

Setting up Active Directory via PowerShell

<https://blogs.technet.microsoft.com/uktechnet/2016/06/08/setting-up-active-directory-via-powershell/>

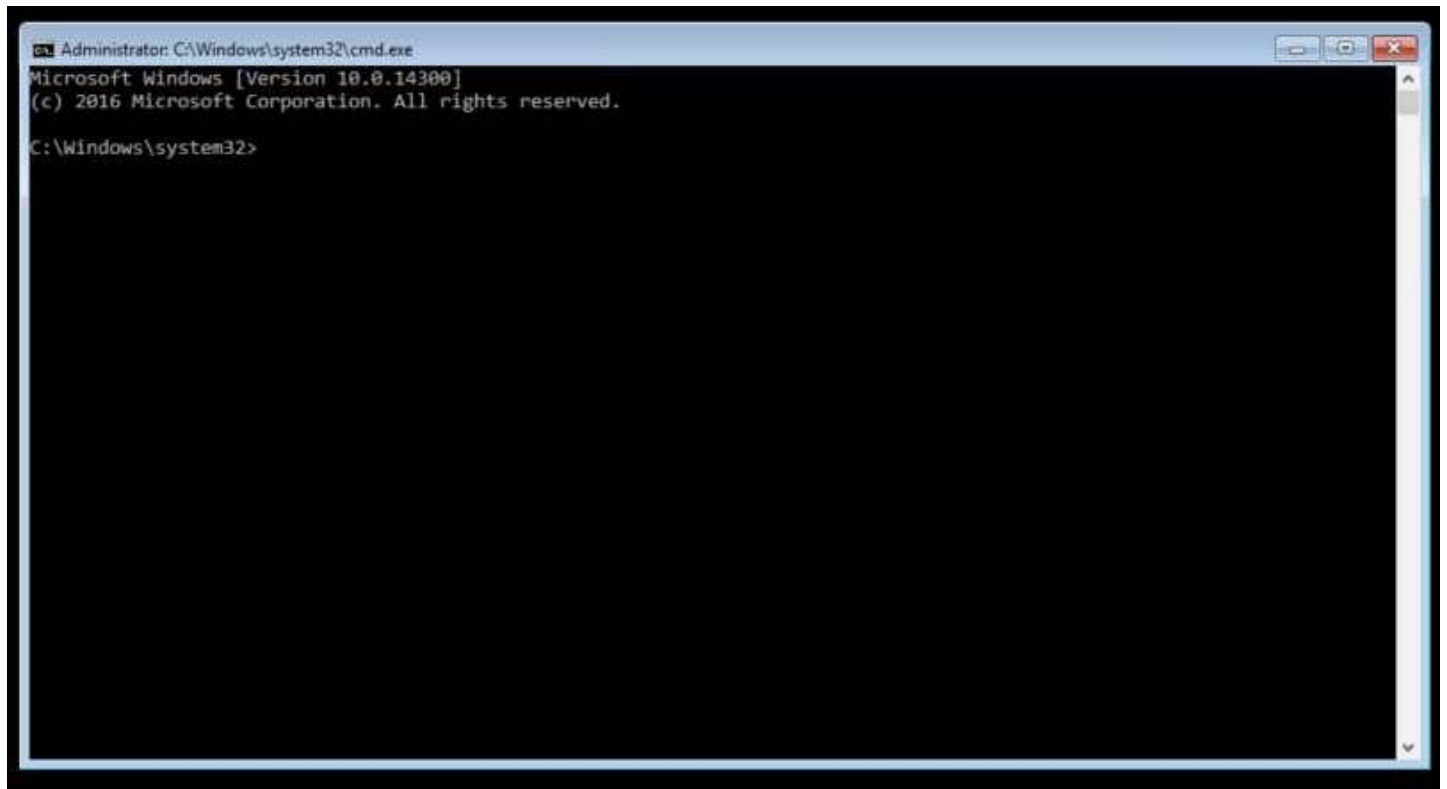
By [Michael Sammels](#)

In today's article, we are going to discuss setting up Active Directory via PowerShell. For the purposes of this article I will be using *Microsoft Windows Server 2016 Technical Preview 5*, but there is no reason this should not work on previous versions of Server. If you run into problems, let me know in the comments below.

The first question to be asked: why would you want to? A lot of Windows Server installs do not have the GUI included, to reduce overheads, which means you don't have access to the wizard – the primary reason for this tutorial.

Entering PowerShell Mode

The first thing you will need to do is open PowerShell. Once you have logged into the system and are faced with the command line, simply type **PowerShell**. This will boot PowerShell. Your command line interface should start off as the top image, and end up as the bottom:



Before PowerShell

```
Administrator: C:\Windows\system32\cmd.exe - PowerShell
Microsoft Windows [Version 10.0.14300]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Windows\system32>PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32>
```

After PowerShell

Get The AD Service Name

In order to install Active Directory from PowerShell, we will need to know the exact module name to look for. In order to do this, we first have to execute:

get-windowsfeature

This command may take some time to execute, as the server collects the data. It depends on the specifications you are running with.

Once the command has completed successfully, you will be presented with all the uninstalled, but available, modules. Your window should now look something like this:

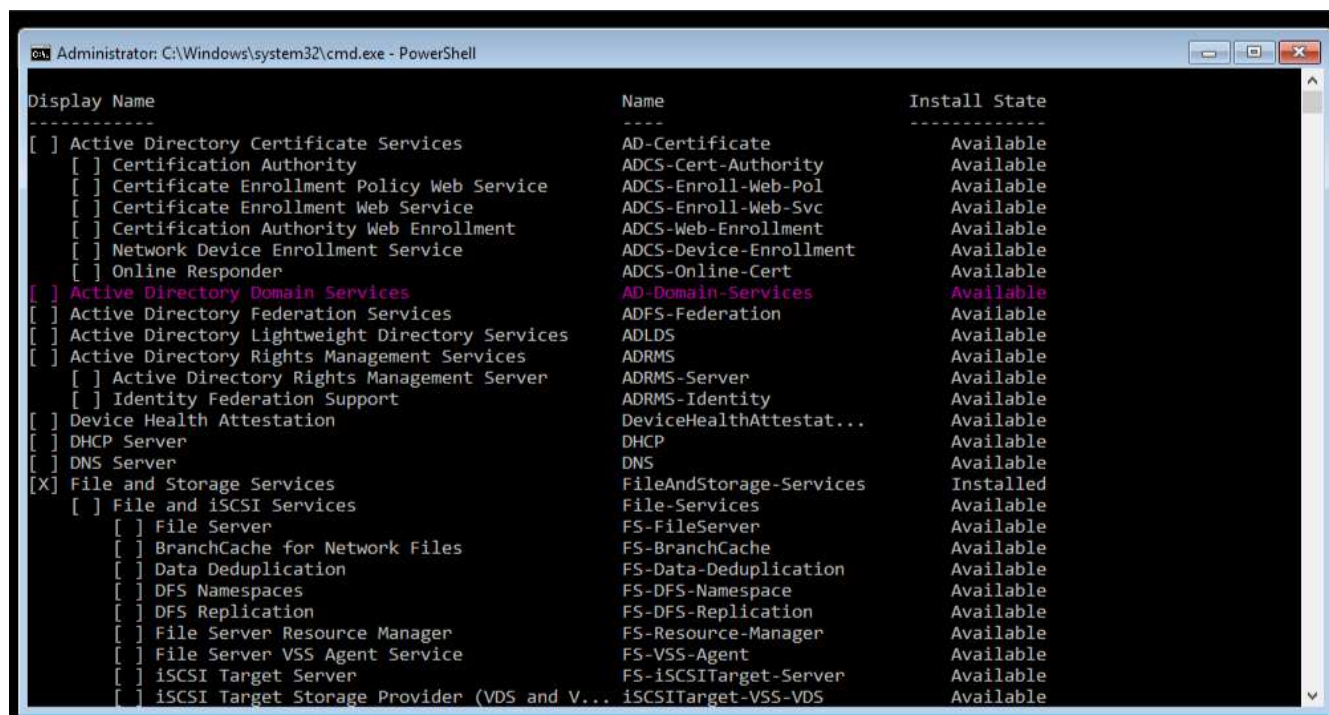
```
Administrator: C:\Windows\system32\cmd.exe - PowerShell

[ ] Remote Access module for Windows Pow... RSAT-RemoteAccess-Po... Available
[ ] RPC over HTTP Proxy RPC-over-HTTP-Proxy Available
[ ] Setup and Boot Event Collection Setup-and-Boot-Event... Available
[X] SMB 1.0/CIFS File Sharing Support FS-SMB1 Installed
[ ] SMB Bandwidth Limit FS-SMBBW Available
[ ] SNMP Service SNMP-Service Available
[ ] SNMP WMI Provider SNMP-WMI-Provider Available
[ ] Telnet Client Telnet-Client Available
[ ] VM Shielding Tools for Fabric Management FabricShieldedTools Available
[X] Windows Defender Features Windows-Defender-Fea... Installed
[X] Windows Defender Windows-Defender Installed
[ ] Windows Internal Database Windows-Internal-Dat... Available
[X] Windows PowerShell PowerShellRoot Installed
[X] Windows PowerShell 5.1 PowerShell Installed
[ ] Windows PowerShell 2.0 Engine PowerShell-V2 Removed
[ ] Windows PowerShell Desired State Configurati... DSC-Service Available
[ ] Windows PowerShell Web Access WindowsPowerShellWeb... Available
[ ] Windows Process Activation Service WAS Available
[ ] Process Model WAS-Process-Model Available
[ ] .NET Environment 3.5 WAS-NET-Environment Available
[ ] Configuration APIs WAS-Config-APIs Available
[ ] Windows Server Backup Windows-Server-Backup Available
[ ] Windows Server Migration Tools Migration Available
[ ] Windows Standards-Based Storage Management WindowsStorageManage... Available
[ ] WinRM IIS Extension WinRM-IIS-Ext Available
[ ] WINS Server WINS Available
[X] Wow64 Support Wow64-Support Installed

PS C:\Windows\system32>
```

After running the command

The next thing you will want to do is locate the **Active Directory Domain Services**:



```
Administrator: C:\Windows\system32\cmd.exe - PowerShell
Display Name                                     Name                                     Install State
-----
[ ] Active Directory Certificate Services         AD-Certificate                         Available
  [ ] Certification Authority                   ADCS-Cert-Authority                   Available
  [ ] Certificate Enrollment Policy Web Service ADCS-Enroll-Web-Pol                   Available
  [ ] Certificate Enrollment Web Service        ADCS-Enroll-Web-Svc                   Available
  [ ] Certification Authority Web Enrollment    ADCS-Web-Enrollment                   Available
  [ ] Network Device Enrollment Service        ADCS-Device-Enrollment                Available
  [ ] Online Responder                         ADCS-Online-Cert                       Available
[ ] Active Directory Domain Services            AD-Domain-Services                     Available
[ ] Active Directory Federation Services        ADFS-Federation                       Available
[ ] Active Directory Lightweight Directory Services ADLDS                                  Available
[ ] Active Directory Rights Management Services ADRMS                                  Available
  [ ] Active Directory Rights Management Server ADRMS-Server                           Available
  [ ] Identity Federation Support              ADRMS-Identity                         Available
[ ] Device Health Attestation                  DeviceHealthAttestat...                Available
[ ] DHCP Server                                DHCP                                    Available
[ ] DNS Server                                 DNS                                      Available
[X] File and Storage Services                  FileAndStorage-Services                 Installed
  [ ] File and iSCSI Services                  File-Services                           Available
    [ ] File Server                           FS-FileServer                           Available
    [ ] BranchCache for Network Files         FS-BranchCache                           Available
    [ ] Data Deduplication                    FS-Data-Deduplication                   Available
    [ ] DFS Namespaces                        FS-DFS-Namespace                         Available
    [ ] DFS Replication                       FS-DFS-Replication                       Available
    [ ] File Server Resource Manager          FS-Resource-Manager                     Available
    [ ] File Server VSS Agent Service         FS-VSS-Agent                             Available
    [ ] iSCSI Target Server                   FS-iSCSITarget-Server                   Available
    [ ] iSCSI Target Storage Provider (VDS and V... iSCSITarget-VSS-VDS                     Available
```

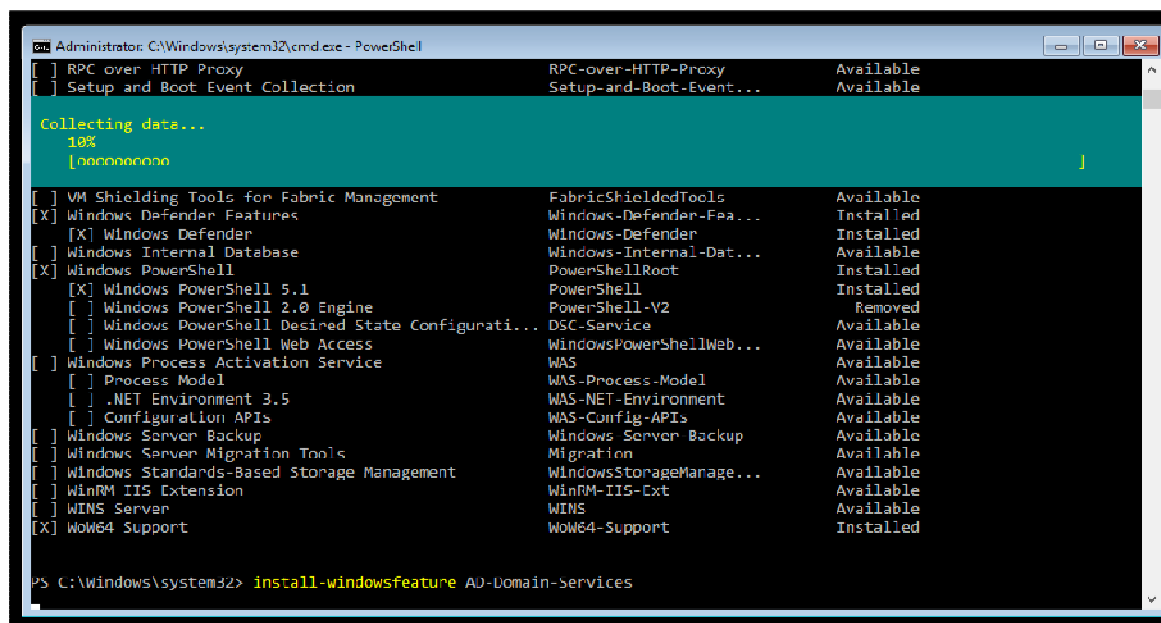
What you need is highlighted in pink

Installing the Active Directory Domain Service

Once we have figured out the service name and the module name, we now have to go ahead and install it. You simply have to execute the following command:

install-windowsfeature AD-Domain-Services

This command will extract all required binary files and start the installation procedure:



```
Administrator: C:\Windows\system32\cmd.exe - PowerShell
[ ] RPC over HTTP Proxy                         RPC-over-HTTP-Proxy                     Available
[ ] Setup and Boot Event Collection              Setup-and-Boot-Event...                 Available

Collecting data...
10%
|#####|

[ ] VM Shielding Tools for Fabric Management    FabricShieldedTools                     Available
[X] Windows Defender Features                  Windows-Defender-Fea...                 Installed
  [X] Windows Defender                          Windows-Defender                         Installed
  [ ] Windows Internal Database                  Windows-Internal-Dat...                 Available
  [X] Windows PowerShell                        PowerShellRoot                           Installed
  [X] Windows PowerShell 5.1                    PowerShell                                Installed
  [ ] Windows PowerShell 2.0 Engine              PowerShell-V2                             Removed
  [ ] Windows PowerShell Desired State Configurati... DSC-Service                             Available
  [ ] Windows PowerShell Web Access              WindowsPowerShellWeb...                 Available
  [ ] Windows Process Activation Service         WAS                                       Available
    [ ] Process Model                           WAS-Process-Model                       Available
    [ ] .NET Environment 3.5                     WAS-NET-Environment                     Available
    [ ] Configuration APIs                       WAS-Config-APIs                         Available
  [ ] Windows Server Backup                      Windows Server Backup                     Available
  [ ] Windows Server Migration Tools             Migration                                 Available
  [ ] Windows Standards-Based Storage Management WindowsStorageManage...                 Available
  [ ] WinRM IIS Extension                       WinRM-IIS-Ext                           Available
  [ ] WINS Server                                WINS                                       Available
[X] WoW64 Support                               WoW64-Support                           Installed

PS C:\Windows\system32> install-windowsfeature AD-Domain-Services
```

Installing the AD Domain Services

If everything goes well and according to plan, you should end up with the following screen:

```

Administrator: C:\Windows\system32\cmd.exe - PowerShell
[ ] Telnet Client                               Telnet-Client                               Available
[ ] VM Shielding Tools for Fabric Management     FabricShieldedTools                         Available
[X] Windows Defender Features                  Windows-Defender-Fea...                     Installed
[X] Windows Defender                           Windows-Defender                           Installed
[ ] Windows Internal Database                  Windows-Internal-Dat...                     Available
[X] Windows PowerShell                        PowerShellRoot                              Installed
[X] Windows PowerShell 5.1                    PowerShell                                  Installed
[ ] Windows PowerShell 2.0 Engine              PowerShell-V2                               Removed
[ ] Windows PowerShell Desired State Configurati... DSC-Service                               Available
[ ] Windows PowerShell Web Access              WindowsPowerShellWeb...                     Available
[ ] Windows Process Activation Service         WAS                                         Available
[ ] Process Model                             WAS-Process-Model                           Available
[ ] .NET Environment 3.5                       WAS-NET-Environment                         Available
[ ] Configuration APIs                        WAS-Config-APIs                            Available
[ ] Windows Server Backup                     Windows-Server-Backup                       Available
[ ] Windows Server Migration Tools             Migration                                    Available
[ ] Windows Standards-Based Storage Management WindowsStorageManage...                     Available
[ ] WinRM IIS Extension                       WinRM-IIS-Ext                               Available
[ ] WINS Server                               WINS                                         Available
[X] WoW64 Support                             WoW64-Support                               Installed

PS C:\Windows\system32> install-windowsfeature AD-Domain-Services

Success Restart Needed Exit Code      Feature Result
-----
True     No           Success      {Active Directory Domain Services, Remote ...

PS C:\Windows\system32>

```

Successful installation

If you happen to come across any errors, then let me know in the comments below and I will do my best to try and help you resolve them.

Importing the Required Modules

Now – the installation is technically complete, however, this article is not going to end there. We are now going to install some additional modules to make the server run smoother, and also walk you through the process of setting up a new forest to make your active directory work.

The module that we are going to import here is the **ADDSDeployment** module. You can import this via the following command:

Import-Module ADDSDeployment

I will not provide a screenshot, because there is no visible feedback from this command. If the command completed successfully then you will be faced with a blank prompt. Again, if you receive any errors, let me know.

Commands to Promote Server as Domain Controller

Now, you will need to need to promote your server to a domain controller as per your requirements – there are several commands that you can use to do this. I will provide a list and description so that you can figure out which one best suits your needs. However, for this article, we are going to use the **Install-ADDSDomainController** command.

Command	Description
Add-ADDSDomainControllerAccount	Install read only domain controller
Install-ADDSDomain	Install first domain controller in a child or tree domain
Install-ADDSDomainController	Install additional domain controller in domain

Install-ADDSForest	Install first domain controller in new forest
Test-ADDSDomainControllerInstallation	Verify prerequisites to install additional domain controller in domain
Test-ADDSDomainControllerUninstallation	Uninstall AD services from server
Test-ADDSDomainInstallation	Verify prerequisites to install first domain controller in a child or tree domain
Test-ADDSForestInstallation	Install first domain controller in new forest
Test-ADDSReadOnlyDomainControllerAccountCreation	Verify prerequisites to install read only domain controller
Uninstall-ADDSDomainController	Uninstall the domain controller from server

Installing the First Domain Controller in Forest

So, as stated above, we are installing the first domain in Forest.

To install the Active Directory with the default configuration, execute the following command:

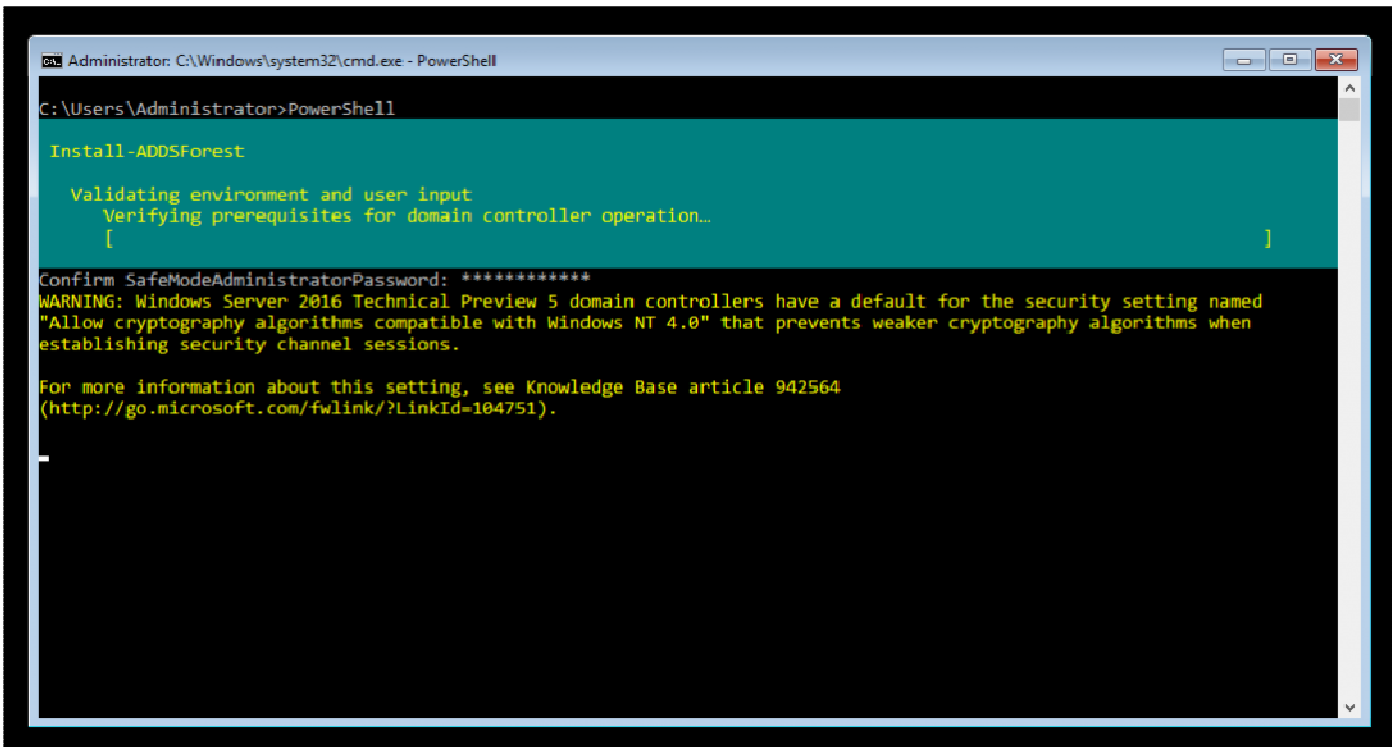
Install-ADDSForest

This will install the basic features and functions, however, if you want to install a customised setup – which I assume you would want to do – in a proper business environment, I will provide a sample setup for you to follow. I will lay this out line per line, to make for easy reading, but when you are passing the parameters, please be sure not to break lines anywhere. The line breaks in my example are *purely* for readability:

Install-ADDSForest

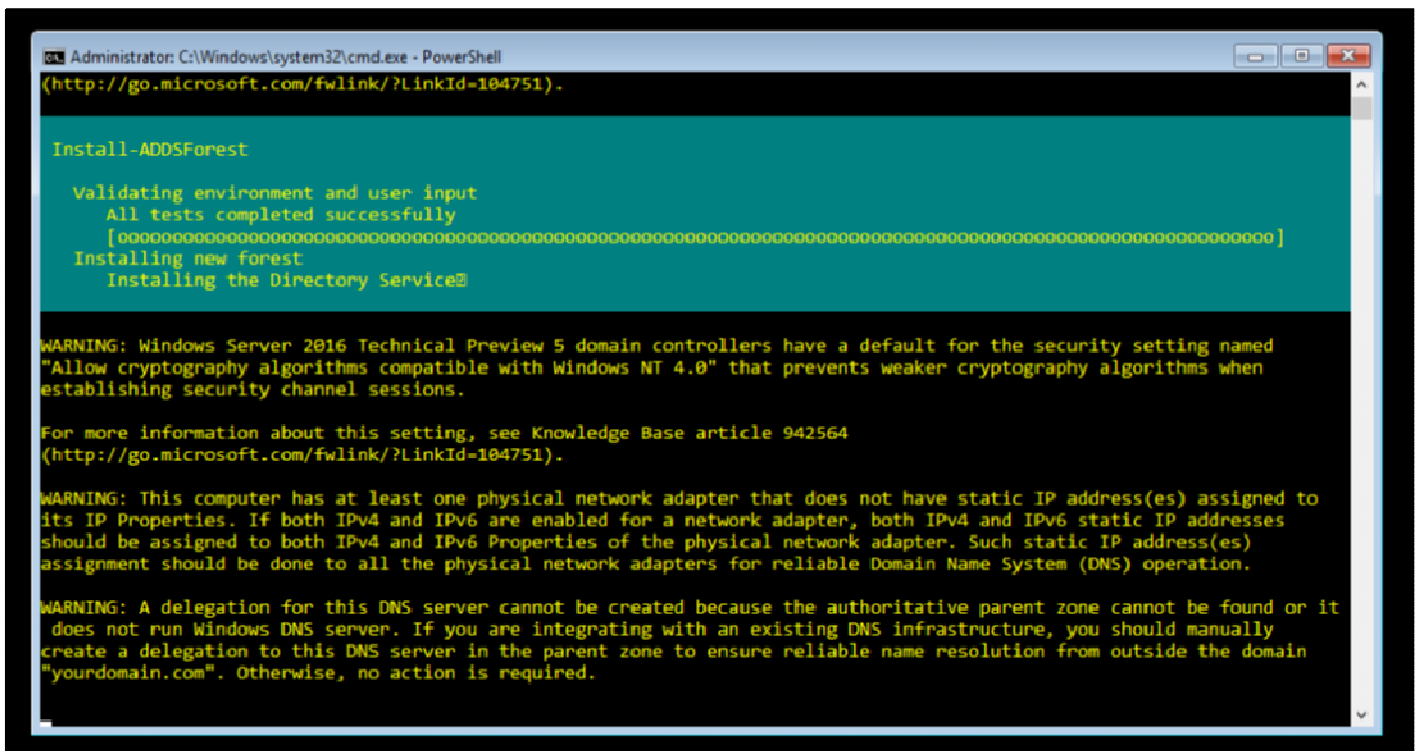
```
-CreateDnsDelegation:$false
-DatabasePath "C:\Windows\NTDS"
-DomainMode "Win2012R2"
-DomainName "yourdomain.com"
-DomainNetbiosName "YOURDOMAIN"
-ForestMode "Win2012R2"
-InstallDns:$true
-LogPath "C:\Windows\NTDS"
-NoRebootOnCompletion:$false
-SysvolPath "C:\Windows\SYVOL"
-Force:$true
```

If you are using a different version of Windows Server, be sure to change your modes from **Win2012R2** to something such as **Win2008**. Once you execute this, you will be asked to enter *SafeModeAdministratorPassword* – this is for the Directory Services Restore Mode (DSRM). Once you set this password here Windows will finish the AD installation and configuration on your Windows Server based on the input provided.



Setting up the Active Directory

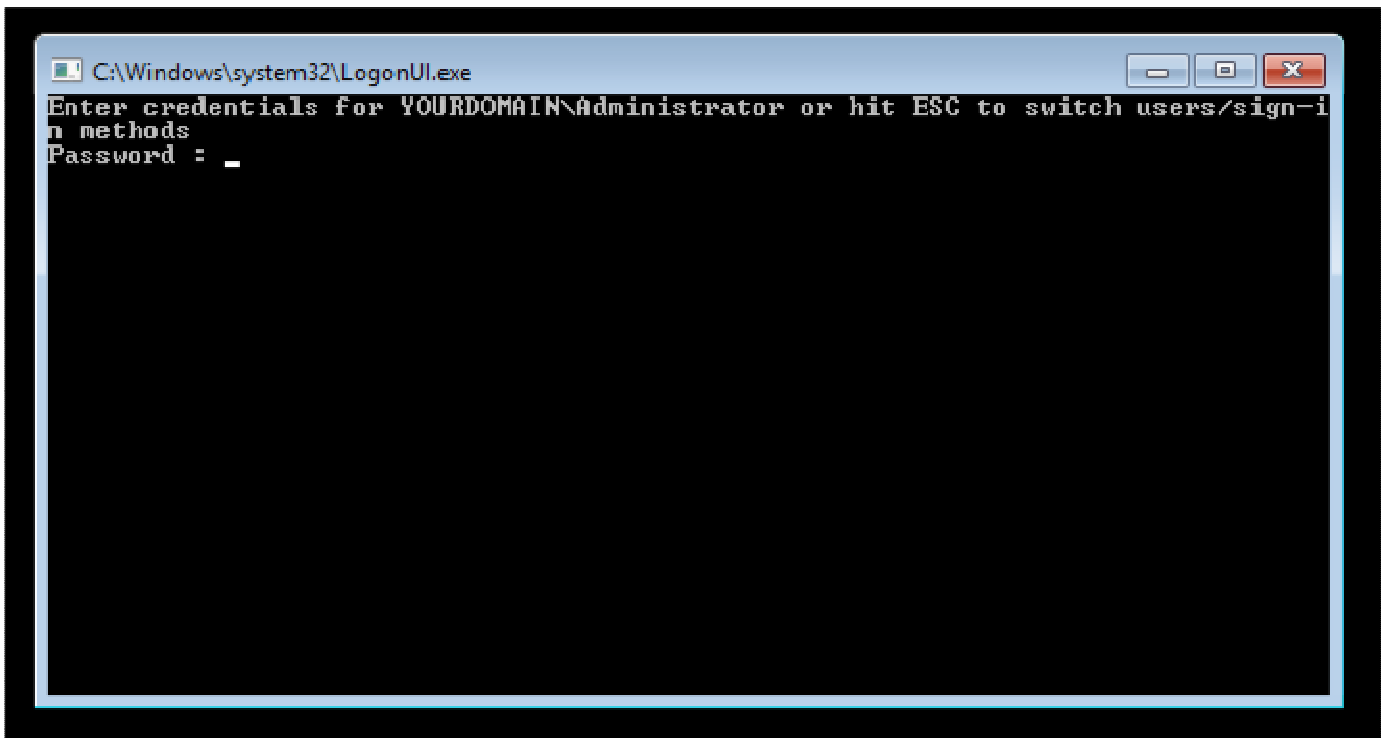
The Active Directory will now setup. You may receive various warnings, dependant on whether you have static IPs or not. You can see the progress of the installation in the teal-coloured status bar covering the top half of the screen in the screenshot below.



ome error messages – I have not fully setup the server

As the system is being setup you may get some error messages. Mine are because I have not setup the static IPs for networks – I assume you will have already done this as this guide does not cover that. Your server may automatically restart during this process as well.

If everything has gone to plan, then your next login prompt will look slightly different. It should look something similar to this:



Logging in after setting up Active Directory

And that is all there is to it. You have successfully set up Active Directory via PowerShell and without the GUI. I hoped this helped! Should you have any comments, problems or queries, let me know in the comments below and I will try and get back to you as soon as I can.