

## Certified Network Technologies Expert (CNTE)

### Program Summary

This instructor-led program with a combination of lecture and hands-on laboratory exercises is our most comprehensive and diverse program combining the coursework of multiple disciplines. This program begins with a PC hardware and software course, provides in-depth coursework on the Microsoft operation systems, offers an introduction to the Linux operating system, and guides the student through multiple levels of network infrastructure study for both Cisco and Microsoft environments. The goal of this program is to offer the student a single program to build the knowledge, skills, and certifications necessary to become a well-respected and well-trained professional poised to become a success in today's information technology environment.

- Certification program
- 1152 Contact Hours, 72 Credit Hours, 72 Weeks

### TERM 1

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE100	Technologies I	6	96
CTE110	Technologies II	6	96
<b>Total</b>		<b>12</b>	<b>192</b>

### TERM 2

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE120	Technologies III	3	48
CTE130	Technologies IV	3	48
CTE140	Technologies V	3	48
CTE150	Technologies VI	3	48
<b>Total</b>		<b>12</b>	<b>192</b>

### TERM 3

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE160	Technologies VII	3	48
CTE170	Technologies VIII	3	48
CTE180	Technologies IX	3	48
CTE190	Technologies X	3	48
<b>Total</b>		<b>12</b>	<b>192</b>

**TERM 4**

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE200	Technologies XI	6	96
CTE210	Technologies XII	6	96
<b>Total</b>		<b>12</b>	<b>192</b>

**TERM 5**

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE220	Technologies XIII	3	48
CTE230	Technologies XIV	3	48
CTE240	Technologies XV	3	48
CTE250	Technologies XVI	3	48
<b>Total</b>		<b>12</b>	<b>192</b>

**TERM 6**

Course No.	Course Name	Quarter Credit Hours	Clock Hours
CTE260	Technologies XVII	6	96
CTE270	Technologies XVIII	6	96
<b>Total</b>		<b>12</b>	<b>192</b>

**Type of Document Received Upon Graduation**

Upon successfully completing all requirements of the programs offered at Brand College, the student will be awarded a Certificate of Completion.

**Certification Tests**

Performance on a certification test is based on a pass or fail. You must receive between 75% and 80%, depending on the test, to pass. It is encouraged to take each test as soon as you complete the corresponding course.

**Career Development**

Students who successfully complete this program will be prepared for midlevel to advanced professional opportunities in the IT field with emphasis on installation, configuration and maintenance of Local Area Network (LAN) and Wide Area Network (WAN) infrastructure. In addition, the students are qualified for positions involving the planning, installation, and maintenance of client workstation as well as server operating system, applications and network infrastructure services using Microsoft and Linux technologies. Although titles may vary by hiring organizations, students with these credentials are qualified to meet the requirements of positions such as Sr. Network Design Engineer, Sr. Network Systems Manager, Manager of Network Systems or similar designations.

This program also aligns with the following career opportunities classified by US Department of Labor under the Standard Occupational Classification (SOC) system.

- 25-1021 Computer Science Teacher, Postsecondary
- 15-1152 Computer Network Support Specialist
- 15-1143 Computer Network Architects

## **CNTE Program Details**

### **COURSE CTE100**

Title: PC Hardware and Operating System

Exam: CompTIA Exams 220-801 and 220-802

#### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises is designed to introduce the students to computer hardware concepts and the skills required to build a Personal Computer (PC) from the ground up. In addition, students will learn software concepts with the newest versions of Microsoft Windows. The primary goal of this course is to give students a basic understanding of every aspect of hardware and software relating to the PC. However, the final portion of this course will introduce the student to basic networking concepts and network implementation using Microsoft Windows operating systems.

#### **Course Objectives**

This course will cover the following subjects:

- Skills in Managing and Troubleshooting PCs
- Operational Procedures
- Perform Preventive Maintenance
- Diagnostics and Troubleshooting
- Professionalism and Communication
- Safety and Tools
- Personal Computer Components
- System Unit Components
- Personal Computer Connection Methods
- Tools of the Trade
- Display Devices
- Input Devices
- Adapter Cards
- Multimedia Devices
- Storage Devices
- Power Supplies
- Memory
- CPUs
- System Boards
- BIOS
- Personal Computer Operating Systems
- Windows User Interface Components
- Windows File System Management
- Windows System Management Tools
- Install, Upgrade, and Optimize Microsoft Windows
- Operating System Utilities
- Maintain and Troubleshoot Microsoft Windows
- Recover Microsoft Windows
- Command Line Interface
- Network Concepts and Communications
- Network Connectivity
- Wireless Networks
- Create Network Connections
- Internet Technologies

- Virtualization
- Install and Configure Web Browser
- Maintain and Troubleshoot Network Connections
- Laptop and Portable Computing Device Components
- Printer and Scanner Technologies
- Printer and Scanner Components
- Printer and Scanner Processes
- Install and Configure Printers and Scanners
- Maintain and Troubleshoot Printers and Scanners
- Security Fundamentals
- Security Protection Measures
- Data and Physical Security
- Wireless Security
- Social Engineering
- Install and Configure Security Measures
- Maintain and Troubleshoot Security Measures
- Virtualization

## COURSE CTE110

Title: Installing and configuring Windows Server 2012

Exam: Microsoft Exam 70-410

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides students with the knowledge and skills to install, configure, and maintain Windows Server 2012. This course is intended for Windows Server 2012 Technology Specialists, in Network Infrastructure and Active Directory, who are interested in learning professional level Server Administrator skills to plan, manage, and maintain Windows Server 2012.

### **Course Objectives**

This course will cover the following subjects:

#### *Deploying and Managing Windows Server 2012*

- Windows Server 2012 Overview
- Installing Windows Server 2012
- Post-Installation Configuration of Windows Server 2012
- Overview of Windows Server 2012 Management
- Introduction to Windows PowerShell

#### *Introduction to Active Directory Domain Services*

- Overview of AD DS
- Overview of Domain Controllers
- Installing a Domain Controller

#### *Managing Active Directory Domain Services Objects*

- Managing User Accounts
- Managing Groups
- Managing Computer Accounts
- Delegating Administration
- Delegate permissions to perform AD DS administration.

#### *Automating Active Directory Domain Services*

- Using Command-line Tools for AD DS Administration
- Using Windows PowerShell for AD DS Administration
- Performing Bulk Operations with Windows PowerShell

#### *Implementing IPv4*

- Overview of TCP/IP
- Understanding IPv4 Addressing
- Subnetting and Supernetting
- Configuring and Troubleshooting IPv4

#### *Implementing DHCP*

- Overview of the DHCP Server Role
- Configuring DHCP Scopes
- Managing a DHCP Database
- Securing and Monitoring DHCP

### *Implementing DNS*

- Name Resolution for Windows Clients and Servers
- Installing a DNS Server
- Managing DNS Zones

### *Implementing IPv6*

- Overview of IPv6
- IPv6 Addressing
- Coexistence with IPv4
- IPv6 Transition Technologies

### *Implementing Local Storage*

- Overview of Storage
- Managing Disks and Volumes
- Implementing Storage Spaces

### *Implementing File and Print Services*

- Securing Files and Folders
- Protecting Shared Files and Folders by Using Shadow Copies
- Configuring Work Folders
- Configuring Network Printing

### *Implementing Group Policy*

- Overview of Group Policy
- Group Policy Processing
- Implementing a Central Store for Administrative Templates

### *Securing Windows Servers Using Group Policy Objects*

- Security Overview for Windows Operating Systems
- Configuring Security Settings
- Restricting Software
- Configuring Windows Firewall with Advanced Security

### *Implementing Server Virtualization with Hyper-V*

- Overview of Virtualization Technologies
- Implementing Hyper-V
- Managing Virtual Machine Storage
- Managing Virtual Networks

## COURSE CTE120

Title: Administering Windows Server 2012

Exam: Microsoft Exam 70-411

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides students with the knowledge and skills to administer and troubleshoot a Windows Server 2012 network infrastructure. Students will learn to implement and configure secure network access and implement fault tolerant storage technologies. Students will gain an understanding of the network technologies most commonly used with Windows Server 2012 and IP-enabled networks. Students will also learn how to secure servers and maintain update compliance.

### **Course Objectives**

This course will cover the following subjects:

#### *Configuring and Troubleshooting Domain Name System*

- Configuring the DNS Server Role
- Configuring DNS Zones
- Configuring DNS Zone Transfers
- Managing and Troubleshooting DNS

#### *Maintaining Active Directory Domain Services*

- Overview of AD DS
- Implementing Virtualized Domain Controllers
- Implementing RODCs
- Administering AD DS
- Managing the AD DS Database

#### *Managing User and Service Accounts*

- Configuring Password Policy and User Account Lockout Settings
- Configuring Managed Service Accounts

#### *Implementing a Group Policy Infrastructure*

- Introducing Group Policy
- Implementing and Administering GPOs
- Group Policy Scope and Group Policy Processing
- Troubleshooting the Application of GPOs

#### *Managing User Desktops with Group Policy*

- Implementing Administrative Templates
- Configuring Folder Redirection and Scripts
- Configuring Group Policy Preferences
- Managing Software with Group Policy

#### *Installing, Configuring, and Troubleshooting the Network Policy Server Role*

- Installing and Configuring a Network Policy Server
- Configuring RADIUS Clients and Servers
- NPS Authentication Methods
- Monitoring and Troubleshooting a Network Policy Server

### *Implementing Network Access Protection*

- Overview of Network Access Protection
- Overview of NAP Enforcement Processes
- Configuring NAP
- Configuring IPSec Enforcement for NAP
- Monitoring and Troubleshooting NAP

### *Implementing Remote Access*

- Overview of Remote Access
- Implementing DirectAccess by Using the Getting Started Wizard
- Implementing and Managing an Advanced DirectAccess Infrastructure
- Implementing VPN
- Implementing Web Application Proxy

### *Optimizing File Services*

- Overview of FSRM
- Using FSRM to Manage Quotas, File Screens, and Storage Reports
- Implementing Classification and File Management Tasks
- Overview of DFS
- Configuring DFS Namespaces
- Configuring and Troubleshooting DFS Replication

### *Configuring Encryption and Advanced Auditing*

- Encrypting Drives by Using BitLocker
- Encrypting Files by Using EFS
- Configuring Advanced Auditing

### *Deploying and Maintaining Server Images*

- Overview of Windows Deployment Services
- Managing Images
- Implementing Deployment with Windows Deployment Services
- Administering Windows Deployment Services

### *Implementing Update Management*

- Overview of WSUS
- Deploying Updates with WSUS

### *Monitoring Windows Server 2012*

- Monitoring Tools
- Using Performance Monitor
- Monitoring Event Logs



## COURSE CTE130

Title: Configuring advanced Windows Server 2012 Services

Exam: Microsoft Exam 70-412

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides to teach Information Technology (IT) Professionals with hands on experience implementing, managing and maintaining a Windows Server 2012 or Windows Server 2012 R2 environment who wish to acquire the skills and knowledge necessary to perform advanced management and provisioning of services within that Windows Server 2012 environment.

### **Course Objectives**

This course will cover the following subjects:

#### *Implementing Advanced Network Services*

- Configuring Advanced DHCP Features
- Configuring Advanced DNS Settings
- Implementing IPAM
- Managing IP Address Spaces with IPAM

#### *Implementing Advanced File Services*

- Configuring iSCSI Storage
- Configuring BranchCache
- Optimizing Storage Usage

#### *Implementing Dynamic Access Control*

- Overview of DAC
- Implementing DAC Components
- Implementing DAC for Access Control
- Implementing Access Denied Assistance
- Implementing and Managing Work Folders

#### *Implementing Distributed Active Directory Domain Services Deployments*

- Overview of Distributed AD DS Deployments
- Deploying a Distributed AD DS Environment
- Configuring AD DS Trusts

#### *Implementing Active Directory Domain Services Sites and Replication*

- AD DS Replication Overview
- Configuring AD DS Sites
- Configuring and Monitoring AD DS Replication

#### *Implementing AD CS*

- Using Certificates in a Business Environment
- PKI Overview
- Deploying CAs
- Deploying and Managing Certificate Templates
- Implementing Certificate Distribution and Revocation
- Managing Certificate Recovery

### *Implementing Active Directory Rights Management Services*

- AD RMS Overview
- Deploying and Managing an AD RMS Infrastructure
- Configuring AD RMS Content Protection
- Configuring External Access to AD RMS

### *Implementing and Administering AD FS*

- Overview of AD FS
- Deploying AD FS
- Implementing AD FS for a Single Organization
- Deploying AD FS in a Business-to-Business Federation Scenario
- Extending AD FS to External Clients

### *Implementing Network Load Balancing*

- Overview of NLB
- Configuring an NLB Cluster
- Planning an NLB Implementation

### *Implementing Failover Clustering*

- Overview of Failover Clustering
- Implementing a Failover Cluster
- Configuring Highly Available Applications and Services on a Failover Cluster
- Maintaining a Failover Cluster
- Implementing a Multi-Site Failover Cluster

### *Implementing Failover Clustering with Hyper-V*

- Overview of Integrating Hyper-V with Failover Clustering
- Implementing Hyper-V Virtual Machines on Failover Clusters
- Implementing Hyper-V Virtual Machine Movement

### *Implementing Business Continuity and Disaster Recovery*

- Data Protection Overview
- Implementing Windows Server Backup
- Implementing Server and Data Recovery

## COURSE CTE140

Title: Installing and Configuring Windows 10

Exam: Microsoft Exam 70-697

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides Students with the knowledge and skills required to install and configure Windows 10 desktops and devices in a Windows Server domain corporate environment. These skills include learning how to install and customize Windows 10 operating systems and apps, and configure local and remote network connectivity and storage. Students will also learn how to configure data security, device security, and network security, and maintain, update, and recover Windows 10.

### **Course Objectives**

This course will cover the following subjects:

#### *Overview of Windows 10*

- Introducing Windows 10
- Navigating the User Interface

#### *Installing Windows 10*

- Installing Windows 10
- Upgrading to Windows 10

#### *Configuring your Device*

- Overview of Tools You Can Use to Configure Windows 10
- Common Configuration Options
- Managing User Accounts
- Using OneDrive

#### *Configuring Network Connectivity*

- Configuring IP Network Connectivity
- Implementing Name Resolution
- Implementing Wireless Network Connectivity
- Overview of Remote Access

#### *Managing Storage*

- Overview of Storage Options
- Managing Disks, Partitions, and Volumes
- Maintaining Disks and Volumes
- Managing Storage Spaces

#### *Managing Files and Printers*

- Overview of File Systems
- Configuring and Managing File Access
- Configuring and Managing Shared Folders
- Work Folders
- Managing Printers

### *Managing Apps in Windows 10*

- Overview of Providing Apps to Users
- The Windows Store
- Web Browsers

### *Managing Data Security*

- Overview of Data-Related Security Threats
- Security Data with EFS
- Implementing and Managing BitLocker

### *Managing Device Security*

- Using Security Settings to Migrate Threats
- Configuring UAC
- Configuring Application Restriction

### *Managing Network Security*

- Overview of Network-Related Security Threats
- Windows Firewall
- Connection Security Rules
- Windows Defender

### *Troubleshooting and recovery*

- Managing Devices and Drives
- Recovering Files
- Recovering Devices

### *Maintaining Windows 10*

- Updating Windows
- Monitoring Windows 10
- Optimizing Performance

## COURSE CTE150

Title: Designing and Implementing a Server Infrastructure

Exam: Microsoft Exam 70-413

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides to teach Information Technology (IT) Professionals with hands on experience Designing and Implementing Server 2012 or Windows Server 2012 R2 Infrastructure who wish to acquire the skills and knowledge necessary to perform advanced management and provisioning of services within that Windows Server 2012 environment.

### **Course Objectives**

This course will cover the following subjects:

#### *Planning Server Upgrade and Migration*

- Consideration for Upgrades and Migrations
- Creating a Server Upgrade and Migration Plan
- Planning for Virtualization

#### *Planning and Implementing a Server Deployment Strategy*

- Selecting an Appropriate Server deployment Strategy
- Implementing an Automated Deployment Strategy

#### *Planning and Deploying Servers Using Virtual Machine Manager*

- System Center 2012 R2 Virtual Machine Manger Overview
- Implementing a Virtual Machine Manager Library and Profiles
- Planning and Deploying Virtual Machine Manager Services

#### *Designing and Maintaining an IP Configuration and Address Management Solution*

- Designing DHCP Servers
- Planning DHCP Scopes
- Designing an IPAM Provisioning Strategy
- Managing Servers and Address Spaces by Using IPAM

#### *Designing and Implementing Name Resolution*

- Designing DNS Server Implementation Strategy
- Designing the DNS Namespace
- Designing DNS Zones
- Designing DNS Zone Replication and Delegation

#### *Designing and Implementing an Active Directory Domain Services Forest and Domain Infrastructure*

- Designing an Active Directory Forest
- Designing and Implementing Active Directory Forest Trusts
- Designing Active Directory Integration with Windows Azure Active Directory
- Designing and Implementing Active Directory Domains

#### *Designing and Implementing an AD DS Organizational Unit Infrastructure*

- Planning the Active Directory Administrative Tasks Delegation Model
- Designing an OU Structure
- Designing and Implementing an AD DS Group Strategy

*Designing and Implementing a Group Policy Object Strategy*

- Collecting the information Required for a GPO Design
- Designing and Implementing GPOs
- Designing GPO Processing
- Planning Group Policy Management

*Designing and Implementing an AD DS Physical Topology*

- Designing and Implementing Active Directory Sites
- Designing Active Directory Replication
- Designing the placement of Domain Controllers
- Designing Highly Available Domain Controllers

*Planning and Implementing Storage and File Services*

- Planning and Implementing iSCSI SANs
- Planning and Implementing Storage Spaces
- Optimizing File Services for Branch Offices

*Designing and Implementing Network Protection*

- Overview of Network Security Design
- Designing and Implementing a Windows Firewall Strategy
- Designing and Implementing a NAP Infrastructure

*Designing and Implementing Remote Access Services*

- Planning and Implementing DirectAccess
- Planning and Implementing VPN
- Planning and Implementing Web Application Proxy
- Planning a Complex Remote Access Infrastructure

## COURSE CTE160

Title: Implementing an Advanced Server Infrastructure

Exam: Microsoft Exam 70-414

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides to teach Information Technology (IT) Professionals with hands on experience Designing and Implementing Server 2012 or Windows Server 2012 R2 Advanced Infrastructure who wish to acquire the skills and knowledge necessary to perform advanced management and provisioning of services within that Windows Server 2012 environment.

### **Course Objectives**

This course will cover the following subjects:

#### *Overview of Management in an Enterprise Data Center*

- Overview of the Enterprise Data Center
- Overview of the Microsoft System Center 2012 R2 Components

#### *Planning and Implementing a Server Virtualization Strategy*

- Planning a VMM Deployment
- Planning and Implementing a Server Virtualization Host Environment

#### *Planning and Implementing Networks and Storage for Virtualization*

- Planning a Storage Infrastructure for *Virtualization*
- Implementing a Storage Infrastructure for *Virtualization*
- Planning and Implementing Network Infrastructure for *Virtualization*
- *Planning and Implementing Network Virtualization*

#### *Planning and Deploying Virtual Machines*

- Planning a Virtual Machine Configuration
- Preparing for Virtual Machine Deployments with VMM
- Deploying Virtual Machines
- Planning and Implementing Hyper-V Replica

#### *Planning and Implementing a Virtualization Administration Solution*

- Planning and Implementing Automation with System Center 2012
- Planning and Implementing System Center 2012 Administration
- Planning and Implementing Self-Service Options in System Center 2012
- Planning and Implementing Updates in a Server Virtualization Infrastructure

#### *Planning and Implementing a Server Monitoring Strategy*

- Planning Monitoring in Windows Server 2012
- Overview of Operations Manager
- Planning and Configuring Monitoring Components
- Configuring Integration with VMM

#### *Planning and Implementing High Availability for Files Services and Applications*

- Planning and Implementing Storage Spaces
- Planning and Implementing a DFS
- Planning and Implementing a NLB

*Planning and Implementing a High Availability Infrastructure Using Failover Clustering*

- Planning an Infrastructure for Failover Clustering
- Implementing Failover Clustering
- Planning and Implementing Updates for Failover Clusters
- Integrating Failover Clustering with Server Virtualization
- Planning a Multisite Failover Cluster

*Planning and Implementing a Business Continuity Strategy*

- Overview of Business Continuity Planning
- Planning and Implementing Backup Strategies
- Planning and Implementing Recovery
- Planning and Implementing Backup and Recovery of Virtual Machines

*Planning and Implementing a Public Key Infrastructure*

- Planning and Implementing Deployment of a Certification Authority
- Planning and Implementing Certificate Templates
- Planning and Implementing Certificate Distribution and Revocation
- Planning and Implementing Key Archival and Recovery

*Planning and Implementing an Identity Federation Infrastructure*

- Planning and Implementing an A FS Server Infrastructure
- Planning and Implementing AD FS Claim Providers and Relying Parties
- Planning and Implementing AD FS Claims and Claim Rules
- Planning and Implementing Web Application Proxy

*Planning and Implementing Data Access for Users and Devices*

- Planning and Implementing DAC
- Planning Workplace Join
- Planning Work Folders

*Planning and Implementing an Information Rights Management Infrastructure*

- AD RMS Overview
- Planning and Implementing an AD RMS Cluster
- Planning and Implementing AD RMS Templates and Policies
- Planning and Implementing External Access to AD RMS Services
- Planning and Implementing AD RMS Integration with Dynamic Access Control



## COURSE CTE170

Title: Core Solutions of Microsoft Exchange Server 2013

Exam: Microsoft Exam 70-341

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides Students with the knowledge and skills to plan, deploy, manage, secure, and support Microsoft® Exchange Server 2013. This course will teach Audience how to configure Exchange Server 2013 and supply them with the information they will need to monitor, maintain, and troubleshoot Exchange Server 2013. This course will also provide guidelines, best practices, and considerations that will help students optimize performance and minimize errors and security threats in Exchange Server 2013. to teach Information Technology (IT) Professionals with hands on experience Designing and Implementing Server 2012 or Windows Server 2012 R2 Advanced Infrastructure who wish to acquire the skills and knowledge necessary to perform advanced management and provisioning of services within that Windows Server 2012 environment.

### **Course Objectives**

This course will cover the following subjects:

#### *Deploying and Managing Microsoft Exchange Server 2013*

- Exchange Server 2013 Prerequisites and Requirements
- Exchange Server 2013 Deployment
- Managing Exchange Server 2013

#### *Planning and Configuring Mailbox Servers*

- Overview of the Mailbox Server
- Planning the Mailbox Server Deployment
- Configuring the Mailbox Servers

#### *Managing Recipient Objects*

- Managing Exchange Server 2013 Mailboxes
- Managing Other Exchange Recipients
- Planning and Implementing Public Folder Mailboxes
- Managing Address Lists and Policies

#### *Planning and Deploying Client Access Servers*

- Planning Client Access Server Deployment
- Configuring the Client Access Server Role
- Managing Client Access Services

#### *Planning and Configuring Messaging Client Connectivity*

- Client Connectivity to the Client Access Server
- Configuring Outlook Web App
- Planning and Configuring Mobile Messaging
- Configuring Secure Internet Access for Client Access Server

#### *Planning and Implementing High Availability*

- High Availability on Exchange Server 2013
- Configuring Highly Available Mailbox Databases
- Configuring Highly Available Client Access Server

*Planning and Implementing Disaster Recovery*

- Planning for Disaster Mitigation
- Planning and Implementing Exchange Server 2013 Backup
- Planning and Implementing Exchange Server 2013 Recovery

*Planning and Configuring Message Transport*

- Overview of Message Transport and Routing
- Planning and Configuring Message Transport
- Managing Transport Rules

*Planning and Configuring Message Hygiene*

- Planning Messaging Security
- Implementing an Antivirus Solution for Exchange Server 2013
- Implementing an Anti-Spam Solution for Exchange Server 2013

*Planning and Configuring Administrative Security and Auditing*

- Configuring Role-Based Access Control
- Configuring Audit Logging

*Monitoring and Troubleshooting Microsoft Exchange Server 2013*

- Monitoring Exchange Server 2013
- Maintaining Exchange Server 2013
- Troubleshooting Exchange Server 2013

## COURSE CTE180

Title: Advanced Solutions of Microsoft Exchange Server 2013

Exam: Microsoft Exam 70-342

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides Students with the knowledge and skills to configure and manage a Microsoft Exchange Server 2013 messaging environment. This course will teach students how to configure Exchange Server 2013, and it will provide guidelines, best practices, and considerations that will help them optimize your Exchange Server deployment.

### **Course Objectives**

This course will cover the following subjects:

#### *Overview of Exchange Server 2013 Unified Messaging*

- Telephony Technologies Overview
- Unified Messaging in Exchange Server 2013
- Unified Messaging Components

#### *Designing and Implementing Exchange Server 2013 Unified Messaging*

- Designing a Unified Messaging Deployment
- Deploying and Configuring Unified Messaging Components
- Integrating Exchange Server 2013 Unified Messaging with Lync

#### *Designing and Implementing Site Resiliency*

- Site Resiliency in Exchange 2013
- Planning Site Resilient Implementation
- Implementing Site Resiliency

#### *Planning Virtualization for Exchange Server 2013*

- Hyper-V 3.0 Overview
- Virtualizing Exchange Server 2013 Server Roles

#### *Designing and Implementing Message Transport Security*

- Overview of Policy and Compliance Requirements
- Designing and Implementing Transport Compliance
- Designing and Implementing AD RMS Integration with Exchange Server 2013

#### *Designing and Implementing Message retention*

- Message Records Management and Archiving Overview
- Designing In-Place Archiving
- Designing and Implementing Message Retention

#### *Designing and Implementing Messaging Compliance*

- Designing and Implementing Data Loss Prevention
- Designing and Implementing an In-Place Hold
- Designing and Implementing In-Place E-Discovery

#### *Designing and Implementing Administrative Security and Auditing*

- Designing and Implementing Role Based Access Control
- Designing and Implementing Split Permissions
- Planning and Implementing Audit Logging

*Managing Exchange Server 2013 with Exchange Management Shell*

- Overview of Windows PowerShell 3.0
- Using Exchange Management Shell to Manage Exchange Server Recipients
- Managing Exchange Server 2013 with Exchange Management Shell

*Designing and Implementing Integration with Exchange Online*

- Planning for Exchange Online
- Planning and Implementing the Migration to Exchange Online
- Planning Coexistence with Exchange Online

*Designing and Implementing Messaging Coexistence*

- Designing and Implementing Federation
- Designing Coexistence Between Exchange Organizations
- Designing and Implementing Cross-Forest Mailbox Moves

*Designing and Implementing Exchange Server Migrations and Upgrades*

- Designing Migration From Non-Exchange Email Systems
- Planning the Upgrade From Previous Exchange Versions
- Implementing the Migration from Previous Exchange Versions

## COURSE CTE190

Title: Managing Office 365 Identities and Services

Exam: Microsoft Exam 70-346 & 70-347

### **Course Description**

This instructor-led course with a combination of lecture and hands-on laboratory exercises provides Students with the knowledge and skills required the needs of IT professionals who take part in evaluating, planning, deploying, and operating Office 365 services, including its identities, dependencies, requirements, and supporting technologies. This course focuses on skills required to set up an Office 365 tenant, including federation with existing user identities, and skills required to sustain an Office 365 tenant and users.

### **Course Objectives**

This course will cover the following subjects:

#### *Preparing for Office 365*

- Introduction to Office 365
- Provisioning the Tenant Accounts
- Planning a Pilot
- Enabling Client Connectivity

#### *Managing Users, Groups, and Licenses*

- Manage Users and Licenses by Using the Administration Center
- Managing Security and Distribution Groups
- Manage Cloud Identities with Windows PowerShell

#### *Administering Office 365*

- Manage Administrator Roles in Office 365
- Configure Password Management
- Administer Rights Management

#### *Planning and Managing Clients*

- Plan for Office Clients
- Manage User-Driven Client Deployments
- Manage IT Deployments of Office 365 ProPlus
- Office Telemetry and Reporting

#### *Planning DNS and Exchange Migration*

- Add and Configure Custom Domains
- Recommend a Mailbox Migration Strategy

#### *Planning Exchange Online and Configuring DNS Records*

- Plan for Exchange Online
- Continue DNS Records for Services

#### *Administering Exchange Online*

- Configure Personal Archive Policies
- Manage Anti-Malware and Anti-Spam Policies
- Configure Additional Email Addresses for Users
- Create and Manage External Contacts, Resources, and Groups

#### *Configuring SharePoint Online*

- Manage SharePoint Site Collections
- Configure External User Sharing
- Plan a Collaboration Solution

#### *Configuring Lync Online*

- Plan for Lync Online
- Configure Lync Online Settings

#### *Implementing Directory Synchronization*

- Prepare On-Premises Active Directory for DirSync
- Set up DirSync
- Manage Active Directory Users and Groups with DirSync In Place

#### *Implementing Active Directory Federation Services*

- Planning for AD FS
- Install and Manage AD FS Servers
- Install and Manage AD FS Proxy Servers

#### *Monitoring Office 365*

- Isolate Service Interruption
- Monitor Service Health
- Analyze Reports

## COURSE CTE200

Title: Cisco Certified Network Associate

Exam: 200-120

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises covers basic networking concepts implemented on Cisco routers. Students will be introduced to the Cisco Internetworking Operating System (IOS) and its command structure. TCP/IP addressing and implementation, including subnetting, will be covered thoroughly. Wide Area Networking (WAN) implementations including ISDN, frame relay, and serial point-to-point (including T1), will be emphasized. This is an advanced course providing the skills and knowledge necessary to pass the Cisco certification exam (one exam) necessary to become a Cisco Certified Network Associate (CCNA).

### **Course Objectives**

This course will cover the following subjects:

#### *Operation of IP Data Networks*

- Recognize the purpose and functions of various network devices such as Routers, Switches, Bridges and Hubs
- Select the components required to meet a given network specification
- Identify common applications and their impact on the network
- Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models
- Predict the data flow between two hosts across a network
- Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN

#### *LAN Switching Technologies*

- Determine the technology and media access control method for Ethernet networks
- Identify basic switching concepts and the operation of Cisco switches
- Configure and verify initial switch configuration including remote access management
- Verify network status and switch operation using basic utilities
- Describe how VLANs create logically separate networks and the need for routing between them
- Configure and verify VLANs
- Configure and verify trunking on Cisco switches
- Identify enhanced switching technologies
- Configure and verify PVSTP operation

#### *IP Addressing*

- Describe the operation and necessity of using private and public IP addresses for IPv4 addressing
- Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment
- Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment
- Describe the technological requirements for running IPv6 in conjunction with IPv4
- Describe IPv6 addresses

#### *IP Routing Technologies*

- Describe basic routing concepts
- Configure and verify utilizing the CLI to set basic router configuration
- Configure and verify operation status of a device interface
- Verify router configuration and network connectivity using
- Configure and verify routing configuration for a static or default route given specific routing requirements

- Differentiate methods of routing and routing protocols
- Configure and verify OSPF
- Configure and verify interVLAN routing (Router on a stick)
- Configure SVI interfaces
- Manage Cisco IOS Files
- Configure and verify EIGRP (single AS)

#### *IP Services*

- Configure and verify DHCP (IOS Router)
- Describe the types, features, and applications of ACLs
- Configure and verify ACLs in a network environment
- Identify the basic operation of NAT
- Configure and verify NAT for given network requirements
- Configure and verify NTP as a client
- Recognize High availability (FHRP)
- Configure and verify syslog
- Describe SNMP v2 and v3

#### *Network Device Security*

- Configure and verify network device security features
- Configure and verify switch port security
- Configure and verify ACLs to filter network traffic
- Configure and verify an ACLs to limit telnet and SSH access to the router

#### *Troubleshooting*

- Troubleshoot and correct common problems associated with IP addressing and host configurations
- Troubleshoot and resolve VLAN problems
- Troubleshoot and resolve trunking problems on Cisco switches
- Troubleshoot and resolve ACL issues
- Troubleshoot and resolve Layer 1 problems
- Identify and correct common network problems
- Troubleshoot and resolve spanning tree operation issues
- Troubleshoot and resolve routing issues
- Troubleshoot and resolve OSPF problems
- Troubleshoot and resolve EIGRP problems
- Troubleshoot and resolve interVLAN routing problems
- Troubleshoot and resolve WAN implementation issues
- Monitor NetFlow statistics
- Troubleshoot EtherChannel problems

#### *WAN Technologies*

- Identify different WAN Technologies
- Configure and verify a basic WAN serial connection
- Configure and verify a PPP connection between Cisco routers
- Configure and verify frame relay on Cisco routers
- Implement and troubleshoot PPPoE



## COURSE CTE210

Title: Implementing Cisco IP Routing (ROUT)

Exam: 300-101

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises will certify that the successful candidate has important knowledge and skills necessary to use advanced IP addressing and routing in implementing scalability for Cisco ISR routers connected to LANs and WANs. The exam covers topics on Advanced IP Addressing, Routing Principles, Multicast Routing, IPv6, Manipulating Routing Updates, Configuring basic BGP, Configuring EIGRP, OSPF, and IS-IS.

### **Course Objectives**

This course will cover the following subjects:

- Identify Cisco Express Forwarding Concepts
- Explain General Network Challenges
- Describe IP Operations
- Explain TCP Operations
- Describe UDP Operations
- Recognize Proposed Changes to the Network
- Configure and Verify PPP
- Explain Frame Relay
- Identify, Configure, and Verify IPv4 addressing and subnetting
- Identify IPv6 Addressing and Subnetting
- Configure and Verify Static Routing
- Configure and Verify Default Routing
- Evaluate Routing Protocol Types
- Configure and Verify GRE
- Describe DMVPN
- Describe Easy Virtual Networking
- Describe IOS AAA Using Local Database
- Describe Device Security Using IOS AAA with TACACS+ and RADIUS
- Configure and Verify Device Access Control
- Configure and Verify Router Security Features
- Configure and Verify Device Management
- Configure and Verify SNMP
- Configure and Verify Logging
- Configure and Verify Network Time Protocol
- Configure and Verify IPv4 and IPv6 DHCP
- Configure and Verify IPv4 Network Address Translation
- Describe IPv6 NAT
- Describe SLA Architecture
- Configure and Verify IP SLA
- Configure and Verify Tracking Objects
- Configure and Verify Cisco NetFlow

## COURSE CTE220

Title: Implementing Cisco Switched Network (SWITCH)

Exam: 300-115

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises will certify that the successful candidate has important knowledge and skills necessary to implement scalable multilayer switched networks. The exam includes topics on Campus Networks, describing and implementing advanced Spanning Tree concepts, VLANs and Inter-VLAN routing, High Availability, Wireless Client Access, Access Layer Voice concepts, and minimizing service Loss and Data Theft in a Campus Network.

### **Course Objectives**

This course will cover the following subjects:

- Configure and Verify Switch Administration
- Configure and Verify Layer 2 Protocols
- Configure and Verify VLANs
- Configure and Verify Trunking
- Configure and Verify EtherChannels
- Configure and Verify Spanning Tree
- Configure and Verify Other LAN Switching Technologies
- Describe Chassis Virtualization and Aggregation Technologies
- Configure and Verify Switch Security Features
- Describe Device Security Using Cisco IOS AA with TACACS+ and RADIUS
- Configure and Verify First-Hop Redundancy Protocols

## COURSE CTE230

Title: Troubleshooting and Maintaining Cisco IP Networks (TSHOOT)

Exam: 300-135

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises will certify that the successful candidate has important knowledge and skills necessary to secure and expand the reach of an enterprise network to (1) plan and perform regular maintenance on complex enterprise routed and switched networks and (2) use technology-based practices and a systematic ITIL-compliant approach to perform network troubleshooting.

### **Course Objectives**

This course will cover the following subjects:

- Use Cisco IOS Troubleshooting Tools
- Apply Troubleshooting methodologies
- Troubleshoot Switch Administration
- Troubleshoot Layer 2 Protocols
- Troubleshoot VLANs
- Troubleshoot Trunking
- Troubleshoot EtherChannels
- Troubleshoot Spanning Tree
- Troubleshoot other LAN Switching Technologies
- Troubleshoot Chassis Virtualization and Aggregation Technologies
- Troubleshoot IPv4 Addressing and Subnetting
- Troubleshoot IPv6 Addressing and Subnetting
- Troubleshoot Static Routing
- Troubleshoot Default Routing
- Troubleshoot Administrative Distance
- Troubleshoot GRE
- Troubleshoot IOS AAA using Local Database
- Troubleshoot Device Access Control
- Troubleshoot Router Security Features
- Troubleshoot Device Management
- Troubleshoot SNMP
- Troubleshoot Logging
- Troubleshoot Network Time Protocol
- Troubleshoot IPv4 and IPv6 DHCP
- Troubleshoot IPv4 Network Address Translation
- Troubleshoot SLA Architecture
- Troubleshoot Tracking Objects

## COURSE CTE240

Title: Implementing Cisco Network Security (IINS)

Exam: 210-260

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises is associated with the CCNA Security certification. This exam tests a candidate's knowledge of securing Cisco routers and switches and their associated networks. It leads to validated skills for installation, troubleshooting and monitoring of network devices to maintain integrity, confidentiality and availability of data and devices and develops competency in the technologies that Cisco uses in its security infrastructure.

### **Course Objectives**

This course will cover the following subjects:

- Common Security Principals
- Common Security Treats
- Cryptography Concepts
- Describe Network Topologies
- Secure Management
- AAA Concepts
- 802.1X Authentication
- BYOD
- VPN Concepts
- Remote Access VPN
- Site to Site VPN
- Security on Cisco Routers
- Securing Routing Protocols
- Securing the Control Plane
- Common Layer to Attacks
- Mitigation Procedures
- VLAN security
- Describe Operational Strengths and weaknesses of the Different Firewall Technologies
- Compare Stateful vs. Stateless Firewalls
- Implement NAT on Cisco ASA 9.x
- Implement Zone-Based Firewall
- Firewall Features on the Cisco Adaptive Security Appliance 9.x
- Describe IPS Deployment Considerations
- Describe IPS Technologies
- Describe Mitigation Technology for Email-Based Treats
- Describe Mitigation Technology for Web-Based Treats
- Describe Mitigation Technology for Endpoint Treats

## COURSE CTE250

Title: Implementing Cisco Secure Access Solutions (SISAS)

Exam: 300-208

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises is one of the exams associated with the CCNP Security certification. This course will cover the components and architecture of secure access, by utilizing 802.1X and Cisco TrustSec. It includes knowledge of Cisco Identity Services Engine (ISE) architecture, solution, and components as an overall network threat mitigation and endpoint control solutions. It also includes the fundamental concepts of bring your own device (BYOD) using posture and profiling services of ISE. Candidates can prepare for this exam by taking the Implementing Cisco Secure Access Solutions (SISAS) course.

### **Course Objectives**

This course will cover the following subjects:

- Implement Device Administration
- Describe Identity Management
- Implement Wired/Wireless 802.1X
- Implement MAB
- Implement network authorization enforcement
- Implement Central Web Authentication
- Implement Profiling
- Implement Guest Services
- Implement Posture Services
- Implement BYOD Access
- Describe TrustSec Architecture
- Troubleshoot Identity Management Solutions
- Design Highly Secure Wireless Solution with ISE
- Device Administration
- Identity Management
- Profiling
- Guest Services
- Posturing Services
- BYOD Access

## COURSE CTE260

Title: Implementing Cisco Edge Network Security Solutions (SENSS)

Exam: 300-206

### **Course Description**

This instructor-led program with a combination of lecture and hands-on laboratory exercises is one of the exams associated with the CCNP Security. The Implementing Cisco Edge Network Security Course includes the knowledge of a network security engineer to configure and implement security on Cisco network perimeter edge devices such as a Cisco switch, Cisco router, and Cisco ASA firewall. This course focuses on the technologies used to strengthen security of a network perimeter such as Network Address Translation (NAT), ASA policy and application inspect, and a zone-based firewall on Cisco routers.

### **Course Objectives**

This course will cover the following subjects:

- Implement Firewall
- Implement Layer 2 Security
- Configure Device Hardening Per Best Practices
- Implement SSHv2, HTTPS, and SNMPv3 Access on the Network Devices
- Implement RBAC on the ASA/IOS using CLI and ASDM
- Describe Cisco Prime Infrastructure
- Describe Cisco Security Manager
- Implement Device Mangers
- Configure NetFlow Exporter on Cisco Routers, Switches, and ASA
- Implement SNMPv3
- Implement Logging on Cisco Routers, Swtiches, and ASA Using Cisco Best Practices
- Implement NTP with Authentication on Cisco Routers, Switches, and ASA
- Describe CDP, DNS, SCP, SFTP, and DHCP
- Analyze Packet Tracer on the Fire Using CLI/ASDM
- Configure and Analyze Packet Capture Using CLI/ASDM
- Analyze Syslog Events Generated From ASA
- Design a Firewall Solution
- Layer 2 Security Solutions
- Describe Security Operations Management Architectures
- Describe Data Center Security Components and Considerations
- Describe Common IPv6 Security Considerations

## COURSE CTE270

Title: Implementing Cisco BGP and MPLS

### **Course Description**

BGP is the protocol which is used to make core routing decisions on the Internet; it involves a table of IP networks or "prefixes" which designate network reachability among autonomous systems (AS). BGP is a path vector protocol or a variant of a Distance-vector routing protocol. BGP does not involve traditional Interior Gateway Protocol (IGP) metrics, but routing decisions are made based on path, network policies and/or rule-sets. For this reason, it is more appropriately termed a reachability protocol rather than routing protocol. BGP was created to replace the Exterior Gateway Protocol (EGP) to allow fully decentralized routing in order to transition from the core ARPANet model to a decentralized system that included the NSFNET backbone and its associated regional networks. This allowed the Internet to become a truly decentralized system.

MPLS is a highly scalable, protocol agnostic, data-carrying mechanism. In an MPLS network, data packets are assigned labels. Packet-forwarding decisions are made solely on the contents of this label, without the need to examine the packet itself. This allows one to create end-to-end circuits across any type of transport medium, using any protocol. The primary benefit is to eliminate dependence on a particular OSI model data link layer technology, such as Asynchronous (ATM), Frame Relay, Synchronous Optical Networking (SONET) or Ethernet, and eliminate the need for multiple layer-2 networks to satisfy different types of traffic. MPLS belongs to the family of packet-switched networks.

### **Course Objectives**

This course will cover the following subjects:

- Understanding BGP Building Blocks
- Comparing the Control Plane and Forwarding Plane.
- BGP Processes and Memory Use.
- BGP Path Attributes.
- Memory Use for IP CEF.
- Tuning BGP Performance
- TCP Protocol Considerations
- Path MTU Discovery, Queue Optimization
- Packet Reception Process. Hold Queue Optimization
- Effective BGP Policy Control
- How to Use Regular Expressions in Cisco IOS Software
- Filter Lists for Enforcing BGP Policies. Prefix Lists
- DESIGNING BGP ENTERPRISE NETWORKS
- Enterprise BGP Core Network Design
- Internet Connectivity for Enterprise Networks
- DESIGNING BGP SERVICE PROVIDER NETWORKS
- Scalable iBGP Design and Implementation Guidelines
- Route Reflection and Confederation Migration Strategies
- Service Provider Architecture
- General ISP Network Architecture
- Interior Gateway Protocol Layout
- The Aggregation Layer, Network Addressing Methodology, Loopback Addressing.
- IMPLEMENTING BGP MULTIPROTOCOL EXTENSIONS
- Multiprotocol BGP and MPLS VPN
- Route Distinguisher and VPN-IPv4 Address
- Understanding MPLS Fundamentals. MPLS Labels
- Multiprotocol BGP and Interdomain Multicast

- Multicast Distribution Trees
- Multiprotocol BGP Support for IPv
- IPv6 Enhancements, Expanded Addressing Capabilities, Autoconfiguration Capabilities
- MP-BGP Extensions for IPv6 NLRI, Dual-Stack Deployment, MP-BGP for IPv6 Deployment Considerations
- Configuring MP-BGP for IPv, BGP Address Family Configuration, Injecting IPv6 Prefixes into BGP
- Security Enhancements
- QoS Capabilities, IPv6 Addressing
- Anycast Address Functionality
- Aggregatable Global Unicast Addresses
- MP-BGP Extensions for IPv6 NLRI
- Multiprotocol BGP Extensions for CLNS Support
- Matrix of BGP Features and Cisco IOS Software Releases
- MPLS VPN Architecture Overview
- MPLS VPN Terminology
- Connection-Oriented VPNs
- Connectionless VPNs
- MPLS-Based VPNs
- New MPLS VPN Developments
- Advanced PE-CE Connectivity
- Remote Access to an MPLS VPN
- Providing Dial-In Access to an MPLS VPN
- Providing Dial-Out Access via LSDO
- Providing Dial-Out Backup for MPLS VPN Access
- Providing DSL Access to an MPLS VPN
- Advanced features of MPLS VPN Remote Access
- PE-CE Routing Protocol Enhancements and Advanced Features
- PE-CE Connectivity: OSPF
- PE-CE Connectivity: Integrated IS-IS
- PE-CE Connectivity: EIGRP
- Virtual Router Connectivity
- Configuring Virtual Routers on CE Routers
- VRF Selection based on Source IP Address
- Performing NAT in a Virtual Router Environment
- Protecting MPLS-VPN Backbone
- Inherent Security Capabilities
- Neighbor Authentication
- CE-to-CE Authentication
- PE to CE Circuits
- Large-Scale Routing and Multiple Service Provider Connectivity
- Carrier Backbone Connectivity
- Label Distribution Protocols on PE-CE Links
- BCP-4 Between PE/CE Routers
- Hierarchical VPNs: Carrier's Carrier MPLS VPNs
- Multicast VPN
- Introduction to IP Multicast
- Enterprise Multicast in a Service Provider Environment
- MDTs
- IP Version 6 Transport Across an MPLS Backbone
- IPv6 Business Drivers
- Deployment of IPv6 in Existing Networks
- 6PE Operation and Configuration
- Introduction to Troubleshooting of MPLS-Based Solutions
- MPLS Control Panel Troubleshooting



- MPLS Data Plane Troubleshooting
- MPLS VPN Troubleshooting