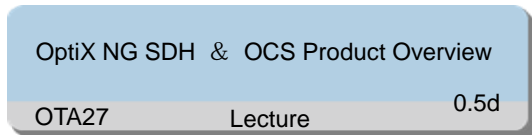
Class Size

Min 6, Max 12

2.11 MSTP Products Training Programs

2.11.1 OptiX OSN NG SDH & OCS Product Overview Training

Training Path



Target Audience

Non-technical manager
OptiX NG SDH & OCS products novice

Prerequisites

- NA

Objectives

On completion of this program, the participants will be able to:

- List the function of transmission network
- Describe the network application of the OptiX NG SDH & OCS system
- Describe the structure of the OptiX NG SDH & OCS equipment
- List the main cards of the OptiX NG SDH & OCS equipment
- Understand the features of the OptiX NG SDH & OCS equipment

Duration

0.5 working day

Class Size

Min 6, Max 12

2.11.2 OptiX OSN NG SDH & OCS Installation Training

Training Path

OptiX NG SDH & OCS Installation		
OTA26	Lecture, WBT	2D

Target Audience

OptiX NG SDH & OCS installation engineer

Prerequisites

NA

Objectives

On completion of this program, the participants will be able to:

- Describe the features of the OptiX NG SDH & OCS equipment
- Outline the main boards of the OptiX NG SDH & OCS equipment
- List the equipment installation procedure
- Describe the preparation for installation
- State the required equipment room environment and grounding condition checks
- Verify the cabinet, cables and component installations

Duration

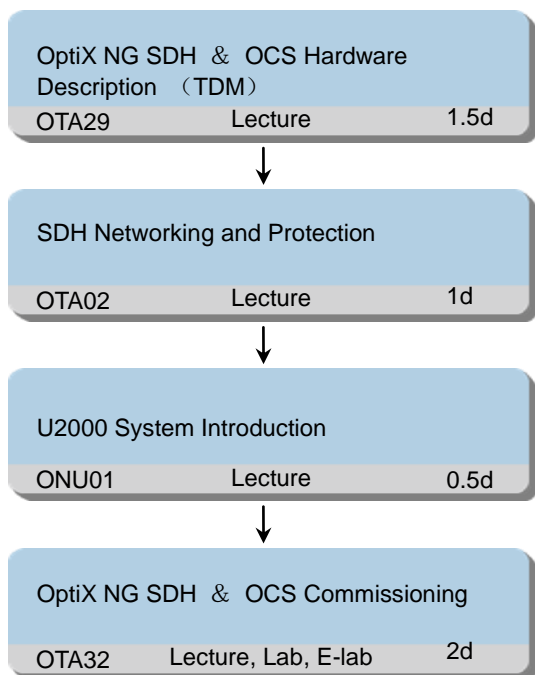
2 days

Class Size

No limit

2.11.3 OptiX NG SDH & OCS Equipment (TDM) Commissioning Training

Training Path



Target Audience

OptiX NG SDH & OCS commissioning engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Upon completion of OTA01 SDH Basics course or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of linear MSP
- Explain the protection mechanism of MS shared protection ring
- Explain the protection mechanism of SNCP in ring/mesh topology
- Analyze the service signal flow before/after the protection switch takes place
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000

- Describe the preparation for the commissioning
- List the items for single station commissioning for OptiX NG SDH & OCS system
- Outline the procedures of network commissioning for OptiX NG SDH & OCS system
- Summarize the equipment/network condition after commissioning
- Accomplish the OptiX NG SDH & OCS system commissioning

Duration

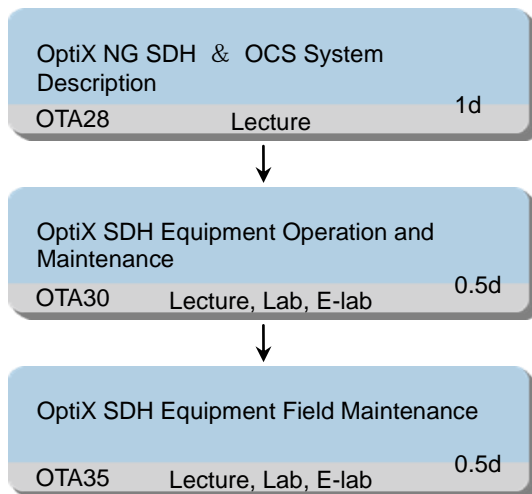
5 working days

Class Size

Min 6, Max 12

2.11.4 OptiX NG SDH & OCS Equipment (TDM) 1st Line Maintenance Training

Training Path



Target Audience

OptiX NG SDH & OCS equipment field maintenance engineer

Prerequisites

Be familiar with Windows operating system

Having a general knowledge of SDH basics

Objectives

On completion of this program, the participants will be able to:

- Illustrate the networking applications of the OptiX NG SDH & OCS equipment
- Describe the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection schemes of the OptiX NG SDH & OCS equipment
- Outline the operation environment of OptiX SDH series equipment
- List the status description of OptiX SDH series equipment indicators
- List the maintenance items of OptiX SDH series equipment
- Perform the basic maintenance operations of OptiX SDH series equipment
- Complete the maintenance records of OptiX SDH series equipment
- Outline the function of basic menus of OptiX iManager T2000 LCT
- Create topology including create NE/Link/NM
- Perform the NE configuration, board configuration, service dispatching and protection configuration for equipment via OptiX iManager T2000 LCT
- Perform the routine maintenance via T2000 LCT

Duration

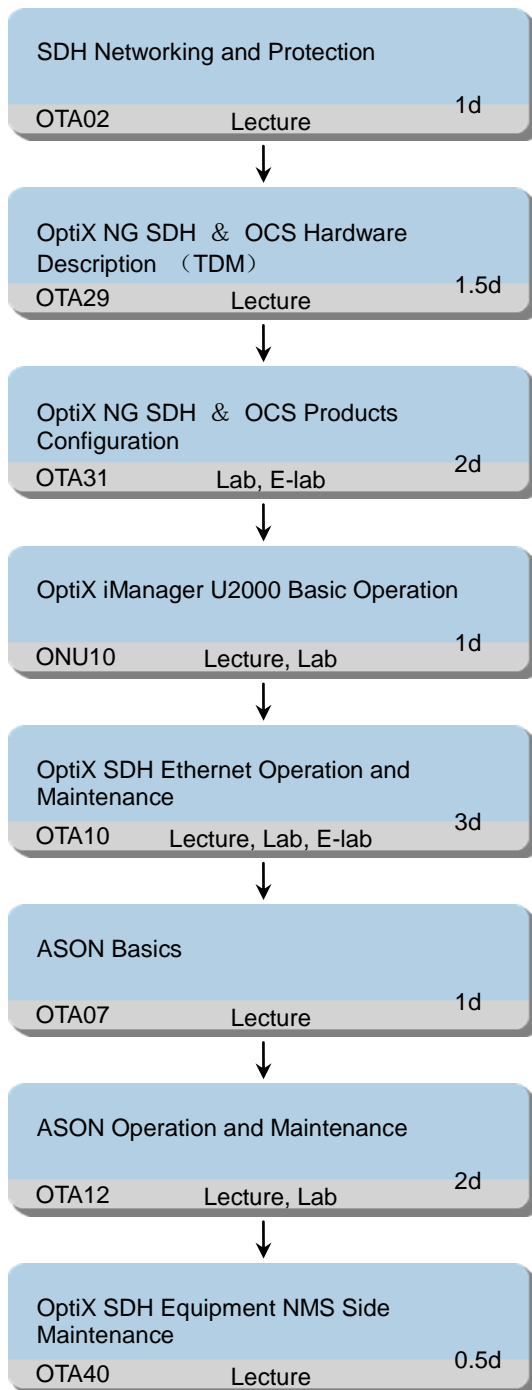
2 working days

Class Size

Min 6, Max 12

2.11.5 OptiX NG SDH & OCS Equipment (TDM) NMC Operation Training

Training Path



Target Audience

OptiX NG SDH & OCS network operation center engineer

Prerequisites

Be familiar with Windows operating system

Upon completion of OTA01 SDH Basics course or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of linear MSP
- Explain the protection mechanism of MS shared protection ring
- Explain the protection mechanism of SNCP in ring/mesh topology
- Analyze the service signal flow before/after the protection switch takes place
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Accomplish the network protection and SDH service configuration through NMS
- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service
- List the main Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the functions and application of the Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the features of the Ethernet boards
- Accomplish the Ethernet service EPL/EVPL/EPLAN configuration through NMS
- State the purpose of Ethernet performance testing
- List the common indices of Ethernet service performance testing
- Explain the concepts of common testing indices
- Outline the testing methods of Ethernet service performance testing
- Implement the Ethernet performance testing and analyze the result
- Know the operation environment of NMS
- List the maintenance tasks
- Perform the basic maintenance operations
- Complete the maintenance records
- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON
- Implement the creation of ASON network
- Create SLA services and test the protection and restoration of them
- Conduct the maintenance operation of ASON network
- Explain the operation precaution of ASON
- Explain the fault reported by the ASON network
- Outline the methods of ASON troubleshooting
- Solve the typical ASON trouble

Duration

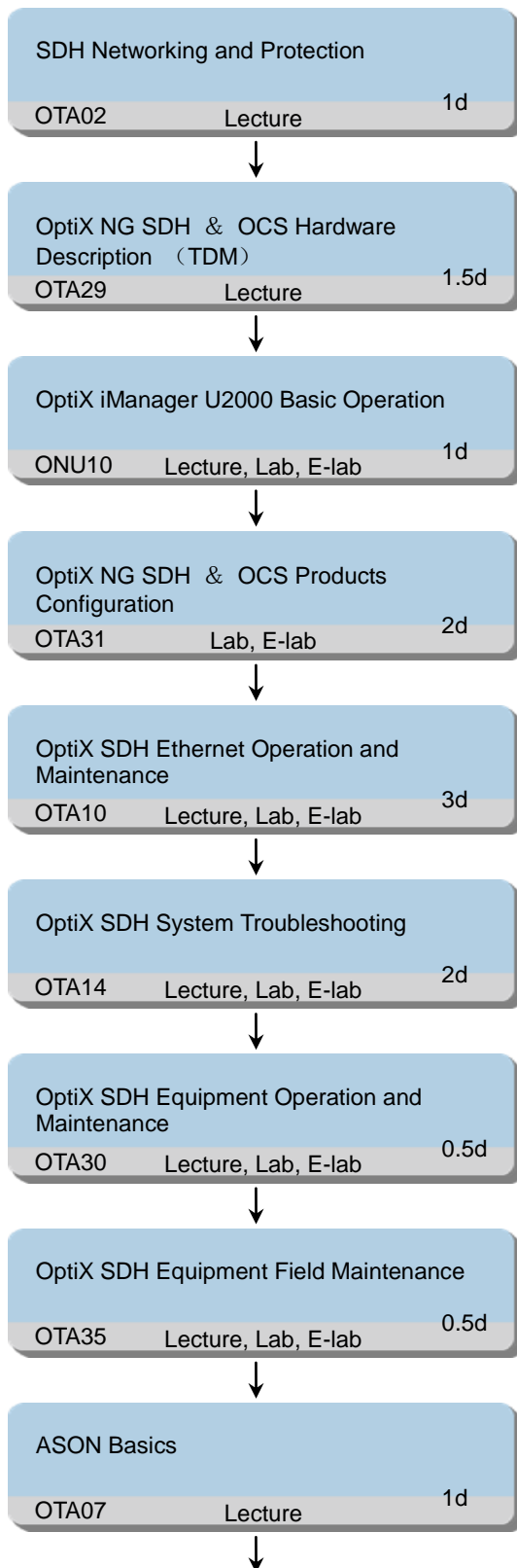
12 working days

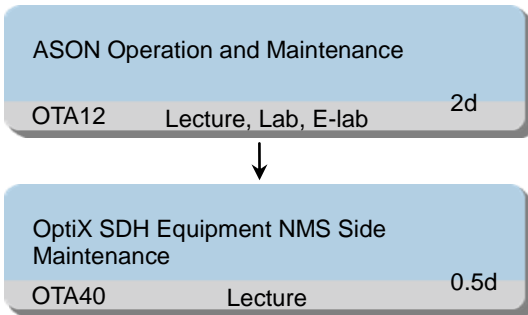
Class Size

Min 6, Max 12

2.11.6 OptiX NG SDH & OCS Equipment (TDM) 2nd Line Maintenance Training

Training Path





Target Audience

OptiX NG SDH & OCS operation and maintenance engineer

Prerequisites

Having working experience in the maintenance of SDH products

Be familiar with Windows operating system

Upon completion of OTA01 SDH Basics course or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of linear MSP
- Explain the protection mechanism of MS shared protection ring
- Explain the protection mechanism of SNCP in ring/mesh topology
- Analyze the service signal flow before/after the protection switch takes place
- Accomplish the network protection and SDH service configuration through NMS
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Outline the function of basic menus of OptiX iManager T2000 LCT
- Create topology including create NE/Link/NM
- Perform the NE configuration, board configuration, service dispatching and protection configuration for equipment via OptiX iManager T2000 LCT
- Perform the routine maintenance via T2000 LCT
- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service
- List the main Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the functions and application of the Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the features of the Ethernet boards
- Accomplish the Ethernet service EPL/EVPL/EPLAN configuration through NMS
- State the purpose of Ethernet performance testing

- List the common indices of Ethernet service performance testing
- Explain the concepts of common testing indices
- Outline the testing methods of Ethernet service performance testing
- Implement the Ethernet performance testing and analyze the result
- Implement the creation of ASON network
- Create SLA services and test the protection and restoration of them
- Conduct the maintenance operation of ASON network
- Explain the operation precaution of ASON
- Explain the fault reported by the ASON network
- Outline the methods of ASON troubleshooting
- Solve the typical ASON trouble
- Outline the operation environment of OptiX SDH series equipment
- List the status description of OptiX SDH series equipment indicators
- List the maintenance items of OptiX SDH series equipment
- Perform the basic maintenance operations of OptiX SDH series equipment
- Complete the maintenance records of OptiX SDH series equipment
- Know the operation environment of NMS
- List the maintenance tasks
- Perform the basic maintenance operations
- Complete the maintenance records
- List the common analysis methods of fault locating
- Outline the fault handling flow
- Analyze the typical faults: traffic interruption, error bit, etc
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Analyze common faulty of the network consist of OptiX NG SDH & OCS series
- Locate and eliminate faults, get experience from troubleshooting practice
- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON

Duration

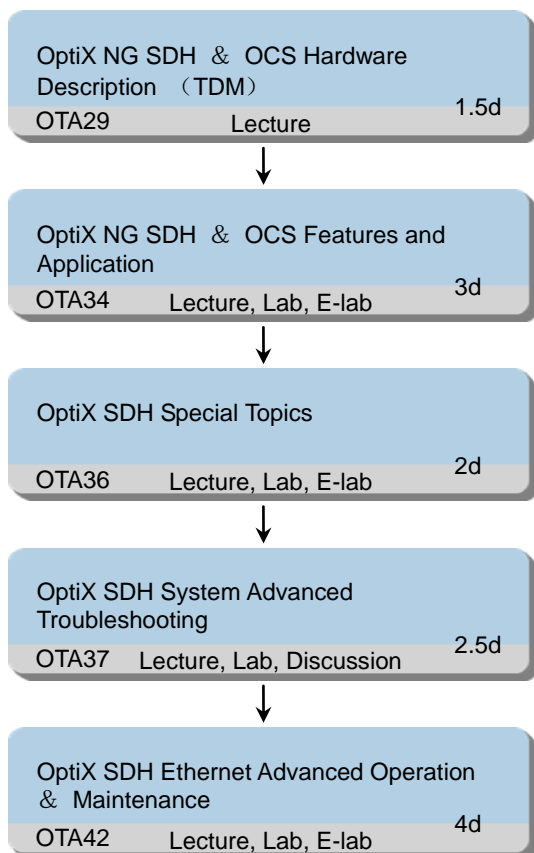
15 working days

Class Size

Min 6, Max 12

2.11.7 OptiX NG SDH & OCS Equipment (TDM) 3rd Line Maintenance Training

Training Path



Target Audience

OptiX NG SDH & OCS senior operation and maintenance engineer

Prerequisites

Completion of OptiX NG SDH & OCS Equipment (TDM) 2nd Line Maintenance Training or OptiX NG SDH & OCS Equipment (TDM) NMC Operation Training

Objectives

On completion of this program, the participants will be able to:

- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe the principle and process of TPS on OptiX NG SDH equipment
- List the main characteristics of TPS on OptiX NG SDH equipment
- Implement the configuration of TPS on OptiX NG SDH equipment
- Describe the feature of power source system in OptiX NG SDH & OCS system
- Grasp the protection principle and function of all types of power sources in OptiX NG SDH & OCS equipments
- Grasp the principle of cross-connection & clock active/standby switching in OptiX NG SDH & OCS system

- Grasp the mechanism of cross-connection & clock active/standby switching in OptiX NG SDH & OCS system
- Describe the principle of SCC active/standby switching in OptiX NG SDH & OCS system
- List the methods of SCC switching in OptiX NG SDH & OCS system
- Describe the traffic flow and service configuration about the complicated networks
- Analyze the protection capability about the complicated networks
- Accomplish the service configuration of the complicated network and verify the protection
- Describe the working mechanism of the L2 switching
- Interpret the basic of QoS
- Outline the key technology in QoS
- Describe the typical QoS application
- Describe the frame structure of MPLS
- Interpret the basic of QinQ
- List the application of MPLS and QinQ
- Describe the working mechanism of virtual concatenation
- Describe the function of LCAS
- Illustrate the GFP-F frame structure for the Ethernet signal
- Describe the troubleshooting idea and methods
- Analyze the common faults locating
- Outline the procedures of Ethernet troubleshooting
- Analyze the failure of the Ethernet service
- Locate the faulty of the Ethernet service
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Accomplish the OAM testing
- Locate the fault position when error reports
- Explain the meaning of clock protection related synchronization parameters
- Explain the basic principles of implementing clock protection networking
- Accomplish the clock protection configuration and verify it while the network fails
- Grasp the working principle of ECC
- Describe the network application of ECC and how to separate huge ECC network into smaller networks
- Illustrate the extended applications of ECC
- Accomplish the configuration of ECC, verify extended ECC and DCC transparent transmission
- Outline common ECC command lines
- Get further understand of the feature of OptiX NG SDH & OCS system
- Analyze common cases in the real network and figure out the problem
- Locate the faulty of the failed network and summarize the key point of troubleshooting

Duration

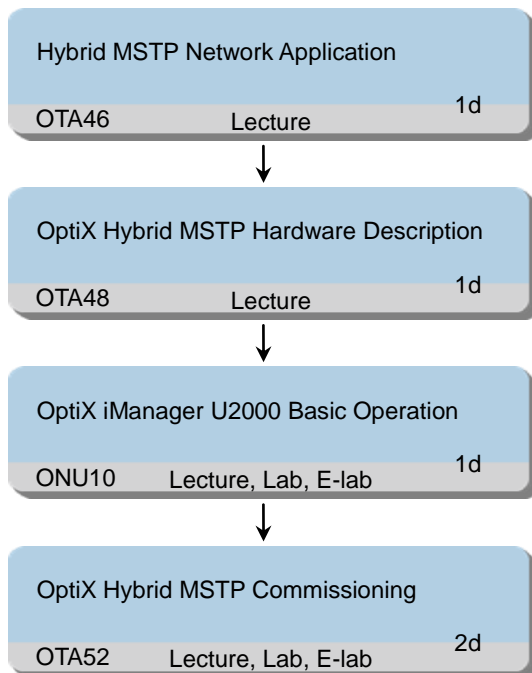
13 working days

Class Size

Min 6, Max 12

2.11.8 OptiX NG SDH Equipment (Packet) Commissioning Training

Training Path



Target Audience

Hybrid MSTP commissioning engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet
- Check the equipment condition such as power connections, fiber connections, mounted boards, etc
- Outline and perform the commissioning process for OptiX Hybrid MSTP equipment
- Perform the commissioning process of the network
- Describe methods of operation including circuit provisioning, routing maintenance tasks and fault finding
- Perform commissioning tests on the equipment
- Perform commissioning tests on the network

- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000

Duration

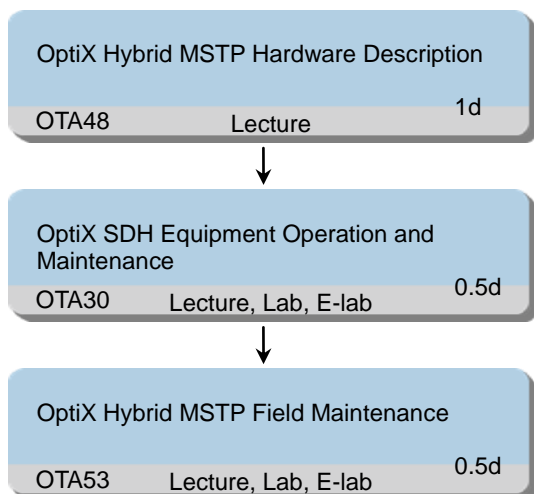
5 working days

Class Size

Min 6, Max 12

2.11.9 OptiX NG SDH Equipment (Packet) 1st Line Maintenance Training

Training Path



Target Audience

Hybrid MSTP equipment field maintenance engineer

Prerequisites

Be familiar with Windows operating system

Having a general knowledge of SDH basics

Objectives

On completion of this program, the participants will be able to:

- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Outline the operation environment of OptiX SDH series equipment
- List the status description of OptiX SDH series equipment indicators
- List the maintenance items of OptiX SDH series equipment
- Perform the basic maintenance operations of OptiX SDH series equipment
- Complete the maintenance records of OptiX SDH series equipment
- Outline the function of basic menus of iManager U2000 LCT
- Create topology including create NE/Link
- Perform the NE configuration, board configuration, and service dispatching and protection configuration for equipment via iManager U2000 LCT
- Perform the routine maintenance via U2000 LCT

Duration

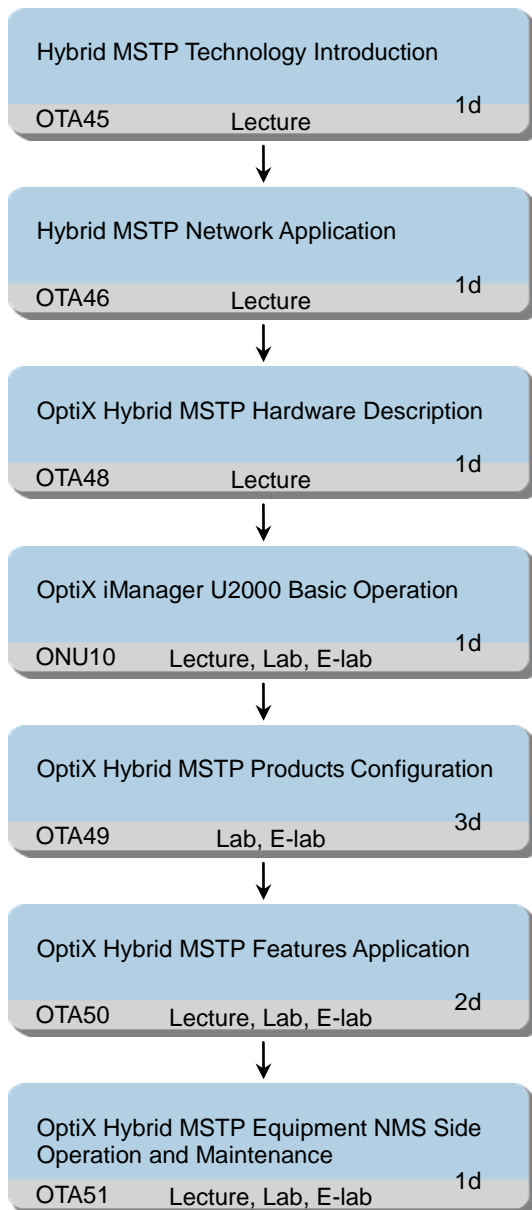
2 working days

Class Size

Min 6, Max 12

2.11.10 OptiX NG SDH Equipment (Packet) NMC Operation Training

Training Path



Target Audience

Hybrid MSTP network operation center engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Upon completion of OTA01 SDH Basics and OTA45 Hybrid MSTP Technology Introduction courses or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Outline the QinQ application scenarios of OptiX Hybrid MSTP
- Describe the basic concepts of PWE3
- Outline the typical PWE3 encapsulation format for Ethernet
- Outline the typical PWE3 encapsulation format for TDM E1
- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Configure OptiX Hybrid MSTP products
- Configure the protection of TDM plane & packet transport plane for the network and equipment
- Configure the common services for the TDM plane
- Configure the E-Line/E-LAN/E-AGGR service in the packet transport plane
- Outline the QoS model
- Describe QoS basic concepts
- Outline the key technology in QoS
- Describe the typical QoS application in Hybrid MSTP network
- Configure QoS in Hybrid MSTP system according to the service demand
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Describe the working mechanism and application scene of MPLS OAM
- Describe the working mechanism and application scene of MPLS-TP OAM
- Describe the working mechanism and application scene of PW OAM
- Accomplish the OAM testing
- Locate the fault position when error reports
- Describe the operation environment of NMS
- List the maintenance tasks for Hybrid MSTP equipment
- Perform the basic maintenance operations for Hybrid MSTP equipment
- Complete the maintenance records
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet

Duration

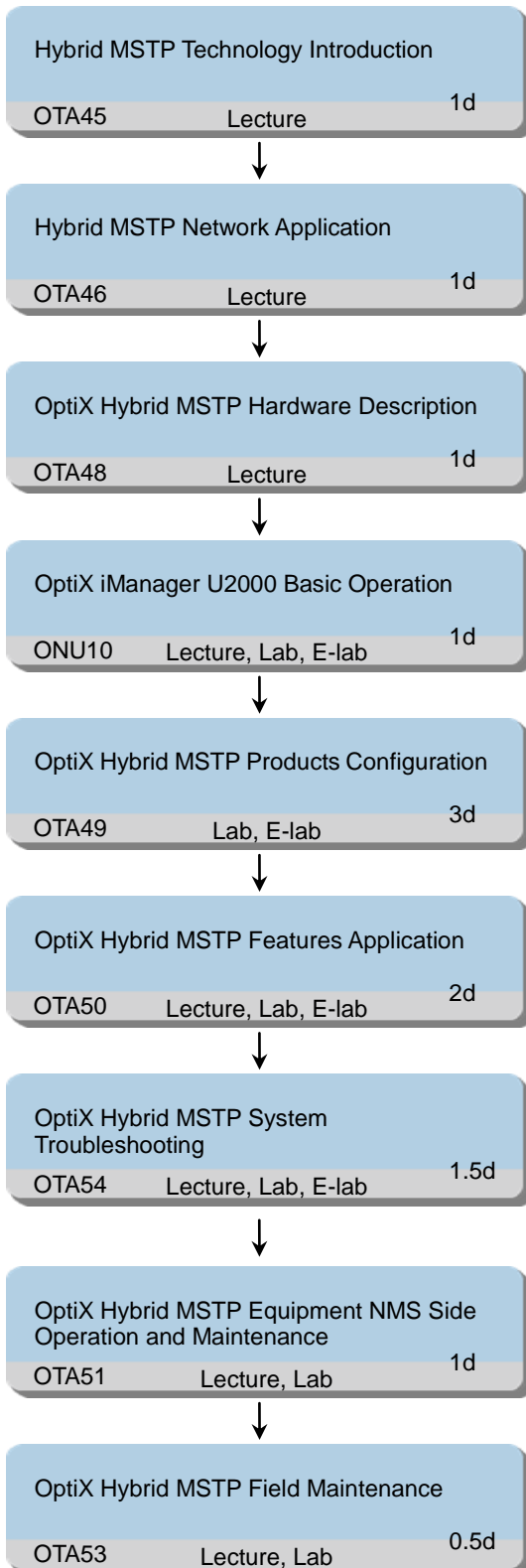
10 working days

Class Size

Min 6, Max 12

2.11.11 OptiX NG SDH Equipment (Packet) 2nd Line Maintenance Training

Training Path



Target Audience

Hybrid MSTP operation and maintenance engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Outline the QinQ application scenarios of OptiX Hybrid MSTP
- Describe the basic concepts of PWE3
- Outline the typical PWE3 encapsulation format for Ethernet
- Outline the typical PWE3 encapsulation format for TDM E1
- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Configure OptiX Hybrid MSTP products
- Configure the protection of TDM plane & packet transport plane for the network and equipment
- Configure the common services for the TDM plane
- Configure the E-Line/E-LAN/E-AGGR service in the packet transport plane
- Outline the QoS model
- Describe QoS basic concepts
- Outline the key technology in QoS
- Describe the typical QoS application in Hybrid MSTP network
- Configure QoS in Hybrid MSTP system according to the service demand
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Describe the working mechanism and application scene of MPLS OAM
- Describe the working mechanism and application scene of MPLS-TP OAM
- Describe the working mechanism and application scene of PW OAM
- Accomplish the OAM testing
- Locate the fault position when error reports
- Describe the operation environment of NMS
- List the maintenance tasks for Hybrid MSTP equipment
- Perform the basic maintenance operations for Hybrid MSTP equipment

- Complete the maintenance records
- Outline the function of basic menus of iManager U2000 LCT
- Create topology including create NE/Link
- Perform the NE configuration, board configuration, and service dispatching and protection configuration for equipment via iManager U2000 LCT
- Perform the routine maintenance via U2000 LCT
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors, etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faults of the Hybrid MSTP network
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet

Duration

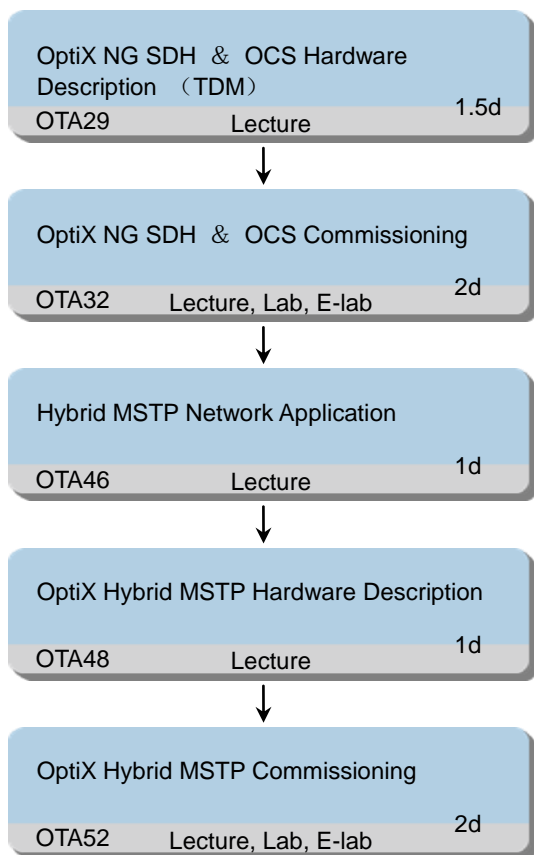
12 working days

Class Size

Min 6, Max 12

2.11.12 OptiX NG SDH Equipment (Packet+TDM) Commissioning Training

Training Path



Target Audience

Hybrid MSTP commissioning engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet
- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Check the equipment condition such as power connections, fiber connections, mounted boards, etc
- Outline and perform the commissioning process for OptiX Hybrid MSTP equipment

- Perform the commissioning process of the network
- Describe methods of operation including circuit provisioning, routing maintenance tasks and fault finding
- Perform commissioning tests on the equipment
- Perform commissioning tests on the network
- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe the preparation for the commissioning
- List the items for single station commissioning for OptiX NG SDH & OCS system
- Outline the procedures of network commissioning for OptiX NG SDH & OCS system
- Summarize the equipment/network condition after commissioning
- Accomplish the OptiX NG SDH & OCS system commissioning
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000

Duration

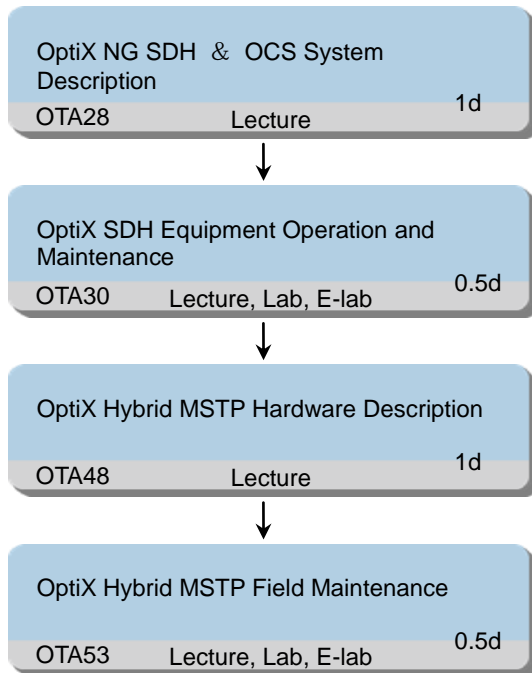
8 working days

Class Size

Min 6, Max 12

2.11.13 OptiX NG SDH Equipment (Packet+TDM) 1st Line Maintenance Training

Training Path



Target Audience

Hybrid MSTP equipment field maintenance engineer

Prerequisites

Be familiar with Windows operating system
Having a general knowledge of SDH basics

Objectives

On completion of this program, the participants will be able to:

- Describe the networking applications of the OptiX OSN 1500/3500/7500/7500II
- Describe the system structure of the OptiX OSN 1500/3500/7500/7500II
- Outline the main boards of the OptiX OSN 1500/3500/7500/7500II
- Outline the system protection schemes of the OptiX OSN 1500/3500/7500/7500II
- Outline the operation environment of OptiX SDH series equipment
- List the status description of OptiX SDH series equipment indicators
- List the maintenance items of OptiX SDH series equipment
- Perform the basic maintenance operations of OptiX SDH series equipment
- Complete the maintenance records of OptiX SDH series equipment
- Outline the function of basic menus of iManager U2000 LCT
- Create topology including create NE/Link
- Perform the NE configuration, board configuration, and service dispatching and protection configuration for equipment via iManager U2000 LCT
- Perform the routine maintenance via U2000 LCT

- Illustrate the networking applications of the OptiX NG SDH & OCS equipment
- Describe the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection schemes of the OptiX NG SDH & OCS equipment

Duration

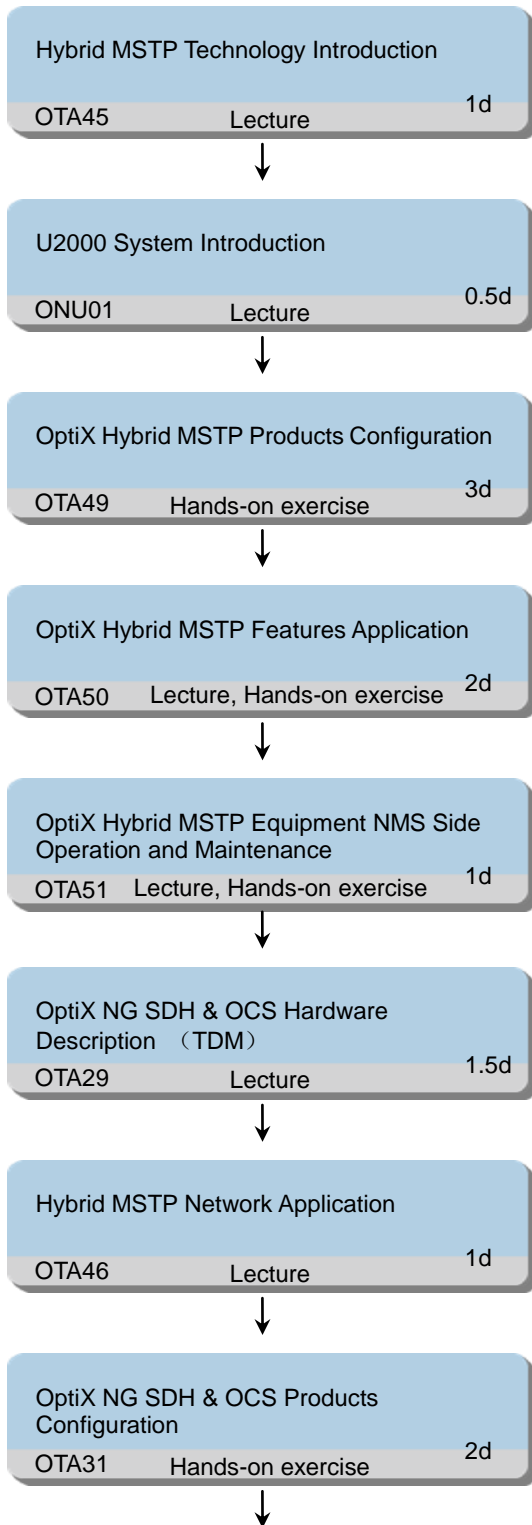
3 working days

Class Size

Min 6, Max 12

2.11.14 OptiX NG SDH Equipment (Packet+TDM) NMC Operation Training

Training Path



Target Audience

Hybrid MSTP network operation center engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Outline the QinQ application scenarios of OptiX Hybrid MSTP
- Describe the basic concepts of PWE3
- Outline the typical PWE3 encapsulation format for Ethernet
- Outline the typical PWE3 encapsulation format for TDM E1
- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Configure OptiX Hybrid MSTP products
- Configure the protection of TDM plane & packet transport plane for the network and equipment
- Configure the common services for the TDM plane
- Configure the E-Line/E-LAN/E-AGGR service in the packet transport plane
- Outline the QoS model
- Describe QoS basic concepts
- Outline the key technology in QoS
- Describe the typical QoS application in Hybrid MSTP network
- Configure QoS in Hybrid MSTP system according to the service demand
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Describe the working mechanism and application scene of MPLS OAM
- Describe the working mechanism and application scene of PW OAM
- Accomplish the OAM testing
- Locate the fault position when error reports
- Describe the operation environment of NMS
- List the maintenance tasks for Hybrid MSTP equipment
- Perform the basic maintenance operations for Hybrid MSTP equipment
- Complete the maintenance records

- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product
- Classify the service types of Ethernet
- Outline the types and applications of Ethernet
- Accomplish the network protection and SDH service configuration through NMS
- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service
- List the main Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the functions and application of the Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the features of the Ethernet boards
- Accomplish the Ethernet service EPL/EVPL/EPLAN configuration through NMS
- State the purpose of Ethernet performance testing
- List the common indices of Ethernet service performance testing
- Explain the concepts of common testing indices
- Outline the testing methods of Ethernet service performance testing
- Implement the Ethernet performance testing and analyze the result

Duration

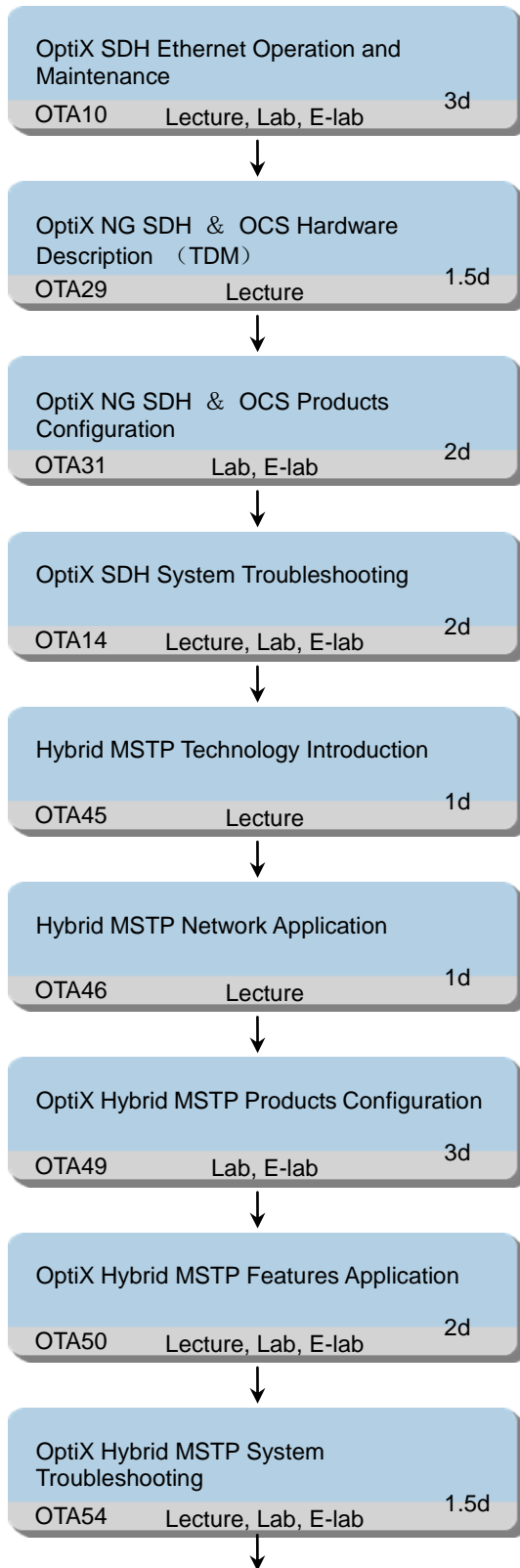
15 working days

Class Size

Min 6, Max 12

2.11.15 OptiX NG SDH Equipment (Packet+TDM) 2nd Line Maintenance Training

Training Path



OptiX Hybrid MSTP Equipment NMS Side Operation and Maintenance

OTA51

Lecture, Lab, E-lab

1d

Target Audience

Hybrid MSTP operation and maintenance engineer

Prerequisites

Having working experience in transport network

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Describe the classification of IP addresses
- Describe the basic concepts of MPLS
- Describe the basic concepts of MPLS-TP
- Outline the QinQ application scenarios of OptiX Hybrid MSTP
- Describe the basic concepts of PWE3
- Outline the typical PWE3 encapsulation format for Ethernet
- Outline the typical PWE3 encapsulation format for TDM E1
- Configure OptiX Hybrid MSTP products
- Configure the protection of TDM plane & packet transport plane for the network and equipment
- Configure the common services for the TDM plane
- Configure the E-Line/E-LAN/E-AGGR service in the packet transport plane
- Outline the QoS model
- Describe QoS basic concepts
- Outline the key technology in QoS
- Describe the typical QoS application in Hybrid MSTP network
- Configure QoS in Hybrid MSTP system according to the service demand
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Describe the working mechanism and application scene of MPLS OAM
- Describe the working mechanism and application scene of MPLS-TP OAM
- Describe the working mechanism and application scene of PW OAM
- Accomplish the OAM testing
- Locate the fault position when error reports
- Describe the operation environment of NMS
- List the maintenance tasks for Hybrid MSTP equipment
- Perform the basic maintenance operations for Hybrid MSTP equipment
- Complete the maintenance records
- Describe OptiX Hybrid MSTP product networking
- Outline the protection types of OptiX Hybrid MSTP product

- Classify the service types of Ethernet
- Outline the types and applications of Ethernet
- List the common analysis methods of packet network fault locating
- Outline the fault handling flow
- Analyze the typical faults: service interruption, APS switching failed, OAM errors,etc
- Illustrate the application of common troubleshooting methods for packet network
- Analyze common faulty of the Hybrid MSTP network
- Describe the network applications of the OptiX NG SDH & OCS equipment
- Explain the system structure and features of the OptiX NG SDH & OCS equipment
- Outline the system protection modes of the OptiX NG SDH & OCS equipment
- State the main functions of the cards in the OptiX NG SDH & OCS equipment
- Accomplish the network protection and SDH service configuration through NMS
- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service
- List the main Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the functions and application of the Ethernet boards of OptiX NG SDH & OCS equipment
- Describe the features of the Ethernet boards
- Accomplish the Ethernet service EPL/EVPL/EPLAN configuration through NMS
- State the purpose of Ethernet performance testing
- List the common indices of Ethernet service performance testing
- Explain the concepts of common testing indices
- Outline the testing methods of Ethernet service performance testing
- Implement the Ethernet performance testing and analyze the result
- List the common analysis methods of fault locating
- Outline the fault handling flow
- Analyze the typical faults: traffic interruption, error bit, etc
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Analyze common faulty of the network consist of OptiX NG SDH & OCS series
- Locate and eliminate faults, get experience from troubleshooting practice

Duration

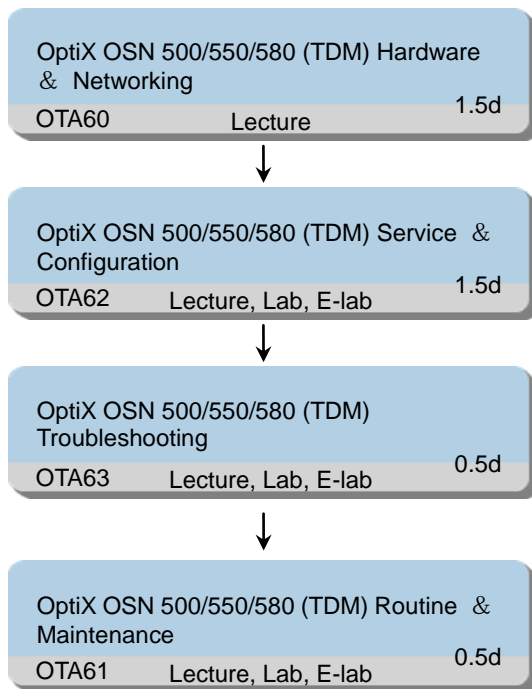
18 working days

Class Size

Min 6, Max 12

2.11.16 OptiX OSN 500/550/580 (TDM) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 500/550/580 operation and maintenance engineer

Prerequisites

Having experience in the operation and maintenance of optical network equipment

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Appreciate the networking applications of the OptiX OSN 500/550/580 (TDM)
- Describe the system structure and features of the OptiX OSN 500/550/580 (TDM)
- Describe the main functions of the boards used on the OptiX OSN 500/550/580 (TDM)
- Outline the system protection schemes of the OptiX OSN 500/550/580 (TDM)
- Outline the operation environment of OptiX OSN 500/550/580 series equipment
- List the status description of OptiX OSN 500/550/580 equipment indicators
- List the maintenance items of OptiX OSN 500/550/580 equipment
- Perform the basic maintenance operations of OptiX OSN 500/550/580 equipment
- Complete the maintenance records of OptiX OSN 500/550/580 equipment
- Configure protection attributes in OSN 500/550/580 network, such as SNCP, LMP, RMP etc
- Configure services of OSN 500/550
- /580

Duration

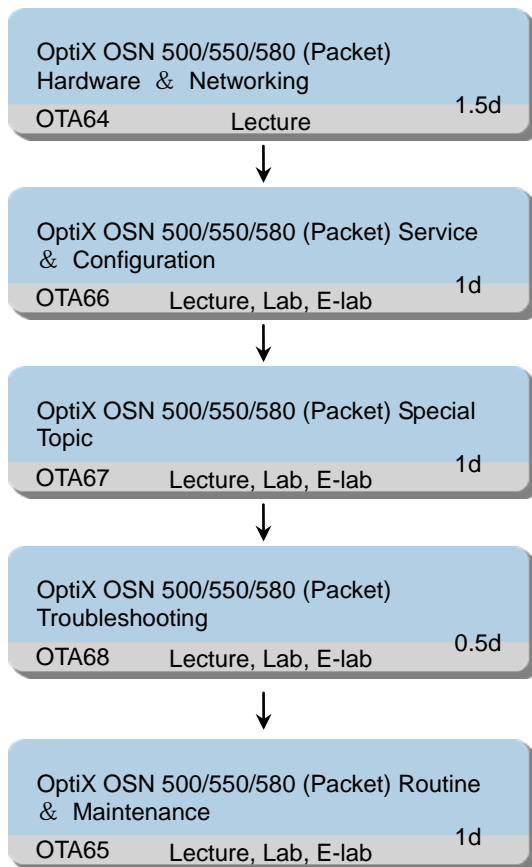
4 working days

Class Size

Min 6, Max 12

2.11.17 OptiX OSN 500/550/580 (Packet) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 500/550/580 operation and maintenance engineer

Prerequisites

Having experience in the operation and maintenance of optical network equipment

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Appreciate the networking applications of the OptiX OSN 500/550/580(Packet)
- Describe the system structure and features of the OptiX OSN 500/550/580 (Packet)
- Describe the main functions of the boards used on the OptiX OSN 500/550/580(Packet)
- Outline the system protection schemes of the OptiX OSN 500/550/580(Packet)
- Outline the operation environment of OptiX OSN 500/550/580 series Equipment
- List the status description of OptiX OSN 500/550/580 Equipment indicators
- List the maintenance items of OptiX OSN 500/550/580 Equipment
- Perform the basic maintenance operations of OptiX OSN 500/550/580 Equipment
- Complete the maintenance records of OptiX OSN 500/550/580 Equipment

- Configure MPLS APS/MRPS protection attributes in OSN 500/550/580 network
- Configure packet services on OSN 500/550/580

Duration

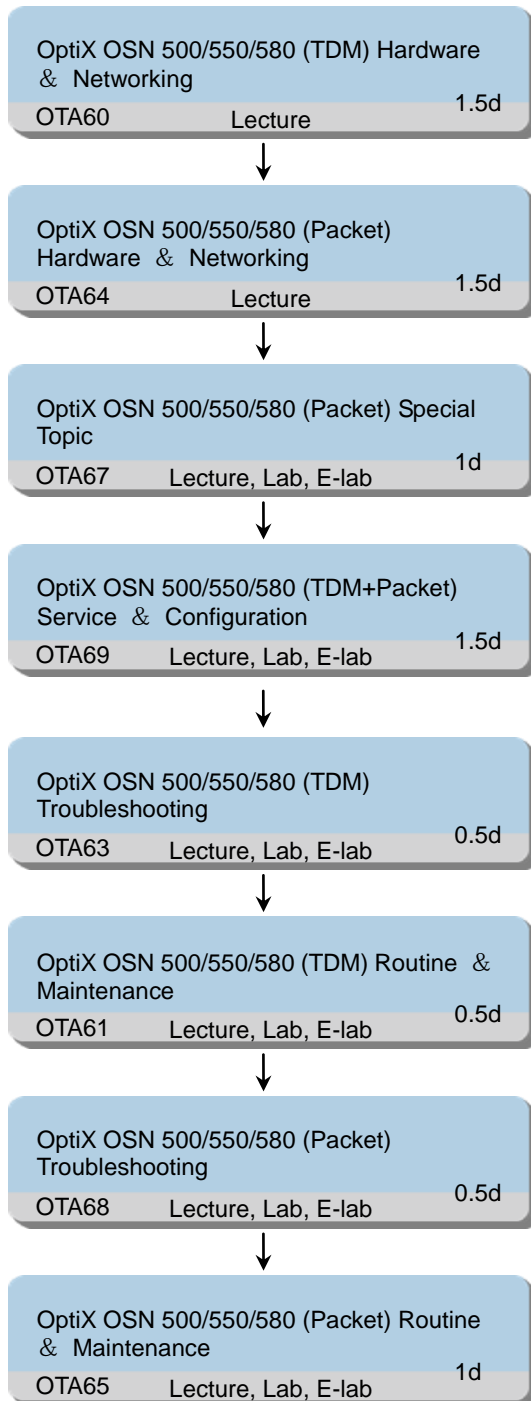
5 working days

Class Size

Min 6, Max 12

2.11.18 OptiX OSN 500/550/580 (Packet+TDM) Operation and Maintenance Training

Training Path



Target Audience

OptiX OSN 500/550/580 operation and maintenance engineer

Prerequisites

Having experience in the operation and maintenance of optical network equipment

Be familiar with Windows operating system

Objectives

On completion of this program, the participants will be able to:

- Appreciate the networking applications of the OptiX OSN 500/550/580(TDM+Packet)
- Describe the system structure and features of the OptiX OSN 500/550/580 (TDM+Packet)
- Describe the main functions of the boards used on the OptiX OSN 500/550/580(TDM+Packet)
- Outline the system protection schemes of the OptiX OSN 500/550/580(TDM+Packet)
- Outline the operation environment of OptiX OSN 500/550/580 series equipment
- List the status description of OptiX OSN 500/550/580 equipment indicators
- List the maintenance items of OptiX OSN 500/550/580 equipment
- Perform the basic maintenance operations of OptiX OSN 500/550/580 equipment
- Complete the maintenance records of OptiX OSN 500/550/580 equipment
- Configure MPLS APS/MRPS protection,SNCP, LMP, RMP etc attributes in OSN 500/550/580 network
- Configure services of OSN 500/550/580(TDM+Packet)

Duration

8 working days

Class Size

Min 6, Max 12

2.11.19 OptiX SDH Ethernet Advanced Operation and Maintenance Training

Training Path

OptiX SDH Ethernet Advanced Operation & Maintenance		4d
OTA42	Lecture, Lab, E-lab	

Target Audience

Ethernet over SDH equipment senior operation and maintenance engineer

Prerequisites

Be familiar with NMS

Be familiar with OptiX SDH service configuration and maintenance

Be familiar with the Ethernet service configuration and maintenance

Upon completion of OTA03 Ethernet Basics course or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the working mechanism of the L2 switching
- Interpret the basic of QoS
- Outline the key technology in QoS
- Describe the typical QoS application
- Describe the frame structure of MPLS
- Interpret the basic of QinQ
- List the application of MPLS and QinQ
- Describe the working mechanism of virtual concatenation
- Describe the function of LCAS
- Illustrate the GFP-F frame structure for the Ethernet signal
- Describe the troubleshooting idea and methods
- Analyze the common faults locating
- Outline the procedures of Ethernet troubleshooting
- Analyze the failure of the Ethernet service
- Locate the faulty of the Ethernet service
- Compare the function of Ethernet port and service OAM
- Outline the typical application scenario of Ethernet service OAM
- Accomplish the OAM testing
- Locate the fault position when error reports

Duration

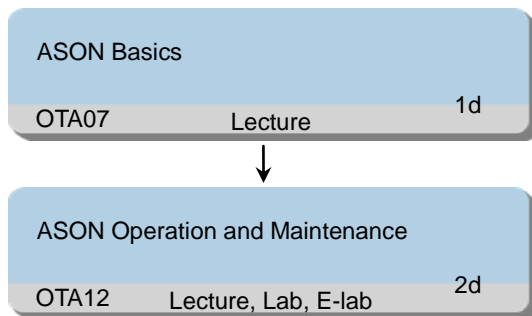
4 working days

Class Size

Min 6, Max 12

2.11.20 OptiX ASON(SDH) Operation and Maintenance Training

Training Path



Target Audience

ASON operation and maintenance engineer

Prerequisites

Having a general knowledge of SDH basics

Be familiar with NMS

Be familiar with SDH service configuration and maintenance

Objectives

On completion of this program, the participants will be able to:

- Implement the creation of ASON network
- Create SLA services and test the protection and restoration of them
- Conduct the maintenance operation of ASON network
- Explain the operation precaution of ASON
- Explain the fault reported by the ASON network
- Outline the methods of ASON troubleshooting
- Solve the typical ASON trouble
- Outline the standards of ASON
- Illustrate the structure of ASON
- Describe the networking characters of ASON
- Explain the service characters of ASON

Duration

3 working days

Class Size

Min 6, Max 12

2.11.21 TP-Assist Operation and Maintenance Training (Hybrid MSTP)

Training Path

TP-Assist Operation and Maintenance		
OTA70	Lecture, Lab, E-lab	1d

Target Audience

Hybrid MSTP Maintenance Engineer

Prerequisites

Having basic knowledge for Hybrid MSTP equipment or completed OptiX NG SDH Equipment (Packet) 2nd Line Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the application scenarios of TP-Assist features
- Outline the application functions of TP-Assist features
- Complete TP-Assist configuration and test

Duration

1 working day

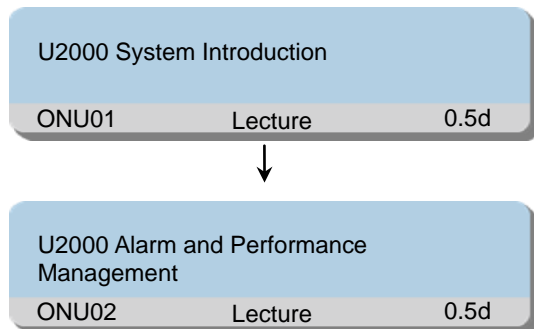
Class Size

Min 6, Max 12

2.12 Transmission Network OSS Training Programs

2.12.1 iManager U2000 Monitoring Training (Transmission Network only)

Training Path



Target Audience

U2000 operator and maintainer

Prerequisites

Having the basic knowledge of network management

Having the basic principle and equipment knowledge of Transmission network

Objectives

On completion of this program, the participants will be able to:

- Describe the architecture and main features of U2000
- Describe the directory structure of U2000
- Describe the main functions of U2000
- Describe the basic concepts in alarm and performance management of U2000
- Perform the browse and setting operation for alarm
- Perform the basic response operation for common alarm events
- Perform the browse and setting operation for performance events

Duration

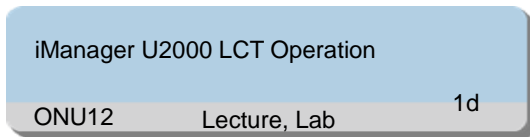
1 working day

Class Size

Min 6, Max 16

2.12.2 iManager U2000 LCT Operation Training

Training Path



Target Audience

U2000 LCT user

Prerequisites

Having the basic knowledge of Windows OS

Objectives

On completion of this program, the participants will be able to:

- List the main menus of iManager U2000 LCT
- Perform the NE configuration, service configuration for NG SDH equipment via U2000 LCT
- Perform the routine maintenance via U2000 LCT
-

Duration

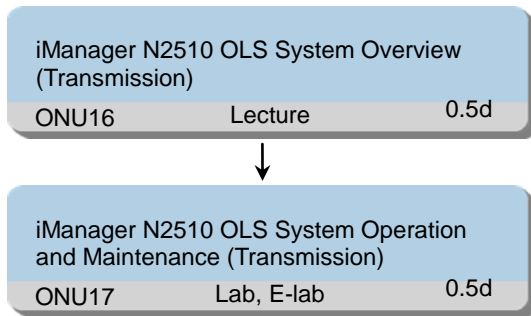
1 working day

Class Size

Min 6, Max 16

2.12.3 iManager N2510 OLS Operation and Maintenance Training (Transmission)

Training Path



Target Audience

N2510 Maintenance Engineer

Prerequisites

Having the basic knowledge of NMS

Objectives

On completion of this program, the participants will be able to:

- Describe iManager N2510 OLS networking and application
- Outline iManager N2510 OLS solution of fiber optic transmission monitoring
- Describe iManager N2510 OLS hardware and feature
- Describe iManager N2510 OLS function
- Perform iManager N2510 OLS operation and maintenance for transmission networks
- Perform iManager N2510 OLS test and analysis for transmission networks

Duration

1 working day

Class Size

Min 6, Max 16

2.12.4 iManager U2000 Operation and Maintenance Training for NOC FO (Transmission)

Training Path

iManager U2000 Operation and Maintenance for NOC FO		
ONU18	Lecture, Lab, E-lab	2d

Target Audience

NOC FO and U2000 Maintenance Engineer

Prerequisites

Having the basic knowledge of NMS

Objectives

On completion of this program, the participants will be able to:

- Describe the directory structure of U2000
- Describe the main functions of U2000
- Describe the basic concepts in alarm and performance management of U2000
- Perform the browse and setting operation for alarm
- Perform the basic response operation for common alarm events
- Perform the browse and setting operation for performance events
- Outline the function of Huawei network equipment
- List the board type
- Describe the characteristic of the common boards
- List the common alarms of the equipment
- List the common operation for FO

Duration

2 working days

Class Size

Min 6, Max 16

2.12.5 iManager U2000 Operation and Maintenance Training for NOC BO (Transmission)

Training Path

iManager U2000 Operation and Maintenance for NOC BO		
ONU19	Lecture, Lab, E-lab	3d

Target Audience

NOC BO and U2000 Maintenance Engineer

Prerequisites

Complete iManager U2000 Operation and Maintenance Training for NOC FO (Transmission) or Having equivalent knowledge of NMS

Objectives

On completion of this program, the participants will be able to:

- Explain the concept of security management
- Complete the operation of U2000 security management
- Explain the concept of data management
- Complete the operation of U2000 data management
- List U2000 routine maintenance items
- Perform operations of routine maintenance
- Complete routine maintenance for U2000
- List the common analysis methods of fault localization
- Locate U2000 faults
- Complete NG SDH/ NG WDM common services configuration and management
- Complete inventory and report management
- Perform Msuite tool common operations

Duration

3 working days

Class Size

Min 6, Max 16

2.12.6 iManager U2100 Operation and Maintenance Training

Training Path

U2100 System Operation and Maintenance		
OTD08	Lecture, Lab	5d

Target Audience

U2100 administrator and operator

Prerequisites

Be familiar with Windows operating system and SQL Server

Having the knowledge of Solaris and Sybase basics

Objectives

On completion of this program, the participants will be able to:

- List the features and basics of Solaris and Sybase
- Describe the basic command of Solaris and Sybase
- Describe the system structure, management capacity and menus of iManager U2100
- Browse the SDH/WDM/PTN/Hybrid MSTP trail and their alarm through iManager U2100
- Create and delete SDH/WDM/PTN/Hybrid MSTP trail through iManager U2100
- Check the running status of U2100 and perform the routine maintenance
- Perform the U2100 troubleshooting, deal the NMS and network problems with U2000

Duration

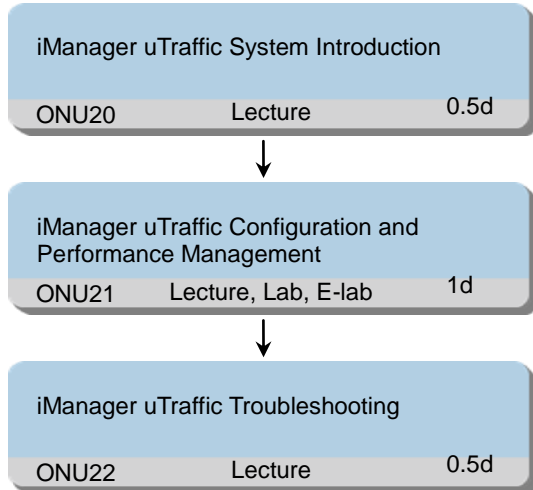
5 working days

Class Size

Min 6, Max 12

2.12.7 iManager uTraffic Network Performance Monitoring Training (Transmission Network Only)

Training Path



Target Audience

U2000 Maintenance Engineer and Administrator

Prerequisites

- Having the basic knowledge of NMS

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts in performance management of iManager uTraffic
- Perform the browse and setting operation for performance events
- Describe the IP/Transmission/Access scenario in iManager uTraffic
- Understand the basic parameters in performance management of iManager uTraffic
- Describe the iManager uTraffic troubleshooting

Duration

2 working days

Class Size

Min 6, Max 12

2.13 Transmission Engineer Certification Training Programs

2.13.1 Huawei Certified Network Associate-Transmission Technologies and Device Training

Training Path

Transmission Technologies and Device		
OTH01	Lecture, Lab	15d

Target Audience

Personnel who are going to take HCNA HTTD (Huawei Certified Network Associate-Transmission Technologies and Device) exam

Personnel who expect to learn about basic optical transmission principles and Huawei SDH equipment operation

Prerequisites

- Having a general knowledge of telecommunications

Objectives

On completion of this program, the participants will be able to:

- Describe SDH working principle
- Describe WDM working principle
- Describe OTN working principle
- Describe Ethernet working principle
- Describe the basic concept of MPLS
- Describe the basic concept of PWE3
- Describe the common SDH network topologies and their features
- Explain the protection mechanism of MSP/SNCP
- Explain the system structure and features of the OptiX OSN 3500 equipment
- State the main functions of the boards in the OptiX OSN 3500 equipment
- Accomplish the SDH network configuration and monitoring through NMS
- Accomplish the PDH service configuration through NMS
- Accomplish the Ethernet service (EPL/EVPL/EPLAN) configuration through NMS
- List the common analysis methods of fault locating

Duration

15 working days

Class Size

Min 6, Max 16

2.13.2 Huawei Certified Network Professional-Building Carrier MSTP Transmission Network Training

Training Path

Building Carrier MSTP Transmission Network		
OTH02	Lecture, Lab	10d

Target Audience

Personnel who are going to take HCNP HTMN (MSTP) (Huawei Certified Network Professional-Building Carrier MSTP Transmission Network) exam

Personnel who expect to learn SDH network commissioning, maintenance and troubleshooting

Prerequisites

Pass HCNA HTTD (Huawei Certified Network Associate-Transmission Technologies and Device) exam or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure of the SDH equipment commissioning
- Describe the complex Networking of SDH
- Replacing the SDH Board
- Analyze the discrete services on the NMS
- Tests for common Ethernet services indicators
- Describe the principle of the clock protection
- Describes the notes to do the SDH equipment interconnection
- Complete the ECC maintenance
- Describes the methods for handling typical faults and alarms to troubleshoot networks in practice
- Describes the mechanism of pointer justification
- Describes the functions of ASON

Duration

10 working days

Class Size

Min 6, Max 16

2.13.3 Huawei Certified Network Professional-Building Carrier OTN Transmission Network Training

Training Path

Building Carrier OTN Transmission Network		
OTH03	Lecture, Lab	10d

Target Audience

Personnel who are going to take HCNP HTON (OTN) (Huawei Certified Network Professional-Building Carrier OTN Transmission Network) exam

Personnel who expect to learn WDM network configuration, commissioning, maintenance and troubleshooting

Prerequisites

Pass HCNA HTTD (Huawei Certified Network Associate-Transmission Technologies and Device) exam or having equivalent knowledge

Objectives

On completion of this program, the participants will be able to:

- Describe the function and features of WDM cabinet, sub-rack and boards
- Describe the network topologies and signal flow
- Implement the data configuration through iManager U2000
- Implement the single station and system commissioning step by step through iManager U2000
- List the common indices of WDM product and perform the testing
- Describe the WDM protection principle
- Describe the notice of traffic interconnection
- Describe the principle of ALC/IPA/APE
- Illustrate the application of common troubleshooting methods, such as loop-back, testing, alarm and performance events analysis, replacement, etc
- Locate and eliminate faults, get experience from troubleshooting practice

Duration

10 working days

Class Size

Min 6, Max 16