

# Active Directory Domain Setup Project

## Project Overview

This project provides a comprehensive guide to setting up a Windows Active Directory domain environment. Learn how to configure a domain controller, create organizational units, manage groups, and configure users in a complete Active Directory infrastructure.

## Table of Contents

- Prerequisites
- Network Architecture
- Step-by-Step Implementation
- Screenshots
- Troubleshooting
- Conclusion

## Prerequisites

### Hardware/Software Requirements

- **Server:** Windows Server 2016/2019/2022 (physical or virtual machine)
- **Client Machines:** Windows 8 and Windows XP (physical or virtual machines)
- **RAM:** Minimum 2GB for server, 1GB for clients
- **Storage:** Minimum 40GB for server, 20GB for clients
- **Network:** All devices must be on the same subnet
- **Virtualization Software (if using VMs):** VMware, VirtualBox, or Hyper-V

### Knowledge Prerequisites

- Basic understanding of Windows operating systems
- Familiarity with networking concepts (IP addressing, subnets)
- Understanding of user and group management concepts

## Network Architecture

This project creates a basic Active Directory domain with the following structure:

Domain Controller (Windows Server)

```
└─ Domain: example.local
    └─ Organizational Units (OUs)
        |   └─ HR
        |   └─ IT
        └─ Audit
    └─ Groups (within each OU)
        |   └─ HR-Employees
        |   └─ IT-Staff
        └─ Audit-Team
    └─ Users (assigned to respective groups)
```

### **Network Configuration:**

- **Subnet:** X.X.X.X
- **Server IP:** X.X.X.X (static)
- **Client IPs:** X.X.X.X (static or DHCP)
- **DNS Server:** Points to Domain Controller (X.X.X.X)

## **Step-by-Step Implementation**

### **Step 1: Configure the VLAN and Make All Devices on the Same Subnet**

A VLAN (Virtual Local Area Network) ensures all devices can communicate on the same network segment.

#### **Configure Network Settings on Server**

##### **1. Open Network Settings:**

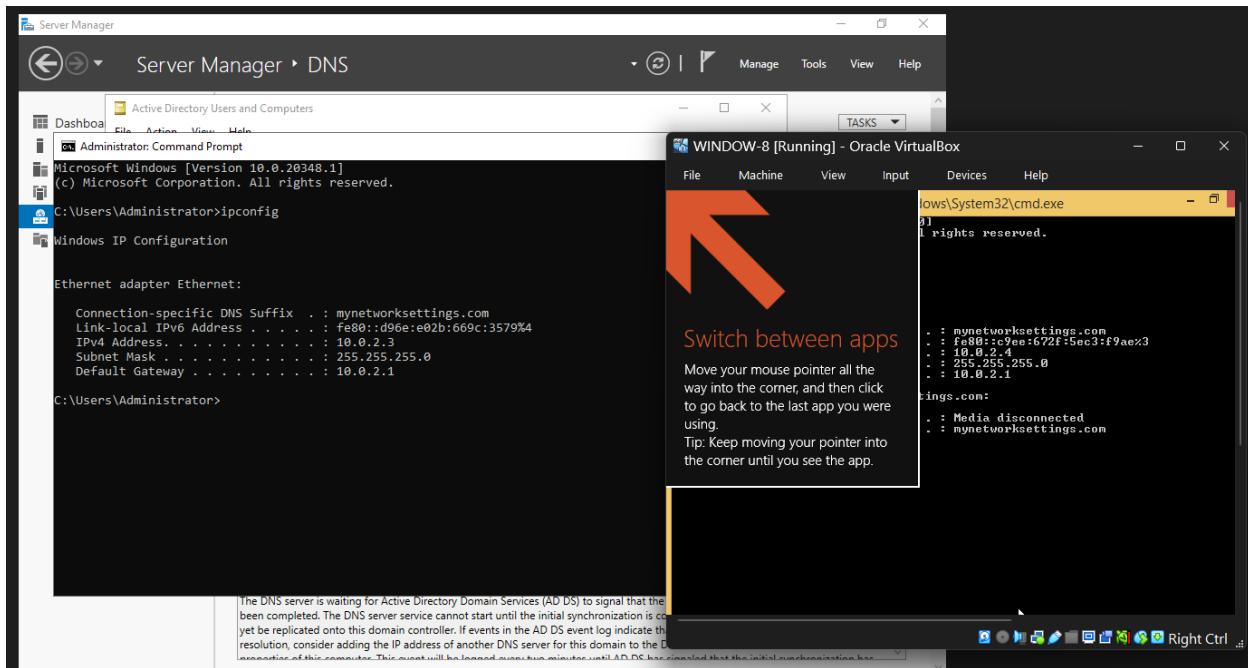
- Right-click on **Network** icon in system tray
- Select **Open Network and Sharing Center**

- Click **Change adapter settings**
- 2. **Configure Static IP for Server:**
  - Right-click on your network adapter
  - Select **Properties**
  - Select **Internet Protocol Version 4 (TCP/IPv4)**
  - Click **Properties**
  - Select **Use the following IP address**
  - Enter the following:
    - **IP address:** X.X.X.X
    - **Subnet mask:** 255.255.255.0
    - **Default gateway:** X.X.X.X
    - **Preferred DNS server:** 127.0.0.1 (will point to itself after DC promotion)
  - Click **OK**
- Capture the server's IPv4 properties window with static IP configured

## Configure Network Settings on Windows 8 Client

1. **Open Network Settings:**
  - Press Windows + X
  - Select **Network Connections**
  - Click **Change adapter settings**
2. **Configure Static IP:**
  - Right-click on network adapter → **Properties**
  - Select **Internet Protocol Version 4 (TCP/IPv4)** → **Properties**

- Enter the following:
  - **IP address:** X.X.X.X
  - **Subnet mask:** 255.255.255.0
  - **Default gateway:** X.X.X.X
  - **Preferred DNS server:** X.X.X.X (points to DC)
- Click **OK**

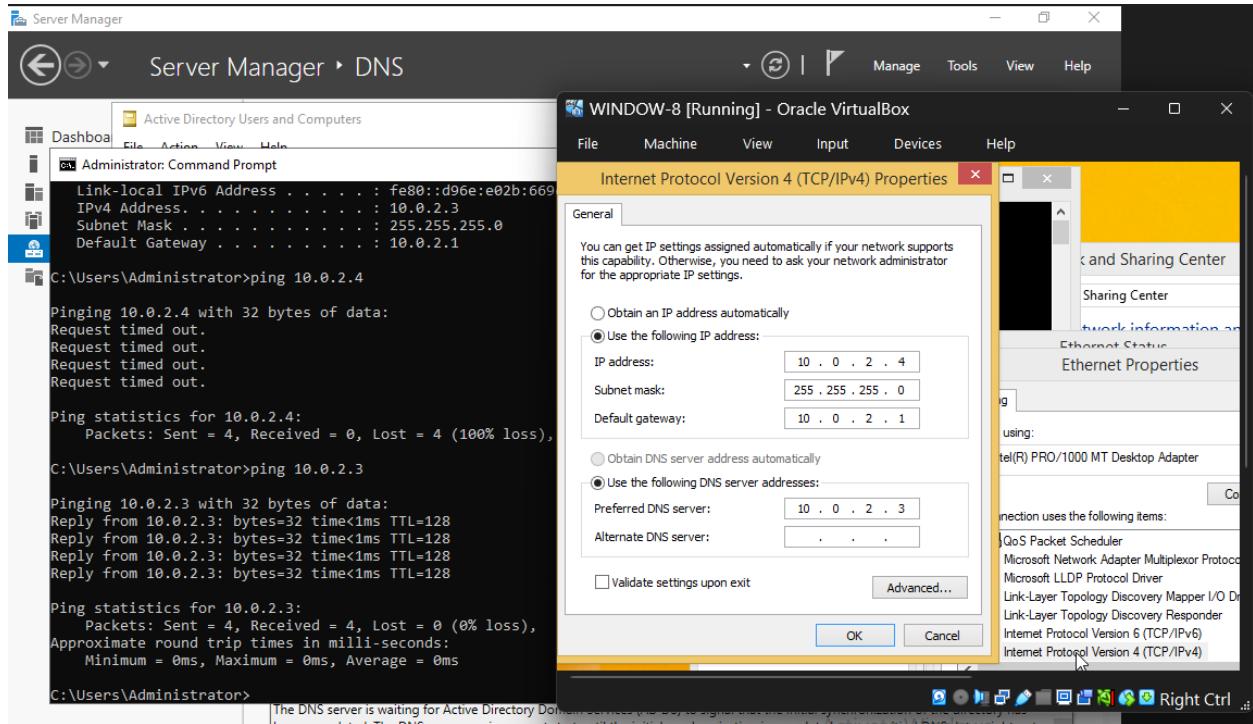


- Capture the Windows 8 IPv4 properties window

## Configure Network Settings on Windows XP Client

1. Open Network Connections:
  - Go to **Start** → **Control Panel**
  - Double-click **Network Connections**
  - Right-click **Local Area Connection** → **Properties**
2. Configure Static IP:

- o Select **Internet Protocol (TCP/IP) → Properties**
- o Enter the following:
  - **IP address:** X.X.X.X
  - **Subnet mask:** 255.255.255.0
  - **Default gateway:** X.X.X.X
  - **Preferred DNS server:** X.X..X (points to DC)
- o Click **OK**



- Capture the Windows XP TCP/IP properties window

## Verify Network Connectivity

1. **On the Server, open Command Prompt and test:**

cmd

ping 10.0.2.4

ping 10.0.2.4

## 2. On Windows 8 client:

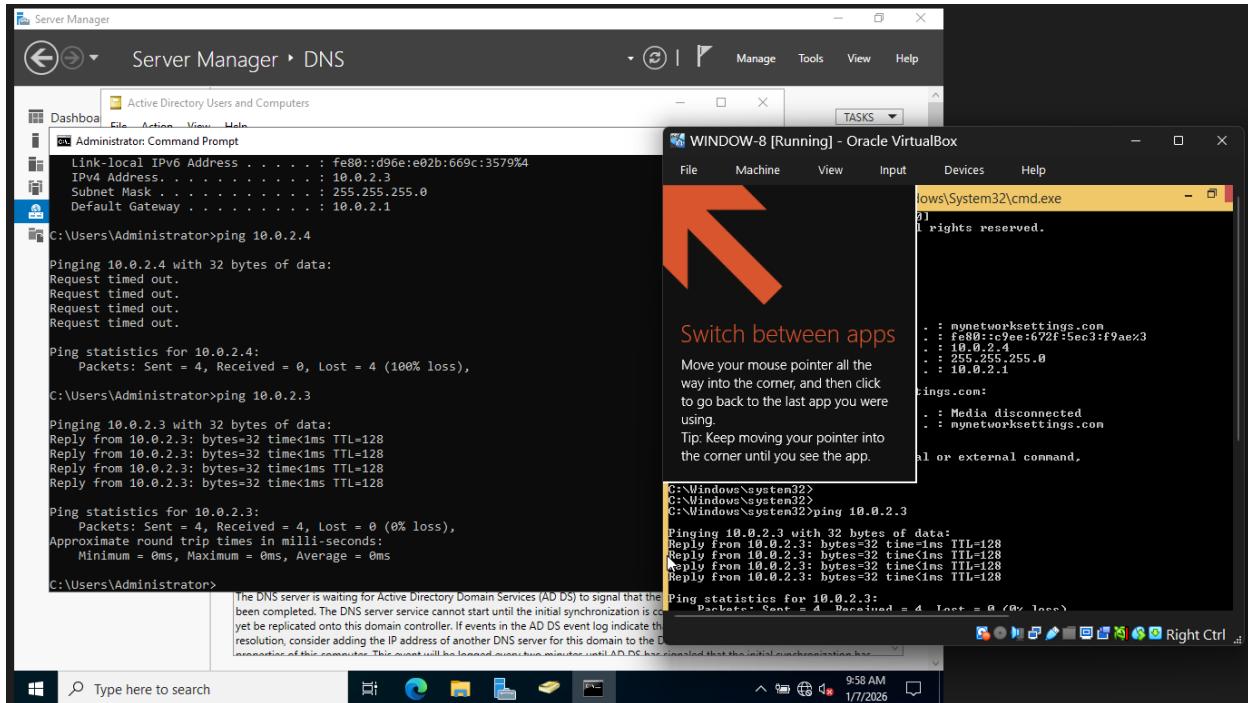
cmd10.0.2.3

ping 10.0.2.3

## 3. On Windows XP client:

cmd

ping X.X.X.X



- Capture successful ping results from server to clients

### ⚠ Important Notes:

- All devices must be on the same subnet (X.X.X.X/24)
- Disable firewalls temporarily for testing if ping fails

- Ensure all network adapters are enabled

## **Step 2: Start All the Devices Including the Server**

This step ensures all machines are powered on and ready for configuration.

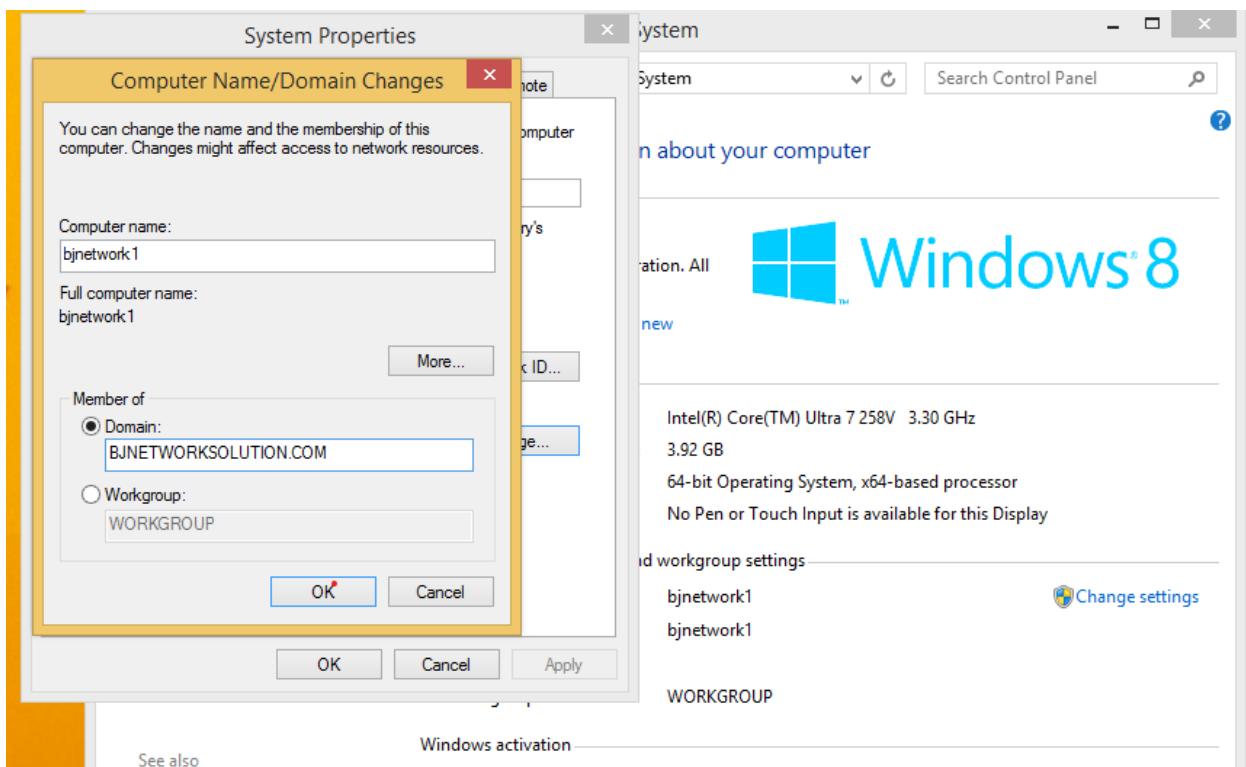
### **Starting the Server**

#### **1. Power on the Windows Server:**

- Boot the server machine
- Log in with Administrator credentials
- Wait for the desktop to fully load

#### **2. Verify Server is Running:**

- Check that Server Manager launches automatically
- Verify network connectivity is active
- Ensure all services are running

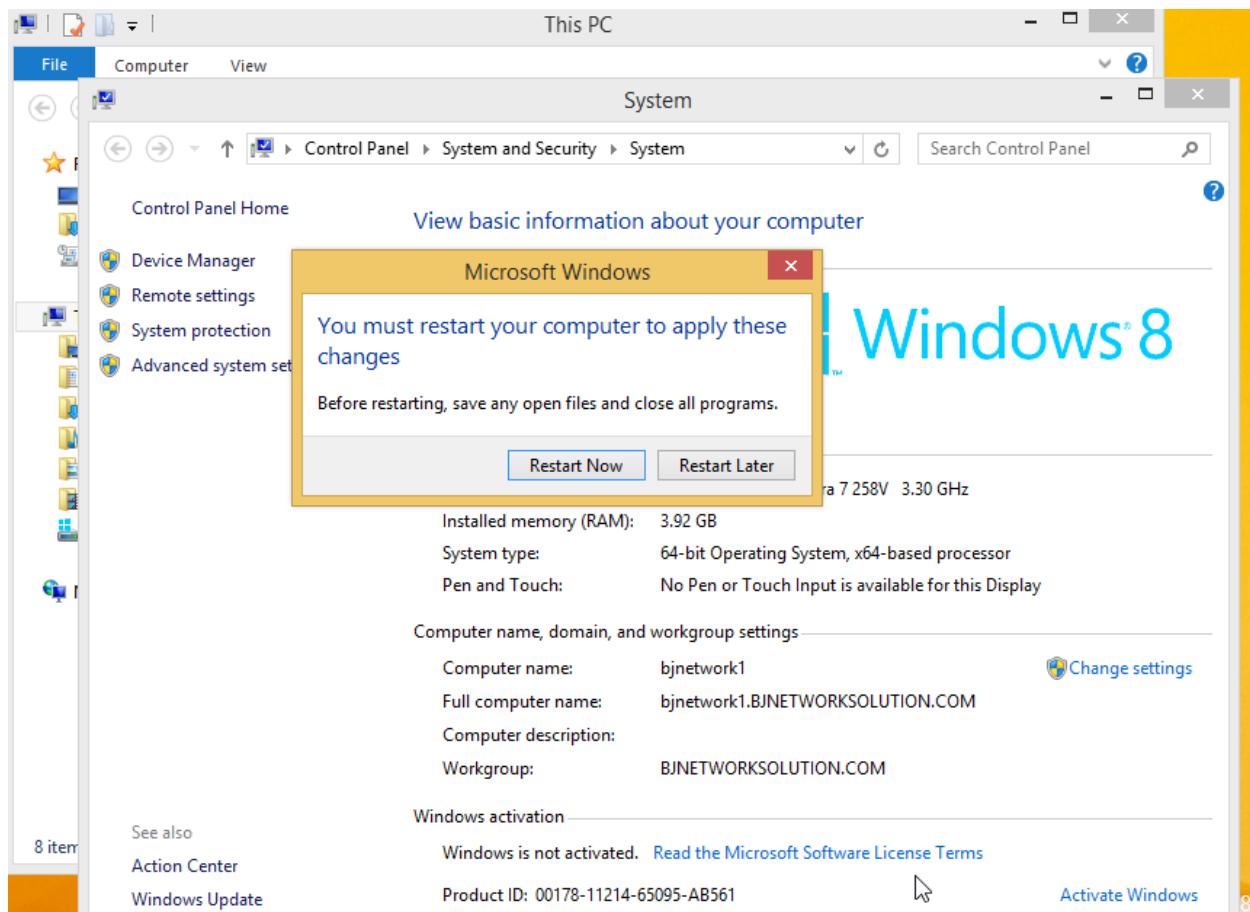


- Capture the Windows Server desktop with Server Manager open

## Starting Client Machines

### 1. Power on Windows 8 Client:

- Boot the machine
- Log in with local administrator account
- Verify desktop loads successfully



- Capture the Windows 8 desktop

## 2. Power on Windows XP Client:

- Boot the machine
- Log in with local administrator account
- Verify desktop loads successfully

## Verify All Devices are Online

### 1. Create a checklist:

- Server is powered on and logged in
- Windows 8 client is powered on and logged in
- Windows XP client is powered on and logged in
- All devices can ping each other
- Server Manager is running on server

## Step 3: On the Server, Start the Server Dashboard

Server Manager is the central management console for Windows Server.

### Launch Server Manager

#### 1. Open Server Manager:

- Server Manager typically opens automatically on login
- If not, click **Start** → Type "Server Manager" → Press Enter
- Or click the Server Manager icon on the taskbar

#### 2. Navigate Server Manager Dashboard:

- Review the dashboard overview
- Note the server's current roles and features

- Check for any configuration warnings
- Capture the main Server Manager dashboard view

## **Explore Server Manager Sections**

### **1. Dashboard Tab:**

- Shows quick status of all server roles
- Displays configuration warnings
- Provides quick access to management tasks

### **2. Local Server Tab:**

- Shows computer name, domain, IP address
- Displays Windows Firewall status
- Shows Remote Desktop settings

## **Key Points:**

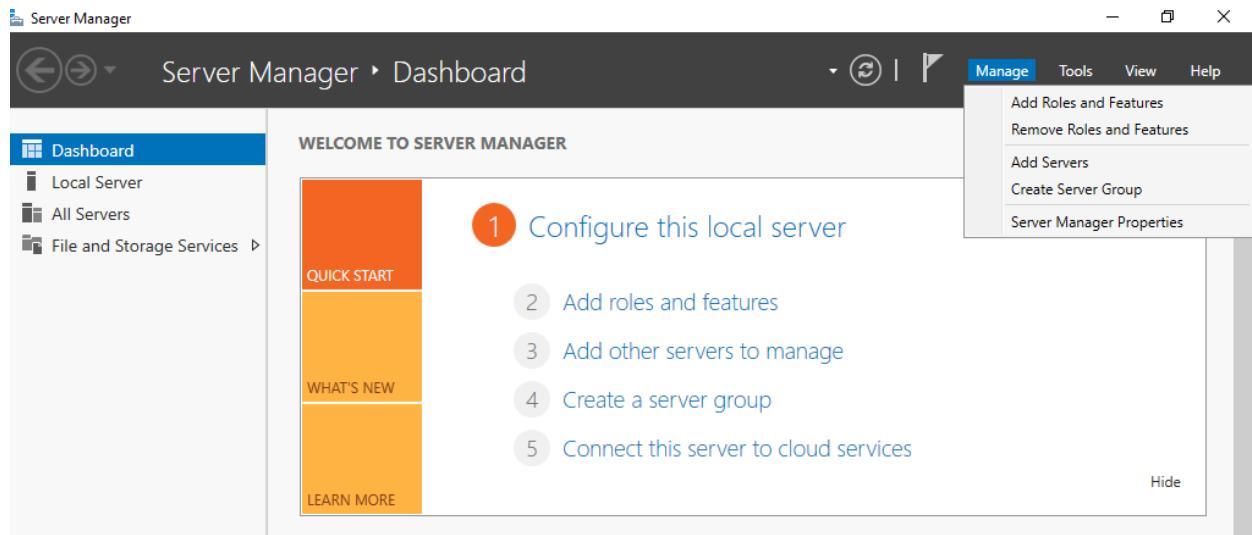
- Server Manager is the central hub for all server administration
- You'll use this dashboard to install Active Directory
- Keep Server Manager open throughout the configuration process

## **Step 4: Install Active Directory**

Active Directory Domain Services (AD DS) is the foundation of domain management.

### **Install Active Directory Domain Services Role**

1. In Server Manager, click "Manage" → "Add Roles and Features"



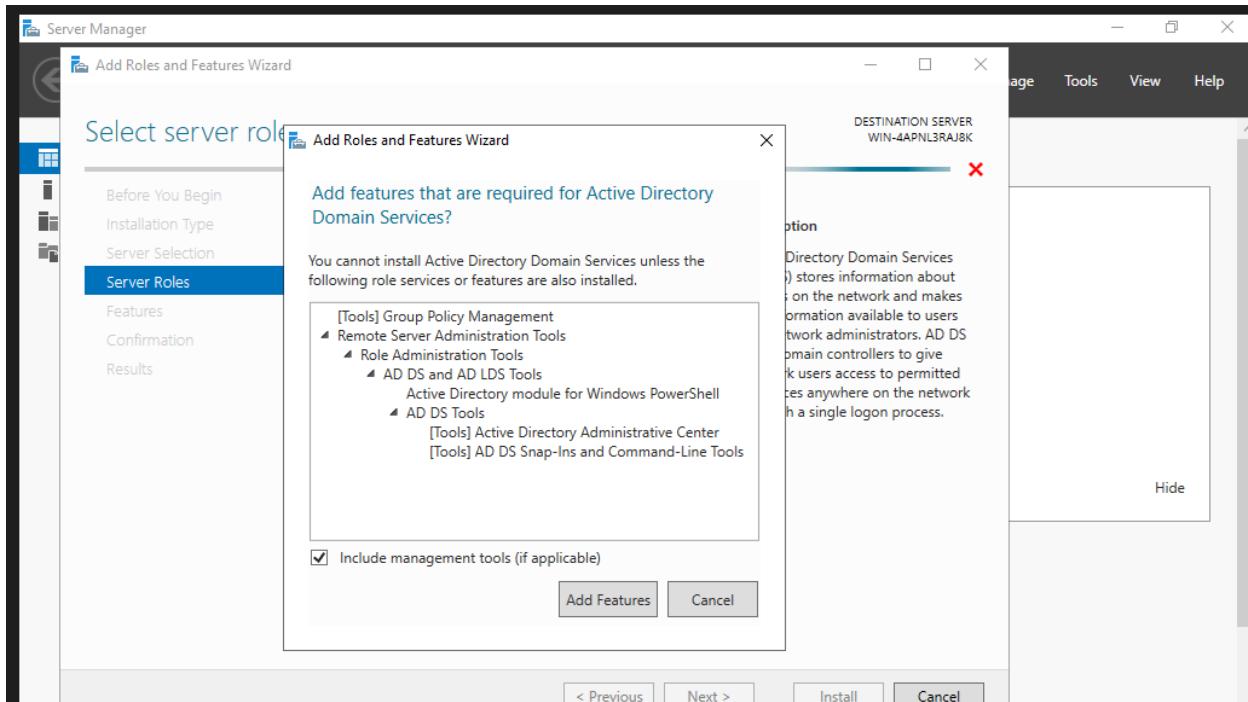
- Capture the "Add Roles and Features" wizard start screen

**2. Before You Begin:**

- Read the information
- Click **Next**

**3. Installation Type:**

- Select **Role-based or feature-based installation**
- Click **Next**



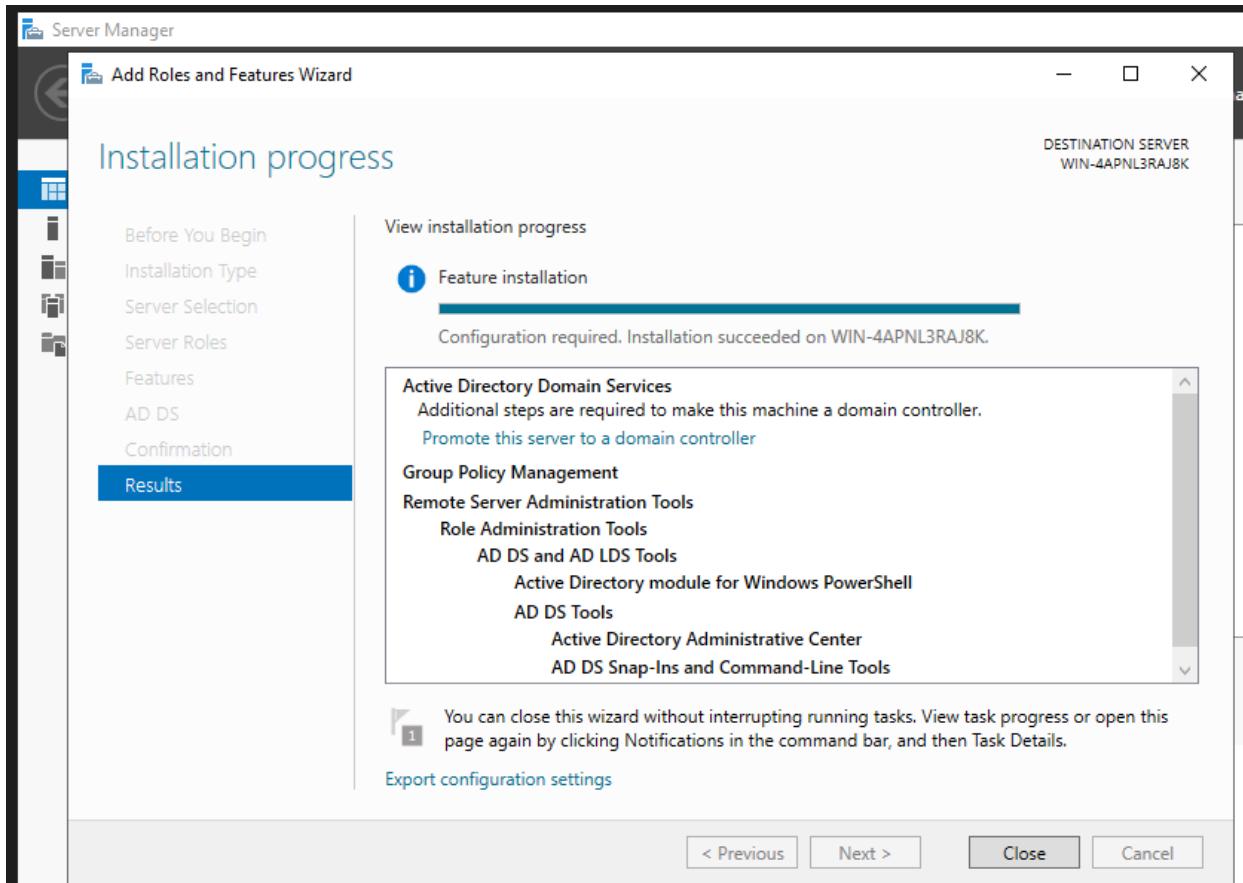
- Capture the installation type selection screen

#### 4. **Server Selection:**

- Select your server from the server pool
- Click **Next**

#### 5. **Server Roles:**

- Check **Active Directory Domain Services**
- A popup will appear asking to add required features
- Click **Add Features**
- Click **Next**



- Capture the server roles page with AD DS selected

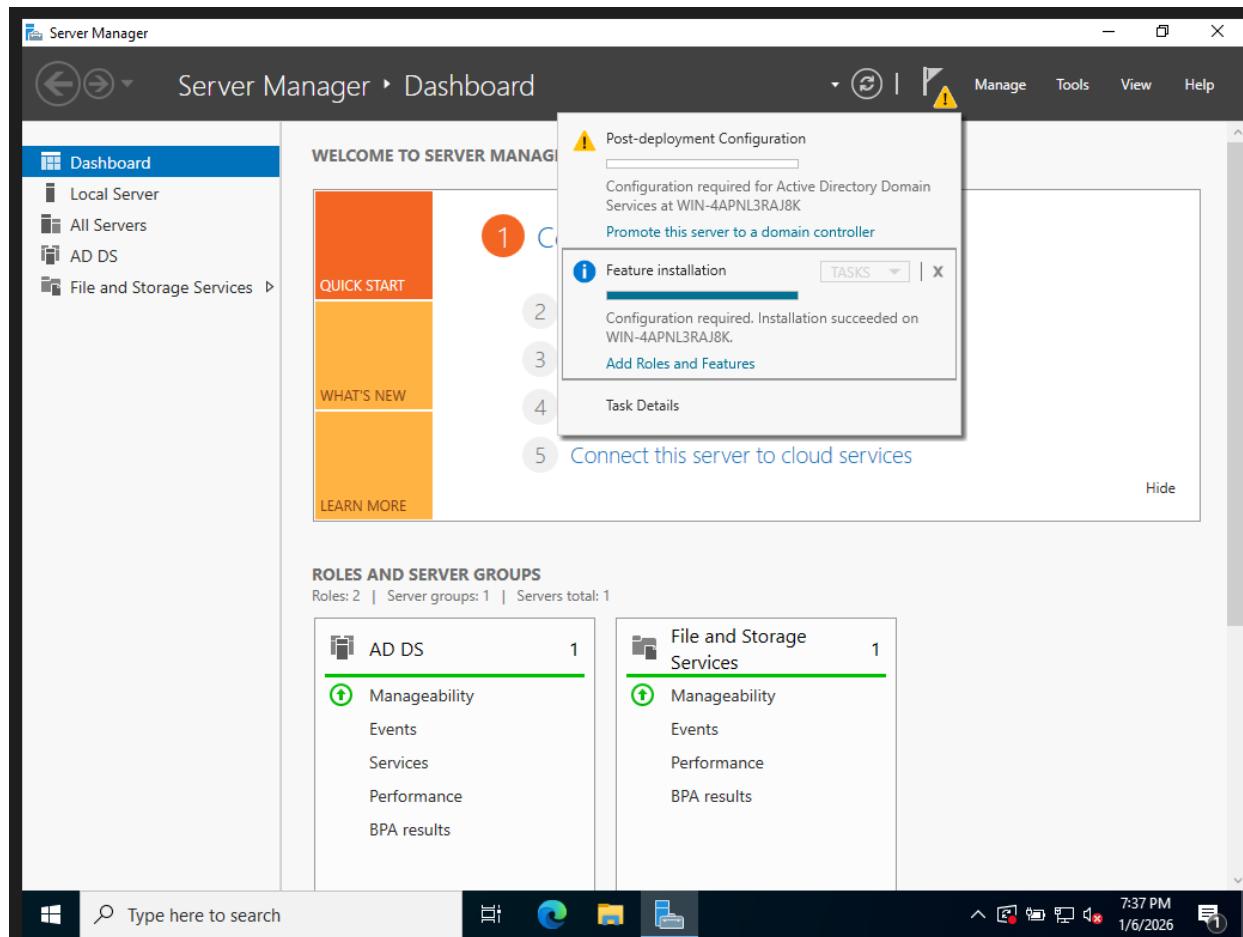
## 6. **Features:**

- Leave default selections
- Click **Next**

## 7. **AD DS:**

- Read the information about AD DS

- o Click Next



- Capture the AD DS information page

## 8. Confirmation:

- o Review your selections
- o Check **Restart the destination server automatically if required** (optional)
- o Click **Install**

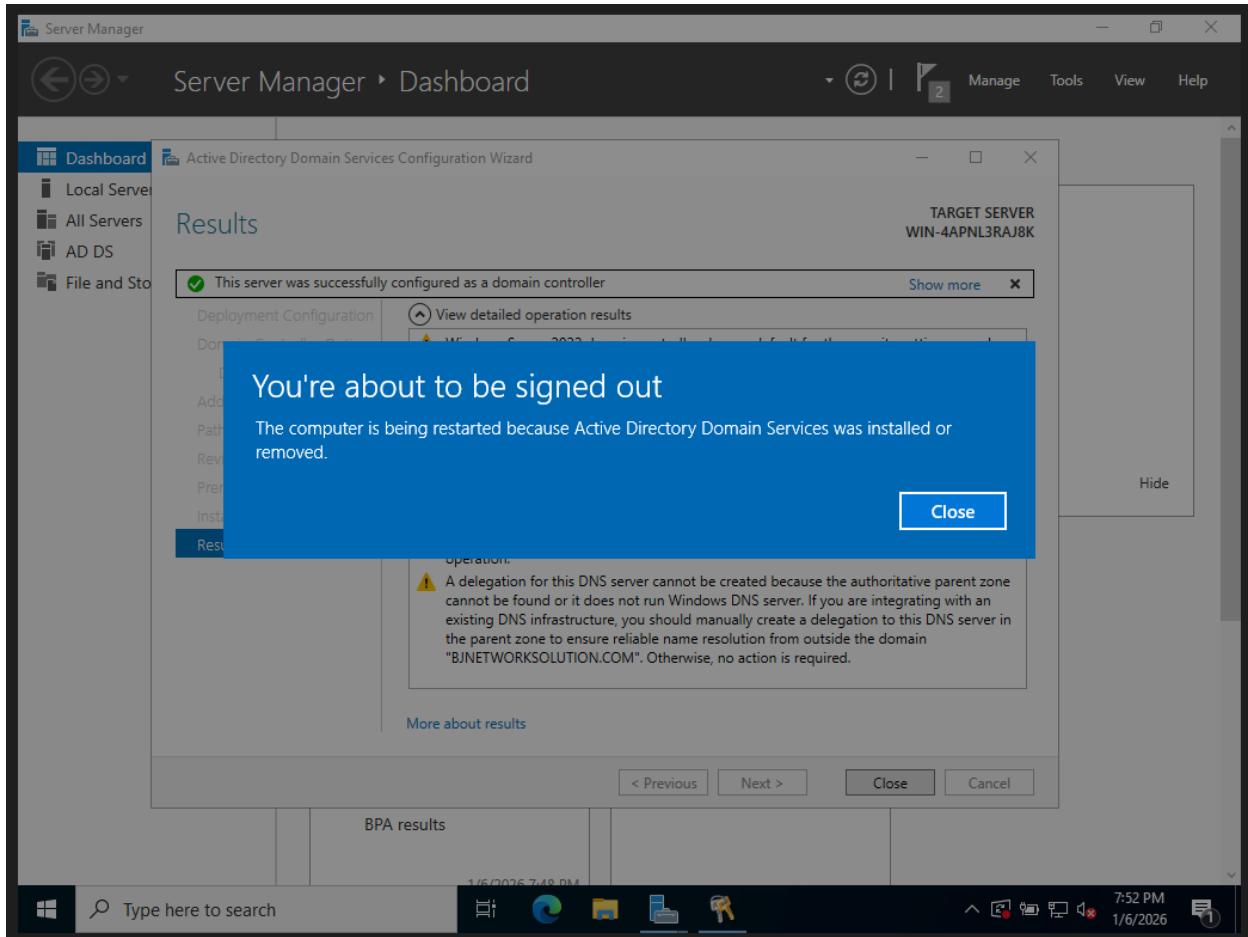
**Screenshot Location:** screenshots/04-installation-progress.png

- Capture the installation progress window

## 9. Wait for Installation:

- o The installation may take several minutes

- o Do not close the window
- o Wait for "Installation succeeded" message



- Capture the successful installation message

## 10. Close the wizard

**Important:** Installing AD DS only installs the role; you still need to promote the server to a Domain Controller (next step).

## Step 5: Promote the Active Directory Server to a Domain Controller

After installing AD DS, you must promote the server to become a Domain Controller.

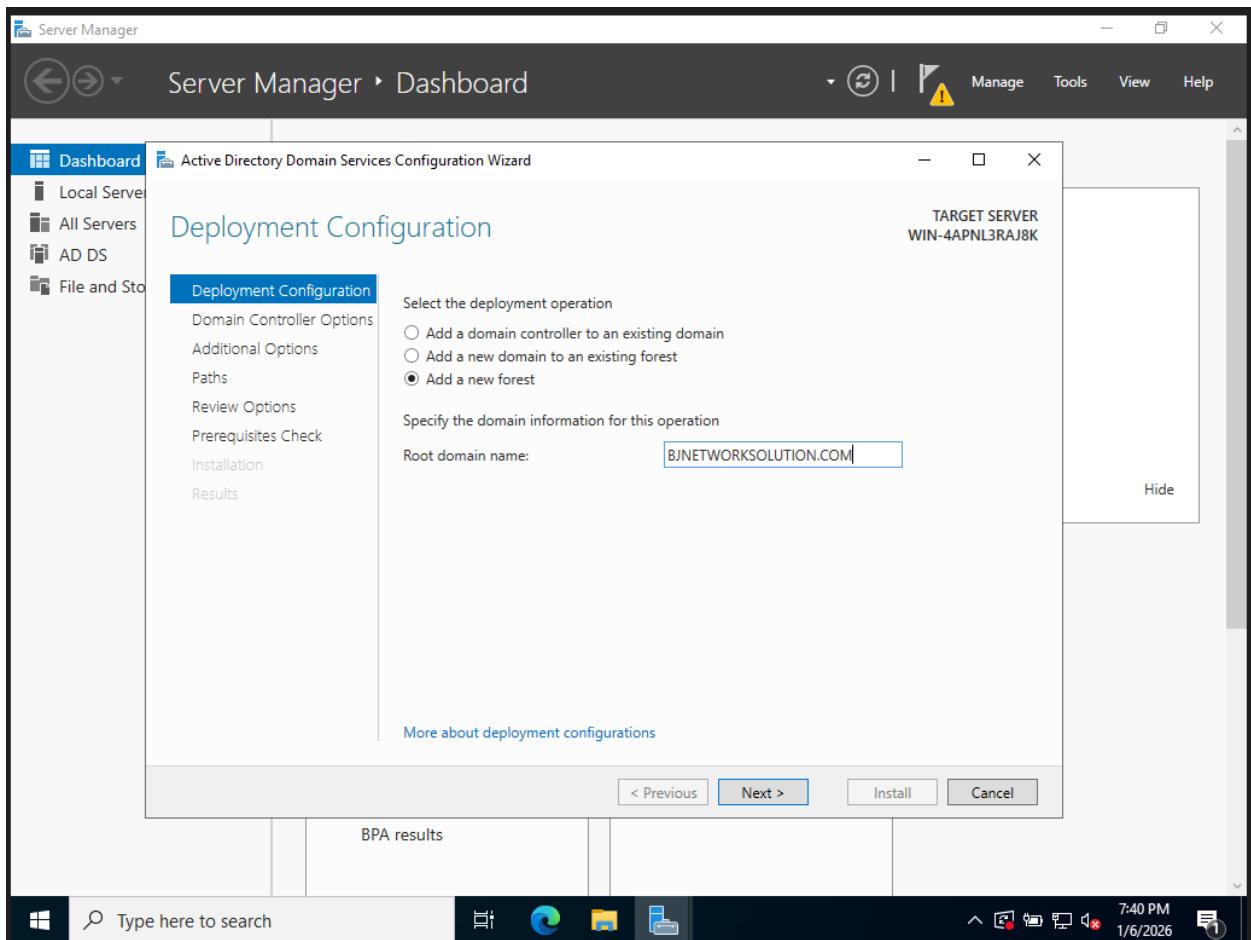
### Configure Active Directory Domain Services

1. In Server Manager, click the notification flag (yellow triangle with exclamation mark)

- o Click **Promote this server to a domain controller**
- Capture the Server Manager notification with promotion link

## 2. Deployment Configuration:

- o Select **Add a new forest**
- o **Root domain name:** Enter your domain name **BJNETWORKSOLUTION.COM**
- o Click **Next**



- Capture the deployment configuration with domain name entered

### 💡 Domain Naming Tips:

- Use **.local** for internal-only domains
- Use a subdomain of your registered domain for production **Bjnetworksolution**

- Avoid using single-label names

3. **Domain Controller Options:**

- **Forest functional level:** Windows Server 2016 (or your server version)
- **Domain functional level:** Windows Server 2016 (or your server version)
- Check **Domain Name System (DNS) server**
- Check **Global Catalog (GC)**
- **Type the Directory Services Restore Mode (DSRM) password**
- Enter a strong password and confirm it
- Click **Next**

- Capture the Domain Controller options page (blur DSRM password)

4. **DNS Options:**

- Warning about DNS delegation may appear (this is normal for new domains)
- Click **Next**

5. **Additional Options:**

- The NetBIOS name will auto-populate
- Click **Next**

- Capture the Additional Options page with NetBIOS name

6. **Paths:**

- Leave default locations for Database, Log files, and SYSVOL
- Or specify custom paths if needed
- Click **Next**

- Capture the Paths configuration page

7. **Review Options:**

- Review all your configuration choices
- Click **View script** to see PowerShell script (optional)
- Click **Next**

- Capture the review options summary

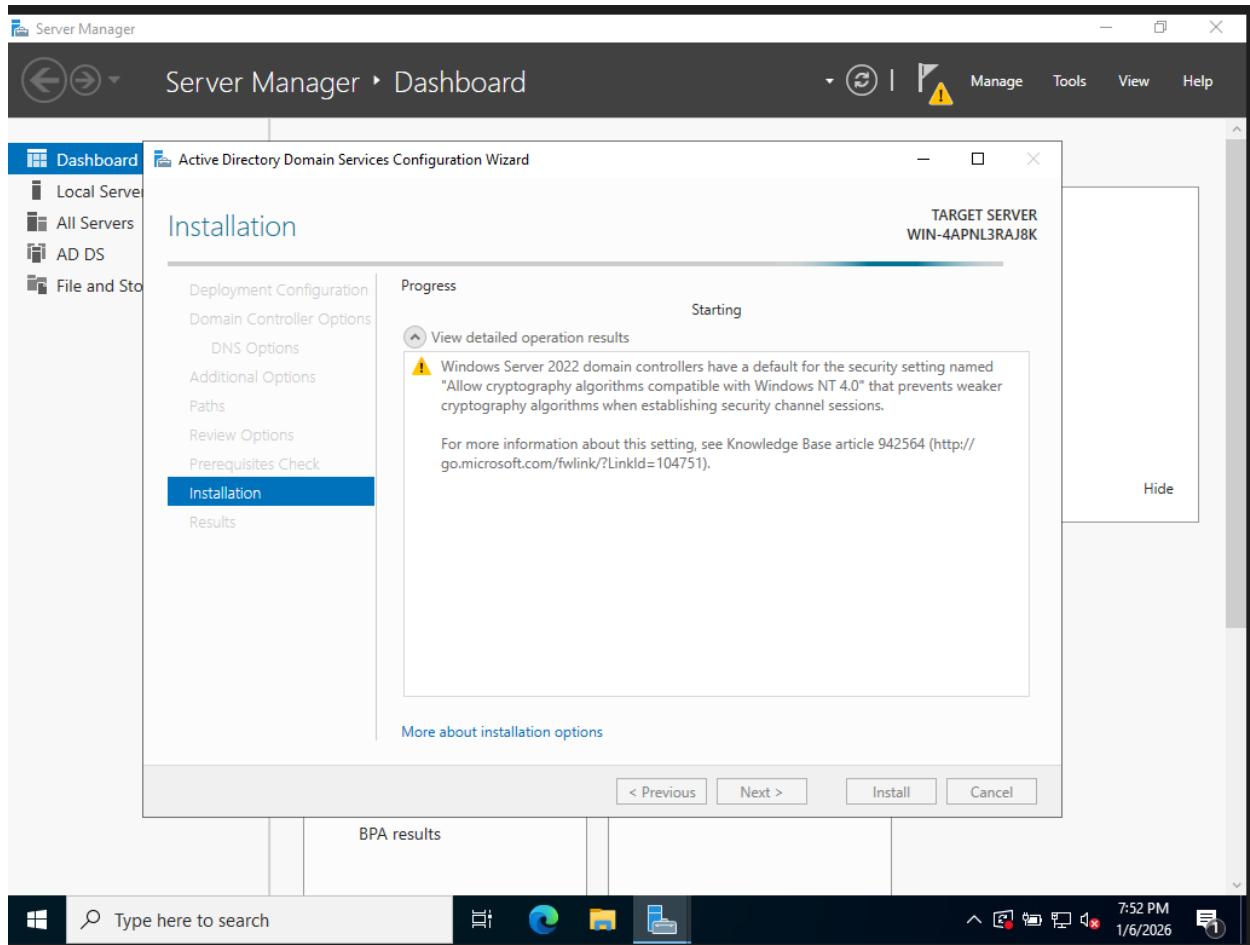
8. **Prerequisites Check:**

- The wizard will run prerequisite checks
- Some warnings are normal (like DNS delegation)
- Ensure no critical errors appear
- Click **Install**

- Capture the prerequisites check results

9. **Installation Progress:**

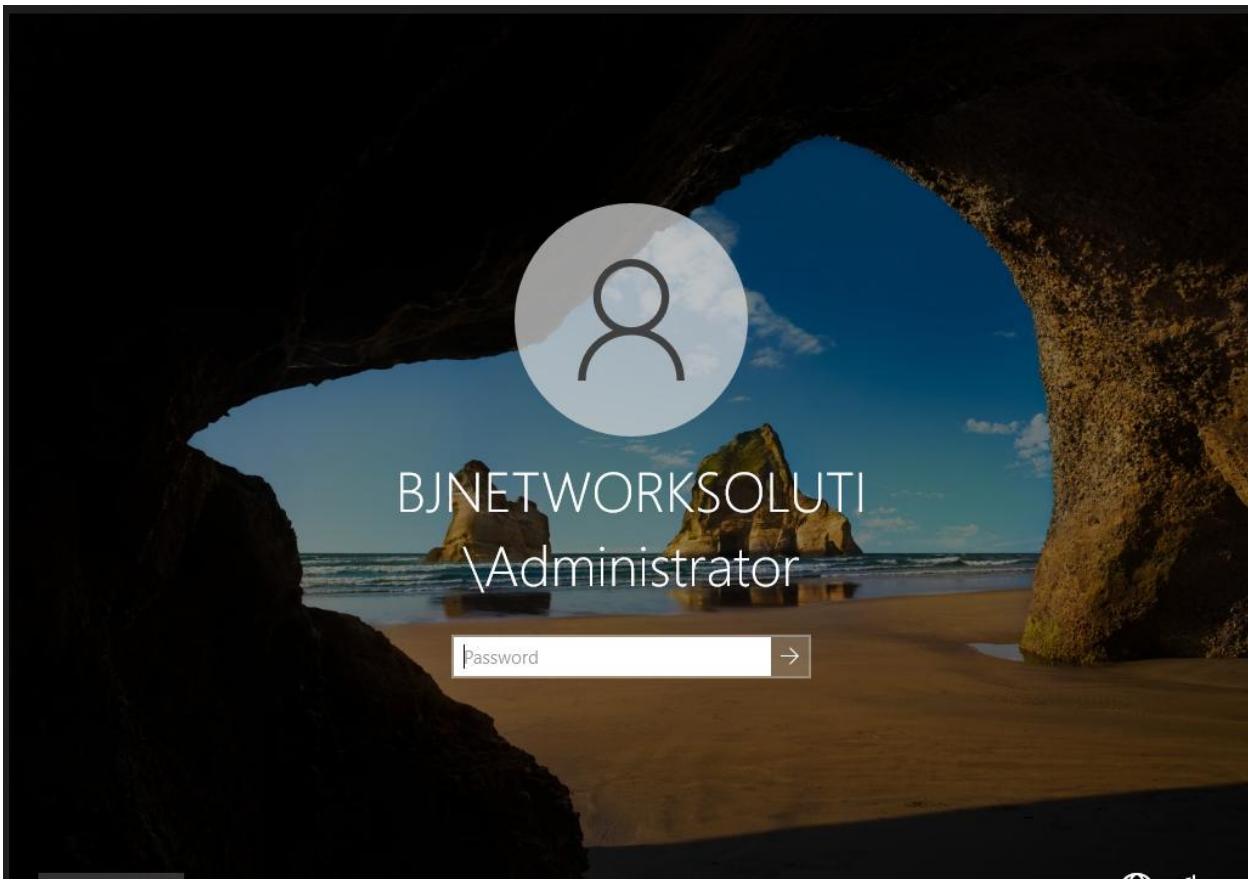
- The server will install and configure AD DS
- This may take 10-20 minutes
- The server will automatically restart



- Capture the installation/promotion progress

#### 10. After Restart:

- The server will reboot automatically
- Wait for the restart to complete
- Log in with the domain administrator account
- Format: BJNETWORKSOLUTION\Administrator

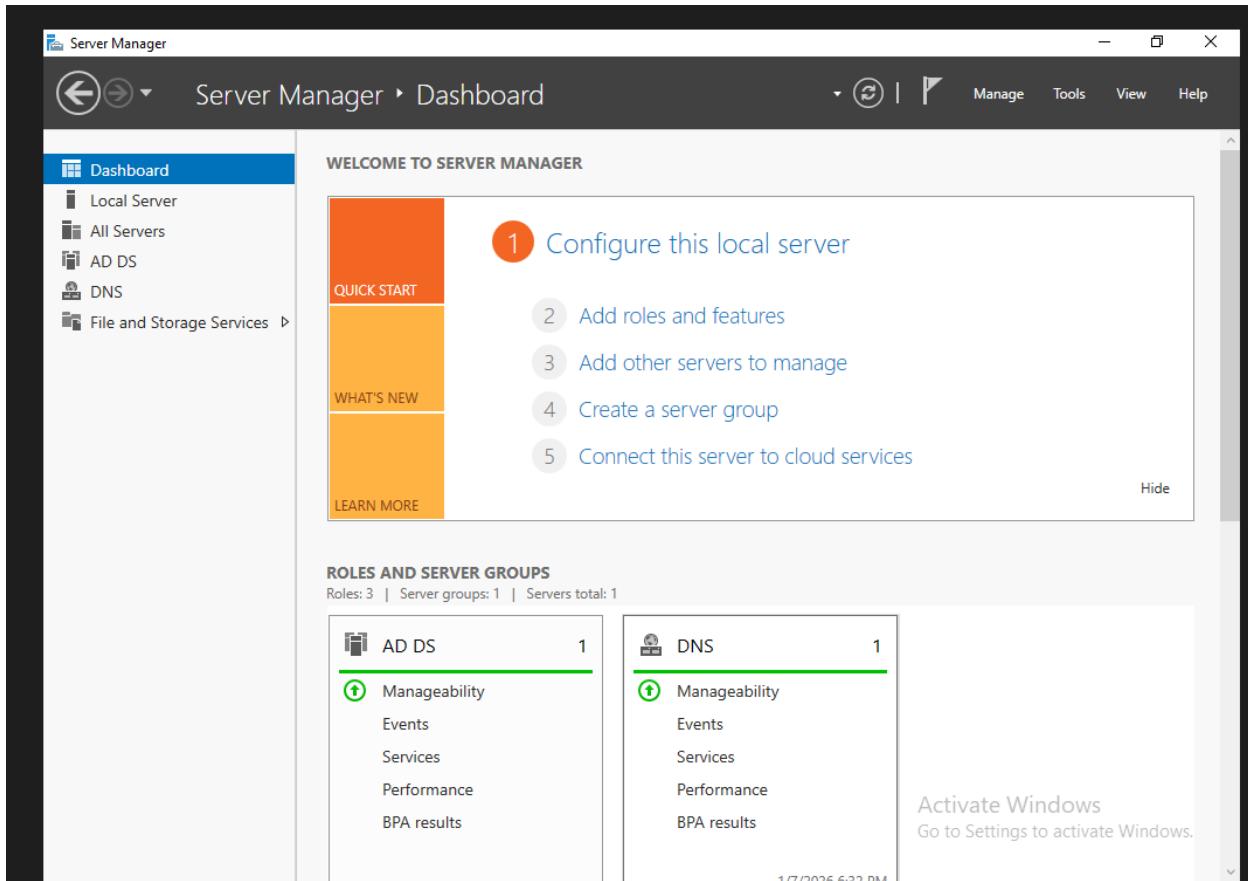


- Capture the login screen showing domain name

#### **Verify Domain Controller Promotion**

##### **1. Check Server Manager:**

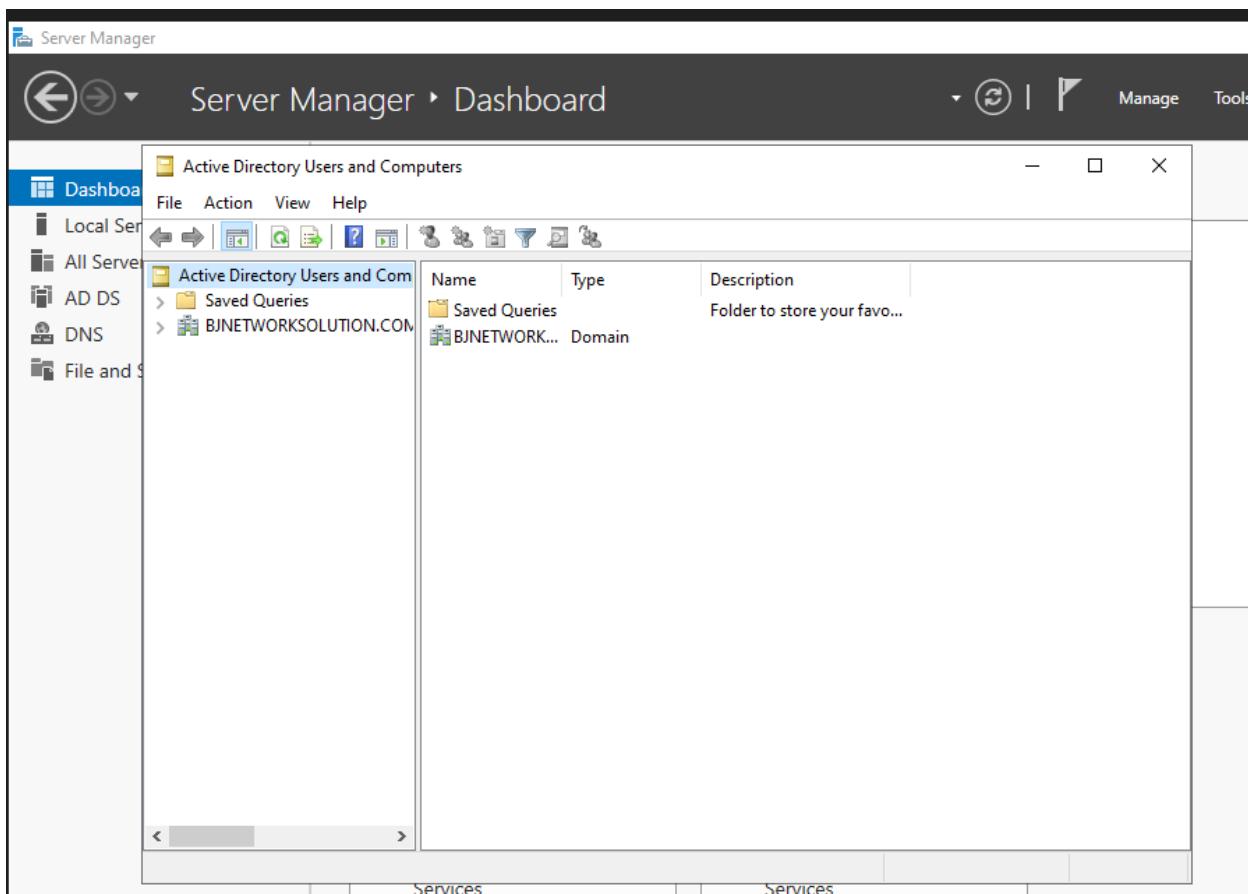
- Open Server Manager
- Verify "AD DS" role is listed
- Check that no configuration errors appear



- Capture Server Manager showing AD DS role installed

## 2. Open Active Directory Users and Computers:

- Click **Tools** → **Active Directory Users and Computers**
- Verify your domain appears in the left panel
- Expand the domain to see default OUs



- Capture the Active Directory Users and Computers console

**✓ Success Indicators:**

- Server reboots successfully
- Can log in with domain\administrator
- AD Users and Computers shows your domain
- DNS Manager shows forward and reverse lookup zones

## **Step 6: Login as the Administrator**

After promoting the server to a domain controller, you must log in with domain administrator credentials.

### **Domain Administrator Login**

#### **1. At the Login Screen:**

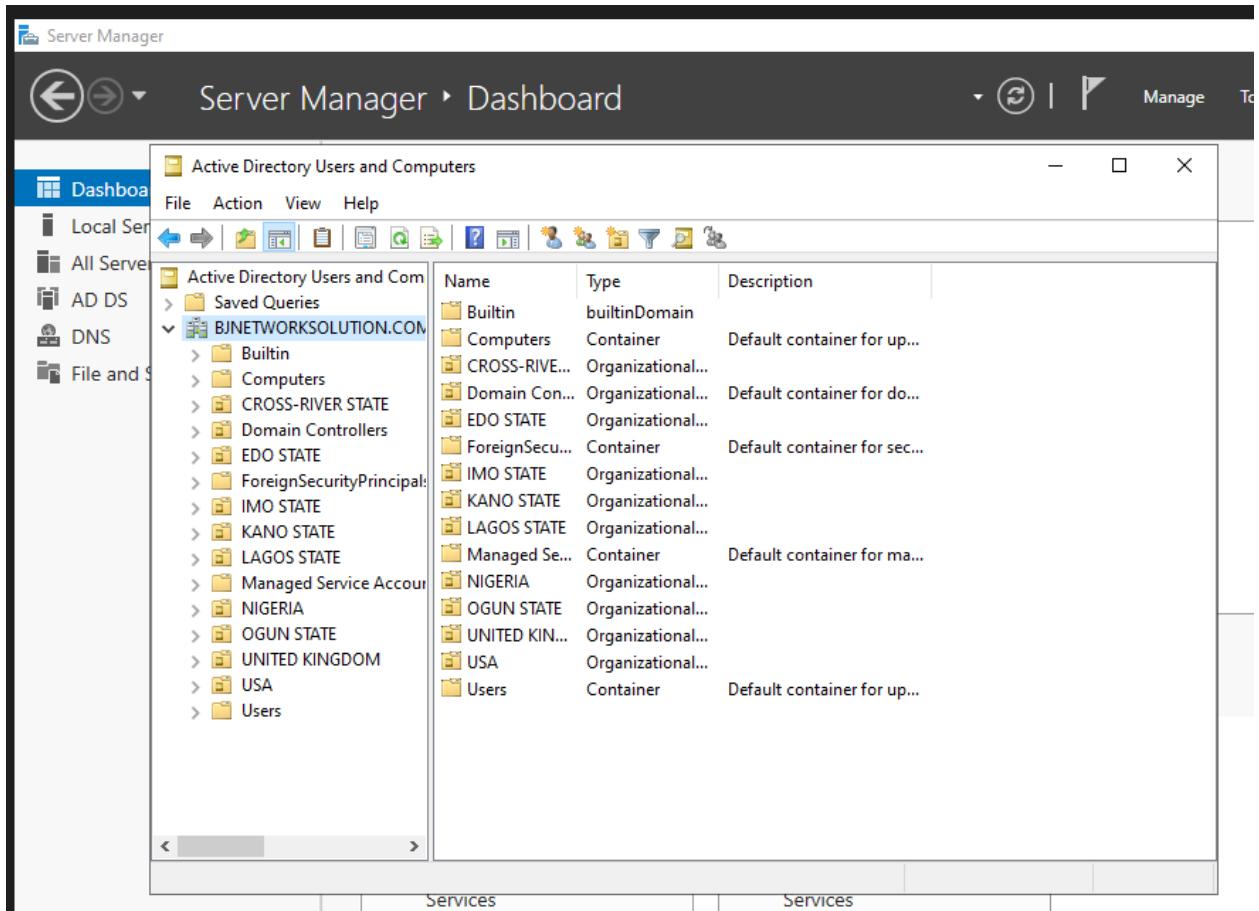
- You should see the domain name displayed
- Username format: BJNETWORKSOLUTION\Administrator
- Enter the Administrator password \*\*\*\*\*



BJNETWORKSOLUTI  
\Administrator

Password





- Capture the login screen with domain administrator credentials entered (blur password)

## 2. Verify Domain Login:

- After logging in, check that you're logged in as domain admin
- Open Command Prompt and type:

cmd

whoami

- Should display: domain\administrator

```
c:\ Administrator: Command Prompt
Microsoft Windows [Version 10.0.20348.1]
(c) Microsoft Corporation. All rights reserved.

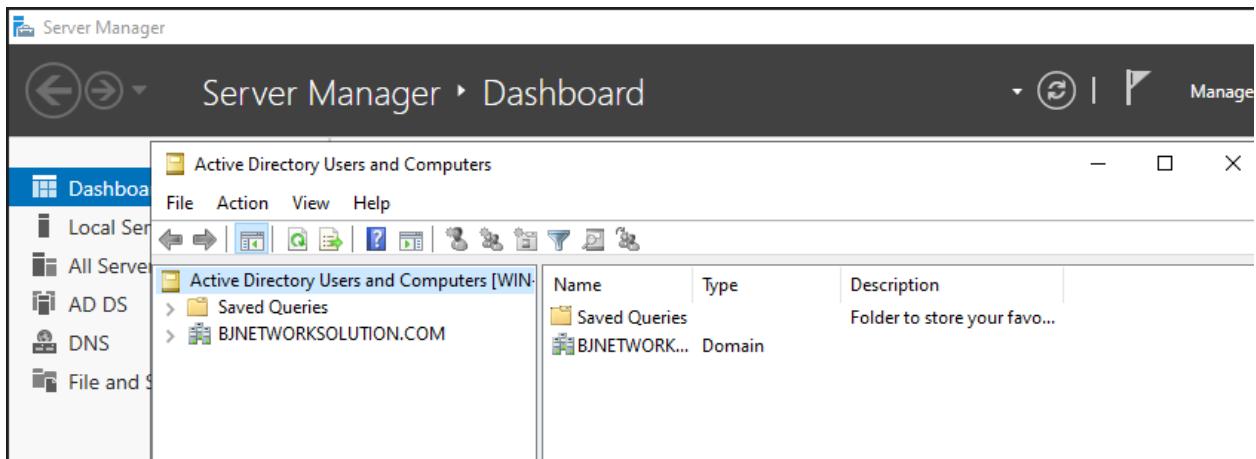
C:\Users\Administrator>whoami
objnetworksoluti\administrator

C:\Users\Administrator>
```

- Capture the command prompt showing whoami output

### 3. Check Domain Controller Functionality:

- Open **Server Manager**
- Click **Tools → Active Directory Users and Computers**
- Verify you can access the AD console



- Capture Server Manager with domain administrator logged in

## Understanding Domain Administrator Account

### Key Points:

- Domain Administrator has full control over the entire domain
- This is the most privileged account in Active Directory
- Should only be used for administrative tasks

- In production, create separate admin accounts for daily tasks

### **Security Best Practices:**

- Never use Domain Admin for routine tasks
- Enable MFA for administrator accounts
- Use separate accounts for administration
- Regularly audit administrator account usage

### **Step 7: Create Three Organizational Units: HR, IT and Audit**

Organizational Units (OUs) are containers used to organize users, groups, computers, and other objects within Active Directory.

#### **Understanding Organizational Units**

##### **What are OUs?**

- Logical containers that organize Active Directory objects
- Used to delegate administrative control
- Allow application of Group Policies
- Reflect your organization's structure

##### **Why Create OUs?**

- Organize users and computers by department
- Delegate administrative permissions
- Apply specific Group Policies to different departments
- Simplify management and security

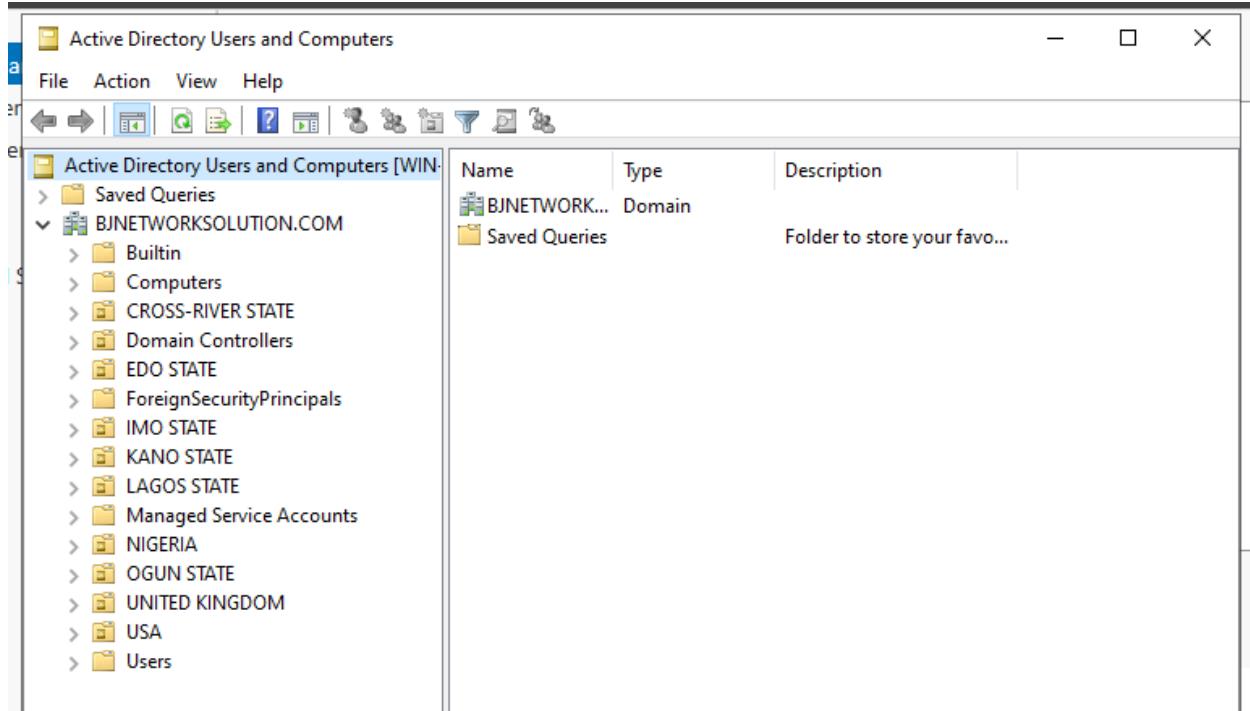
#### **Create HR Organizational Unit**

##### **1. Open Active Directory Users and Computers:**

- Server Manager → Tools → Active Directory Users and Computers

##### **2. Create HR OU:**

- In the left panel, right-click on your domain name
- Select **New → Organizational Unit**



- Capture the right-click context menu showing New → Organizational Unit

### 3. Name the OU:

- **Name:**
  - Leave **Protect container from accidental deletion** checked (recommended)
  - Click **OK**

Name	Type	Description
ACCOUNT	Organizational...	
HR	Organizational...	
IT	Organizational...	
SALES	Organizational...	
WAREHOUSE	Organizational...	

#### 4. Verify HR OU Created:

- o The HR OU should now appear under your domain in the left panel
- Capture Active Directory showing HR OU in the tree

### Create IT Organizational Unit

#### 1. Create IT OU:

- o Right-click on your domain name
- o Select **New → Organizational Unit**
- o **Name:** IT
- o Ensure **Protect container from accidental deletion** is checked
- o Click **OK**
- Capture the New Organizational Unit dialog with "IT" entered

## Create Audit Organizational Unit

### 1. Create Audit OU:

- o Right-click on your domain name
- o Select **New → Organizational Unit**
- o **Name:**
- o Ensure **Protect container from accidental deletion** is checked
- o Click **OK**

The screenshot shows the 'Active Directory Users and Computers' snap-in. On the left, the navigation pane lists 'Saved Queries', 'BJNETWORKSOLUTION.COM' (expanded to show 'Builtin', 'Computers', 'CROSS-RIVER STATE', 'Domain Controllers', 'EDO STATE', 'ForeignSecurityPrincipals', 'IMO STATE', 'KANO STATE', and 'LAGOS STATE'), and 'ACCOUNT', 'HR', 'IT', 'SALES', and 'WAREHOUSE' (under 'LAGOS STATE'). On the right, a table displays five organizational units with their names, types, and descriptions.

Name	Type	Description
ACCOUNT	Organizational...	
HR	Organizational...	
IT	Organizational...	
SALES	Organizational...	
WAREHOUSE	Organizational...	

- Capture the New Organizational Unit dialog with "Audit" entered

## Verify All Three OUs

### 1. Check OU Structure:

- o In Active Directory Users and Computers
- o Expand your domain
- o Verify all three OUs appear:

## **OU Best Practices**

### **Tips for OU Design:**

- Keep OU structure simple and logical
- Match your organization's structure
- Don't create too many nested levels
- Consider future growth and changes
- Document your OU structure

## **Step 8: Create Groups Within Each Organizational Unit**

Groups allow you to assign permissions to multiple users at once, simplifying security management.

### **Understanding Active Directory Groups**

#### **What are Groups?**

- Collections of user accounts, computer accounts, or other groups
- Used to assign permissions to multiple users simultaneously
- Essential for efficient security management

#### **Group Types:**

- **Security Groups:** Used to assign permissions to resources
- **Distribution Groups:** Used only for email distribution (not covered here)

#### **Group Scopes:**

- **Domain Local:** Used to assign permissions to resources in the same domain
- **Global:** Can contain users from the same domain, used across multiple domains

- **Universal:** Can contain users from any domain, used in multi-domain forests

### **Create Group in OU**

#### **1. Navigate to OU:**

- In Active Directory Users and Computers
- Expand your domain
- Click on OU to select it

#### **2. Create Group:**

- Right-click on the OU (or right-click in the right panel)
- Select **New → Group**

- Capture the right-click menu showing New → Group option

#### **3. Configure Group:**

- **Group name:**
- **Group scope:** Select **Global**
- **Group type:** Select **Security**
- Click **OK**

The screenshot shows the Active Directory Users and Computers (ADUC) console. The left pane displays the navigation tree for the domain **BJNETWORKSOLUTION.COM**, which includes various organizational units (OUs) such as **Builtin**, **Computers**, **CROSS-RIVER STATE**, **Domain Controllers**, **EDO STATE**, **ForeignSecurityPrincipals**, **IMO STATE**, **KANO STATE**, **LAGOS STATE**, **Managed Service Accounts**, **NIGERIA** (which is selected), **OGUN STATE**, **UNITED KINGDOM**, **USA**, and **Users**. The right pane lists the objects in the current OU, showing four entries:

Name	Type	Description
akin akinola	User	
KEBBI STATE	Security Group...	
OSUN STATE	Security Group...	
Tunde diaro	User	

- Capture the New Object - Group dialog with group details

#### 4. Verify Group Created:

- The group should appear in the OU
- Double-click the group to view properties

### Create Group in IT OU

#### 1. Navigate to OU:

- Click on OU to select it

#### 2. Create IT Group:

- Right-click on the OU
- Select **New > Group**

#### 3. Configure Group:

- **Group name:**

- **Group scope:** Select **Global**
  - **Group type:** Select **Security**
  - Click **OK**
- 
- Capture the New Object - Group dialog with IT group details

### **Create Group in OU**

1. **Navigate to OU:**
    - Click on OU to select it
  2. **Create Group:**
    - Right-click on the OU
    - Select **New → Group**
  3. **Configure Audit Group:**
    - **Group name:**
    - **Group scope:** Select **Global**
    - **Group type:** Select **Security**
    - Click **OK**
- 
- Capture the New Object - Group dialog with Audit group details

### **Verify All Groups**

1. **Check Each OU:**
  - Click on OU → Verify Employees group exists
  - Click on OU → Verify Staff group exists
  - Click on OU → Verify Team group exists

The screenshot shows the Windows Active Directory Users and Computers (ADUC) management console. On the left, a tree view displays the structure of the domain. Under the root node 'Active Directory Users and Computers [WIN-...]', there is a 'Saved Queries' folder and a 'BJNETWORKSOLUTION.COM' container. This container holds several OUs: 'BuiltIn', 'Computers', 'CROSS-RIVER STATE', 'Domain Controllers', 'EDO STATE', 'ForeignSecurityPrincipals', 'IMO STATE', 'KANO STATE', 'LAGOS STATE', 'Managed Service Accounts', 'NIGERIA', 'OGUN STATE', 'UNITED KINGDOM' (which is selected), 'USA', and 'Users'. On the right, a table lists objects with columns for Name, Type, and Description. The listed objects are: ENGLAND (Security Group...), jenny blue (User), london white (User), love joy (User), NORTHERN I... (Security Group...), SCOTLAND (Security Group...), and WALES (Security Group...).

Name	Type	Description
ENGLAND	Security Group...	
jenny blue	User	
london white	User	
love joy	User	
NORTHERN I...	Security Group...	
SCOTLAND	Security Group...	
WALES	Security Group...	

## Group Naming Best Practices

### Recommended Naming Conventions:

- Use descriptive names that indicate purpose
- Include OU or department in name (e.g., Employees)
- Use consistent prefixes or suffixes
- Avoid spaces if possible (use hyphens or underscores)
- Keep names under 64 characters

### Step 9: Add Users to Group and Configure Each User

Creating and configuring users is essential for providing access to domain resources.

## Create Users in OU

1. **Navigate to OU:**
  - o In Active Directory Users and Computers
  - o Click on OU
2. **Create First User:**
  - o Right-click on OU
  - o Select **New → User**  
  - Capture the right-click menu showing New → User
3. **Enter User Information:**
  - o **First name:**
  - o **Last name:**
  - o **Full name:** (auto-populated)
  - o **User logon name:**
  - o Select your domain from dropdown
  - o Click **Next**

## love joy Properties

Member Of	Dial-in	Environment
Remote control	Remote Desktop Services Profile	
General	Address	Account
	Profile	Telephones

love joy

---

First name:  Initials:

Last name:

Display name:

Description:

Office:

---

Telephone number:

E-mail:

Web page:

---

#### 4. Set Password:

- o **Password:** Enter a secure password (e.g., P@ssw0rd123)
- o **Confirm password:** Re-enter the same password
- o **Password options:**
  - Uncheck **User must change password at next logon** (for testing)
  - Check **Password never expires** (for testing environment only)
- o Click **Next**

- Capture the password configuration page (blur passwords)

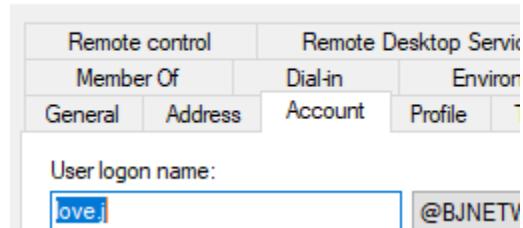
**5. Complete User Creation:**

- Review the summary
- Click **Finish**

**6. Create Second User:**

- Repeat steps 2-5 with these details:
  - **Name:**
  - **Logon name:**
  - **Password:** Same as above

love joy Properties



- Capture the OU showing both users created

**Add Users to -Employees Group**

**1. Open -Employees Group:**

- In the OU, double-click **-Employees** group

**2. Add Members:**

- Click on the **Members** tab
- Click **Add**

- Capture the group properties with Members tab and Add button

3. **Select Users:**

- In the "Enter the object names to select" field, type: jsmith; sjohnson
- Click **Check Names** (names should underline)
- Click **OK**

- Capture the Select Users dialog with names entered

4. **Verify Members Added:**

- The Members tab should now show both users
- Click **OK** to close

## Create Users in IT OU

1. **Navigate to OU:**

- Click on OU

2. **Create First User:**

- Right-click on OU → **New → User**
- **Name:**
- **Logon name:**
- Set password and complete creation

3. **Create Second User:**

- **Name:**
- **Logon name:**
- Set password and complete creation

- Capture the IT OU showing both users

4. **Add IT Users to IT-Staff Group:**

- Double-click **IT-Staff** group
  - Go to **Members** tab → **Add**
  - Add mdavis and lchen
  - Click **OK**
- 
- Capture the IT-Staff group members

**Create Users in OU**

1. **Navigate to OU:**

- Click on OU

2. **Create First User:**

- Right-click on OU → **New** → **User**
- **Name:**
- **Logon name:**
- Set password and complete creation

3. **Create Second User:**

- **Name:**
- **Logon name:**
- Set password and complete creation

- Capture the Audit OU showing both users

4. **Add Users to -Team Group:**

- Double-click **-Team** group
- Go to **Members** tab → **Add**

- Add
- Click **OK**

## **Configure User Properties**

### **1. Edit User Details:**

- Double-click on a user (e.g., John Smith)
- Explore different tabs:

### **2. General Tab:**

- Add description: "Employee"
  - Add office location, phone number, email, etc.
- 
- Capture the General tab with details filled in

### **3. Account Tab:**

- View logon name
  - Check account options
  - Set account expiration if needed
- 
- Capture the Account tab settings
- ### **4. Member Of Tab:**
- Verify the user is member of correct group
  - Shows all groups the user belongs to
- 
- Capture the Member Of tab showing group membership

### **5. Profile Tab:**

- Set profile path (optional)
- Set home folder (optional)
- Set logon script (optional)

## **Verify Complete Configuration**

### **1. Check All OUs:**

- **OU:** 2 users, 1 group (-Employees with 2 members)
- **OU:** 2 users, 1 group (-Staff with 2 members)
- **OU:** 2 users, 1 group (-Team with 2 members)

## **Test User Login**

### **1. Test from Windows 8 Client:**

- Log out of the client machine
- At login screen, click **Other user**
- Enter: domain\
- Enter password
- Verify successful login

### **2. Verify User Profile:**

- Open Command Prompt
- Type: whoami
- Should show: domain\