Creating Active Directory Domain Services in Oracle Cloud Infrastructure

Quick Start

ORACLE WHITE PAPER | JANUARY 2019
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Revision History

The following revisions have been made to this white paper since its initial publication:

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 9, 2019</td>
<td>Initial publication</td>
</tr>
</tbody>
</table>

You can find the most recent versions of the Oracle Cloud Infrastructure white papers at https://cloud.oracle.com/iaas/technical-resources.
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Overview

Active Directory Domain Services are a proven solution for identity management. Oracle Cloud Infrastructure can help you build and extend your current Active Directory forest. This white paper walks you through the process of creating an Active Directory environment in your Oracle Cloud Infrastructure tenancy. Two domain controllers are installed, one active and one read-only, each in a different availability domain for redundancy. A third system is used as a test server to ensure that you can both join to and log in to the domain established in Oracle Cloud Infrastructure.

This document provides the following information:

- How to automate the deployment of your Active Directory servers
- Best practices for building a simple Active Directory environment and joining domains
- Scripts that you can use to help automate your deployment in an Oracle Cloud Infrastructure environment

The following topics are out of scope and therefore not covered:

- Active Directory design and topologies
- Large forest, tree, and leaf designs
- Group policies or policy management

Assumptions

To perform the actions in this paper, you must have a non-root compartment.

Also, you should be familiar with the fundamentals of the Oracle Cloud Infrastructure. If this is the first time that you have used the platform, we recommend walking through the getting started tutorial.

You should also have a basic understanding of Active Directory concepts.
Setting Up the Network Environment

The following diagram depicts the components of the environment that this white paper includes:

**Best Practice:** The domain controllers should not be accessible externally from the internet. Create a separate subnet for your domain assets like Active Directory domain controllers and a separate subnet for your application servers.

A bastion host is used to access the environment to prevent exposing the Remote Desktop Protocol (RDP) ports of the Active Directory domain controllers to the internet. RDP sessions are tunneled through an SSH connection to a bastion host. Separate subnets (as illustrated in the diagram) are used to host the primary and secondary domain controllers created in the steps that follow. Because subnets are associated with availability domains, each of the domain controllers resides in different availability domains, thereby creating an Active Directory domain structure that is resilient to availability domain issues. In the examples that follow, the virtual cloud network (VNC) IP space of 10.0.0.0/16 is used.

**Best Practice:** Always be as descriptive as possible when naming Oracle Cloud Infrastructure components. Descriptive names make it easier when you have to revisit an environment later.
Create a VCN

Use the Oracle Cloud Infrastructure Console to create the virtual cloud network (VCN) and related resources, including the internet gateway for the bastion host, public routing tables, and security lists for the public subnet. Two more public subnets are created but aren't used in this environment. More networking resources for the private segments of the environment are created in the following sections.

Create the following VCN and related resources: vcn01

Create a NAT Gateway

Create a NAT gateway to allow the instances that have only private IP addresses to access internet resources.

Create the following NAT gateway: nat-gateway

Create a Private Security List

When you create a subnet in the following steps, you must select a security list. Create an empty security list now and add the rules in a later step.

Create the following security list: Production - Active Directory

Create a Private Route Table

Create a route table to use for the private subnets. Private subnets automatically can route to other private subnets in the VNC. The NAT gateway that you created is used by this route table for all internet destinations, which allows instances that have only private IP addresses to access internet resource.

Create the following route table with a 0.0.0.0/0 route to nat-gateway:

<table>
<thead>
<tr>
<th>Name</th>
<th>Target Type</th>
<th>Destination CIDR Block</th>
<th>Target Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production - Active Directory - NAT</td>
<td>NAT Gateway</td>
<td>0.0.0.0/0</td>
<td>nat-gateway</td>
</tr>
</tbody>
</table>
Create Security List Rules

Active Directory uses several protocols to communicate, including RPC, NetBIOS, SMB, LDAP, Kerberos, WINS, and DNS. All of the protocols are listed here, although your configuration might use only some of them. If a protocol (for example, WINS) is not used in your environment, you can remove it from the list.

As a best practice, all the domain controllers should be in a subnet that either has no external IP addresses or has no access from the internet. As a result, you might want to enable all ports to communicate between your subnets and the Active Directory subnets. However, be aware that this still opens potential paths of attack from those subnets. Therefore, it's a best practice to open only the following ports between the subnets:

<table>
<thead>
<tr>
<th>Name</th>
<th>Protocol</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDP</td>
<td>TCP</td>
<td>3389</td>
</tr>
<tr>
<td>DNS</td>
<td>TCP, UDP</td>
<td>53</td>
</tr>
<tr>
<td>LDAP</td>
<td>TCP, UDP</td>
<td>389</td>
</tr>
<tr>
<td>LDAP over SSL</td>
<td>TCP</td>
<td>636</td>
</tr>
<tr>
<td>Global catalog LDAP</td>
<td>TCP</td>
<td>3268</td>
</tr>
<tr>
<td>Global catalog LDAP over SSL</td>
<td>TCP</td>
<td>3269</td>
</tr>
<tr>
<td>Kerberos</td>
<td>TCP, UDP</td>
<td>88</td>
</tr>
<tr>
<td>RPC endpoint mapper</td>
<td>TCP, UDP</td>
<td>135</td>
</tr>
<tr>
<td>NetBIOS name service</td>
<td>TCP, UDP</td>
<td>137</td>
</tr>
<tr>
<td>NetBIOS datagram service</td>
<td>UDP</td>
<td>138</td>
</tr>
<tr>
<td>NetBIOS session service</td>
<td>TCP</td>
<td>139</td>
</tr>
<tr>
<td>SMB over IP (Microsoft-DS)</td>
<td>TCP, UDP</td>
<td>445</td>
</tr>
<tr>
<td>WINS resolution</td>
<td>TCP, UDP</td>
<td>1512</td>
</tr>
<tr>
<td>WINS replication</td>
<td>TCP, UDP</td>
<td>42</td>
</tr>
</tbody>
</table>

Create ingress rules on the Production - Active Directory security list to allow the required port communication into the new Active Directory subnets (these rules must exist to allow traffic between the two domain controller subnets).
Create Subnets

As mentioned previously, you need at least two private subnets (a third subnet in the third availability domain can be used for extra availability of the Active Directory environment).

Create the following subnets:

<table>
<thead>
<tr>
<th>Name</th>
<th>Availability Domain</th>
<th>CIDR Block</th>
<th>Route Table</th>
<th>Security Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production - Admin - PHX-AD-1</td>
<td>PHX-AD-1</td>
<td>10.0.10.0/24</td>
<td>Production - Active Directory - NAT</td>
<td>Production - Active Directory</td>
</tr>
<tr>
<td>Production - Admin - PHX-AD-2</td>
<td>PHX-AD-2</td>
<td>10.0.20.0/24</td>
<td>Production - Active Directory - NAT</td>
<td>Production - Active Directory</td>
</tr>
<tr>
<td>Production - Application - PHX-AD-2</td>
<td>PHX-AD-2</td>
<td>10.0.100.0/24</td>
<td>Production - Active Directory - NAT</td>
<td>Production - Active Directory</td>
</tr>
</tbody>
</table>

Creating a Bastion Host

A bastion host is used to access the Active Directory environment. This secures RDP sessions by tunneling them through an SSH tunnel. For more information about bastion hosts, see the Bastion Hosts: Protected Access for Virtual Cloud Networks white paper.

Create a bastion host with the following details:

<table>
<thead>
<tr>
<th>Name</th>
<th>Image</th>
<th>Shape</th>
<th>Availability Domain</th>
<th>Subnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bastion</td>
<td>Oracle Linux 7.5</td>
<td>VM.Standard2.1</td>
<td>PHX-AD-1</td>
<td>Public Subnet PHX-AD-1</td>
</tr>
</tbody>
</table>

Creating the Windows Instances

The example in this white paper uses three Windows Server 2016 instances. Two are used for the Active Directory domain controllers, and the third is joined to the domain as a new host. Use the following properties when you create the instances in the following section. (The shape used in this paper is a recommendation; scale it up or down as needed).
<table>
<thead>
<tr>
<th>Name</th>
<th>Image</th>
<th>Shape</th>
<th>Availability Domain</th>
<th>Subnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS16WAD3001</td>
<td>Windows Server 2016 Standard VM</td>
<td>VM.Standard2.1</td>
<td>PHX-AD-1</td>
<td>Production - Admin - PHX-AD-1</td>
</tr>
</tbody>
</table>

For each instance, note the RFC1918 IP addresses:

<table>
<thead>
<tr>
<th>Instance</th>
<th>RFC1918 IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-1</td>
<td>10.0.10.2</td>
</tr>
<tr>
<td>DC-2</td>
<td>10.0.20.2</td>
</tr>
<tr>
<td>Test-SRV</td>
<td>10.0.100.2</td>
</tr>
</tbody>
</table>

Configuring the Forest and Domain Controllers

You can create your initial domain controller in several different ways. This paper uses Microsoft PowerShell integrated with Cloudbase Init to reduce the amount of manual interaction with the Active Directory setup. The scripts provided in the appendices install the necessary Windows Server features, such as the .NET Framework, Active Directory Domain Services, and the DNS server components. Four PowerShell scripts are used to create this environment:

- Appendix A: ActiveDirectoryInit.ps1: Create the forest and promote the server to an Active Directory domain controller.
- Appendix B: ActiveDirectoryInit2.ps1: Build the second host and promote it to be the replica domain controller.
- Appendix C: AddComputer.ps1: Prepare the domain for a new computer join.
- Appendix D: NewComputer.ps1: Join a Windows Server to the domain at launch time.

This paper uses the Oracle Cloud Infrastructure Console to demonstrate how to create the compute instances. You need the following information:

- Your domain administrator password. A best practice is to ensure that you change your domain administrator password immediately after you create the domain controllers.
• The name of the domain that you are about to create.
• A one-time password that you will use when joining new computers to the domain.

Create the Primary Domain Controller

1. In the Oracle Cloud Infrastructure Console, go to the Compute section and click Create Instance.

2. Provide a name for the instance (WS16WAD3001) and select the availability domain (PHX-AD-1).
3. Choose the operating system (Windows Server 2016 Standard) and image version.

![Image of Create Compute Instance with Windows Server 2016 Standard selected]

4. Select the instance type (virtual machine) and the instance shape (VM.Standard2.1).

![Image of Instance Type and Shape Selection]

**Note:** You can choose a larger boot volume size or encrypt the boot volume via the Key Management service. This white paper doesn't address this function.
5. Configure your network connection.

Best Practice: Ensure that your new domain controllers are in the private subnet.

6. Under **Advanced Options**, select the **Management** view, and then choose the compartment and fault domain.
7. In the **User Data** section, select **Paste cloud-init script** and add the script to create the domain controller. Copy the **ActiveDirectoryInit.ps1** script from Appendix A and paste it in the text box:

```powershell
#ps1_synative

# Title: ActiveDirectoryInit.ps1
# Version & Date: V1 31 Oct 2018
# Creator: john.s.parker@oracle.com
#
# Warning: This script is a representation of how to use Powershell to create an Active Directory Domain controller

Checks: The script installs the following Windows features:
- .NET Framework
- Active Directory Domain Services
- Active Directory Administrative Center
- DNS Server Tools

8. Click **Create**.

The script takes approximately 20 minutes to complete the installation of the Windows features and the Active Directory tools.

You can log in and monitor the progress by viewing the **stage1.txt** log at **C:\DomainJoin**. The log should show **Success = True** for .NET Framework, Active Directory Domain Services, Active Directory Administrative Center, and DNS Server Tools.
9. After the first reboot, log in to the host with the **domain administrator** account to execute the last script with the RunOnce script. The first login with the domain administrator account starts the RunOnce script and provides you a reference for when the entire process will be complete.

After the RunOnce script completes, the instance restarts automatically as part of the process.
10. Log back in and check the logs to ensure that there are no errors. The logs are
stage1.txt and stage2.txt located in C:\DomainJoin.

For success, stage2.txt should have Warnings but no Errors.
11. Verify that the domain has been successfully created by opening the Start menu and selecting Windows Administrative Tools > Active Directory Users and Computers.

Now you have the first domain controller in the new Active Directory forest. The new forest is ready for configuration that is not covered in this paper, such as group policies, more domain trusts, and DNS configurations.

Add a Second Domain Controller

Repeat steps 1–6 in the previous section to create a backup domain controller. Make the appropriate changes in the name of the instance and in setting the appropriate availability domain and the correct fault domain to ensure that you have proper redundancy for your domain. The next series of steps use the script from Appendix B.

**Best Practice:** To ensure best availability, we recommend that you deploy across multiple availability domains, or fault domain within one availability domain.

1. Under Advanced Options, in the User Data section, select Paste cloud-init script. Copy the ActiveDirectorInit2.ps1 script from Appendix B and paste it in the text box. In the script, adjust the $DnsServer variable to the private IP address for the domain controller that you just created.

$$
$DnsServer = 'Private IP for Current DC'
$$
2. Click Create.

You can monitor the progress by watching the Domain Controllers section in the current domain controller under Active Directory Users and Computers. It takes approximately 20 minutes to install all of the necessary Windows Server features and add the server to the domain.

3. After the final reboot of the host, check the installation by logging in with the domain administrator password. Check the C:\DomainJoin\stage3.txt log. Also verify that the Active Directory tools are loaded on the host.

The stage3.txt file should not have any errors and should show Success = True for the .NET Framework, Active Directory Domain Services, Active Directory Administrative Center, and DNS Server Tools. You should see only Warnings and no Errors, Success for the DCPromo, and that a restart is required. The script will reboot your host after five minutes.
4. Run `Get-ADForest` from the PowerShell command prompt to verify communication with the domain.

The output should show the correct domains and name for your Active Directory domain and forest.
5. After the domain controllers are installed, change your domain administrator password by using the `Set-ADAccountPassword` command. Ensure that you use a strong password that meets the password standards of your organization.

You now have a primary Active Directory domain controller and a secondary domain controller to facilitate a complete Active Directory forest in your Oracle Cloud Infrastructure tenancy. Ensure that you don’t skip step 5, which can create a security threat to your Active Directory domain. You should also add any of your group policies and users that you require in your environment.

Add a New Host

Now you can add new hosts to your domain. There are many ways to join new computers to the new Active Directory domain. This paper uses a Microsoft PowerShell example for using a predefined computer credential to add the new host to the domain. The Microsoft website has more examples that you can use to add hosts to your domain.

**Best Practice:** We recommend that you use the Microsoft PowerShell example of using a predefined computer credential to add new hosts to your domain.
1. Log in to your primary domain controller with a domain administrator account.

2. Open a PowerShell window and run the `AddComputer.ps1` script from Appendix C.

   The script executes the `New-ADComputer` command to add the new computer record in the domain controller.

   ```powershell
   New-ADComputer -Name $NewComputerName -AccountPassword (ConvertTo-SecureString -String 'TemJoinPass' -AsPlainText -Force)
   ``

3. Verify that the computer was added by checking Computers section of Active Directory Users and Computers.

4. Sign in to the Oracle Cloud Infrastructure Console and create the Windows Server 2016 instance by following steps 1–6 in the Create the Primary Domain Controller section of this document. Use the appropriate name and place it in the correct availability and fault domains and pick a subnet and shape that are correct for your needs.
5. Click **Advanced Options** and select **Paste cloud-init script** in the **User Data** section. Copy the **NewComputer.ps1** script from Appendix D and paste it in the text box.

![Cloud-init script](image)

6. In the script, update the `$DnsServer` variable with the correct IP address for your domain controller.

```powershell
$DnsServer = '192.168.0.1'
$DomainToJoin = 'bss.corp'

Set-DnsClientServerAddress -InterfaceAlias Ethernet -ServerAddresses $DnsServer
```

7. Click **Create**.

After the new computer has joined the domain, it automatically reboots. The script contains a 5-minute sleep to ensure that domain replication has occurred.

8. Log in to the new host and check the **C:\DomainJoin\Stage4.txt** log for errors.

![Stage4.txt log](image)
You can also check the computer properties on the domain controller in the Active Directory Users and Computers administrative application.

Now you have a fully functioning Active Directory domain where you can add new computers and expand your domain to fit the needs of your organization.

**Conclusion**

This white paper walks you through the core steps of building an Active Directory domain, using redundant domain controllers that are in separate Oracle Cloud Infrastructure availability or fault domains and logical subnets to ensure that you are building fault tolerance into your infrastructure. You can build more application servers to add to the domain. These are the building blocks of your Active Directory domain. It's up to you to build your group policies and ensure that your domain meets the standards of your organization.

Oracle Cloud Infrastructure enables you to deploy the building blocks of your Active Directory domain and support any expansion to your Active Directory forests that your organization requires to meet the demanding needs of today’s computing environments.
References

- Oracle Cloud Infrastructure documentation
- Oracle Cloud Infrastructure regions and availability domains
- Creating an Oracle Cloud Infrastructure virtual cloud network
- Oracle Cloud Infrastructure bastion hosts
- Adding Active Directory Users Guide
- Active Directory Domain Services
- Active Directory Domain Services Features
- Active Directory PowerShell Commands
- RunOnce Registry Key
- Microsoft PowerShell Documentation

Appendix A: ActiveDirectoryInit.ps1

```powershell
#ps1_sysnative
########
# Title: ActiveDirectoryInit.ps1
# Version & Date: v1 31 Oct 2018
# Creator: john.s.parker@oracle.com
# Warning: This script is a representation of how to use PowerShell to create an Active Directory Domain controller
# and build the first DC in a new Active Directory Forest. This script creates and uses the domain administrator
# account. There are potential for mistakes and destructive actions. USE AT YOUR OWN RISK!!
# This is the first script in the Active Directory Series that will establish the first
# Active Directory Domain Controller. This script will unlock the local administrator account
# this account will become the Domain Administrator.
#
# This script will install the required Windows features that are required for Active
# Directory. This script will install the prerequisites for Active Directory, then create a
# one-time executed script on the login after the reboot. This script will reboot the host
# a total of 2 times to add the windows features, create the forest, and promote the domain controller.
#
# Variables for this script
# $password - this is the password necessary to unlock the administrator account
# - and is used in both runs of the AD build.
# $FullDomainName - the full name for the AD Domain example: CESA.corp
# $ShortDomainName - the short name for the AD Domain example: CESA
# $encrypted - you must encrypt the password so that you can use it as you set up your domain controller
# $addsmodule02 - this is the text block that will be used to create the RunOnceScript that will finish the installation
# - of the domain controller.
# $RunOnceKey - this is the key that will create the command to complete the installation of the domain controller.
Try {
    # Start the logging in the C:\DomainJoin directory
    Start-Transcript -Path "C:\DomainJoin\stage1.txt"
    # Global Variables
```

$password="P@ssw0rd123!!"
# Set the Administrator Password and activate the Domain Admin Account
# net user Administrator $password /logonpasswordchg:no /active:yes
# Install the Windows features necessary for Active Directory
# Features
#   - .NET Core
#   - Active Directory Domain Services
#   - Remote Active Directory Services
#   - DNS Services
# Install-WindowsFeature NET-Framework-Core
Install-WindowsFeature AD-Domain-Services
Install-WindowsFeature RSAT-ADDS
Install-WindowsFeature RSAT-DNS-Server
# Create text block for the new script that will be ran once on reboot
# $addsmodule02 = @"" #ps1_sysnative
Try {
    Start-Transcript -Path C:\DomainJoin\stage2.txt
    ´$password = "P@ssw0rd123!!"´
    ´$FullDomainName = "cesa.corp"´
    ´$ShortDomainName = "CESA"´
    ´$encrypted = ConvertTo-SecureString `$password -AsPlainText -Force´
    Import-Module ADDSDeployment
    Install-ADDSForest -CreateDnsDelegation:`$false` -DatabasePath "C:\Windows\NTDS" ` -DomainMode "WinThreshold" ` -DomainName `$FullDomainName ` -DomainNetbiosName `$ShortDomainName ` -ForestMode "WinThreshold" ` -InstallDns:`$true` -LogPath "C:\Windows\NTDS" ` -NoRebootOnCompletion:`$false` -SysvolPath "C:\Windows\SYSVOL" ` -SafeModeAdministratorPassword `$encrypted ` -Force:`$true`
    Catch {
        Write-Host $_
    }
    Finally {
        Stop-Transcript
    }
} "@Add-Content -Path "C:\DomainJoin\ADDCmodule2.ps1" -Value $addsmodule02
# Adding the run once job
#$RunOnceKey = "HKLM:\Software\Microsoft\Windows\CurrentVersion\RunOnce"
set-itemproperty $RunOnceKey "NextRun" ("C:\Windows\System32\WindowsPowerShell\v1.0\PowerShell.exe -executionPolicy Unrestricted -File` + "C:\DomainJoin\ADDCmodule2.ps1")
# End the logging
# Catch {
#    Write-Host $_
#} Finally {
#    Stop-Transcript
#} # Last step is to reboot the local host
Appendix B: ActiveDirectoryInit2.ps1

#ps1_sysnative
# Title: ActiveDirectoryInit2.ps1
# Version & Date: v1 31 Oct 2018
# Creator: john.s.parker@oracle.com
# Warning: This script is a representation of how to use PowerShell to create an Active Directory Domain controller and build the first DC in a new Active Directory Forest. This script creates and uses the domain administrator account
# there are potential for mistakes and destructive actions. USE AT YOUR OWN RISK!!
# This is the second script in the Active Directory Series that will establish the second
# Active Directory Domain Controller. This script will unlock the local administrator account.
#
# This script will install the required Windows features that are required for Active
# Directory. This script will install the prerequisites for Active Directory. This script will reboot the host after it has added the
# Windows features installed the Active Directory Services and promoted the domain controller.
#
# Variables for this script
# $password - this is the password necessary to unlock the administrator account
# - and is used in both runs of the AD build.
# $DomainName - this is the full name of the domain that you will be adding the DC
# $DomainUser - this account must have the Domain Admin role
# $EncryptedPass - the encrypted password
# $Credential - the encrypted domain
# $DnsServer - this is the private IP address of the Primary Domain Controller

Try {
    Start-Transcript -Path "C:\DomainJoin\Stage3.txt" -Force
    $Password="P@ssw0rd123!!"
    $DomainName="cesa.corp"
    $DomainUser="cesa\administrator"
    $EncryptedPass = ConvertTo-SecureString $Password -AsPlainText -Force
    $Credential = New-Object -TypeName System.Management.Automation.PSCredential -ArgumentList $DomainUser, $EncryptedPass
    $DnsServer = '192.168.0.1'
    Set-DnsClientServerAddress -InterfaceAlias Ethernet -ServerAddresses $DnsServer
    Install-ADDSDomainController -InstallDns -Credential $Credential -DomainName $DomainName -SafeModeAdministratorPassword $EncryptedPass -Force -NoRebootOnCompletion
Appendix C: AddComputer.ps1

# AddComputer.ps1

# Title: AddComputer.ps1
# Version & Date: v1 31 Oct 2018
# Creator: lawrence.gabriel@oracle.com & john.s.parker@oracle.com
# Warning: This script is a representation of how to use PowerShell to create an Active Directory Domain controller and build the first DC in a new Active Directory Forest. This script creates and uses the domain administrator account.
# There are potential for mistakes and destructive actions. USE AT YOUR OWN RISK!!
# This is the third script in the Active Directory Series that will join a computer to your new Active Directory Domain. This script will create the computer account to the Active Directory Domain. You will need to use an account that has the Add Computer domain role.
# Source:
# From https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.management/add-computer?view=powershell-5.1#examples

Variables for this script

$NewComputerName - this is the name of the new computer that you want to add to your domain

# Run as Administrator on a domain computer.
$NewComputerName = "WS16CN001"
New-ADComputer -Name $NewComputerName -AccountPassword (ConvertTo-SecureString -String 'TempJoinPA$$' -AsPlainText -Force)

Appendix D: NewComputer.ps1

# NewComputer.ps1

# Title: newcomputer.ps1
# Version & Date: v1 31 Oct 2018
# Creator: lawrence.gabriel@oracle.com & john.s.parker@oracle.com
# Warning: This script is a representation of how to use PowerShell to create an Active Directory Domain controller and build the first DC in a new Active Directory Forest. This script creates and uses the domain administrator account.
# There are potential for mistakes and destructive actions. USE AT YOUR OWN RISK!!
# This is the forth script in the Active Directory Series that will join a computer to your new Active Directory Domain. This script will join the newly created host to an Active Directory Domain.

Variables for this script

$DnsServer - this is the private IP address of the Primary Domain Controller
$DnsServer2 - this is the private IP address of the Secondary Domain Controller
$DomainToJoin - this is the full name of the domain you want to join.
$JoinCred - this will be the encrypted credential

source: https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.management/add-computer?view=powershell-5.1#examples
Try {
    Start-Transcript -Path "C:\DomainJoin\Stage4.txt" -Force
    $DnsServer = '192.168.0.1'
    $DnsServer2 = '192.168.0.2'
    $DomainToJoin = 'cesa.corp'
    ############
    # Sets the DNS to the DC.
    ############
    Set-DnsClientServerAddress -InterfaceAlias Ethernet -ServerAddresses ($DnsServer, $DnsServer2)
    ############
    # Build the one time use password
    ############
    $JoinCred = (New-Object pscredential -ArgumentList ([pscustomobject]@{
        UserName = $null
        Password = (ConvertTo-SecureString -String 'TempJoinPA$$' -AsPlainText -Force)[0]
    }))
    Add-Computer -Domain $DomainToJoin -Options UnsecuredJoin,PasswordPass -Credential $JoinCred
} Catch {
    Write-Host $_
} Finally {
    Stop-Transcript
}
############
# This wait is to ensure that the Add-Computer command finishes before the restart.
#
############
start-sleep -s 300
Restart-Computer -ComputerName "localhost" -Force
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Integrated Cloud Applications & Platform Services

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