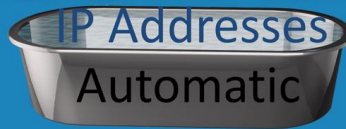


ITFreeTraining



Basics of DHCP

For the free video please see
<http://itfreetraining.com/dhcp/dhcp>

In this video from ITFreeTraining I will look at the basics of how Dynamic Host Configuration Protocol or DHCP works. Once we understand the basics, the rest of the course will look at how to deploy and configure DHCP in your organization.

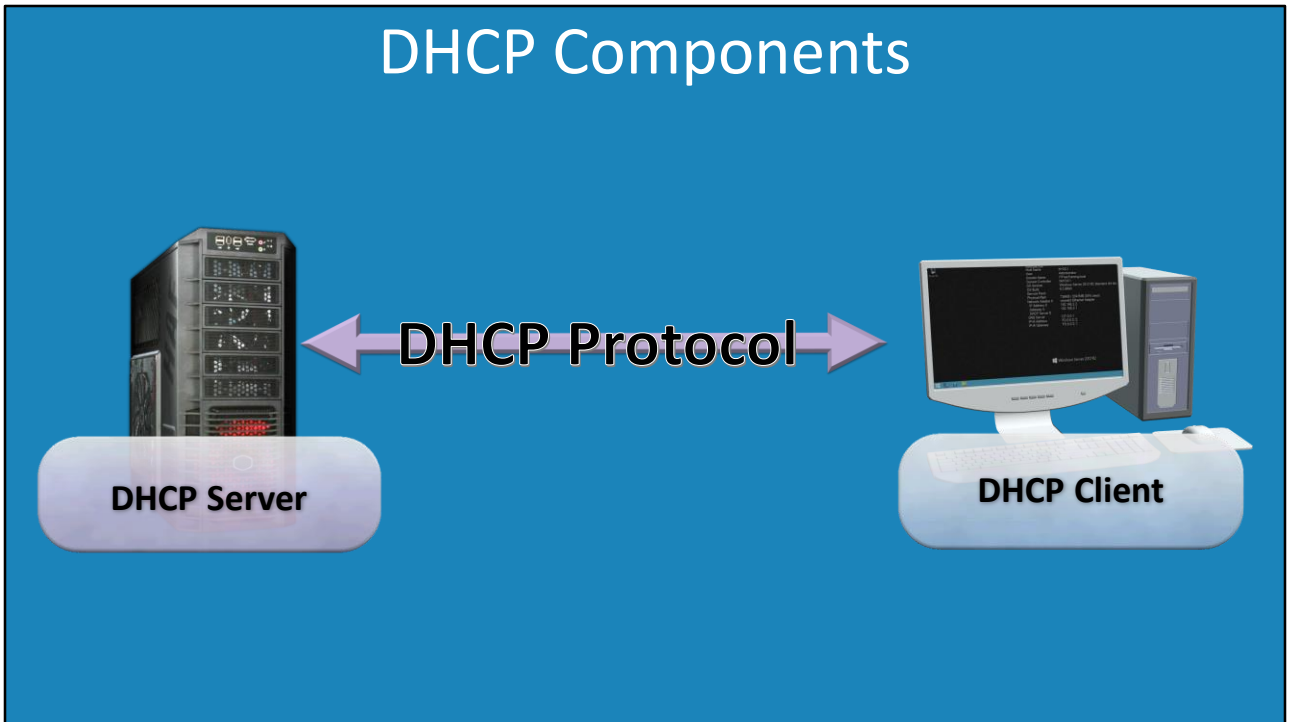
Dynamic Host Configuration Protocol (DHCP)

- Developed in the early 90's
- Dynamically distributes
 - network configuration



0:17 DHCP was first developed in the early 90's. It is designed to dynamically distribute network configuration. There were other methods designed before this, but they did not include all the features of DHCP. DHCP is now the standard for distributing network configuration.

DHCP Components



0:34 To understand how DHCP works, I will first look at the components that make up DHCP. First, there is the DHCP server component. This contains all the configuration for DHCP and responds back to client requests for network configuration.

The next component is the DHCP client. This is the device on the network that sends requests to the DHCP server. The server will respond back and the client will use this configuration.

The last component is the DHCP protocol. This defines the messages that are sent over the network between the DHCP server and the DHCP client. Since the DHCP protocol is an open protocol, all devices on the network can use it. All Windows' client and server operating systems support the DHCP Client. Also, all Windows Servers support the DHCP server component.

On the Linux side, all distributions support the DHCP client. There are also many different implementations of the DHCP server. So regardless if you are using Windows, Linux or another operating system, your client and server will support DHCP.

DHCP Allocation Methods



Devices are assigned an IP Address from a pool. Device must renew its IP Address otherwise it may be given to another device.



A device is allocated an IP Address which it will permanently use.



The administrator assigns an IP Address to the device. This device will always get this IP Address.

1:51 The next part of DHCP that I will look at is DHCP allocation methods. DHCP allocates IP Addresses to devices on the network from pools. In Windows, these pools are called scopes. There are three different ways it can allocate IP Addresses.

The first is dynamic. If you consider that there are a number of devices on the network, these devices can be anything; desktops, phones, laptops or mobile devices. Any devices that support DHCP which nowadays includes devices like smart TVs. If you can connect the device to a network, it is more than likely that it supports DHCP.

When using the dynamic method of allocating IP addresses, devices are assigned an IP Address from a pool of addresses. Once assigned, the device can use that IP Address. After a period of time, the device will need to renew the IP Address if it wants to continue to use it. If the device does not renew the IP Address, the IP Address is free to be allocated to another device.

The dynamic method of IP Address allocation is commonly used on DHCP servers. For example, the default configuration of a home DSL device will generally use the dynamic method to allocate IP addresses. Dynamic allocation allows devices to come and go from the network.

If you consider a free wireless hotspot, for example in a café, you want it to have the ability to allow any device to connect to it. If the device is disconnected for a short

period of time, for example an hour or so, you want the device to be able to continue to use the same IP Address. However, if the device is disconnected for an extended period of time, like days, it may not be connecting back to that network. It makes sense that when this occurs, the DHCP server should reclaim the IP Address. If this did not occur, a device could connect to a network the one time, never connect to it ever again but be permanently allocated an IP Address on that network.

The next method of allocation is automatic. The method differs from dynamic in that when a device is allocated an IP Address, it is permanently allocated that IP Address. This is useful in companies where there are a limited number of devices connecting to the network. The advantage is that even if the device changes networks, when it returns to the previous network, it will always get the same IP Address. Having the same IP Address allocated for each device is useful for auditing. If you find the IP Address in a log file, you know the IP Address belongs to that device. However, using the dynamic allocation method, a single IP Address could have been used by many devices. Using the automatic allocation method, allows you to be sure that only that device was using that IP Address.

The last allocation method that I will look at is the manual allocation method, in which each device on the network is allocated a permanent IP Address. This sounds the same as automatic allocation. However, the administrator is required to assign an IP Address to each device before it is put on the network. This is called a reservation and will ensure that the device will always get that IP Address. This gives the administrator ultimate control over which IP Addresses go to which devices, but does require more work on the part of the administrator.

This concludes this video. In later videos, I will look at DHCP in more detail and then look at how to implement DHCP in your organization. Until those videos, I would like to thank you for watching.

References

“Installing and Configuring Windows Server 2012 R2 Exam Ref 70-410” pg 207-208

“Dynamic Host Configuration Protocol”

https://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol

“Comparison of DHCP server software”

https://en.wikipedia.org/wiki/Comparison_of_DHCP_server_software

Credits

Trainer: Austin Mason <http://ITFreeTraining.com>

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