Microsoft INF201.31x: Implementing DHCP in Microsoft Windows Server
Starts: 5 January 2016
What you will learn in this course:

- How to implement an IPv4 addressing scheme.
- How to implement Dynamic Host Configuration Protocol (DHCP) in a Microsoft Windows Server network infrastructure, including deployment, configuration, and authorization of the DHCP server role.
- How to implement DHCP scopes as the primary method of configuring options for a group of IP addresses.
- How to manage, maintain, and troubleshoot the DHCP service and DHCP servers in your Microsoft Windows Server network infrastructure.
- How to describe the key distinctions between IPv4 and IPv6 and plan for the coexistence of both protocols in your Microsoft Windows Server network infrastructure.

Upcoming Windows Server Courses
A related course is INF201.32x Implementing DNS in Microsoft Windows Server. Both courses are part of a series of courses designed to introduce you to Microsoft's Windows Server offerings. INF201.32 will be available in January, 2016.

Course Prerequisites:

- Learners should have some general understanding of basic networking concepts and common network protocols used to enable network communications.
- It would be helpful to have taken INF201.12, Introduction to Windows Server. This ensures a strong foundation in Server Manager, server roles, and server features.
- Windows PowerShell is used in many of the hands on exercises in this course. While not essential, learners would benefit from some experience with Windows PowerShell. This ensures you have a strong foundation in accessing and using simple Windows PowerShell commands. There are many resources available to learn PowerShell. We recommend http://www.microsoftvirtualacademy.com.

Modality: Self-paced. Each lesson will take between 4-6 hours. One lesson is released each week.

Lesson 1 - IPv4 Refresher

Understanding IPv4 network communication is critical to ensuring that you can implement, troubleshoot, and maintain IPv4 networks. IPv4 addressing is a core component of the communication process. Other components such as subnet masks and default gateways are related components of the process and understanding these elements will enable you to identify the proper communication between network hosts and understand how the communication process is designed to work.

In this lesson, you will:

- Describe IPv4 Addressing and identify the components.
- Distinguish between public and private IPv4 addresses.
- Explain how dotted decimal notation relates to binary numbers.
- Describe a simple IPv4 network with classful addressing.
- Describe a more complex IPv4 network with classless addressing.

Lesson 2 - Introducing DHCP

You can use the DHCP server role to help simplify client computer configuration by distributing network configuration information to network clients and network-enabled services, such as Windows Deployment Services (WDS) and Remote Access.
This lesson describes the advantages of using DHCP, explains how the DHCP protocol works, and discusses how to control DHCP in a Windows Server 2012 network.

In this lesson you will:

- Describe the benefits of using DHCP.
- Explain how DHCP allocates IP addresses to network clients.
- Describe the process for installing the DHCP server role.
- Explain how a DHCP server role is authorized.
- Describe the purpose of a DHCP relay agent.

Lesson 3 - DHCP Scopes

DHCP scopes help you manage how the DHCP server assigns IP addresses. You'll use DHCP to assign the appropriate IP addresses, and in some cases to reserve IP addresses for specific clients, as well as configure specific device settings a clients in a scope. DHCP scopes allow you a level of control in how addresses are assigned as well as helping to ensure there aren't IP address conflicts.

In this lesson, you will:

- Create and configure a DHCP scope.
- Create and configure DHCP options.
- Create and configure a DHCP reservation.
- Configure advanced DHCP scopes, such as split scopes, superscopes, and Multicast scopes.
- Apply policy based assignment of network IP addresses.
- Manage DHCP scopes with Windows PowerShell.

Lesson 4 - Managing and Maintaining DHCP

DHCP protocol has no built-in method for authenticating users. You need to know how to take appropriate precautions to ensure that IP leases are not granted to unauthorized devices and users.

DHCP is a core service in many organization's network environments. A situation where either the DHCP service is not functioning properly, or there's a problem with the DHCP server, can cause problems for clients attempting to access network resources. You need to be able to identify the problem and determine potential causes to resolve issue.

This lesson explains how to prevent unauthorized users from obtaining a lease, how to manage unauthorized DHCP servers, and how to configure DHCP servers so that a specific group can manage them.

In this lesson, you will:

- Explain how to prevent an unauthorized computer from obtaining a lease.
- Explain how to restrict unauthorized non-Microsoft DHCP servers from leasing IP addresses.
- Explain how to delegate administration of the DHCP server role.
- Describe DHCP statistics and audit logging.
- Identify common issues that are possible when using DHCP.

Lesson 5 - IPv6

IPv6 has been included with Windows client operating systems and servers since the release of Windows Server 2008. The use of IPv6 is becoming more common on corporate networks and on the Internet, having been designed from the start for long-term co-existence with IPv4 networks. Many networks will continue to support IPv4 for many years as well as adopt IPv6.

Therefore, it is important for you to understand how this technology affects current networks, and how to integrate IPv6 into those networks. This lesson discusses the benefits of IPv6, how it differs from IPv4, and how IPv4 and IPv6 coexist.

In this lesson, you will:

- Describe the benefits of IPv6.
- Identify the differences between IPv4 and IPv6.
- Describe the IPv6 address format.
- Describe methods to provide coexistence for IPv4 and IPv6.