

# Cyber Defense Organization



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## Windows Server DNS Primer

<http://tinyurl.com/CDOSpr19WindowsDNS>

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# What is DNS

## Background

All devices (computers etc) that are connected to the Internet, your own network, or company network are identified by an IP address; which is a number.

IP addresses are easy for computers to process but they are not so easy for people to remember.

To make it easy for people to remember names (host names) are used to identify individual computers on a network.

On early computer networks a simple text file called a hosts file was created that mapped host names to IP addresses.

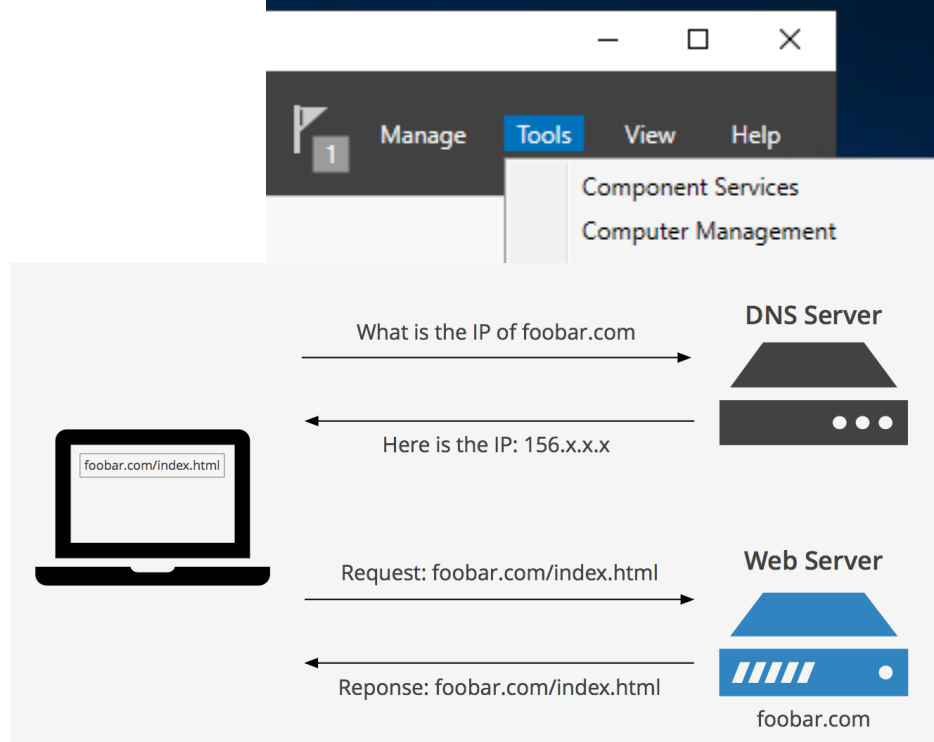
This enabled people to refer to other computers by the name, and their computer translated that name to an IP address when it needed to communicate with it.

## DNS Servers

A DNS Server is a computer that completes the process of name resolution in DNS. DNS Servers contain files, called *zone files*, that enable them to resolve names to IP addresses (or vice versa). When queried, a DNS Server responds in one of three ways:

- The server returns the requested name-resolution or IP-resolution information.
- The server returns a pointer to another DNS Server that can service the request.
- The server indicates that it does not have the requested information.

DNS Servers might, during the course of preparing to return the requested resolution information, query other DNS Servers. But beyond that, DNS Servers do not perform any operations other than those mentioned in the previous list.



# Installing DNS

## Server Manager

Start Server Manager, click the Manage menu, and then select **Add Roles and Features**.

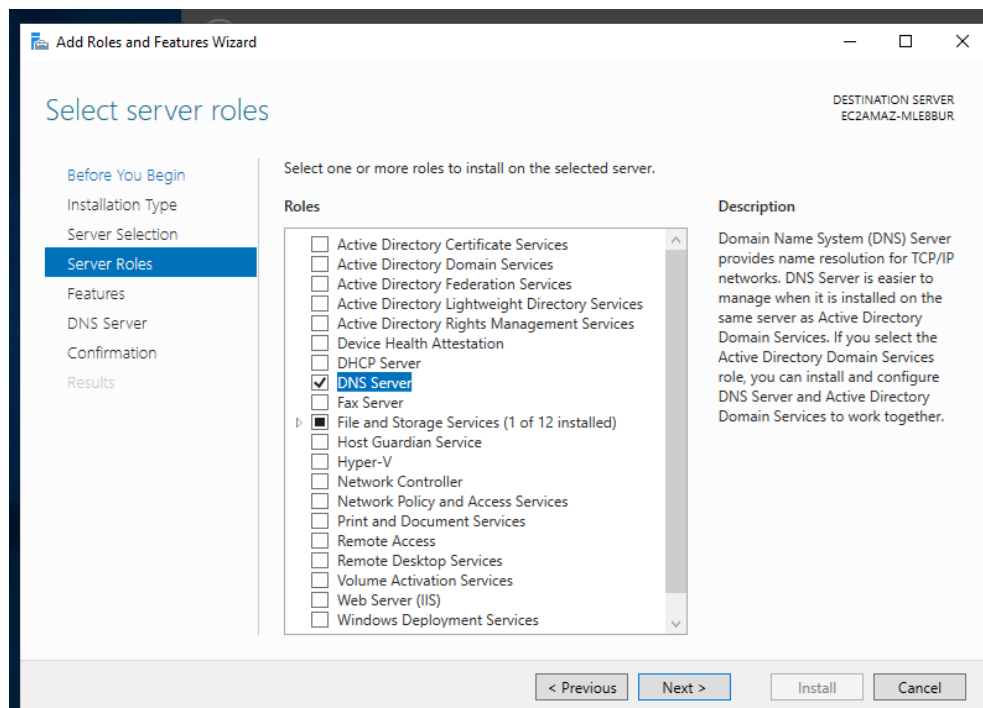
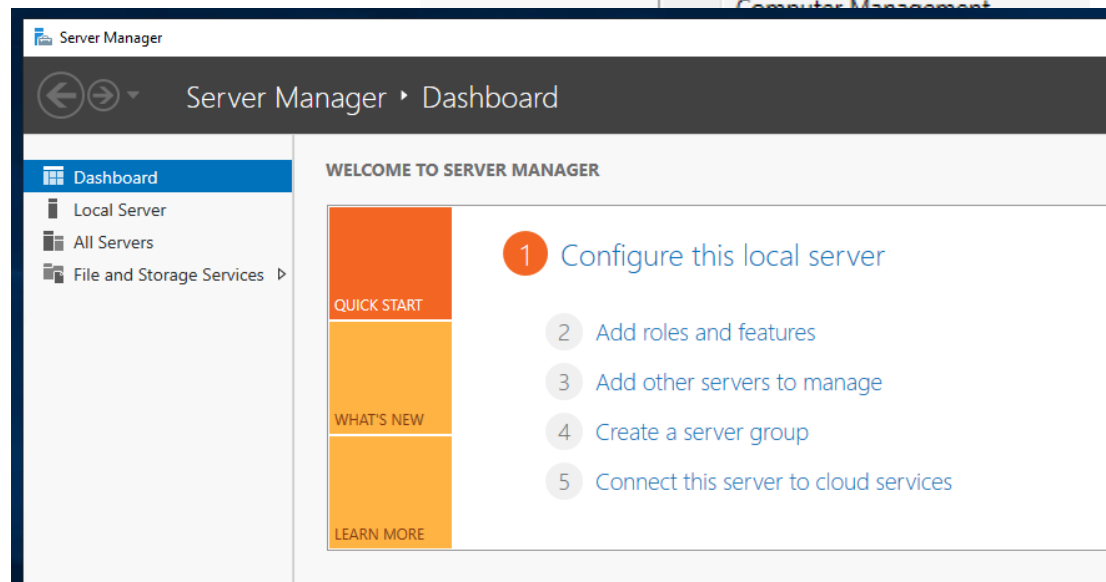
Click Next on the Add Roles and Features Wizard Before you begin window that pops up. (If you checked **Skip this page by default** sometime in the past, that page will, of course, not appear.)

Now, it's time to select the installation type. For DNS servers, you will be selecting the **Role-based or feature-based installation**

Next, you will choose which server you want to install the DNS server role on from the server pool. Select the server you want, and click next.

At this point, you will see a pop-up window informing you that some additional tools are required to manage the DNS Server. These tools do not necessarily have to be installed on the same server you are installing the DNS role on. If your organization only does remote administration, you do not have to install the DNS Server Tools.

However, in a crunch you may find yourself sitting at the server console or remotely using the console and needing to manage the DNS Server directly. In this case, you will wish you had the tools installed locally. Unless your company policy forbids it, it is typically prudent to install the management tools on the server where the DNS will be housed.



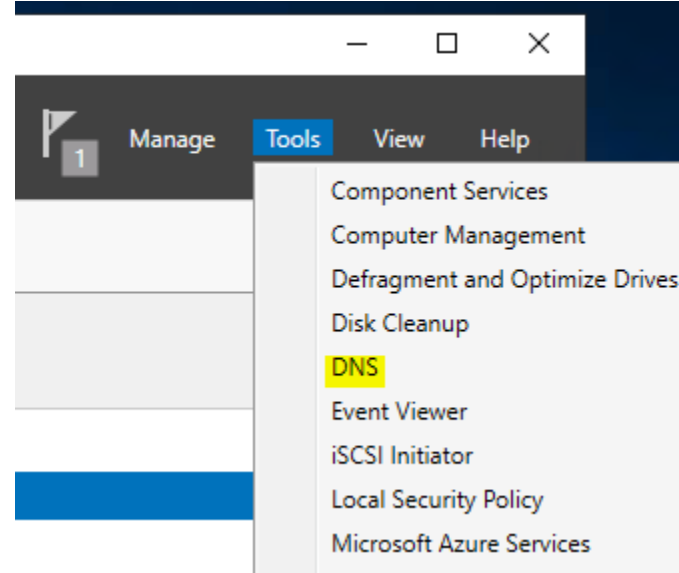
This is the final confirmation screen before installation completes. You can check the box to **Restart the destination server automatically**, if you like. Installing the DNS Server does not require a restart, but unless you've planned for the downtime, keep that box unchecked, just in case.

## Installing Though Powershell

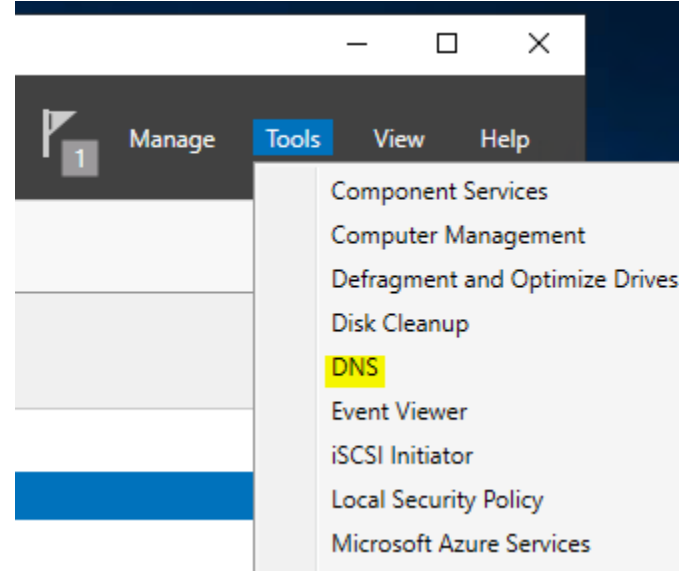
Of course, installing the DNS Server role on Windows Server 2016 using PowerShell does not require all the above steps. In essence, as you will see below, the whole process is very easy with a 'one-liner' cmdlet.

So, to install the role DNS, use the following command in a PowerShell window with administrator privileges.

```
Get-WindowsFeature  
Install-WindowsFeature DNS -IncludeManagementTools
```



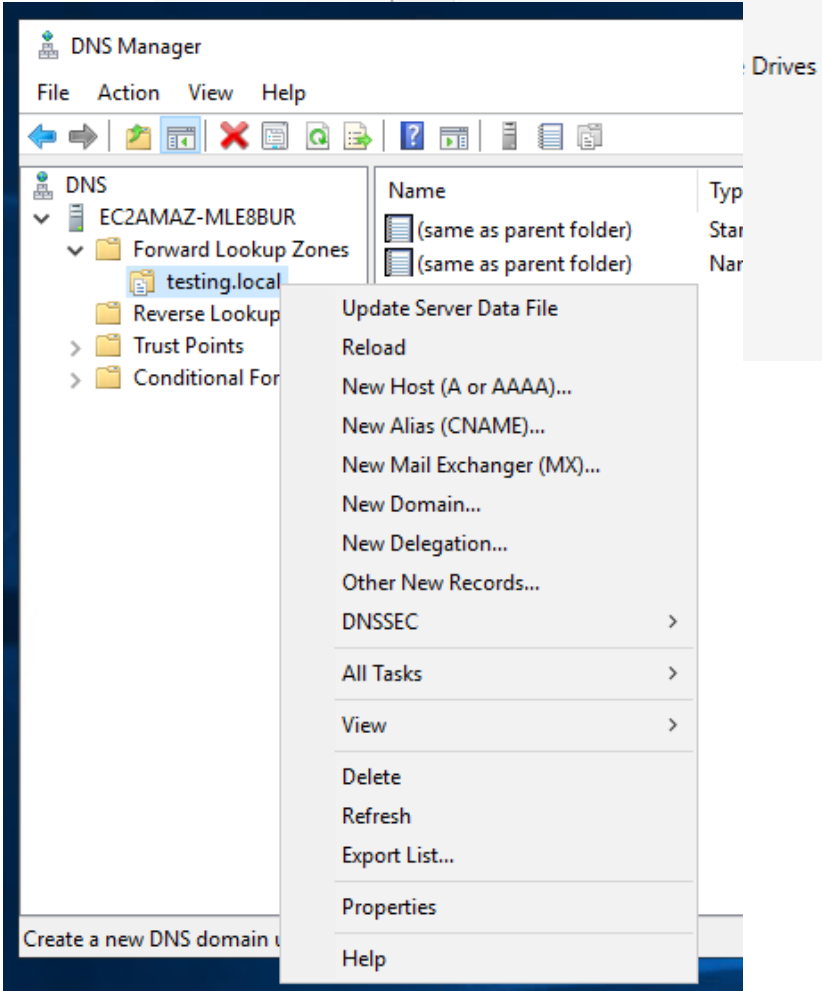
# Basic Administration



## DNS Record Types

<b>A (Host address)</b>	The A-record is the most basic and the most commonly used DNS record type. It is used to translate human friendly domain names such as "www.example.com" into IP-addresses such as 23.211.43.53 (machine friendly numbers).
<b>AAAA (IPv6 host address)</b>	An AAAA-record is used to specify the IPv6 address for a host (equivalent of the A-record type for IPv4). IPv6 is the future replacement for the current IP address system (also known as IPv4).
<b>ALIAS (Auto resolved alias)</b>	ALIAS-records are virtual alias records resolved by Simple DNS Plus at at the time of each request - providing "flattened" (no CNAME-record chain) synthesized records with data from a hidden source name.

# Creating a Basic Record



# Troubleshooting

## Internal Check

