



**International
System
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2010

ISS TRAINING CATALOG

“DELIVERING RESULTS...
NO MATTER!”
NO MATTER!

Telecommunications
Group

5/19/2010

Introduction

ISS offers a number of training courses to meet a wide range of customer needs. Courses may be provided for technical and non-technical, or management and non-management personnel. Standard, customized, and specialized courses are provided.

Specialized Courses. We specialize in Telecommunications Legacy and Transitional Technology training courses. We utilize a number of legacy components such as Datakit VCS, AI Switch, and LUCENT ATM/Frame Relay switches to simulate real-world environments.

Standard Courses. By maintaining an awareness of both current and emerging technologies, ISS develops and offers courses demanded by a wide range of customers. Using a number of available software and hardware components, customer environments are simulated and “real-world” lab exercises are provided.

Customized Courses. In addition to the standard courses offered by ISS, customized courses may be developed to meet specific customer requirements. This training may be provided at ISS’s headquarters training facility or at desired customer locations. Whether at ISS or at the customer site, ISS provides the software and hardware components necessary to simulate customer environments and perform meaningful lab exercises. The course content and lab exercises are aimed at meeting specific customer-defined objectives.

Training Course Delivery Methods

ISS offers flexible course delivery methods which include instructor-led training, multimedia presentations, and web-based training (WBT).

Instructor-Led Training. ISS has conscientiously assembled a staff of highly-qualified instructors. With over 60 years of combined experience in prominent desktop software, course development and delivery, and certifications from industry leaders (e.g., Cisco Systems, Nortel Networks, Polycom, Microsoft), this core group provides the foundation for comprehensive customer training programs. However, in today’s marketplace, both the competition and scope are global. In order to meet these broadened geographical demands, ISS uses its core group of senior training specialists to identify and evaluate supplemental personnel in other geographical locations who meet the company’s stringent criteria for course development and classroom instruction. This allows ad hoc deployment of qualified personnel to provide immediate responses to a wide range of geographically-dispersed customer training needs.

E-Learning. ISS also offers custom tailored web-based training. Educate and re-skill large numbers of widely dispersed employees on products, systems, technologies, local ordinance interpretation, state and national legislation, and more. ISS provides tailored training that is easy to use and includes everything you need for online learning, personnel performance assessment, with live responses from a “virtual instructor”... For over a decade, ISS has specialized in enterprise training tailored to desired skill levels specified by our customers. In realizing our customer's need to control rising training costs and their need for just-in-time training, we provide a complete e-Learning solution along with all services associated with learning management systems (LMS).

Immediate advantages of e-Learning include:

- Cost and Time Savings
- Cross-Platform Training Access (Windows, UNIX, or Macintosh workstations)
- Widely Available Internet Access and Inexpensive Distribution
- Convenient and Flexible User Pace
- Ease of Update and Document Control

We've created an environment and process allowing rapid development of new content and speedy conversion of existing courseware.

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Category: Network Switching and Transport

Title: **Frame Relay/ATM Support Operations with Lucent NavisCore NMS and Core Switches (ISS959)**

Length: 5 days

Description:

A 5-day, practical approach to ATM and Frame Relay support operations utilizing the LUCENT NavisCore NMS for network management of B-STDX, CBX 500, and GX 550 core network switches. Student workshops and labs are consistent with tasks performed in typical NOC support and network surveillance centers which include network trouble event observation, ticket documentation, mild configurations, troubleshooting, and field unit replacement.

Prerequisites:

Experience or prior training with Frame Relay, ATM, and Broadband Network Access technologies

Course Outline:

Broadband Network Technology Review

Identify operational characteristics for Frame Relay, ATM, and Broadband Network Access technologies

- Network Access and Network Transport Review
- Essential Frame Relay and ATM Operations Review
- Essential xDSL Broadband Access Operations Review

NavisCore NMS and LUCENT Core Switch Component Operations

Perform network map navigation with NavisCore

- NavisCore Software Architecture and Operations Overview
- General Map Navigation and Component Inter-operations
- NavisCore Network Event Identification, Testing, and Configuration Tools

LUCENT Core Switch Component Operations and Initialization

Perform field installations of core switch components and switch initialization

- LUCENT Core Switch Hardware Highlights (B-STDX, CBX 500, and GX 550)
- I/O Module Overview and LED Indicators
- Essential Console Port Commands for Switch Initialization

Essential Frame Relay, ATM, and Trunk Configuration

Perform Frame Relay, ATM, and Trunk network configurations

- Frame Relay Port and Circuit Configuration Essentials
- ATM Port and Circuit Configuration Essentials
- xDSL Broadband Access Architectures and ATM-related Configurations
- Core Switch Trunk and Frame-to-ATM Interworking Configurations

Network Support Center Practical Operations and Troubleshooting

Perform network monitoring and testing with NavisCore; prescribe recommendations for network trouble resolution

- General Troubleshooting Strategies and Methods
- Trouble Ticket Documentation
- Analyzing Physical and Logical Port Statistics
- Analyzing Circuit Statistics
- Performing Background and Foreground Diagnostics

Category: Network Switching and Transport

Title: **AI Switch Operations, Administration, and Maintenance (ISS359)**

Length: 4 days

Description:

This four-day course is intended for CO and NOC personnel involved in the support of AI Switch Connections in the Datakit X.25 Packet Switched Network. It includes both AI Switch and Datakit Configuration Essentials.

Prerequisites:

Completion of Datakit course (ISS355) and X.25 Packet Switching Operations course (ISS297) or equivalent experience in Datakit operations in an X.25 environment

Course Outline:

Datakit II VCS Overview

Identify LAN/WAN Standards and Protocols, Local and Remote Datakit Node Component Operations and Protocol Implementations

- LAN/WAN Protocols Review
- Datakit Product Architecture Overview
- Datakit Modules and Protocol Implementations
- Datakit Remote Shelf Operations and Interconnections

Datakit Network LAN/WAN Network Configurations

Perform Datakit Node Interface and Trunking Configuration Operations

- Node, Groups, Addresses, and Profile Database Operations
- LAN/WAN Interface Module Configuration and Connections
- Trunking, CPM, and DKAP Module Configurations

AI Switch Overview and Configuration

Identify AI Switch Components, Perform AI Switch Configuration Operations, and Monitor Connections

- AI Switch Product Overview
- AI Switch Configuration for NMA Environments
- Connection Status Commands
- AI Switch SLC Diagnostics and Line Monitor Interpretations

Configuring the AI Switch and Datakit Interconnection

Perform AI Switch and Datakit Connection and Monitoring Operations

- X.25 Network Protocol Overview
- Configuring the Datakit and AI Switch X.25 Connections
- Troubleshooting the AI Switch and Datakit Connections

Category: Network Switching and Transport
Title: **Datakit Operations, Administration, and Maintenance (ISS355)**
Length: 5 days

Description:

This five-day course identifies the required and optional components and cabling used for local Datakit node connections, as well as trunk connections to other Datakit nodes; it also identifies the commands used by CO and NOC personnel for monitoring and maintenance support.

Prerequisites:

Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:

Data Communications Review

Identify communications standards and models (e.g., OSI)

- Transmission Signaling and Interfacing
- Protocol Standards and Operations

Datakit II VCS Overview

Describe the Datakit shelf and node configuration, including slot assignments and cabling; describe interface and trunk options; and describe Datakit bus and data flow operations

- Product Overview
- Cabinet/Shelf Architecture
- Circuit Board Roles and Protocol Implementations
- BNS-2000 Overview
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Datakit Routine Operations

Perform procedures for tape/disk backup and restore, tape and disk formatting, and proper system booting; also, describe commands for each mode of operation

- Moving Around in the System
- System Booting Modes
- Tape/Disk Backups and Restores
- Formatting Tapes and Disks
- Module Replacement

Datakit Database and Host Setup

Perform the processes and commands required for interface connections and for host computer connections

- Groups, Addresses, and Hardware Setup
- CPM-HS Connections and Host Computer Definitions and Operations
- Host Computer files and Tables
- Testing and Troubleshooting the Host Computer Connection
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Datakit Internetworking

Perform the procedures for connecting Datakit nodes and accessing, monitoring, and troubleshooting remote connections by CO and NOC personnel

- Node-to-Node Trunking and Options (e.g., copper and fiber)
- Database Setups and Statistics
- Call Processing and Typical Trunk Problems

Datakit Troubleshooting

Identify troubleshooting methods for determining problem resolutions

- Troubleshooting methods and strategies
- Console and LED Alarm Messages
- Datakit Packet Status Error Indicators
- Using Interface Testers and Protocol Analyzers

Category: Network Switching and Transport
Title: **X.25 Packet Switching Concepts and Operations (ISS297)**
Length: 3 days

Description:

A 3-day, practical course on X.25 concepts and those operations as found in telecommunication environments for network element alarm handling and provisioning.

Prerequisites:

Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:

X.25 and Packet Switched Networks

Define X.25 basics and its application in the telecommunications environment

- X.25 Concepts, Purpose, and Origin
- OSI Reference Model and the X.25 Protocol Stack

X.25 and the Physical Layer

Distinguish among RS/V/X interface characteristics and applications

- Physical Layer Mechanical and Electrical Characteristics
- RS 232, V.35, RS 530, and Other Interfaces

X.25 and the Data Link Layer

Observe X.25 Data Link Layer data streams and perform protocol configurations

- HDLC Link Protocol Family Overview
- LAP-B Protocol Frame Formats and Operations
- Data Stream Analysis at the Link Level

X.25 Network Layer Operations

Configure X.25 for PVC and SVC operations

- Network Layer Operations
- Virtual Circuit and Logical Channel Operations
- Data Stream Analysis of Packet Formats and Flows
- Packet Diagnostics and Security

X.25 Facilities and Telemetry Applications

Configure X.25 devices for telemetry operations

- X.25 Facilities Overview and Usage
- X.25 Implementations in Network Elements
- Using X.25 for Network Alarms and Provisioning

Category: Network Switching and Transport
Title: **T-Carrier Operations and Maintenance (ISS227)**
Length: 3 days

Description:
A 3-day course involving a practical approach to configuring and maintaining T-carrier networks for CPE and NOC operations.

Prerequisites:
Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:
Introduction to T-Carrier
Define basic T-Carrier Applications

- Evolution of Carriers (C-, N-, L-, and T-Carriers)
- Data-Voice Integration
- T-Carrier Applications

T-Carrier Operations
Define T-Carrier principle operations

- Multiplexing and Switching Operations
- Pulse Code Modulation (PCM)
- Transmission Rates and the Digital Hierarchy

T1 System Components
Associate T1 components with their principle operations

- Transmission Media
- Channel Banks
- Repeaters and the DSX
- DCS, Switches, and Multiplexors
- Line Monitoring Units

T-Carrier Equipment Provisioning
Perform T-Carrier device installation and framing, coding, timing, and channel provisioning

- DSU/CSU Provisioning
- Configuring Channel Banks
- Internal DSU Channelization and Configuration
- DSX Frame Wiring for Line and Equipment

T-Carrier Performance and Testing
Identify and resolve carrier alarms and troubles using test sets

- Carrier Group Alarms (Red, Yellow, and Blue Alarms)
- T-Carrier Testing Strategies
- Loopbacks and Test Pattern Injections
- Using Carrier Test Sets for Passive and Active Line Testing

Category: Network Switching and Transport
Title: **Basic Telecommunications Concepts and Operations (ISS214)**
Length: 1 day

Description:
This 1-day course removes the mystic of telecommunications and provides a solid foundation of concepts, technologies, and practical operations.

Prerequisites:
None

Course Outline:
Telecommunication Principles
Define the major principles of telecommunications

- Telecommunications Network: A Panoramic View
- Transmission Principles
- Analog and Digital Techniques
- Transmission Media Selections
- Transmission Impairments
- Modulation and Multiplexing

Carrier Services and Offerings
List common carrier offerings, characteristics, and their application

- Digital Hierarchies: NADH, SONET/SDH
- Common Carrier Offerings

Voice Operations in Telecommunications
Identify key components and operations in a typical call flow

- Network Access and Local Loop Operations
- POTs (Plain Old Telephone Set) Operations
- Telecommunication Switch Operations (Lines, Trunks, Switch Matrix)
- Numbering Plans
- Voice Call Processing Flow

Signaling Operations in Telecommunications
Associate various signaling technique with their associated characteristics

- Concepts of Signaling
- Channel Associated Signaling
- Common Channel Signaling
- SS7 Signaling

Data and Voice Telecommunications Convergence
Distinguish among voice and data telecommunication requirements; identify practical solutions for data and voice convergence

- Data Communications (LAN/WAN) Basics
- Networking Standards and Prominent Protocols
- TCP/IP Primer
- Converging Voice and Data at Transmission and Network Levels
- Using xDSL and ATM for Convergence

Category: Network Access

Title: **Frame Relay Operation, Implementation, and Maintenance (ISS272)**

Length: 3 days

Description:

This course is intended to provide CO and NOC personnel detailed Frame Relay operation and implementation information for effective support and maintenance. It includes Frame Relay implementations using prominent vendor equipment.

Prerequisites:

Completion of Computer Network Operations course (ISS220) or equivalent experience LAN/WAN operations

Course Outline:

Basic Data Communications Review

Identify Networking Standards and Models (OSI), Physical Layer and Data Link Layer LAN/WAN Operations

- Computer Networking and the OSI Model
- Signaling at the Physical Layer
- Protocol Operations at the Data Link Layer
- LAN/WAN Operations Review

Frame Relay Protocol Operations

Identify Frame Relay Architectural Aspects (e.g., UNI and NNI), Link Management Protocol Operations, and Differences between Frame Relay and X.25.

- Frame Relay as a Preferred Link Access Protocol (LAP)
- Frame Relay Architecture: UNI, NNI
- Local Management Protocols: LMI, AnnexD, CLLM
- Comparison of Frame Relay and X.25
- Frame Relay Data Flow Observations

Frame Relay Implementation

Perform Frame Relay Configuration Tasks for Point-to-Point, Network Interworking, and Service Interworking Applications.

- Frame Relay as an Internetworking Vehicle
- Frame Relay for a Point-to-Point Connection
- Frame Relay as Implemented by a Carrier

Frame Relay Performance Monitoring/Troubleshooting

Observe Frame Relay Data Traffic, Determine Performance Levels, and Identify/Resolve Trouble Conditions

- Frame Relay Subscription and Performance: CIR, Be, Bc
- Monitoring Frame Relay Data Traffic and Measuring Performance Using Protocol Analyzer
- Resolving Troubles from Common User Symptoms in a Frame Relay Environment

Integration of Frame Relay with Emerging High-speed Protocols

Associate Frame Relay with Emerging Technological Trends and Evaluate its Future.

- Frame Relay Network Interworking with ATM
- Frame Relay Service Interworking with ATM
- The Future of Frame Relay

Category: Network Access

Title: **Network Troubleshooting with Protocol Analyzers Workshop (ISS260)**

Length: 4 days

Description:

A 4-day, intense hands-on course involving network testing and troubleshooting strategies with network test equipment and protocol analyzers for LAN, WAN, and carrier environments.

Prerequisites:

Completion of Computer Network Operations course (ISS220) or equivalent experience with LAN/WAN maintenance

Course Outline:

Network Analyzer Fundamentals

Describe the basic operations of network analyzers

- Protocol Analyzer Basic Operations
- Protocol Analyzer Usage: Testing, Emulating, Data Gathering, Trouble Filtering, Trapping, Configuring, Traffic Generation, and Metering
- Protocol Analyzer Types and Examples: Carrier Testers/Analyzers, Interface and Cable Testers, and WAN/LAN Analyzers

Basic Approach to Analyzer Operations/Usage

Perform essential operations for attaching analyzers to your network

- Benchmarking the Network: Expected Protocol Behavior: Signaling/Transmission, Addressing/Routing, Presentation, Confirmation, Flow Control, Error Detection/Correction, and Message Integrity
- Protocol Types and Data Streams Review: ASYNC, SYNC, Packet/Circuit Switched, LAN/WAN, and Internetworking
- Troubleshooting Methods/Symptom Analysis: Symptom Recognition, Data Gathering/Testing, Trouble Identification/Trouble Resolution

Data Gathering and Symptom Recognition

Perform data gathering using the test set and associate typical network symptoms with likely causes

- Generating Traffic/Patterns for Testing
- Data Gathering/Testing Implementation: Cable/Interface Tester, T-Carrier Tester, and LAN/WAN Analyzer
- Observing Network Symptoms and Determining Likely Causes

Trouble Identification and Resolution

Resolve network troubles in a thorough and timely manner

- Comparing actual data with expected protocol operations/performance
- Trouble detection and isolation
- Confirming the trouble: analyzer simulation/emulation
- Trouble resolution: re-configure, replacement, repair, and performance optimization

Category: Network Access

Title: **Computer Networking Operations and Maintenance (ISS220)**

Length: 5 days

Description:

This 5-day course presents a solid approach towards building a foundation in computer networking. This practical approach blends discussion with hands-on exercises early in the class to de-mystify concepts surrounding this field. Many lab exercises are typical of those performed in Network Operation Centers and Field Technician tasks.

Prerequisites:

None

Course Outline:

Overview of Communication Principles

Identify principle operations of transmission and perform a typical circuit installation

- Transmission Principles and Terminology
- Carrier Systems Overview
- Transmission Impairments
- Modulation and Multiplexing Concepts

Communication Interfaces with RS/V Standards

Associate interface lead operations with DTE and DCE roles

- Review of DTE and DCE Operations
- RS232 and RS530 Standards and Operations
- V.35, X.21, and HSSI Standards and Operations
- Testing and Troubleshooting the Interface

Network Switching Fundamentals

Distinguish among common switching techniques and their application

- Switching Concepts and General Operations
- Message, Circuit, and Packet Switching Operations
- Practical Switching Operations and Components

Network Protocol Concepts and Operations

Analyze pre-captured and live protocol data streams

- Concepts of Protocols
- Character and Bit-Oriented Protocol Operations
- HDLC and Derived Protocols Examples: LAP-B and Frame Relay

Network Architectures and the ISO-OSI Reference Model

Associate LAN and WAN standards with their associated layer in the OSI reference model

- The Motivation for Networking Standards
- ISO-OSI Standards and their Influence on Networking
- WAN Characteristics and Architectures
- LAN Characteristics and Architectures

Network Maintenance and Management

Perform network troubleshooting with typical network test devices

- Network Maintenance Fundamentals

- Using OSI for Troubleshooting
- Network Maintenance Testing Tools
- Common Network Management Models (i.e. SNMP)

Category: Network Support Systems
Title: **Hands-On UNIX for Systems Support Operations (ISS425)**
Length: 5 days

Description:
This five-day course is intended for CPE, CO, and NOC personnel who must use UNIX for OSS Administration and other Network Support Applications.

Prerequisites:
None

Course Outline:
UNIX Introduction and Review
Identify the UNIX Operating System Components, and Shell Operation.

- UNIX Operating System Description
- UNIX Components, Organization, and Interface
- UNIX System Operations

UNIX Commands
Perform essential UNIX command operations (including command options).

- UNIX Command Concepts and man Page Usage
- UNIX Command Parameters, Options, and Arguments
- Frequently-Used Commands for Systems Support

UNIX File Systems
Identify UNIX file system types, describe the directory hierarchy, and interpret file permissions.

- File Types, Names and Organization
- File Access Permissions
- System Directories and Contents
- Finding and Comparing Files

More UNIX Commands
Execute and interpret additional UNIX commands.

- Using mail, mailx and news for System Notices
- Command Filtering and Piping
- I/O Redirection

Text Editing
Perform text file editing tasks.

- Description of Editing Tools: vi and ed
- Using Editing Tools: vi and ed

The UNIX Shell
Describe the UNIX Shell, identify Shell functions, and interpret Shell commands.

- Shell Concepts and Operation
- Shell Commands and Basic Shell Programming

Category: Network Support Systems
Title: **Solaris UNIX Operating System Environment (ISS439)**
Length: 4 days

Description:

This five-day course provides detailed descriptions of the Solaris UNIX operating system. It also includes preliminary information concerning tasks required for System Administration and System Maintenance.

Prerequisites:
None

Course Outline:

Solaris UNIX Operating System Essentials

Describe operating system components, shell components, and user applications.

- UNIX Operating System Essentials
- Essential Solaris Commands Review
- Solaris Graphical User Interfaces (OpenWindows, CDE)

Installing Solaris

Identify Requirements for Installing Operating System Software (e.g., system information, software package information, disk partitioning, etc.), Mounting File Systems, and Mirroring File Systems.

- Sun System Architectures
- Loading/Partitioning Disks
- Booting the Workstation
- Workstation Configuration

Solaris File Systems

Identify the UNIX File System Types, Describe Process for Creating, Mounting, and Monitoring File Systems, and Mirroring File Systems.

- File System Types
- Creating and Mounting File Systems
- Maintaining and Monitoring File Systems
- Disk Mirroring

End User Administration

Perform Steps for Establishing Groups and User Accounts using Commands and GUIs.

- User Account and Groups
- Creating User Accounts using Commands (e.g., useradd) and GUIs (e.g., admintool)
- User Account Administration

Solaris System Services

Describe Graphical User Interface (GUI) Options and Preferences, Software Package Administration Features, and Backup/Restore Utilities.

- Configuring OpenWindows and Common Desktop Environment (CDE)
- Software Package Administration
- Backup/Restore Utilities (ufsdump, ufsrestore, cpio, tar, etc.)

Solaris Networking

Identify Network Applications/Services, and Perform Steps for Network File Sharing (FTP, TFTP, NFS), Remote Command Execution, and Network Monitoring.

- LAN Networking with Ethernet
- Network Monitoring Commands
- Remote Command Execution
- Remote Host Name Resolution
- NFS Configuration
- Network Routing

Category: Network Support Systems
Title: **UNIX Shell Script Essentials (ISS435)**
Length: 3 days

Description:

This three-day course is intended to provide CO and NOC personnel with comprehensive information concerning the development and use of Shell Scripts for automating OSS and end user support processes. It may also be used by personnel at the Customer Premise to automate device configuration, monitoring, and reporting procedures.

Prerequisites:

Completion of Hands-On UNIX course (ISS425) or equivalent experience in UNIX operations

Course Outline:

The Shell Environment

Describe Shell concepts and operations, and identify essential UNIX commands for Shell scripting applications.

- Shell Concepts and Operations
- Essential UNIX Commands Review (I/O Redirection, Piping, and Command Execution)
- Customizing Your UNIX Shell

Basic Shell Scripting

Describe Shell scripting parameters and conventions, and associate parameters with scripting applications.

- Positional Parameters
- Shell Script Conventions (Command Substitution, Pattern Matching, I/O Redirection, etc.)
- The Shell Environment

Control Constructs and Looping

List and define most common Shell commands, and develop scripts using standard constructs.

- Frequently Used Shell Script Commands (e.g., test, exit, while, etc.)
- Basic Shell Constructs (if, then, else, while, case, etc.)

Quoting and Signals

Develop Shell scripts using quotes, signals and trap statements.

- Quoting Special Characters
- Executing Signals in Shell Scripts
- Using "Trap" Statements

Category: Customer Premise Equipment

Title: **Cisco Systems Router Operations, Administration, and Maintenance (ISS290)**

Length: 3 days

Description:

Intense, 3-day hands-on course covering the Cisco Systems router product. Frequent lab exercises involve router configurations for various network applications along with multiple troubleshooting cases.

Prerequisites:

Completion of TCP/IP course (ISS273) or equivalent experience

Course Outline:

Internetworking Review

Recall basic LAN/WAN and TCP/IP concepts

- Network Models and OSI Architecture Review
- TCP/IP and Addressing Review
- Bridge and Router Operations Overview

Cisco Router Product Overview

Distinguish among Cisco Router product lines and their application; detect router IOS versions

- Cisco Systems Router Product Overview
- Router Product Physical Description and Features
- IOS Software Features

Router Installation

Perform initial activation of the Cisco router

- Router Physical Installation
- Initial Router Activation Basics
- Activation Through Interactive Setup, Config T, and Auto Install

Router Configuration for Internetworking

Perform detailed router configurations for various network applications

- Global Network Settings
- Serial Line Protocol Configurations
- IP Address Configuration
- Saving and Recalling the Configuration

Cisco Router Operations and Administration

Retrieve router status using administrative commands

- Router User Interface Modes
- Determining Router Status with Administrative Commands
- Managing Traffic and Network Access

Router Troubleshooting

Identify and resolve network troubles using the Cisco router

- Troubleshooting strategies and methods
- Using Router Commands to Diagnose Troubles (ping, trace, show)
- Using "debug" to Observe Router Traffic

Category: Customer Premise Equipment

Title: **Cisco CCNA Boot Camp Workshop (ISS2902CCNABootcamp)**

Length: 5 days

Description:

Our CCNA course (ISS2902) is designed to prepare students to pass the CCNA (640-801), INTRO (640-821), and ICND (640-811) Cisco Certified Network Associate CCNA certification exams. The course covers the skills necessary to select, connect, configure, and troubleshoot Cisco networking devices and includes topics on Extending Switched Networks with VLANs, Determining IP Routes, Managing IP traffic with Access Lists, Establishing Point-to-Point connections, and Establishing Frame Relay Connections.

This course includes student training manuals, tutorials, lesson plans, exercises, assignments, quizzes, and many other valuable training resources.

Prerequisites:

None

Course Outline:

Network Models

- is designed to provide students with a comprehensive introduction to different networking models and their functions in helping to understand network communication and design. Topics covered in this module include the OSI model, the DoD TCP/IP model, and the Cisco hierarchical network design model. By the end of this module, students will be able to list and describe the layers of each model, as well as describe different protocols, equipment, and/or functions found at each layer.

Networking Essentials

- designed to provide students with a solid understanding of core networking concepts, equipment, and technologies. Topics covered in this module include network transmission methods, LAN technologies such as Ethernet, network cabling, differentiating between network devices, network topologies, and more.

Introduction to Switching

- is designed to provide students with a comprehensive understanding of the idea of switched network communication and its benefits. Topics covered in this module include Cisco switching methods, the functions of Spanning Tree Protocol (STP), Virtual LANs (VLANs), and the initial configuration of a Cisco Catalyst switch.

TCP/IP and IPX/SPX

- is designed to provide students with a solid fundamental understanding of both the TCP/IP and IPX/SPX protocol suites. Topics covered in this module include the functions and makeup of the core protocols in each suite, and a closer look at their individual responsibilities in the network communication process.

IP Addressing and Subnetting

- is designed to provide students with a comprehensive understanding of the IP addressing schemes and how subnetting works towards logically dividing an IP address space. Topics covered in this module include classes of addresses, private address ranges, understanding the purpose of subnetting, creating custom subnet masks, determining address ranges based on a custom mask, supernetting, and more. By the end of this module, students will be completely comfortable with both the theory and implementation of custom subnetting schemes.

Router Hardware and Software

- is designed to provide students with an introductory look at the hardware and software components of Cisco routers. Topics covered in this module include a look at the major hardware components of a router such as ports, memory

types, and software elements like the Cisco IOS. By the end of the module, students will be able to identify the major hardware and software components of a router, and identify the functions, roles, and characteristics of each.

Router Configuration

- is designed to provide students with a comprehensive introduction to the configuration of a Cisco router from the command line interface (CLI). Topics covered in this module include router modes, console connection methods, the initial setup of a Cisco router, the configuration of general and port-specific settings, using network diagnostic tools, and configuring proprietary protocols like CDP. By the end of this module, students will feel comfortable connecting to and configuring a Cisco router from the command line.

Router Protocols

- is designed to provide students with a comprehensive overview of the functions of routing protocols and their importance in large internetworks. Topics covered in this chapter include the theory and implementation of common routing protocols such as Routing Information Protocol (RIP) and Interior Gateway Routing Protocol (IGRP). By the end of this module, students will understand the purpose and functions of routing protocols, and feel comfortable implementing them on Cisco routers.

Access Lists

- is designed to provide students with a solid and comprehensive look at how access lists can be used to control the flow of traffic to or from different networks on Cisco routers. Topics covered in this module include understanding and implementing both standard and extended IP and IPX access lists. By the end of this module, students will not only understand the importance of access lists and how to configure them, but also how to implement access lists to achieve different network traffic objectives.

Troubleshooting Cisco Routers

- is designed to provide students with a fundamental understanding of different methods and router modes than can be used in the process of attempting to troubleshoot issues with Cisco routers. Topics covered in this module include configuration registers, different router modes, and password recovery. By the end of this module students will have the skills necessary to troubleshoot all of the most common problems typically encountered with a Cisco router.

Wide Area Networks

- is designed to provide students with a comprehensive overview of popular WAN protocols and their implementation. Topics covered in this module include point-to-point links, ISDN, and Frame Relay. By the end of this module, students will be able to determine the most appropriate WAN technology for a given situation, as well as configure a Cisco router to function properly within that WAN environment.

Cisco Switch Configurations

- is designed to provide students with a solid understanding of the commands used to configure different Cisco Catalyst-series switches. Topics covered include the configuration of switching methods, port settings, VLANs, trunking protocols, and more. By the end of this module, students will feel comfortable with the process of configuring a Cisco Catalyst switch from its command line interface.

Category: Customer Premise Equipment
Title: **TCP/IP Operations, Administration, and Maintenance (ISS273)**
Length: 3 days

Description:

This 3-day approach to a very popular topic involves introductions to basics of internetworking followed by the "mechanics" of TCP/IP. The heart of the course is IP addressing which include many lab exercises involving IP implementations and IP data stream observations using protocol analyzers.

Prerequisites:

Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:

Internetwork Operations Review

Define the basic operations of LANs and WANs

- Computer Networking Review
- Motives for LAN/WAN Interconnections

TCP/IP Service Description

List key features and usages of TCP/IP

- Origin and Motives for TCP/IP
- TCP Features, Functions, and Services
- IP Features, Functions, and Services

TCP/IP Formats, Protocols, and Addressing

Identify key TCP and IP header fields along with their key operation; perform IP addressing and subnetting

- TCP Header and Field Operations
- IP (and Related Protocols) Header and Field Operations
- Addresses and Masks
- Address Resolution Methods

TCP/IP Administration

Use TCP/IP services to identify and resolve network troubles

- TCP/IP Implementations
- Troubleshooting Command Operations in TCP/IP

Category: Customer Premise Equipment
Title: **Network Technology "Boot Camp" (ISS229)**
Length: 4 days

Description:
A comprehensive, 4-day course on prominent technologies found in CPE and Network Operations Centers (NOC). Frequent lab exercises are characteristic on network technician tasks.

Prerequisites:
Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:
Introduction to Networking
Define networking concepts

- Networking Basics Review and OSI
- LAN/WAN Introduction

LAN Networking
Perform Ethernet and Token Ring LAN component installations

- Ethernet and Token Ring LAN General Operations
- Ethernet/Token Ring Frames and Field Functions
- LAN Components, Cabling Standards, and Interconnections

TCP/IP Internetworking
Perform IP addressing and implement TCP/IP services in workstation devices

- TCP/IP Concepts and General Operations
- IP Addressing and Subnetting
- Prominent TCP/IP Services

Network Router Concepts and Operations
Configure prominent router devices for TCP/IP network operations

- Basic Router Role in Networking
- Routing Protocols and Tables
- Cisco's Router Implementation
- Cisco Configuration and Administration

Category: Customer Premise Equipment
Title: **DCE Operations and Maintenance (ISS221)**
Length: 3 days

Description:

Intense, 3-day, hands-on course on practical DCE and DTE operations for the customer premise and network operations environment. Building and testing circuits, installing and provisioning prominent DCE and DTE devices, and practical hands-on maintenance and remote surveillance are typical of lab exercises for this course.

Prerequisites:

Completion of Computer Network Operations and Maintenance course (ISS220) or equivalent experience in LAN and WAN operations

Course Outline:

Network Operations Review

Review data transmission carrier (e.g. Analog, DDS, DS1) fundamentals along with RS/V interface standards

- Transmission Principles and Digital Carrier Operations
- Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) Principles
- DTE and DCE (a.k.a Dataset) Interface Operations

Asynchronous DCE Devices

Identify prominent async' DCE components and software, interpret common DCE options, and configure/install async' DCE components for given applications

- Asynchronous Components and Software
- Standard Configurations and Operations
- Installation and Maintenance Labs

Synchronous DCE Components

Identify common synchronous DCE components, associate timing settings and other options for given applications, configure/install circuits and DCE components for typical applications

- Synchronous Components and Software
- Standard Configurations and Operations
- Clocking/Timing Configurations
- Installation and Maintenance Labs

Multiplexors (TDM and DS1) and Related Equipment

Define essential multiplexor operations, configure channel bank and other DS1 multiplexing equipment, and describe functional operations of CODECs, ISDN TAs, and Channel Interface units

- Multiplexing DCE Devices (Channel Banks)
- DS1 Multiplexing Interfaces
- CODEC Devices
- Installation and Maintenance Labs

Network and DCE Monitoring

Identify DCE testing and circuit/device monitoring strategies, identify/perform loopback testing and inject bit patterns for testing, and configure maintenance/secondary channels for remote/central circuit and DCE monitoring

- Testing and Monitoring Strategies
- Loopback and Pattern Injections
- Maintenance Channels and Surveillance Monitoring
- Installation and Maintenance Labs

Category: Customer Premise Equipment
Title: **Cross Technology "Boot Camp" for IT Support (ISS992)**
Length: 5 days

Description:

This 5-day course will provide an opportunity for students to learn the concepts, operations, and general troubleshooting approaches for a myriad of networking technologies encountered in the enterprise IT support function.

This concentration of training begins with providing a foundation of essential concepts and operations of prominent networking technologies and systems often encountered in the enterprise. Upon building this training foundation, essential support and troubleshooting concepts follow to provide the attendee with problem resolution strategies for typical symptoms encountered with many hands-on lab exercises for reinforcement.

This course is intended for help desk and field IT support teams and managers.

Prerequisites:

None

Course Outline:

Enterprise Technology Introduction

Network Technology Concepts and Basic Operations

Networking Framework Concepts and Basic Protocol Operations

TCP/IP Addressing and Routing Essentials

Network Routing and Switching Appliances

Wireless Networking Concepts and Essential Operations

Telephone Systems Survey of Operations

Email and Video Messaging Concepts and Operations

Network Problem Resolution in the Enterprise

Category: Project Management
Title: **Project Management Fundamentals and Operations (ISS1260)**
Length: 4 days

Description:
This 4-day course will provide an opportunity for students to learn the fundamentals of project management and, in the process of learning, prepare for successful results on the PMP and CAPM exams.

Prerequisites:
None

Course Outline:
Upon conclusion of this course, students will develop an in-depth understanding of the following knowledge domains of project management:

Project Management Framework

Define the framework of project management by exploring: the project lifecycle, project management knowledge areas, and the influence of the organizational structure on the project management

- Basic concepts of project management
- The project life cycle: process groups
- Project management knowledge areas
- Project stakeholders
- Influence of organizational structure on project management

Initiating the Project

Define how a project is initiated

- Understanding project selection
- Identifying project stakeholders
- Developing a project charter
- Developing the preliminary project scope
- Obtaining project charter approval

Planning the Project

Explore the project scope management plan, scope definition, and the work breakdown structure (WBS)

- Creating the project management plan
- Developing the project scope plan
- Defining the project scope
- Creating a WBS

Planning Quality and Risk Management

Define the plan for quality and risk management

- Managing and planning quality
- Identifying, analyzing, and managing risks
- Planning the risk response

Executing and Managing the Project

Learn how to execute and manage a project

- Define tools and techniques for directing and managing project execution
- Managing the project team
- Procurement of project resources
- Performing quality assurance

- Integrating the change control process
- Controlling changes in cost, schedule, and scope
- Measuring performance and monitoring risks

Closing the Project

Learn to perform project closure procedures

- Perform project closure
- Perform contract closure

For more information on our services, please contact an ISS marketing representative:

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