

Training Proposal for Network WBT Project



HUAWEI
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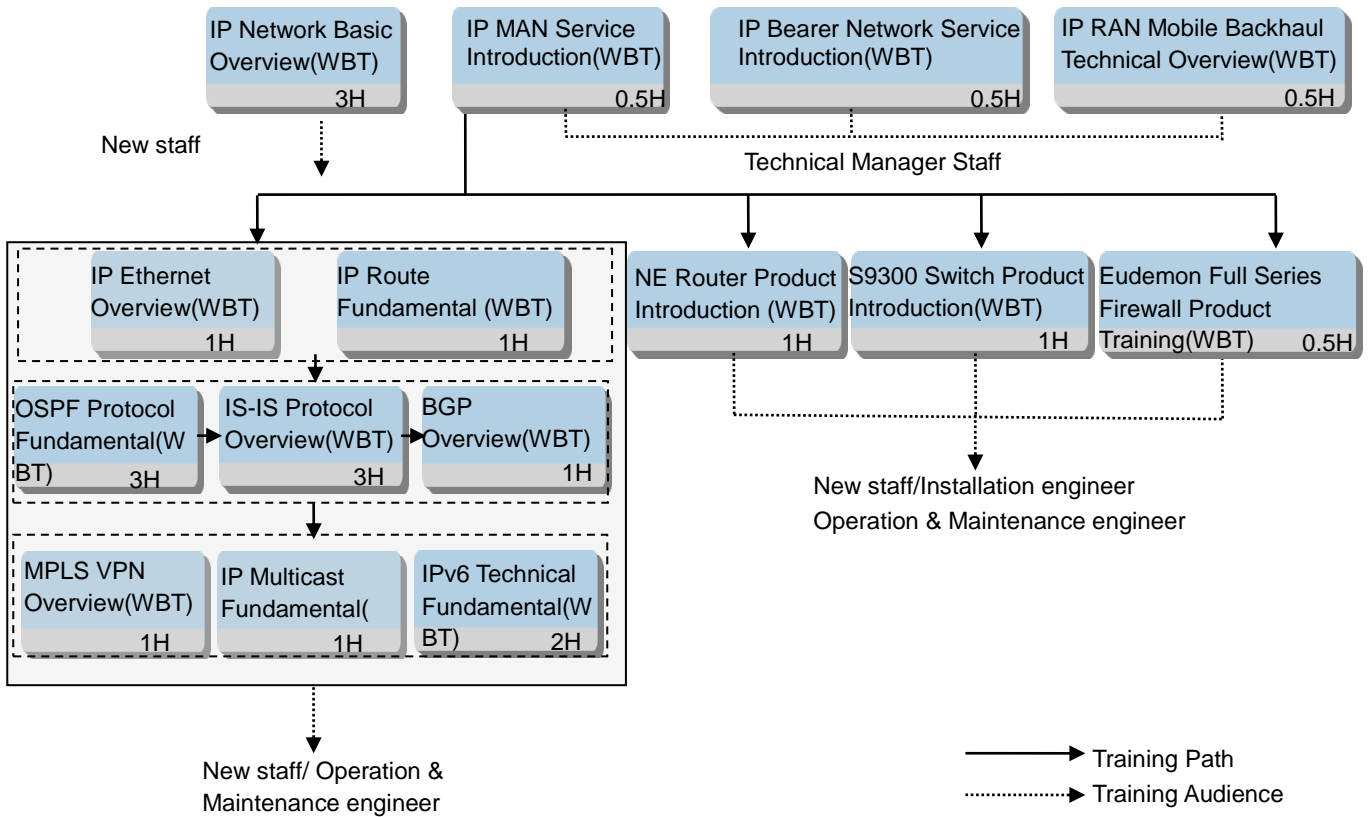
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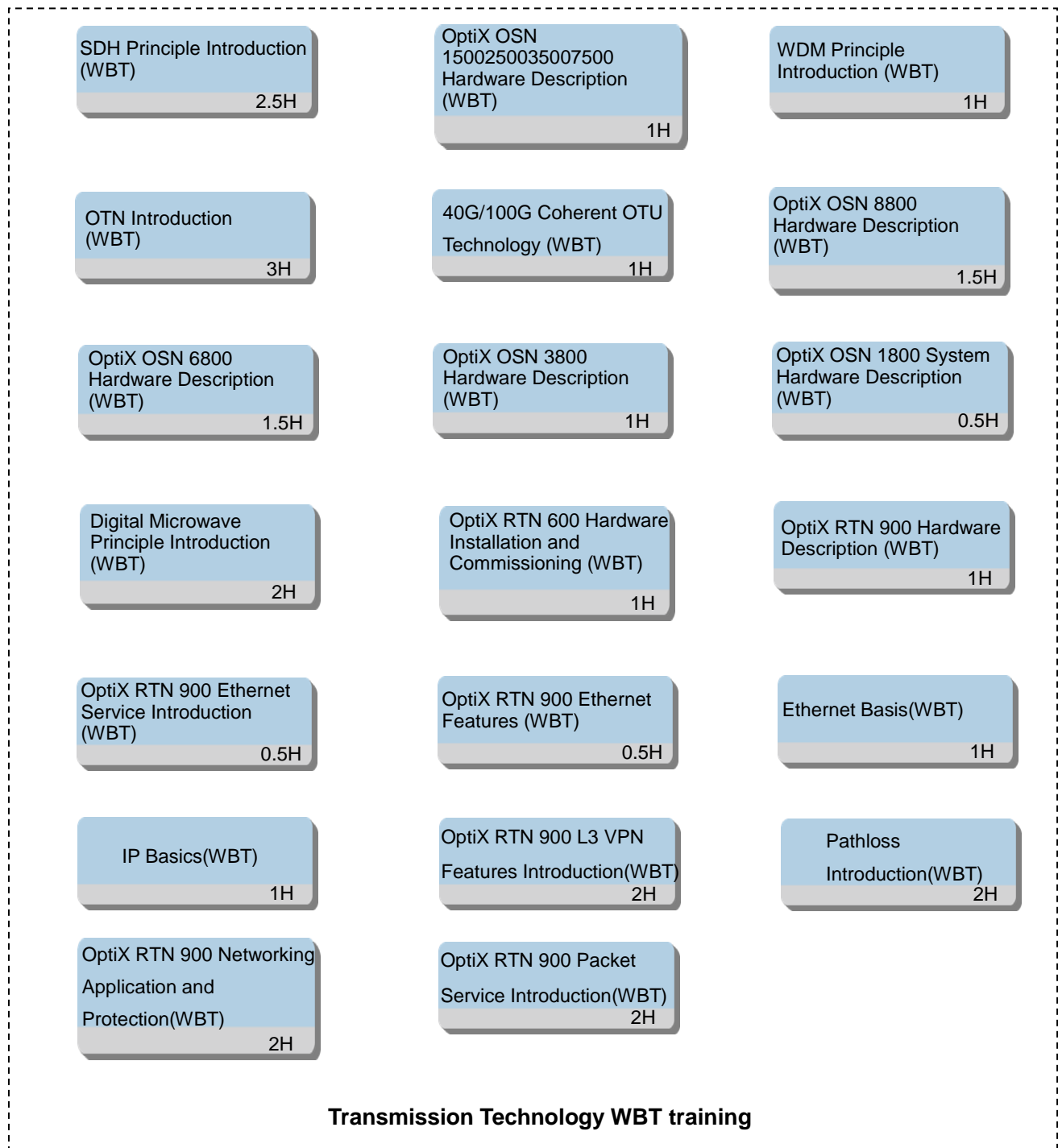
1 Training Solution

1.1 Training Path

1.1.1 IP Technology (WBT) Training Path



1.1.2 Transmission Technology (WBT) Training Path



1.2 Required Training Programs

WBT For this project, the whole training solution is designed into the following programs. List of Training Program(s) for WBT Project:

Training Programs	Level	Duration (hours)	Training Location	Class Size
IP Network Technology (WBT)				
NE Series Router Product Introduction(WBT)	II	1H		No limit
Eudemon Series Firewall Product Introduction(WBT)	II	0.5H		No limit
IP Network Basic Overview(WBT)	I	3.0H		No limit
IP Ethernet Overview(WBT)	I	1.0H		No limit
IP Route Fundamental(WBT)	I	1.0H		No limit
OSPF Protocol Fundamental(WBT)	II	3H		No limit
IS-IS Protocol Overview(WBT)	II	3H		No limit
BGP Overview(WBT)	II	1H		No limit
IP Multicast Fundamental(WBT)	II	1H		No limit
MPLS VPN Overview(WBT)	II	1H		No limit
IPv6 Technical Fundamental(WBT)	II	2H		No limit
IP MAN Service Introduction(WBT)	II	0.5H		No limit
IP Bearer Network Service Introduction(WBT)	II	0.5H		No limit
IP RAN Mobile Backhaul Technical Overview(WBT)	II	0.5H		No limit
S9300 Switch Product Introduction(WBT)	II	1H		No limit
Access Network Technology (WBT)				
GPON Fundamental Training	II	1H		No limit
GPON FTTx System Overview Training	II	1H		No limit
Transmission Network Technology (WBT)				
OptiX RTN 900 Ethernet Service Introduction(WBT)	II	0.5H		No limit
WDM Principle Introduction(WBT)	II	1H		No limit
SDH Principle Introduction(WBT)	II	2.5H		No limit

Digital Microwave Principle Introduction(WBT)	II	2H		No limit
OptiX RTN 600 Hardware Installation and Commissioning(WBT)	I	1H		No limit
OTN Introduction(WBT)	III	3H		No limit
40G/100G Coherent OTU Technology(WBT)	II	1H		No limit
OptiX RTN 900 Hardware Description(WBT)	II	1H		No limit
OptiX OSN 1500250035007500 Hardware Description(WBT)	II	1H		No limit
OptiX OSN 8800 Hardware Description (WBT)	II	1.5H		No limit
OptiX OSN 6800 Hardware Description (WBT)	II	1.5H		No limit
OptiX OSN 3800 Hardware Description (WBT)	II	1H		No limit
OptiX OSN 1800 System Hardware Description(WBT)	II	0.5H		No limit
OptiX RTN 900 Ethernet Features(WBT)	III	0.5H		No limit
Ethernet Basis(WBT)	I	1H		No limit
IP Basics(WBT)	I	1H		No limit
OptiX RTN 900 L3 VPN Features Introduction(WBT)	III	2H		No limit
Pathloss Introduction(WBT)	III	2H		No limit
OptiX RTN 900 Networking Application and Protection(WBT)	II	2H		No limit
OptiX RTN 900 Packet Service Introduction(WBT)	II	2H		No limit
OptiX MS-OTN Networking and Service Introduction(WBT)	II	2H		No limit
OptiX NG WDM Packet Technology Introduction(WBT)	II	2H		No limit
OptiX NG WDM Optical Power Calculation(WBT)	II	2H		No limit
OptiX NG WDM Electrical Layer Grooming(WBT)	II	2H		No limit

Level Description: I :Basic Course II : Intermediate Course III:Advanced Course IV: Expert Course

1.3 Training Programs Description

1.3.1 IP Network Basic Overview(WBT)

Training Path

IP Network Basic Overview(WBT)		
ODW01	Multi-media	3H

Target Audience

New staff

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe basic concepts of data traffic
- Describe basic Knowledge of network and internet
- Describe familiar standardization organization
- Describe basic structure of IP network
- Describe architecture of OSI RM
- Master architecture TCP/IP and the function of each layer
- Describe the process of TCP/IP data encapsulation
- Master the classes of IP address
- Subnet address planning in reason
- Describe ARP/RARP protocol principle
- Describe the working principle of router
- Grasp the basic Knowledge to use VRP CLI

Training Content

ODW01 IP Network Basic Overview(WBT)

- IP Network Fundamental (WBT)
 - Data traffic basis
 - Brief introduction to network and internet
 - Protocol and standard
 - Basic architecture of IP network
- TCPIP Fundamental (WBT)
 - TCP/IP protocol stack
 - Data encapsulation of TCP/IP protocol stack
 - Case analysis of TCP/IP packet

-
- IP Address Fundamental (WBT)
 - IP address
 - Protocols of network layer
 - Working principle of router
 - VRP Basic Configuration (WBT)
 - Building configuration environment
 - VRP configuration basis

Duration

3 hours

Class Size

No limit

1.3.2 IP Ethernet Overview(WBT)

Training Path

IP Ethernet Overview(WBT)		
ODW02	Multi-media	1H

Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the different types of Ethernet media
- Give an outline of Ethernet capabilities and limitations
- Describe Layer 2 and 3 switching principles
- Describe the working principle of HUB,L2 switch and L3 switch
- Describe VLAN routing concept
- Describe VLAN routing principle and configuration

Training Content

ODW02 Ethernet Overview(WBT)

- Ethernet Fundamental (WBT)
 - The development of Ethernet technology
 - The basic principles of Ethernet
 - Layered switching
 - Ethernet port technologies
 - VLAN and layered switching
- L2 Switching Technology (WBT)
 - Shared Ethernet
 - Working principle of LAN switch
- VLAN Technology (WBT)
 - Background of generation of VLAN technology
 - Generation method of VLAN tag
 - Application rule of VLAN tag
 - VLAN configuration

Duration

1 hours

Class Size

No limit

1.3.3 IP Route Fundamental(WBT)

Training Path

IP Route Fundamental(WBT)		
ODW03	Multi-media	1H

Target Audience

New staff
Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the concept of route
- Describe the classification of routing protocol
- Describe the routing process of data packet in the network
- Describe the structure of routing table
- Master static route configuration
- Master default route configuration
- Master route load balance and route backup

Training Content

ODW03 IP Route Fundamental(WBT)

- IP Routing and Routing Table (WBT)
 - Concept of route
 - Classification of routing protocol
 - Routing process of data packet in the network
 - Structure of routing table
- Static Route and Default Route (WBT)
 - Static route configuration
 - Default route configuration
 - Route load balance and route backup

Duration

1hours

Class Size

No limit

1.3.4 OSPF Protocol Fundamental(WBT)

Training Path

OSPF Protocol Fundamental(WBT)		
ODW04	Multi-media	3H

Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the basic features of OSPF
- Master basic concepts of OSPF
- Describe the route calculation process of link state algorithm
- Master basic configuration of OSPF
- Describe OSPF neighbor and adjacency concepts
- Describe OSPF DR and BDR concepts
- Describe the election of DR and BDR
- Describe OSPF packet header and packet types
- Describe LSA types
- Describe the function of Hello packet
- Describe OSPF neighbor state transition
- Describe the process of establishing neighbor and adjacency relationships
- Describe LSDB synchronization
- Describe Router-LSA
- Describe Network-LSA
- Describe calculation of the shortest- path tree
- Describe inter-area routing principle
- Describe Network-Summary-LSA
- Describe Virtual Link
- Describe inter-area route aggregation
- Describe AS-external-LSA
- Describe external route types
- Describe Forwarding Address attribute
- Describe configuration of importing external routes
- Describe configuration of OSPF multiple process

-
- Describe the concept and configuration of Stub Area
 - Describe the concept and configuration of Totally Stub Area
 - Describe the concept and configuration of NSSA Area

Training Content

ODW04 OSPF Protocol Fundamental(WBT)

- OSPF Routing Protocol Basic(WBT)
 - Basic features of OSPF
 - Basic concepts of OSPF
 - Route calculation process of link state algorithm
 - Basic configuration of OSPF
- Understand OSPF Neighbor and Adjacency(WBT)
 - OSPF neighbor and adjacency concepts
 - OSPF DR and BDR concepts
 - Election of DR and BDR
- OSPF Packet and LSA(WBT)
 - OSPF packet header and packet types
 - LSA types
- Setup OSPF Neighbor and Adjacency(WBT)
 - The function of hello packet
 - OSPF neighbor state transition
 - The process of establishing neighbor and adjacency relationships
 - LSDB synchronization
- Calculate OSPF Intra-Area Route Calculation(WBT)
 - Router-LSA
 - Network-LSA
 - Calculation of the shortest-path tree
- OSPF Inter-Area Route(WBT)
 - Inter-area routing principle
 - Network-Summary-LSA
 - Virtual Link
 - Inter-area route aggregation
- OSPF External Route(WBT)
 - AS-external-LSA
 - external route types
 - Forwarding address attribute
 - Configuration of importing
 - Configuration of OSPF multiple process
- OSPF Special Areas(WBT)
 - Concept and configuration of Stub Area
 - Concept and configuration of Totally Stub Area
 - Concept and configuration of NSSA Area

Duration

3hours

Class Size

No limit

1.3.5 IS-IS Protocol Overview(WBT)

Training Path

IS-IS Protocol Overview(WBT)		
ODW05	Multi-media	3H

Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the basic overview of ISIS protocol
- Master the basic characteristic of ISIS protocol
- Describe the basic working mechanism of ISIS protocol
- Master the concept of area, router type and adjacency relationship
- Describe the process of adjacency relationship establishment on point to point link
- Describe the process of adjacency relationship establishment on broadcast network
- Describe the function of LSP, CSNP and PSNP packets in the process of link state database synchronization
- Describe the process of link state database synchronization
- Describe the concept of IS-IS areas and routing hierarchies
- Familiar with IS-IS LSDB structure
- Describe LSP structure
- Describe detailed description of IS-IS LSDB
- Describe the basic concept of the SPF algorithm
- Describe the concept of PRC
- Describe the concept of i-SPF

Training Content

ODW05 IS-IS Protocol Overview(WBT)

- IS-IS Routing Protocol Basic(WBT)
 - Basic overview of ISIS protocol
 - Basic characteristic of ISIS protocol
 - Basic working mechanism of ISIS protocol
- IS-IS Adjacency(WBT)
 - Area, router type, and adjacencies

-
- Adjacency relationship establishment
 - Adjacency relationship configuration
 - IS-IS LSDB Synchronization(WBT)
 - Link state database and link state packet
 - Link state database synchronization
 - IS-IS areas and routing hierarchies
 - IS-IS LSDB Structure Analysis(WBT)
 - IS-IS LSDB overview
 - IS-IS LSDB structure
 - IS-IS LSDB detail
 - IS-IS route Calculation(WBT)
 - Basic concept of the SPF algorithm
 - Concept of PRC
 - Concept of i-SPF

Duration

3 hours

Class Size

No limit

1.3.6 BGP Overview(WBT)

Training Path

BGP Overview(WBT)		
ODW06	Multi-media	1H

Target Audience

New staff
Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the use of BGP routing protocol
- Describe the working mechanism of BGP
- Describe the characteristics of BGP
- Describe the two types of BGP neighbor relationship
- Describe the BGP route advertisement principles
- Describe how the BGP advertise the route
- Describe what is path attribute
- Describe the path attribute which is often used by BGP
- Describe the route selection criteria of BGP

Training Content

ODW06 BGP Overview(WBT)

- BGP Routing Protocol Overview(WBT)
 - BGP overview
 - BGP neighbor relationship
 - BGP route advertisement principles
- BGP Route Attributes and Route Selection(WBT)
 - Introduction to BGP path attributes
 - BGP route selection

Duration

21hours

Class Size

No limit

1.3.7 IP Multicast Fundamental(WBT)

Training Path

IP Multicast Fundamental(WBT)		
ODW07	Multi-media	1H

Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe what is multicast and multicast address structure
- Describe the forwarding flow of multicast
- Describe the relevant concepts of source tree and shared tree
- Describe IGMP protocol principle
- Master IGMP configuration
- Describe the difference among versions
- Master PIM-SM basic principle and configuration
- Master the process of joining the RPT and source registration
- Master the switchover of RPT-to-SPT

Training Content

ODW07 IP Multicast Fundamental(WBT)

- IP Multicast Fundamental(WBT)
 - What is multicast
 - Multicast address structure
 - Multicast package forwarding process
 - Multicast SPT and RPT
- IGMP Fundamental(WBT)
 - IGMP function
 - IGMP principles
 - The differences between IGMPv1 and IGMPv2
 - IGMPv3 features
- PIM-SM Principle(WBT)
 - PIM-SM principles
 - RPT joining and registering principles

-
- Switching from RPT to SPT
 - PIM-SM configuration

Duration

1 hours

Class Size

No limit

1.3.8 MPLS VPN Overview(WBT)

Training Path

MPLS VPN Overview(WBT)		
ODW08	Multi-media	1H

Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Master MPLS structure feature that contains two planes
- Master MPLS label structure
- Master the process of MPLS data forwarding
- Describe the model of BGP MPLS VPN
- Describe the basic concepts referred to BGP MPLS VPN
- Describe the mechanisms of the route and label distribution in BGP MPLS VPN
- Describe the process of data forwarding in BGP MPLS VPN
- Describe the basic MPLS BGP VPN configuration
- Describe the extended BGP attributes used by MPLS BGP VPN

Training Content

ODW08 MPLS VPN Overview(WBT)

- MPLS Technology Fundamental(WBT)
 - MPLS basic structure
 - MPLS label encapsulation
 - MPLS packet forwarding process
- MPLS L3 VPN Technology Fundamental(WBT)
 - BGP MPLS VPN model
 - BGP MPLS VPN concepts
 - BGP MPLS VPN label allocation principles
 - BGP MPLS VPN data forwarding process
- MPLS L3 VPN Configuration and Realization(WBT)
 - Configuring VPN Instance
 - Configuring PE-CE BGP
 - Configuring MP-BGP

- Configuring PE-CE routing

Duration

1 hours

Class Size

No limit

1.3.9 IPv6 Technical Fundamental(WBT)

Training Path



Target Audience

- New staff
- Operation maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe why there is a need to upgrade IPv4 to IPv6
- Describe the constitution of an IPv6 address
- Describe the constitution of an IPv6 packets
- Describe the type of ICMPv6 messages
- Describe the principle of IPv6 neighbor discovery
- Describe the principle of IPv6 address auto configuration
- Describe the process of PMTU discovery
- Describe the DNS of IPv6
- Roles of the transitional technologies of IPv6
- Application situations of the transitional technologies of IPv6
- Basic principles of the common transitional technologies of IPv6

Training Content

ODW09 IPv6 Technical Fundamental(WBT)

- IPv6 Addresses and Packet Encapsulation (WBT)
 - IPv6 background introduction
 - IPv6 addresss introduction
 - IPv6 encapsulation introduction
- IPv6 Basic Principles (WBT)
 - ICMPv6
 - IPv6 ND
 - IPv6 address allocation technologies
 - PMTU
 - IPv6 DNS
- IPv6 Migration Solutions Introduction (WBT)

-
- IPv6 drivers
 - IPv6 current development
 - IPv6 migration solutions

Duration

2 hours

Class Size

No limit

1.3.10 IP MAN Service Introduction(WBT)

Training Path

IP MAN Service Introduction(WBT)		
ODW10	Multi-media	0.5H

Target Audience

Technical manager

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the structure of MAN
- Describe the key technical of MAN
- Familiar to the classical MAN application

Training Content

ODW10 IP MAN Service Introduction(WBT)

- IP MAN Service Introduction(WBT)
 - IP MAN networking and services
 - IP MAN key technologies
 - IP MAN typical applications

Duration

0.5 hour

Class Size

No limit

1.3.11 IP Bearer Network Service Introduction(WBT)

Training Path

IP Bearer Network Service Introduction(WBT)		
ODW11	Multi-media	0.5H

Target Audience

Technical manager

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the requirement of IP bearer network
- Describe the method of building IP bearer network
- Describe the key technologies of IP bearer network
- Describe the trend of IP bearer network

Training Content

ODW11 IP Bearer Network Service Introduction(WBT)

- IP Bearer Network Service Introduction(WBT)
 - Drivers of building IP bearer network
 - Requirements of building IP bearer network
 - Solutions of building IP bearer network

Duration

0.5 hour

Class Size

No limit

1.3.12 IP RAN Mobile Backhaul Technical Overview(WBT)

Training Path

IP RAN Mobile Backhaul Technical Overview(WBT)		
ODW12	Multi-media	0.5H

Target Audience

Technical manager

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Outline ATN and CX600 product features

Training Content

ODW12 IP RAN Mobile Backhaul Technical Overview(WBT)

- IP RAN Mobile backhaul Technical Overview(WBT)
 - Background of IP RAN solution
 - Challenges of IP RAN solution
 - ATN and CX600 IP RAN solution introduction

Duration

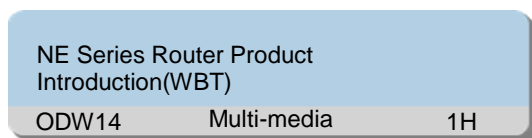
0.5 hour

Class Size

No limit

1.3.13 NE Series Router Product Introduction(WBT)

Training Path



Target Audience

New staff
Installation engineer
Operation & maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the Development of Huawei NE Series Routers
- Describe NE5000E Cluster System Architecture
- Describe NE5000E Router Chassis and Boards
- Describe the development of Huawei NE Series routers
- Describe NE80E/40E hardware system architecture
- Describe NE80E/40E board function

Training Content

ODW14 NE Series Router Product Introduction(WBT)

- NE5000E-X16 Product Introduction(WBT)
 - NE5000E-X16 network positioning and applications
 - NE5000E-X16 cluster routers
 - NE5000E-X16 chassis
 - NE5000E-X16 boards
- NE40E-X16 Product Introduction(WBT)
 - NE40E-X series routers network positioning and applications
 - NE40E-X series routers types
 - NE40E-X series routers chassis
 - NE40E-X series routers boards

Duration

1 hours

Class Size

No limit

1.3.14 Eudemon Series Firewall Product Introduction(WBT)

Training Path

Eudemon Series Firewall Product Introduction(WBT)		
ODW15	Multi-media	0.5H

Target Audience

New staff
Installation engineer
Operation & maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- Describe the types of each series Eudemon firewall
- Describe the network orientation of each series firewall
- Describe the main functions of each series firewall
- Describe the typical applications of each series firewall

Training Content

ODW15 Eudemon Series Firewall Product Introduction(WBT)

- Eudemon Serials Firewall Product Introduction(WBT)
 - E200E-X product introduction
 - E300/500/1000 product introduction
 - E1000E product introduction
 - E8000E product introduction

Duration

0.5 hour

Class Size

No limit

1.3.15 S9300 Switch Product Introduction(WBT)

Training Path

S9300 Switch Product Introduction(WBT)		
ODW13	Multi-media	1H

Target Audience

New staff
Installation engineer
Operation & maintenance engineer

Prerequisites

- Having basic knowledge in IP network
- Understanding basic network equipment

Objectives

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

- List out the hardware modules of S9300
- Describe network application of S9300
- List out the functions of S9300
- Describe the application scenario of S9300 features

Training Content

ODW13 S9300 Switch Product Introduction(WBT)

- S9300 Switch Product Introduction(WBT)
 - S9300 products overview
 - S9300 products hardware structures
 - S9300 products software features
 - S9300 products typical networking

Duration

1 hour

Class Size

No limit

1.3.16 GPON Fundamental Training

Training Path

GPON Fundamental		
OBA22	Multi-media	1H

Target Audience

Technical Support Engineers
Operation and Maintenance Engineers

Prerequisites

- A basic understanding of telecommunication network

Objectives

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

- Describe GPON typical application scenarios
- Describe the functions and specifications of GPON components
- Describe the upstream and downstream technology
- Describe the key performance parameters on distance, bandwidth, optical launched power, received sensitive power, attenuation, etc.
- Describe important concepts about GEM port and T-CONT
- Describe service encapsulation and multiplexing measures
- Describe the QoS and security solution in GPON
- Describe ONT management measures

Training Content

OBA22 GPON Fundamental

- GPON Fundamentals
 - GPON networking
 - GPON component
 - GPON upstream and downstream implementation
 - GPON key performance
 - GPON service implementation process
 - GPON QoS and security
 - GPON protection
 - GPON OAM

Duration

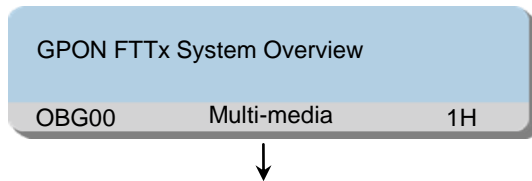
1 hours

Class Size

No limit

1.3.17 GPON FTTx System Overview Training

Training Path



Target Audience

Technical Support Engineers
Operation and Maintenance Engineers

Prerequisites

- Completion of Access Network Related IP Technology Fundamental Training or having equivalent knowledge

Objectives

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

- Introduce FTTx network
- Describe the function and structure of cabinet, frames, boards and cables
- Describe FTTH/B/C/O solutions

Training Content

OBG00 GPON FTTx System Overview

- FTTx System Overview
 - FTTx network introduction
 - FTTx cabinet appearance, typical configuration, parameter and connections
 - FTTx frame appearance, typical configuration, parameters and principles
 - FTTx board appearance, function, front panel and interfaces
 - FTTx cable introduction
 - FTTH/B/C/O solutions

Duration

1 hours

Class Size

No limit

1.3.18 OptiX RTN 900 Ethernet Service Introduction(WBT)

Training Path

OptiX RTN 900 Ethernet Service Introduction (WBT)		
OMTF04	Multi-media	0.5H

Target Audience

OptiX RTN 900 series equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of digital microwave

Objectives

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

- Outline the classification of Ethernet service
- Explain the function and applications of different types Ethernet service

Training Content

OMTF04 OptiX RTN 900 Ethernet Service Introduction (WBT)

- OptiX RTN 900 Ethernet Service Introduction (WBT)
 - Basic Concepts
 - QinQ Overview
 - PWE3 Technology
 - E-Line Service Introduction
 - E-LAN Service Introduction

Duration

0.5 hour

Class Size

No limit

1.3.19 WDM Principle Introduction(WBT)

Training Path

WDM Principle (WBT)		
OMTC01	Multi-media	1H

Target Audience

WDM network operation and maintenance 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

Training Content

OMTC01 WDM Principle (WBT)

- WDM Principle(WBT)
 - WDM optical transmission technology
 - WDM system structure
 - Transmission mode
 - Application mode
 - Advantages of WDM
 - Optical fiber structure
 - Basic feature of optical fiber
 - Related ITU-T recommendation
 - Transmission channel reference point
 - Distribution of optical wavelength areas
- WDM Key Technology(WBT)
 - Requirement of optical source
 - Optical amplifier
 - Optical multiplexer and de-multiplexer
 - Supervisory technologies

Duration

1 hour

Class Size

No limit

1.3.20 SDH Principle Introduction(WBT)

Training Path

SDH Principle (WBT)		
OMTA01	Multi-media	2.5H

Target Audience

SDH network operation and maintenance engineer

Prerequisites

- Having a general understanding of telecommunications

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

Training Content

OMTA01 SDH Principle (WBT)

- SDH Basics(WBT)
 - Definition of SDH
 - Advantages of SDH
 - Defects of SDH
 - SDH frame structure
 - SDH multiplexing procedure
- SDH Overhead and Modules(WBT)
 - Section overhead
 - Path overhead and pointer
 - SDH logical modules
 - Alarm process

Duration

2.5 hours

Class Size

No limit

1.3.21 Digital Microwave Principle Introduction(WBT)

Training Path

Digital Microwave Basics (WBT)		
OMTF01	Multi-media	2H

Target Audience

OptiX RTN series operation and maintenance engineer

Prerequisites

- Having a general understanding of telecommunications

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 parts in the digital microwave system
- List the networking application for digital microwave systems
- List the fadings in microwave propagation
- List the common technologies of antifading

Training Content

OMTF01 Digital Microwave Basics (WBT)

- Digital Microwave Communication Overview(WBT)
 - Concept and characters of digital microwave communication
- Digital Microwave Equipment Components(WBT)
 - Theory and function of every parts in the digital microwave system
 - Networking application for digital microwave systems
- Microwave Propagation and Antifading Technologies(WBT)
 - Fadings in microwave propagation
 - Common technologies of antifading

Duration

2 hours

Class Size

No limit

1.3.22 OptiX RTN 600 Hardware Installation and Commissioning(WBT)

Training Path

OptiX RTN 600 Hardware Installation and Commissioning (WBT)		
OMTF02	Multi-media	1H

Target Audience

OptiX RTN 600 installation engineer

Prerequisites

- NA

Objectives

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

- Check the equipment installation condition such as power supply connections, mounted boards, etc
- Perform the single station installation and commissioning of OptiX RTN 600 IDU parts
- Perform the installation and commissioning of microwave link in the network, ODU parts

Training Content

OMTF02 OptiX RTN 600 Hardware Installation and Commissioning (WBT)

- OptiX RTN 600 Hardware Installation and Commissioning(WBT)
 - Engineering Preparations and Unpacking Check
 - Installing the Antenna
 - Installing the ODUs and IF Cables
 - Installing the IDU
 - Commissioning the Equipment

Duration

1 hour

Class Size

No limit

1.3.23 OTN Introduction(WBT)

Training Path

OTN Introduction (WBT)		
OMTC03	Multi-media	3H

Target Audience

WDM network operation and maintenance engineer

Prerequisites

- Having a general understanding of telecommunications
- Completion WDM principle and SDH principle course

Objectives

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

- 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

Training Content

OMTC03 OTN Introduction (WBT)

- OTN Overview(WBT)
 - Optical transport hierarchy
 - OTN interface structure
 - Multiplexing/mapping principles and bit rates
- OTN Overheads Introduction(WBT)
 - Overhead description
 - Maintenance signals and function for different layers
 - Alarm and performance events
- OTN Maintenance Scenarios(WBT)
 - Alarm and performance events
 - Typical maintenance scenarios of OTN

Duration

3 hours

Class Size

No limit

1.3.24 40G/100G Coherent OTU Technology(WBT)

Training Path

OptiX WDM 40G100G Coherent OTU Technology (WBT)		
OMTC04	Multi-media	1H

Target Audience

WDM network operation and maintenance engineer

Prerequisites

- Having the basic knowledge of OTN and telecommunication

Objectives

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

- List 40G100G Key Technologies
- Describe 40G100G OTU feature
- List OptiX NG WDM 40G100G system networking and application scenarios

Training Content

OMTC04 OptiX WDM 40G100G Coherent OTU Technology (WBT)

- OptiX WDM 40G100G Coherent OTU Technology(WBT)
 - 40/100G transport network requirements and technical challenges
 - Key technologies for 40G/100G transmission
 - Huawei 40G/100G transmission technologies and applications

Duration

1 hour

Class Size

No limit

1.3.25 OptiX RTN 900 Hardware Description(WBT)

Training Path

OptiX RTN 900 Hardware Description (WBT)		
OMTF03	Multi-media	1H

Target Audience

RTN network operation and maintenance engineer

Prerequisites

- Having the basic knowledge of digital microwave

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 units
- List all the protection modes which supported by OptiX RTN 900
- Configure the OptiX RTN 900 equipment for all types of the network application
- Explain the functions of AM and Hybrid Microwave

Training Content

OMTF03 OptiX RTN 900 Hardware Description (WBT)

- OptiX RTN 900 Hardware Description (WBT)
 - Main characteristics of OptiX RTN 900
 - System structure, functions and application of every units
 - Protection modes which supported by OptiX RTN 900
 - OptiX RTN 900 equipment configuration for all types of the network application
 - Functions of AM and Hybrid Microwave

Duration

1 hour

Class Size

No limit

1.3.26 OptiX OSN 1500250035007500 Hardware Description(WBT)

Training Path

OptiX OSN 1500250035007500 Hardware Description (WBT)		
OMTA03	Multi-media	1H

Target Audience

OptiX OSN 1500250035007500 equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of SDH

Objectives

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

- Describe OptiX OSN 1500250035007500 networking application and structure
- Describe the functions and traffic flow of the boards

Training Content

OMTA03 OptiX OSN 1500250035007500 Hardware Description (WBT)

- OptiX OSN 1500250035007500 Hardware Description (WBT)
 - OptiX OSN 1500250035007500 product system introduction
 - Cabinet, Sub-rack and Boards introduction
 - Common Network Elements and Configuration introduction
 - The functions and feature of equipment

Duration

1 hour

Class Size

No limit

1.3.27 OptiX OSN 8800 Hardware Description (WBT)

Training Path

OptiX OSN 8800 Hardware Description (WBT)		
OMTC05	Multi-media	1.5H

Target Audience

OptiX OSN 8800 operation and maintenance engineer

Prerequisites

- Having the basic knowledge of OTN

Objectives

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

- Describe the system structure and feature of OptiX OSN 8800(OTN) system
- Describe the main functions of the boards

Training Content

OMTC05 OptiX OSN 8800 Hardware Description (WBT)

- OptiX OSN 8800 Hardware Description (WBT)
 - OptiX OSN 8800 networking application and product features
 - OptiX OSN 8800 cabinet, subrack and frame
 - OptiX OSN 8800 boards description

Duration

1.5 hours

Class Size

No limit

1.3.28 OptiX OSN 6800 Hardware Description (WBT)

Training Path

OptiX OSN 6800 Hardware Description (WBT)		
OMTC06	Multi-media	1.5H

Target Audience

OptiX OSN 6800 equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of OTN

Objectives

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

- Describe the system structure and feature of OptiX OSN 6800(OTN) system
- Describe the main functions of the boards

Training Content

OMTC06 OptiX OSN 6800 Hardware Description (WBT)

- OptiX OSN 6800 Hardware Description (WBT)
 - OptiX OSN 6800 networking application and product features
 - OptiX OSN 6800 cabinet, subrack and frame
 - OptiX OSN 6800 boards description

Duration

1.5 hours

Class Size

No limit

1.3.29 OptiX OSN 3800 Hardware Description (WBT)

Training Path

OptiX OSN 3800 Hardware Description (WBT)		
OMTC07	Multi-media	1H

Target Audience

OptiX OSN 3800 equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of OTN

Objectives

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

- Describe the system structure and feature of OptiX OSN 3800(OTN) system
- Describe the main functions of the boards

Training Content

OMTC07 OptiX OSN 3800 Hardware Description (WBT)

- OptiX OSN 3800 Hardware Description (WBT)
 - OptiX OSN 3800 networking application and product features
 - OptiX OSN 3800 cabinet, subrack and frame
 - OptiX OSN 3800 boards description

Duration

1 hour

Class Size

No limit

1.3.30 OptiX OSN 1800 System Hardware Description(WBT)

Training Path

OptiX OSN 1800 System Hardware Description (WBT)		
OMTC08	Multi-media	0.5H

Target Audience

OptiX OSN 1800 equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of OTN

Objectives

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

- Describe the system structure and features of OptiX OSN 1800(OTN) system
- Describe the main functions of the boards

Training Content

OMTC08 OptiX OSN 1800 System Hardware Description(WBT)

- OptiX OSN 1800 Hardware Description (WBT)
 - OptiX OSN 1800 system overview
 - OptiX OSN 1800 chassis
 - OptiX OSN 1800 boards

Duration

0.5 hour

Class Size

No limit

1.3.31 OptiX RTN 900 Ethernet Features(WBT)

Training Path

OptiX RTN 900 Ethernet Features (WBT)		
OMTF05	Multi-media	0.5H

Target Audience

OptiX RTN 900 series equipment operation and maintenance engineer

Prerequisites

- Having the basic knowledge of digital microwave

Objectives

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

- Outline the Ethernet features supported by OptiX RTN 900
- Describe the function and application of the Ethernet features

Training Content

OMTF05 OptiX RTN 900 Ethernet Features (WBT)

- OptiX RTN 900 Ethernet Features (WBT)
 - Ethernet Ring Protection Switching
 - MSTP
 - Link Aggregation Group
 - Link State Pass Through

Duration

0.5 hour

Class Size

No limit

1.3.32 Ethernet Basis(WBT)

Training Path

Ethernet Basis(WBT)		
OMTF06	Multi-media	1H

Target Audience

Personnel who requires a general knowledge of Ethernet

Prerequisites

- Having basic knowledge on SDH technology

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

Training Content

OMTF06 Ethernet Basis(WBT)

- Ethernet Basis(WBT)
 - Categories of Ethernet
 - Basic Principle of Ethernet
 - Ethernet Port Technology
 - VLAN Basis & L2 Switching

Duration

1 hour

Class Size

No limit

1.3.33 IP Basics(WBT)

Training Path

IP Basics(WBT)		
OMTF07	Multi-media	1H

Target Audience

Personnel who requires a general knowledge of IP

Prerequisites

- Having basic knowledge on SDH technology

Objectives

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

- 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

Training Content

OMTF07 IP Basics(WBT)

- IP Basics(WBT)
 - Data Traffic Basic
 - Brief Introduction of Network and Internet
 - Protocol and Standard
 - Basic Architecture of IP Network
 - IP Address Introduction

Duration

1 hour

Class Size

No limit

1.3.34 OptiX RTN 900 L3 VPN Features Introduction(WBT)

Training Path

OptiX RTN 900 L3 VPN Features Introduction(WBT)		
OMTF09	Multi-media	2H

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:

- 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

Training Content

OMTF09 OptiX RTN 900 L3 VPN Features Introduction(WBT)

- OptiX RTN 900 L3 VPN Features Introduction(WBT)
 - Overview of L3 VPN
 - Introduction of Control Plane
 - Basic Concepts and Principles of BGP/MPLS L3 VPN Introduction
 - Routing and Packet Forwarding in RTN L3 VPN Introduction
 - Protection schemes of RTN L3 VPN

Duration

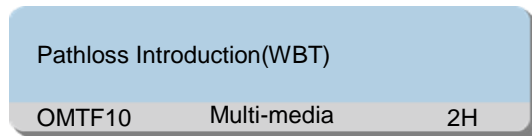
2 hours

Class Size

No limit

1.3.35 Pathloss Introduction(WBT)

Training Path



Target Audience

OptiX RTN 900 network planning engineer

Prerequisites

- Completion of OptiX RTN 900 2nd Line Maintenance Training

Objectives

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

- Understand the application of the origin of the Pathloss
- Describe the Route Design procedure via Pathloss
- Describe the Frequency Design procedure via Pathloss
- Understand the Link-level protection procedure via Pathloss

Training Content

OMTF10 Pathloss Introduction(WBT)

- Pathloss Introduction(WBT)
 - Pathloss Introduction
 - Route Design Via Pathloss
 - Frequency Design Via Pathloss
 - Link-level protection Design Via Pathloss

Duration

2 hours

Class Size

No limit

1.3.36 OptiX RTN 900 Networking Application and Protection(WBT)

Training Path

OptiX RTN 900 Networking Application and Protection(WBT)		
OMTF11	Multi-media	2H

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 main services of OptiX RTN 900 network
- Understand the networking application of OptiX RTN 900
- Describe the protection technologies in OptiX RTN 900
- Be familiar with features and applications of the protection technologies

Training Content

OMTF11 OptiX RTN 900 Networking Application and Protection(WBT)

- OptiX RTN 900 Networking Application and Protection(WBT)
 - Classification of the services in the OptiX RTN 900 network
 - Networking application of OptiX RTN 900
 - Protection technologies in OptiX RTN 900
 - Features and applications of the protection technologies

Duration

2 hours

Class Size

No limit

1.3.37 OptiX RTN 900 Packet Service Introduction(WBT)

Training Path

OptiX RTN 900 Packet Service Introduction(WBT)		
OMTF12	Multi-media	2H

Target Audience

OptiX RTN 900 network maintenance engineer

Prerequisites

- Having the basic knowledge of digital microwave
- Having the basic knowledge of ethernet

Objectives

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

- Understand the basic concept of PWE3 technology
- Describe the main service type of the RTN 900
- Understand the service application

Training Content

OMTF12 OptiX RTN 900 Packet Service Introduction(WBT)

- OptiX RTN 900 Packet Service Introduction(WBT)
 - Basic Concepts
 - PWE3 Technology
 - CES Service Introduction
 - E-Line Service Introduction
 - E-AGG Service Introduction
 - VPLS Service Introduction

Duration

2 hours

Class Size

No limit



1.3.38 OptiX MS-OTN Networking and Service Introduction(WBT)

Training Path

OptiX MS-OTN Networking and Service Introduction(WBT)		
OMTC09	Multi-media	2H

Target Audience

OptiX WDM operation and maintenance engineer

Prerequisites

- Having the basic knowledge of WDM

Objectives

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

- Describe the main functions and features of the packet service boards and universal line boards
- List the ethernet service types and describe the features of MS-OTN
- List the network protection types of MS-OTN

Training Content

OMTC09 OptiX MS-OTN Networking and Service Introduction (WBT)

- OptiX MS-OTN Networking and Service Introduction (WBT)
 - Network Application
 - Service Introduction
 - Network ProtectionDuration

Duration

2 hours

Class Size

No limit

1.3.39 OptiX NG WDM Packet Technology Introduction(WBT)

Training Path

OptiX NG WDM Packet Technology Introduction(WBT)		
OMTC10	Multi-media	2H

Target Audience

OptiX WDM operation and maintenance engineer

Prerequisites

- Having the basic knowledge of WDM

Objectives

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

- Design the IP address and mask for private network equipment
- List the advantages of the QinQ technology
- Describe MPLS label forwarding process
- Outline the typical PWE3 encapsulation format
- Describe the basic concepts of MPLS-TP

Training Content

OMTC10 OptiX NG WDM Packet Technology Introduction(WBT)

- OptiX NG WDM Packet Technology Introduction(WBT)
 - IP Overview
 - Ethernet Basics
 - MPLS Technology
 - PWE3 Technology
 - MPLS-TP Technology

Duration

2 hours

Class Size

No limit

1.3.40 OptiX NG WDM Optical Power Calculation(WBT)

Training Path

OptiX NG WDM Optical Power Calculation(WBT)		
OMTC11	Multi-media	2H

Target Audience

OptiX WDM operation and maintenance engineer

Prerequisites

- Having the basic knowledge of WDM

Objectives

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

- Review NG WDM network node signal flow .
- List the common indices on optical power calculation.
- Calculate the optical power.
- Perform the Optical Power Commissioning.

Training Content

OMTC11 OptiX NG WDM Optical Power Calculation(WBT)

- OptiX NG WDM Optical Power Calculation(WBT)
 - Basics
 - Power Calculation

Duration

2 hours

Class Size

No limit

1.3.41 OptiX NG WDM Electrical Layer Grooming(WBT)

Training Path

OptiX NG WDM Electrical Layer Grooming(WBT)		
OMTC12	Multi-media	2H

Target Audience

OptiX WDM operation and maintenance engineer

Prerequisites

- Having the basic knowledge of WDM

Objectives

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

- Diagram the electrical layer service grooming model of OptiX OSN 3800/6800/8800.
- List the boards which have electrical layer cross-connect function.
- Differentiate the electrical layer cross-connect functions between different boards.
- Describe the application scenarios of electrical layer service grooming.

Training Content

OMTC12 OptiX NG WDM Electrical Layer Grooming(WBT)

- OptiX NG WDM Electrical Layer Grooming(WBT)
 - NG WDM Electrical Layer Grooming
 - Boards Involved in Electrical Layer Grooming
 - Application Scenarios of Electrical Layer Service Grooming

Duration

2 hours

Class Size

No limit