Networking Essentials

Network Essentials – Course Introduction

- Course Introduction

Lesson One – Network Basics

- Network Basics – Lesson Introduction

- Todays IT Network Structures

- Why use a Network?

- Networking Components and Services

- Networking Terminology Topologies

- Networking Terminology Access / Communication Methods

- OSI Model

- TCP/IP Stack

- OSI Model and TCP/IP Model

- Introducing Protocols

- Addressing and Routing

- Network Basics - Summary

- Network Basics - Quiz

Lesson Two – Elements of a Network

- LAN Technologies / Devices / Protocols

- Introducing Hubs, Switches and Routers

- What is a MAC Address?

- Ethernet Frames

- Ethernet Cables

- Network Operating Systems Introduction

- Network Operating System Functions, Multi-User, Authentication and Sharing

- Elements of a Network - Summary

TCP/IP Basic

- TCP/IP Architecture

- Description of IPv4 Address Structure

- IPv4 Address Classes

- IPv4 Reserved Addresses

- Setting a Static IP Address

- Function of Address Resolution Protocol (ARP)

- The Default Gateway

- The Concept of Subnetworks

- IPv4 Address Decimal Binary Notation

- Overview of CIDR

- Introduction to IPv6

- IPv4 vs IPv6 Address Space

- Types of IPv6 Address

- Introduction to Transport Protocols

- Transmission Control Protocol (TCP)

- User Datagram Protocol (UDP)

- IP Ports

Commonly Used Network IP Protocols

- Review the TCP/IP Stack in Detail

- Dynamic Host Configuration Protocol (DHCP)

- DHCP Lease Renewal / Refresh

- Switch from Static IP to DHCP Assigned IP Address

- DHCP Relay Agent

- Introduction and Description of NAT

- Introduction and Description of PAT
- Introduction to DNS

- DNS Name Space Syntax

- What is a Domain Name System Server? (Name Server)

- How Internet DNS Names are Resolved

- Internal Name Resolution Process on a Windows Computer

- Introduce Reverse Lookup

- Introduce Client Side DNS Actions Using IPCONFIG

- Introducing TELNET and FTP

- TELNET

- File Transfer Protocol

- Commonly Used IP Network Protocols - Summary

Windows Networking Tools

- Windows CLI Network Tools

- Using Netsh

- Basics of IPCONFIG and PING

- Tracert, Finding your Way Through the Network

- IP to MAC, Mapping Physical Address Resolution

- Using Netstat

- Using NSLookup

- Windows Networking Tools - Summary

Windows Control Panel

- Windows Control Panel – Introduction

- Network Settings in Control Panel

- What is a Firewall

- The Windows Firewall
- Configure the Windows Firewall with Predefined Rules

- Add Firewall Rule for Network Application using GUI

- Add Firewall Rule for Network Application using Netsh

- Viewing Connected Devices Using Control Panel

- Introduction to Device Manager, Viewing Devices and Drivers

- Introduction to Task Manager

- Printer and Device Status in Control Panel

- Introduction to Event Viewer

- Event Viewer Microsoft Service Logs

- Event Viewer Saving and Clearing Event Logs

Windows Practical Hands on Exercises

- Windows Local User Accounts

- Local User Profiles

- Sharing and Mapping Folders Introduction

- Creating Shared Folders

- Shared Folder Permissions

- NTFS Permissions

- Combining Share and NTFS Permissions

- Connecting to Shares

- Installing a Network Printer

- Connecting to a Network Printer

Active directory

- What is Active Directory?

- Functions of Domain and Forest in AD

- Concepts of Users, Groups and OU's

- Main AD Admin Tools

- Creating User Accounts in AD

- Creating OU's in AD

- AD Group Types and Scopes

- Using Group Policy

- File Servers in AD

- File and Share Management in AD

- AD, Logon, Group Policy and Group Membership in Operation

Troubleshooting

- Troubleshooting - Approaches and Methodology

- Troubleshooting - Network Issues

- Troubleshooting - Client Connectivity

- Troubleshooting - Name Resolution Issues

- Troubleshooting - DHCP Issues

- Troubleshooting - Windows Boot Problems

- Troubleshooting - AD GPO Issues