

CNT 4603: System Administration

Spring 2022

Project Four

Implementing Active Directory

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Office Hours Zoom Details: Meeting ID: 924 3809 7405

Passcode: 983064

Q&A Sessions via Zoom: Meeting ID: 981 8349 4221

Passcode: 509807

Department of Computer Science
University of Central Florida



Project Four

- **Title:** “Project Four: Implementing Active Directory Domain Services And Joining A Domain”
- **Points:** 100 points
- **Due Date:** **Sunday April 10, 2022 by 11:59 pm WebCourses time.**
- **Objectives:** The completion of Project Three left you with a virtual network of three machines, named MJL-SP22-S22-1, MJL-F21-S2-2, and MJL-SP22-W10-1. For our savn.local network we will make MJL-SP22-S22-1 the domain controller. This project will implement the Active Directory Domain Services (AD DS) on this server by configuring its server roles and join the two other VMs to the virtual domain network.
- **Deliverables:** Five screen shots as shown on pages 60, 61, 62, 72, 83, and 84. Make sure your server name shows in all of the screen shots (see page 60).



Project Four – Background

- Active Directory Domain Services provides a directory service that you can use for centralized secure management of your network.
- Installing AD DS on MJL-SP22-S22-1 will establish that server as the domain controller for the network that you constructed in Project Three.
- Be sure that you've successfully verified the IP connectivity of all three VMs and your host computer before you begin this project. You should have done this in Project Three, but it never hurts to recheck.
- What you'll be doing in this project is installing AD DS on MJL-SP22-S22-1 and configuring its server roles as a domain controller. Following this you will join MJL-SP22-S22-2 and MJL-SP22-W10-1 to the domain now controlled by MJL-SP22-S22-1.



Project Four – Background

- If you have not already done it (technically you should have done this for Project3), it is a good idea to set the names of your VMs before you begin this project.
- The following few pages will step you through renaming your VMs.
If you did not already do this for Project 3, then do so before you begin the actual steps of this project which begin on page 12. **If you have already properly named each of your VMs – then go to page 12 to begin Project 4.**
- Note that the actual names of the VMs does not relate to the names you've give the VMs in your virtualization software.



Server 2022 - TestBed Server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Dashboard Local Server All Servers File and Storage Services

PROPERTIES
For WIN-H80C6088NAU

Computer name: WIN-H80C6088NAU
Workgroup: WORKGROUP

Last installed updates: Never
Windows Update: Download updates
Last checked for updates: Never

Microsoft Defender Firewall: Public: On
Remote management: Enabled
Remote Desktop: Disabled
NIC Teaming: Disabled

Microsoft Defender Antivirus: Real-Time Protection
Feedback & Diagnostics: Settings
IE Enhanced Security Configuration: On
Time zone: (UTC-08:00) Pacific
Product ID: 00453-60000-7329

Processor: Intel(R) Core(TM) i5
Installed memory (RAM): 2 GB
Total disk space: 49.39 GB

Version: Microsoft Windows Server 2022 Standard
Edition: innotek GmbH VirtualBox

EVENTS
All events | 6 total

Server Name	ID	Severity	Source	Log	Date and Time
WIN-H80C6088NAU	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:21 PM
WIN-H80C6088NAU	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:20 PM
WIN-H80C6088NAU	7023	Error	Microsoft-Windows-Service Control Manager	System	9/30/2021 7:06:17 PM

Type here to search

4:21 PM 9/30/2021 Right Ctrl

From the Server Manager console, with the Local Server selected, click on the value of the Computer name property.



Server Manager ▶ Local Server

PROPERTIES
For WIN-H80C6088NAU

System Properties

Computer Name | Hardware | Advanced | Remote

Windows uses the following information to identify your computer on the network.

Computer description: Server 2022 - TestBed

For example: "IIS Production Server" or "Accounting Server".

Full computer name: WIN-H80C6088NAU

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.

Change...

OK Cancel Apply

Feedback & Diagnostics Settings
IE Enhanced Security Configuration On
Time zone (UTC-08:00) Pacific
Product ID 00453-60000-7329

Processor Intel(R) Core(TM) i5

Installed memory (RAM) 2 GB

Total disk space 49.39 GB

2. Click the Change button.

1. A System Properties dialog box will open when you click on the Computer name in the Server Manager console. You can enter a description of for the system if you would like (this is optional).



Server Manager ▶ Local Server

Manage Tools View Help

[Dashboard](#)
[Local Server](#)
[All Servers](#)
[File and Storage](#)

PROPERTIES

For WIN-H80C6088NAU

TASKS

System Properties

Computer Name | Hardware | Advanced | Remote



Windows uses the following information to identify your computer on the network.

Computer description:

For example: "IIS Production Server" or "Accounting Server".

Full computer name: **WIN-H80C6088NAU**

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.

[Change...](#)[OK](#)[Cancel](#)[Apply](#)

Last installed updates

Never
Download updates
NeverReal-Time Protection
Settings
On
(UTC-08:00) Pacific
00453-60000-7329

Notice that the current name of the computer is a Windows generated value.

Go to the next slide.

Processor	Intel(R) Core(TM) i5
Installed memory (RAM)	2 GB
Total disk space	49.39 GB

TASKS

Server Name	ID	Severity	Source	Log	Date and Time
WIN-H80C6088NAU	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:21 PM
WIN-H80C6088NAU	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:20 PM
WIN-H80C6088NAU	7023	Error	Microsoft-Windows-Service Control Manager	System	9/30/2021 7:06:17 PM



Type here to search

4:23 PM
9/30/2021

Right Ctrl



Server 2022 - TestBed Server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Dashboard Local Server All Servers File and Storage

PROPERTIES For WIN-H80C6088NAU

System Properties

Computer Name/Domain Changes

You can change the name and the membership of this computer. Changes might affect access to network resources.

Computer name: Server2022TestBed

Full computer name: Server2022TestBed

More...

Member of

Domain:

Workgroup: WORKGROUP

OK Cancel

OK Cancel Apply

Never Download updates Never

Real-Time Protection Settings On (UTC-08:00) Pacific 00453-60000-7329

Intel(R) Core(TM) i5 2 GB 49.39 GB

TASKS

2. DO NOT CLICK set member of to DOMAIN at this point. Leave it as WORKGROUP

3. Click OK. Follows the directions for a restart.

Type here to search

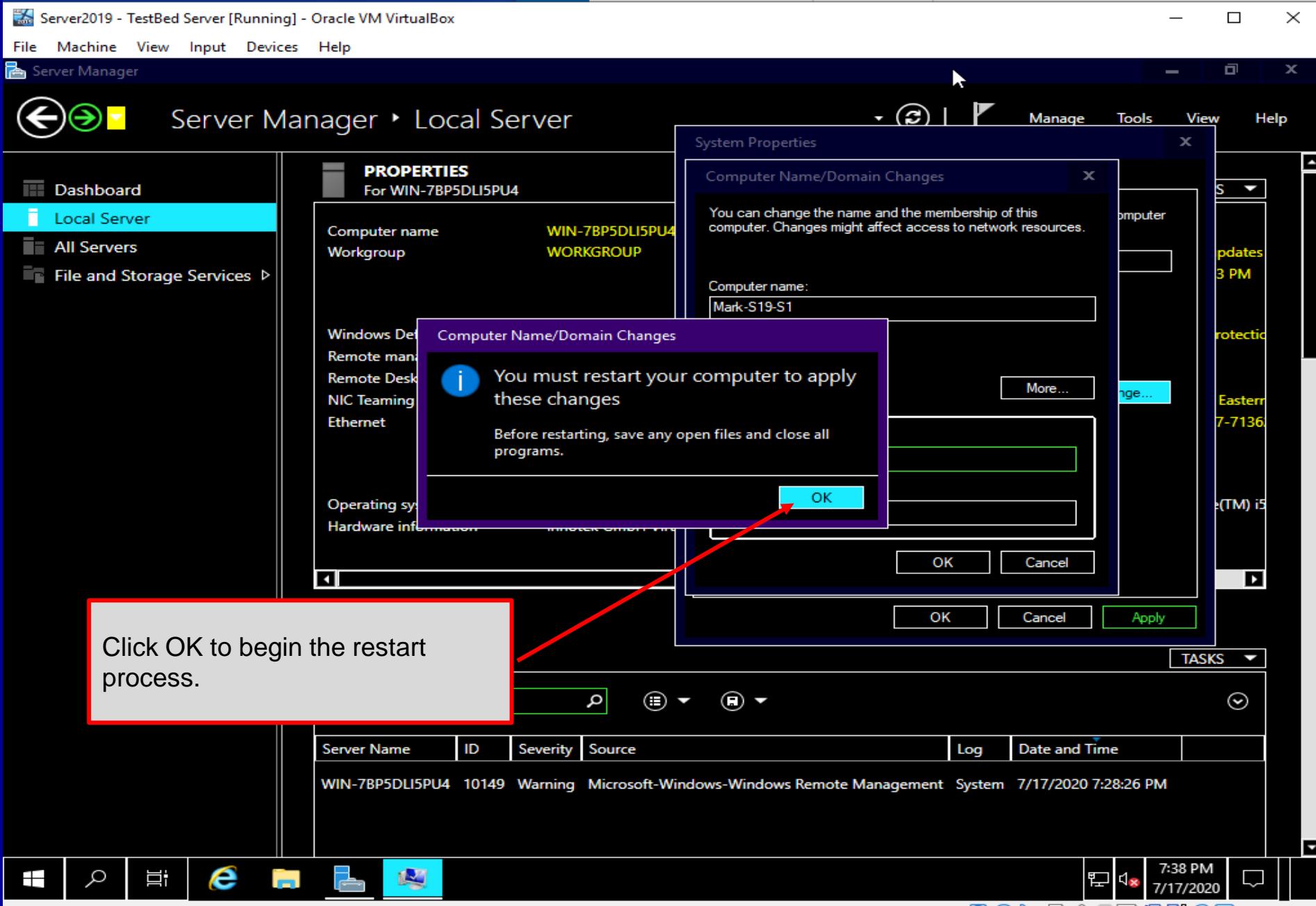
4:25 PM 9/30/2021 Right Ctrl

1. Enter the new name for the computer here. Use the naming convention outlined in Project 3 for the computer names. Namely:
YourInitials-SP22-S22-1
YourInitials-SP22-S22-2
YourInitials-SP22-W10-1

2. DO NOT CLICK set member of to DOMAIN at this point. Leave it as WORKGROUP

3. Click OK. Follows the directions for a restart.







Manage

Tools

View

Help

Dashboard

Local Server

All Servers

File and Storage Services

PROPERTIES

For Server2022TestBed

TASKS

Computer name	Server2022TestBed	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Download updates
Microsoft Defender Firewall	Public: On	Microsoft Defender Antivirus	Real-Time Protection
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC-08:00) Pacific
Ethernet	IPv4 address assigned by DHCP, IPv6 enabled	Product ID	00453-60000-7329
Operating system version	Microsoft Windows Server 2022 Standard	Processors	Intel(R) Core(TM) i5
Hardware information	innotek GmbH VirtualBox	Installed memory (RAM)	2 GB
		Total disk space	49.39 GB

After server restart, the computer name is now set correctly. Repeat this step for the other server.

Server Name	ID	Severity	Source	Log	Date and Time
SERVER2022TESTB	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:21 PM
SERVER2022TESTB	134	Warning	Microsoft-Windows-Time-Service	System	9/30/2021 7:06:20 PM
SERVER2022TESTB	7023	Error	Microsoft-Windows-Service Control Manager	System	9/30/2021 7:06:17 PM



Type here to search

4:29 PM
9/30/2021



Settings

Home

The process for changing the name on the Windows 10 (client) system is the same as on the servers. The only difference is where the process originates. On the Client system, open the Control Panel, select System and Security, then select System. You will be at this screen. From here, click the Rename this PC. Then follow the steps to rename the VM.

Projecting to this PC

About

Device specifications

Device name	MJL-F21-W10-1
Processor	Intel(R) Core(TM) i5-8500 CPU @ 3.00GHz 3.00 GHz
Installed RAM	2.00 GB
Device ID	BCE5C3CE-8059-4559-B241-F4A4772F1AE9
Product ID	00328-50604-99219-AA420
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

Copy

Rename this PC

Windows specifications

Edition	Windows 10 Education N
Version	21H1
Installed on	10/7/2021
OS build	19043.928
Experience	Windows Feature Experience Pack 120 2212 5510



Project Four – Background

- The next several pages will step you through the process of installing AD DS on MJL-SP22-S22-1 and configuring its server role as the domain controller.
- Note that MJL-SP22-S22-1 must be running in order to install AD DS and DNS and configure its server roles. The other VMs do not need to be running for this first part.

NOTE

It is crucial in this project to do things in the exact order that they are shown. Do not skip steps or attempt to do things in a different order than what is shown.



Installing AD DS In MJL-SP22-S22-1

- To begin the process. Start MJL-SP22-S22-1 and bring up the Server Manager. (If you don't have this coming up automatically for your server, Click the Administrative Tools link from the Start menu and then click Server Manager.)
- Select the Local Server (page 14).
- Click the Manage tab in the upper right area (page 15).
- Select Add Roles and Features (page 16).
- You should see the screen shown on page 17.



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Select “Local Server”

Dashboard Local Server All Servers File and Storage Services ▶

Computer name	MJL-SP22-S22-1	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Download updates only
		Last checked for updates	Never
Microsoft Defender Firewall	Public: Off	Microsoft Defender Antivirus	Real-Time Protection: C
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC-05:00) Eastern Time
Ethernet	192.168.0.101	Product ID	Not activated
Operating system version	Microsoft Windows Server 2022 Standard	Processors	Intel(R) Core(TM) i5-850
Hardware information	innotek GmbH VirtualBox	Installed memory (RAM)	2 GB
		Total disk space	49.39 GB

EVENTS

All events | 7 total

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:01 PM
3/29/2022



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Manage Tools View Help

Click "Manage"

Dashboard Local Server All Servers File and Storage Services

Computer name: MJL-SP22-S22-1 Workgroup: WORKGROUP

Last installed updates: Windows Update Never
Last checked for updates: Never

Microsoft Defender Firewall: Public: Off Microsoft Defender Antivirus: Real-Time Protection: Off
Remote management: Enabled Feedback & Diagnostics: Settings
Remote Desktop: Disabled IE Enhanced Security Configuration: On
NIC Teaming: Disabled Time zone: (UTC-05:00) Eastern Time
Ethernet: 192.168.0.101 Product ID: Not activated

Operating system version: Microsoft Windows Server 2022 Standard
Hardware information: innoteck GmbH VirtualBox

Processors: Intel(R) Core(TM) i5-850
Installed memory (RAM): 2 GB
Total disk space: 49.39 GB

EVENTS

All events | 7 total

Filter

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:01 PM 3/29/2022



Server Manager ▸ Local Server



Manage Tools View Help

Add Roles and Features

Remove Roles and Features

Add Servers

Create Server Group

Server Manager Properties

Never

Click "Add Roles and Features"

- Dashboard
- Local Server
- All Servers
- File and Storage Services ▾

Computer name: MJL-SP22-S22-1
Workgroup: WORKGROUP

Last installed updates: Windows Update
Last checked for updates: Never

Microsoft Defender Firewall: Public: Off
Remote management: Enabled
Remote Desktop: Disabled
NIC Teaming: Disabled
Ethernet: 192.168.0.101

Microsoft Defender Antivirus: Real-Time Protection: Off
Feedback & Diagnostics: Settings
IE Enhanced Security Configuration: On
Time zone: (UTC-05:00) Eastern Time (US & Canada)
Product ID: Not activated

Operating system version: Microsoft Windows Server 2022 Standard
Hardware information: innotek GmbH VirtualBox

Processors:
Installed memory (RAM): 2 GB
Total disk space: 49.39 GB

EVENTS

All events | 7 total

TASKS

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM



Type here to search

7:03 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Help

Server Manager

Add Roles and Features Wizard

Read this page, then click "Next"

Before you begin

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

DESTINATION SERVER
MJL-SP22-S22-1

This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.

To remove roles, role services, or features:
[Start the Remove Roles and Features Wizard](#)

Before you continue, verify that the following tasks have been completed:

- The Administrator account has a strong password
- Network settings, such as static IP addresses, are configured
- The most current security update from Windows Update are installed

If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.

To continue, click Next.

Skip this page by default

< Previous **Next >** Install Cancel

Real-Time Protection: C
Settings
tion On
(UTC-05:00) Eastern Tim
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

Type here to search

7:05 PM
3/29/2022

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Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

9

MUL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server M A

1. Select “Role-based or feature-based installation”

Select installation type

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

DESTINATION SERVER
MUL-SP22-S22-1

Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).

Role-based or feature-based installation
Configure a single server by adding roles, role services, and features.

Remote Desktop Services installation
Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.

2. Click “Next”

< Previous Next > Install Cancel

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS
Never
Download updates only
Never

Real-Time Protection: C
Settings
tion On
(UTC-05:00) Eastern Tim
Not activated

TASKS

Server Name	ID	Severity	Source	Log	Date and Time
MUL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MUL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MUL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:07 PM
3/29/2022

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99%

Scalable

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features

1. Select “Select a server from the server pool”

Select destination server

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

2. Be sure the local server is highlighted (it should be – if not click it).

3. Click “Next”

DESTINATION SERVER
MJL-SP22-S22-1

Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

1 Computer(s) found

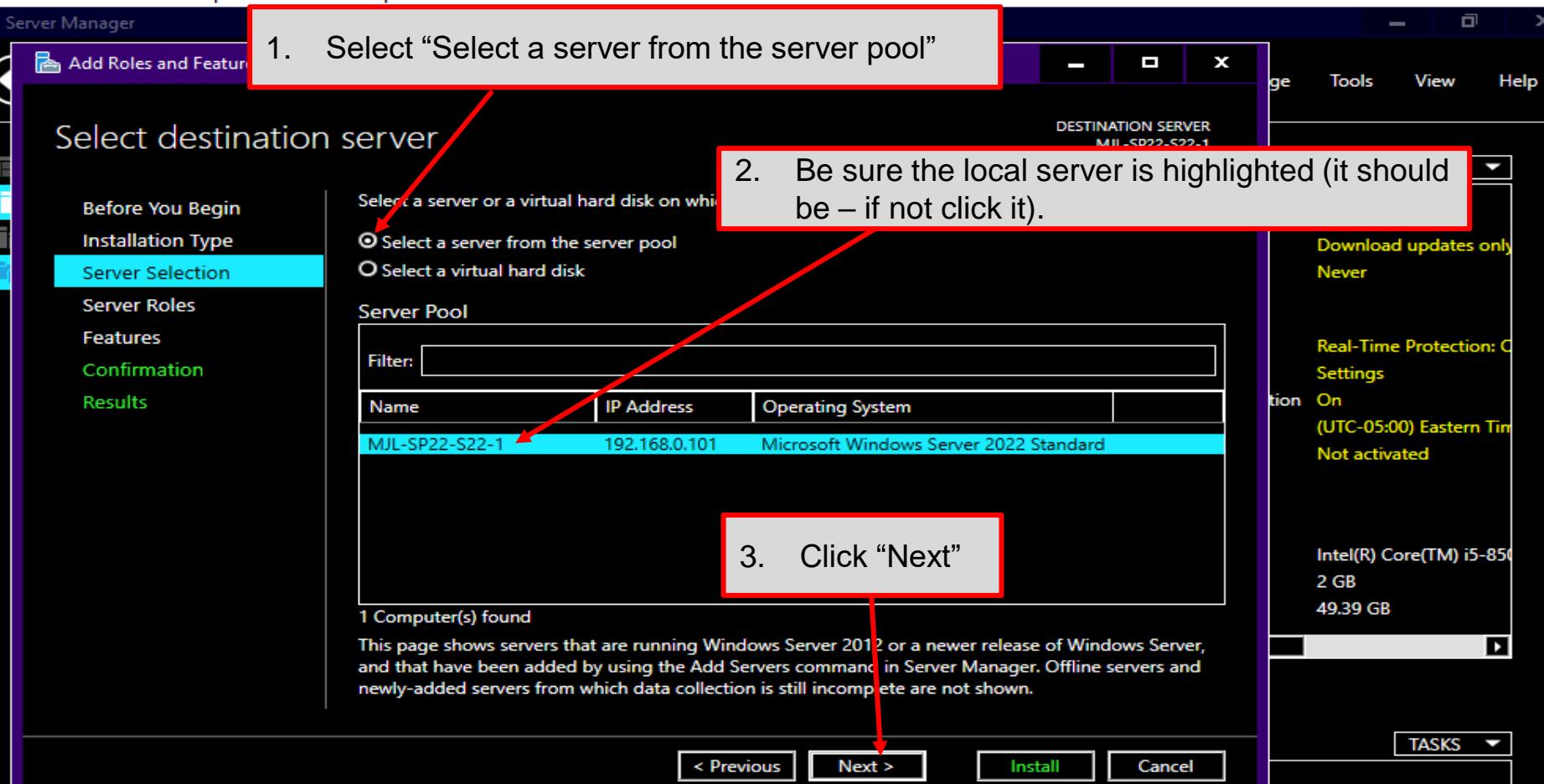
This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

< Previous Next > Install Cancel

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:09 PM 3/29/2022



Installing AD DS In MJL-SP22-S22-1

- At this point you should now see the list of roles that can be assigned to the server (see page 21).
- Since we are going to make MJL-SP22-S22-1 the domain controller for the savn.local domain, we need to install the support for this role on the server.
- We need to install AD DS onto the server, so from this selection list, select Active Directory Domain Services (see page 21).
- As soon as you check AD DS, the following dialog will appear (see page 22):



Add Roles and Features Wizard

Select server roles

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select one or more roles to install on the selected server

Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server
- + File and Storage Services (1 of 12 installed)
- Host Guardian Service
- Hyper-V
- Network Policy and Access Services
- Print and Document Services
- Remote Access
- Remote Desktop Services
- Volume Activation Services
- Web Server (IIS)
- Windows Deployment Services
- Windows Server Update Services

Description

Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.

< Previous Next > Install Cancel

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM



Type here to search

7:12 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

1. Click "Add Features"

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Add features that are required for Active Directory Domain Services?

You cannot install Active Directory Domain Services unless the following role services or features are also installed.

[Tools] Group Policy Management
 Remote Server Administration Tools
 Role Administration Tools
 AD DS and AD LDS Tools
 Active Directory module for Windows PowerShell
 AD DS Tools
 Active Directory Administrative Center
 AD DS Snap-Ins and Command-Line Tools

Include management tools (if applicable)

Add Features Cancel

< Previous Next > Install Cancel

DESTINATION SERVER MJL-SP22-S22-1

System Configuration
Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:15 PM 3/29/2022

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Page 22

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Scalable logo

Installing AD DS In MJL-SP22-S22-1

- These are features that are needed to support the AD DS role of the server.
- When you click the Add Features button, you'll be returned to the original page with the AD DS box now checked (selected).
- Continue on...



Server Manager

Add Roles and Features Wizard

Select server

1. Note that the Active Directory Domain Services is now checked.

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

Select one or more roles to install on the selected server.

Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server
- + File and Storage Services (1 of 12 installed)
 - Host Guardian Service
 - Hyper-V
 - Network Policy and Access Services
 - Print and Document Services
 - Remote Access
 - Remote Desktop Services
 - Volume Activation Services
 - Web Server (IIS)
 - Windows Deployment Services
 - Windows Server Update Services

Description

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process.

2. Click "Next"

< Previous Next > Install Cancel

TASKS

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Select features

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

Select one or more features to install on the selected server.

Features

- + .NET Framework 3.5 Features
- + .NET Framework 4.8 Features (2 of 7 installed)
- + Background Intelligent Transfer Service (BITS)
 - BitLocker Drive Encryption
 - BitLocker Network Unlock
 - BranchCache
 - Client for NFS
 - Containers
 - Data Center Bridging
 - Direct Play
 - Enhanced Storage
 - Failover Clustering
 - Group Policy Management
 - Host Guardian Hyper-V Support
 - I/O Quality of Service
 - IIS Hostable Web Core
 - Internet Printing Client
 - IP Address Management (IPAM) Server
 - LPR Port Monitor

Description

.NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.

1. Click "Next"

< Previous Next > Install Cancel

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:20 PM 3/29/2022

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Page 25

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Logo

Add Roles and Features Wizard

1. Read this page, then click "Next"

DESTINATION SERVER
MJL-SP22-S22-1

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

Active Directory Domain Services (AD DS) stores information about users, computers, and other devices on the network. AD DS helps administrators securely manage this information and facilitates resource sharing and collaboration between users.

Things to note:

- To help ensure that users can still log on to the network in the case of a server outage, install a minimum of two domain controllers for a domain.
- AD DS requires a DNS server to be installed on the network. If you do not have a DNS server installed, you will be prompted to install the DNS Server role on this machine.

Azure Active Directory, a separate online service, can provide simplified identity and access management, security reporting, single sign-on to cloud and on-premises web apps.

[Learn more about Azure Active Directory](#)
[Configure Office 365 with Azure Active Directory Connect](#)

< Previous **Next >** Install Cancel

ge	Tools	View	Help
TASKS			
Never	Download updates only	Never	
Real-Time Protection: C	Settings	On	(UTC-05:00) Eastern Time
tion	Not activated		
Intel(R) Core(TM) i5-850	2 GB	49.39 GB	
TASKS			



Installing AD DS In MJL-SP22-S22-1

- The next page (see next slide) provides an overview of the role you are about to assign to the server.
- Read this page.
- Click Next.



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Ma Server Add Roles and Features Wizard

1. Read this page.

Confirm installation selections

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

To install the following roles, role services, or features on selected server, click Install.
 Restart the destination server automatically if required
Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Active Directory Domain Services
Group Policy Management
Remote Server Administration Tools
Role Administration Tools
AD DS and AD LDS Tools
Active Directory module for Windows PowerShell
AD DS Tools
Active Directory Administrative Center
AD DS Snap-Ins and Command-Line Tools

Export configuration settings
Specify an alternate source path

< Previous Next > Install Cancel

DESTINATION SERVER
MJL-SP22-S22-1

ge Tools View Help

TASKS

Never
Download updates only
Never

Real-Time Protection: C
Settings

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

Type here to search

7:24 PM
3/29/2022

CNT 4603: Project Four

Page 28

Dr. Mark Llewellyn ©

9

2. Check the “Restart the destination server...”

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

7:24 PM
3/29/2022

9

Confirm installation selections

DESTINATION SERVER
MJL-SP22-S22-1

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD DS

Confirmation

Results

To install the following roles, role services, or features on selected server, click Install.

 Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Active Directory Domain Services

Group Policy Management

Remote Server Administration Tools

Role Administration

Add Roles and Features Wizard



If a restart is required, this server restarts automatically, without additional notifications. Do you want to allow automatic restarts?

1. Click "Yes"

Yes

No

Export configuration settings

Specify an alternate source path

< Previous

Next >

Install

Cancel

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM



Type here to search

7:26 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Confirm installation selections

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

To install the following roles, role services, or features on selected server, click Install.

Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Active Directory Domain Services
Group Policy Management
Remote Server Administration Tools
Role Administration Tools
 AD DS and AD LDS Tools
 Active Directory module for Windows PowerShell
 AD DS Tools
 Active Directory Administrative Center
 AD DS Snap-Ins and Command-Line Tools

Export configuration settings
Specify an alternate source path

< Previous | Next > | **Install** | Cancel

DESTINATION SERVER
MJL-SP22-S22-1

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

1. Click "Install"

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:27 PM
3/29/2022

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MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Installation progress

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

View installation progress

Feature installation

Installation started on MJL-SP22-S22-1

Active Directory Domain Services
Group Policy Management
Remote Server Administration Tools
Role Administration Tools
AD DS and AD LDS Tools
 Active Directory module for Windows PowerShell
 AD DS Tools
 Active Directory Administrative Center
 AD DS Snap-Ins and Command-Line Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings

< Previous Next > Close Cancel

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

View Help

TASKS

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

7:50 PM
3/29/2022

CNT 4603: Project Four

Page 31

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A red callout box with a black border and a red arrow points from the text "Installation of AD DS proceeding. This might take awhile to complete." to the progress bar under "Feature installation".

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Installation progress

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

View installation progress

Feature installation

Configuration required. Installation succeeded on MJL-SP22-S22-1.

Active Directory Domain Services
Additional steps are required to make this machine a domain controller.
[Promote this server to a domain controller](#)

Group Policy Management
Remote Server Administration Tools
Role Administration Tools
AD DS and AD LDS Tools
Active Directory module for Windows PowerShell
AD DS Tools
Active Directory Administrative Center
AD DS Snap-Ins and Command-Line Tools

You can close this wizard without interrupting running tasks. View task progress page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings

< Previous Next > Close

DESTINATION SERVER

Never
Download updates only
Never

Real-Time Protection: C

1. Installation successful.

2. Notice that the Server has successfully installed AD DS. It is not yet a domain controller. DO NOT CLOSE THIS WINDOW AND DO NOT CLICK THIS LINK YET! Minimize this window if you'd like. Go to the next slide.

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

7:56 PM
3/29/2022



Installing AD DS In MJL-SP22-S22-1

- Notice that after the installation of AD DS, indicating a successful install, that the server is not a domain controller yet.
- Repeat the same process you just used to install AD DS, but this time add the DNS Server role to MJL-SP22-S22-1.



Server Manager ▶ Local Server

PROPERTIES For MJL-SP22

Computer name: MJL-SP22-S22-1
Workgroup: WORKGROUP

Last installed updates: Windows Update
Last checked for updates: Never

Microsoft Defender Firewall: Public: Off
Remote management: Enabled
Remote Desktop: Disabled
NIC Teaming: Disabled
Ethernet: 192.168.0.101

Microsoft Defender Antivirus: Real-Time Protection: Off
Feedback & Diagnostics: Settings
IE Enhanced Security Configuration: On
Time zone: (UTC-05:00) Eastern Time (US & Canada)
Product ID: Not activated

Operating system version: Microsoft Windows Server 2022 Standard
Hardware information: innotech GmbH VirtualBox

Processors: Intel(R) Core(TM) i5-8500
Installed memory (RAM): 2 GB
Total disk space: 49.39 GB

EVENTS

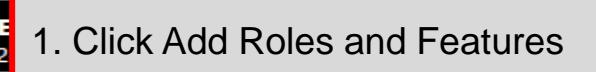
All events | 7 total

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Manage Tools View Help

Add Roles and Features
Remove Roles and Features
Add Servers
Create Server Group
Server Manager Properties

1. Click Add Roles and Features



Type here to search

7:59 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

PROPERTIES
For MJL-SP22-S22-1

TASKS

Local Server

All Servers

AD DS

File and Storage

Add Roles and Features Wizard

Before you begin

Before You Begin

- Installation Type
- Server Selection
- Server Roles
- Features
- Confirmation
- Results

This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.

To remove roles, role services, or features:
[Start the Remove Roles and Features Wizard](#)

Before you continue, verify that the following tasks have been completed:

- The Administrator account has a strong password
- Network settings, such as static IP addresses, are configured
- The most current security updates from Windows Update are installed

If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.

To continue, click Next.

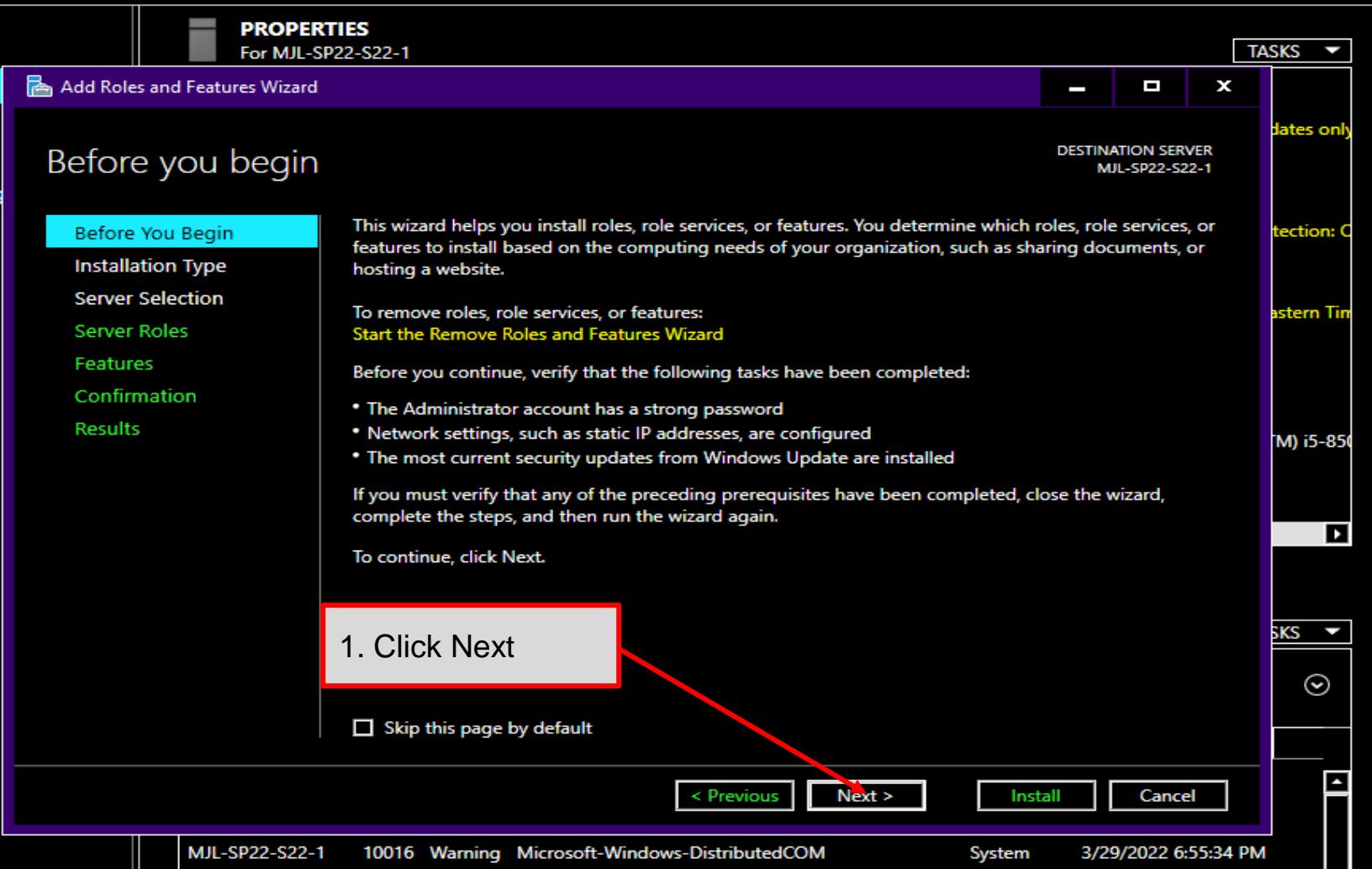
1. Click Next

Skip this page by default

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

8:11 PM 3/29/2022



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Manage Tools View Help

Dashboard Local Server All Servers AD DS File and Storage

Select installation type

Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results

Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).

Role-based or feature-based installation
Configure a single server by adding roles, role services, and features.

Remote Desktop Services installation
Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.

1. Select “Role-based or feature-based installation”

2. Click “Next”

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM 8:12 PM 3/29/2022



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Dashboard Local Server All Servers AD DS File and Storage

Add Roles and Features

TASKS

Select destination server

Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results

Select a server or a virtual hard disk on which to install roles and features.

Select a server from the server pool
 Select a virtual hard disk

Server Pool

Name	IP Address	Operating System
MJL-SP22-S22-1	192.168.0.101	Microsoft Windows Server 2022 Standard

Filter:

1 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

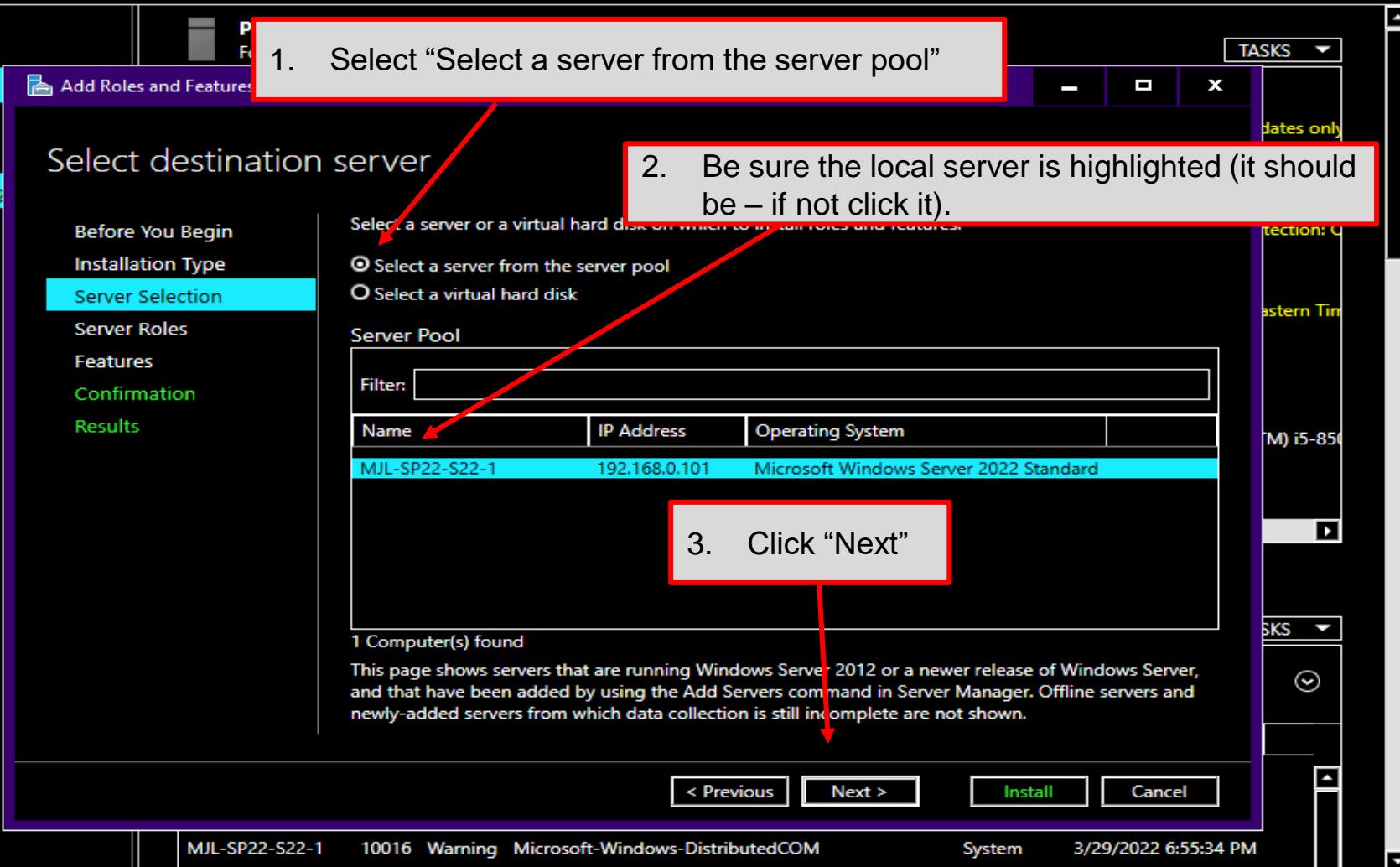
Type here to search

8:16 PM 3/29/2022

1. Select “Select a server from the server pool”

2. Be sure the local server is highlighted (it should be – if not click it).

3. Click “Next”



Server Manager ▶ Local Server

PROPERTIES
For MJL-SP22-S22-1

Add Roles and Features Wizard

Select server roles

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more roles to install on the selected server.

Roles

- Active Directory Certificate Services
- Active Directory Domain Services (Installed)
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server
- + File and Storage Services (1 of 12 installed)
 - Host Guardian Service
 - Hyper-V
 - Network Policy and Access Services
 - Print and Document Services
 - Remote Access
 - Remote Desktop Services
 - Volume Activation Services
 - Web Server (IIS)
 - Windows Deployment Services
 - Windows Server Update Services

Description

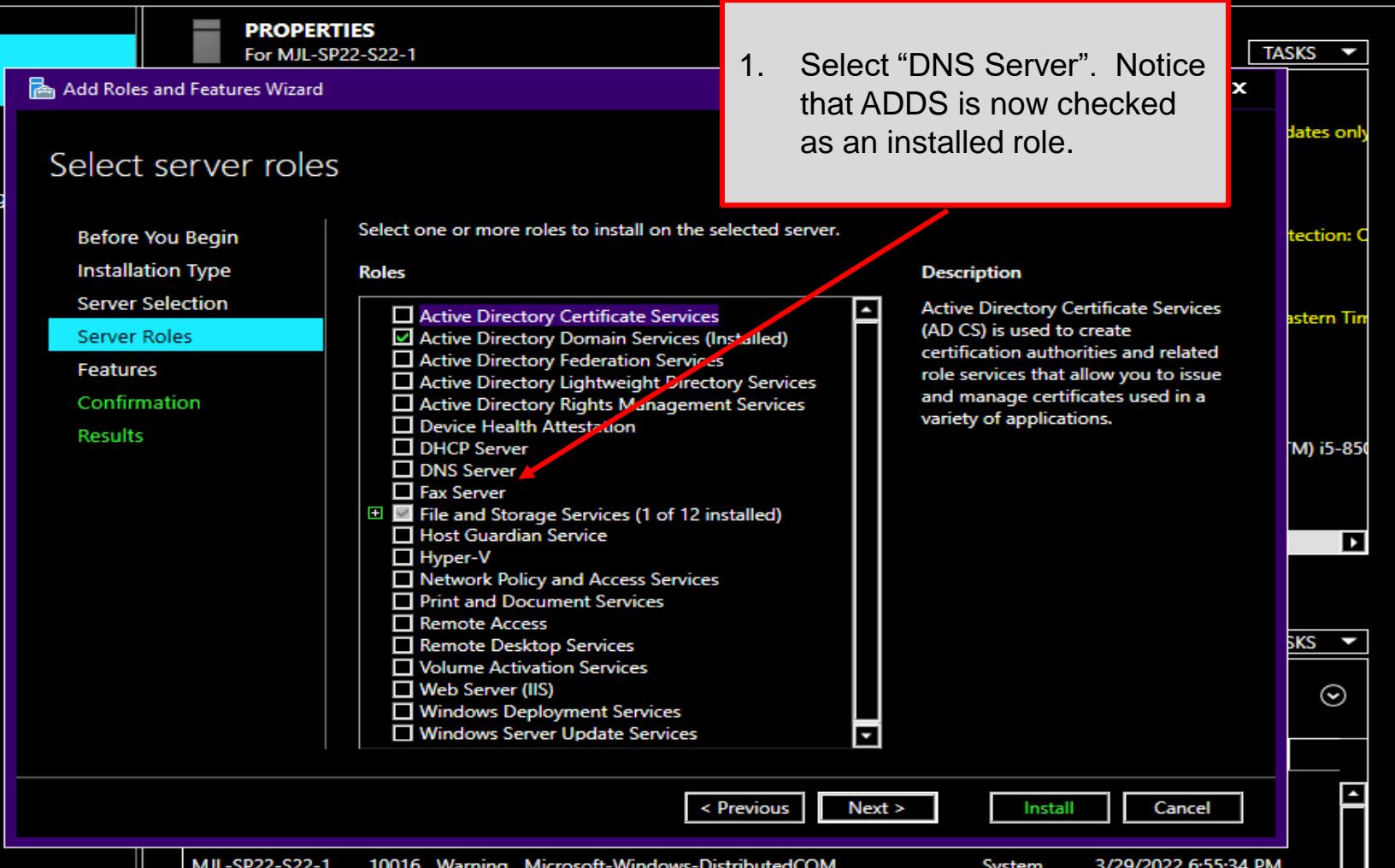
Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.

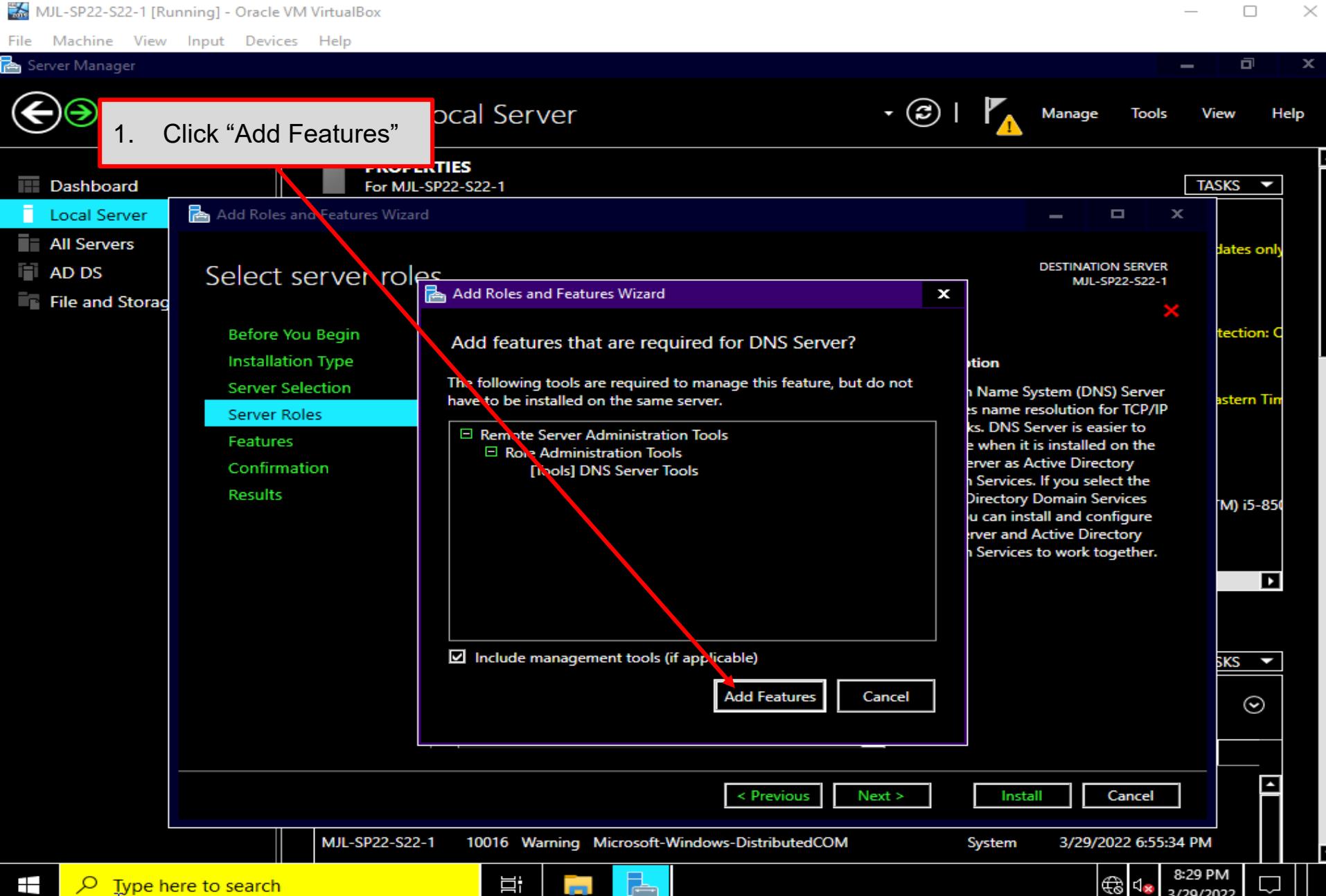
< Previous Next > **Install** Cancel

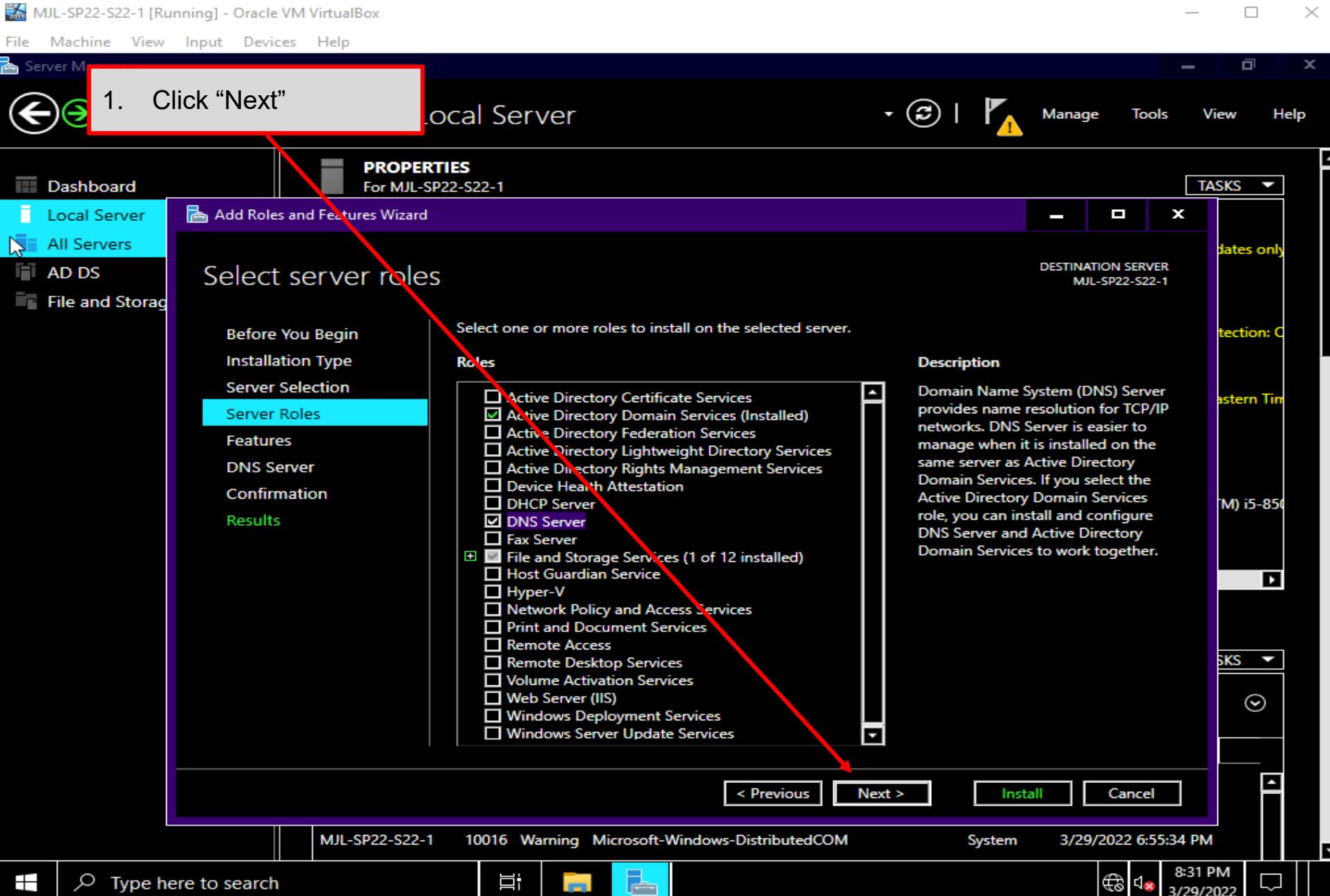
MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

8:24 PM 3/29/2022

1. Select “DNS Server”. Notice that ADDS is now checked as an installed role.







MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server M Local Server

Manage Tools View Help

Dashboard Local Server All Servers AD DS File and Storage

1. Click "Next"

PROPERTIES For MJL-SP22-S22-1

Add Roles and Features Wizard

Select features

Before You Begin Installation Type Server Selection Server Roles Features DNS Server Confirmation Results

Select one or more features to install on the selected server.

Features

- .NET Framework 3.5 Features
- .NET Framework 4.8 Features (2 of 7 installed)
- Background Intelligent Transfer Service (BITS)
- BitLocker Drive Encryption
- BitLocker Network Unlock
- BranchCache
- Client for NFS
- Containers
- Data Center Bridging
- Direct Play
- Enhanced Storage
- Failover Clustering
- Group Policy Management (Installed)
- Host Guardian Hyper-V Support
- I/O Quality of Service
- IIS Hostable Web Core
- Internet Printing Client
- IP Address Management (IPAM) Server
- LPR Port Monitor

Description

.NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:34 PM 3/29/2022

CNT 4603: Project Four Page 41 Dr. Mark Llewellyn ©



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Devices Help

Server Manager Local Server

Manage Tools View Help

Dashboard Local Server All Servers AD DS File and Storage

PROPERTIES For MJL-SP22-S22-1

Add Roles and Features Wizard

DNS Server

Before You Begin Installation Type Server Selection Server Roles Features DNS Server Confirmation Results

DESTINATION SERVER MJL-SP22-S22-1

Domain Name System (DNS) provides a standard method for associating names with numeric Internet addresses. This makes it possible for users to refer to network computers by using easy-to-remember names instead of a long series of numbers. In addition, DNS provides a hierarchical namespace, ensuring that each host name will be unique across a local or wide-area network. Windows DNS services can be integrated with Dynamic Host Configuration Protocol (DHCP) services on Windows, eliminating the need to add DNS records as computers are added to the network.

Things to note:

- DNS server integration with Active Directory Domain Services automatically replicates DNS data along with other Directory Service data, making it easier to manage DNS.
- Active Directory Domain Services requires a DNS server to be installed on the network. If you are installing a domain controller, you can also install the DNS Server role using Active Directory Domain Services Installation Wizard by selecting the Active Directory Domain Services role.

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:37 PM 3/29/2022

CNT 4603: Project Four Page 42 Dr. Mark Llewellyn ©

1. Read this page, then Click "Next"

A red arrow points from the text "1. Read this page, then Click 'Next'" in a red-bordered box at the top left towards the "Next >" button at the bottom right of the wizard window.

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager Local Server

Manage Tools View Help

Dashboard Local Server All Servers AD DS File and Storage

1. Click "Install"

PROPERTIES For MJL-SP22-S22-1

Add Roles and Features Wizard

CONFIRMATION

Confirm installation selections

Before You Begin Installation Type Server Selection Server Roles Features DNS Server Confirmation Results

To install the following roles, role services, or features on selected server, click Install.

Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

DNS Server Remote Server Administration Tools Role Administration Tools DNS Server Tools

Export configuration settings Specify an alternate source path

< Previous Next > Install Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:39 PM 3/29/2022

This screenshot shows the 'Add Roles and Features Wizard' in the Windows Server Manager. The 'Confirmation' step is selected in the left navigation pane. The main area displays the selected roles: 'DNS Server', 'Remote Server Administration Tools', 'Role Administration Tools', and 'DNS Server Tools'. A large red arrow originates from the top-left text '1. Click "Install"' and points directly to the 'Install' button at the bottom right of the wizard window. The status bar at the bottom indicates the system is running and shows the date and time as 3/29/2022 6:55:34 PM.



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Back to Dashboard

Server Manager ▸ Local Server

PROPERTIES
For MJL-SP22-S22-1

DNS Installation proceeding

TASKS

Dashboard Local Server All Servers AD DS File and Storage

Add Roles and Features Wizard

Installation progress

Before You Begin
Installation Type
Server Selection
Server Roles
Features
DNS Server
Confirmation
Results

View installation progress
Feature installation

DESTINATION SERVER
MJL-SP22-S22-1

Installation started on MJL-SP22-S22-1

DNS Server
Remote Server Administration Tools
Role Administration Tools
DNS Server Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings

< Previous Next > Close Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

8:40 PM 3/29/2022

A red arrow points from a callout box containing the text "DNS Installation proceeding" to the "Feature installation" status bar in the wizard interface.



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

PROPERTIES
For MJL-SP22-S22-1

DNS Installation Successful. Click "Close"

Dashboard Local Server All Servers AD DS DNS File and Storage

Add Roles and Features Wizard

Installation progress

Before You Begin Installation Type Server Selection Server Roles Features DNS Server Confirmation Results

View installation progress

Feature installation

Installation succeeded on MJL-SP22-S22-1.

DNS Server Remote Server Administration Tools Role Administration Tools DNS Server Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings

< Previous Next > Close Cancel

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:43 PM 3/29/2022

dates only

tection: C

Eastern Tim

(M) i5-850

SKS



[File](#) [Machine](#) [View](#) [Edit](#) [Tools](#) [Help](#)

1. Return to the window from page 32 and click the link to promote the server to a domain controller.

DESTINATION SERVER
MJL-SP22-S22-1

File Tools View Help

TASKS

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Tim
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

TASKS

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

< Previous Next > Close Cancel

Type here to search

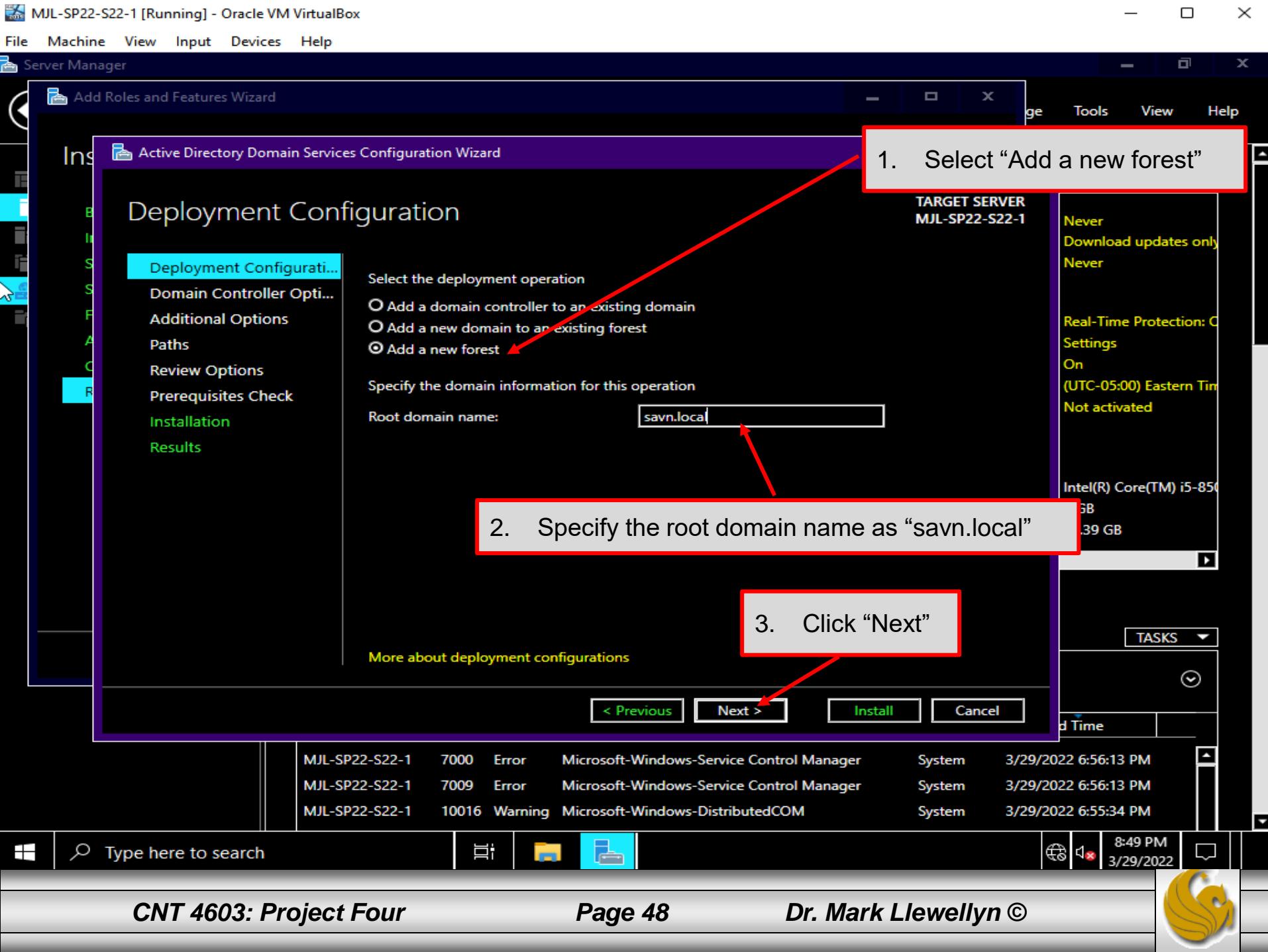
8:46 PM
3/29/2022



Installing AD DS In MJL-SP22-S22-1

- The next step will be to make decisions about the forests and domains that will be part of the network we are creating.
- Recall that a **forest** is a collection of logical **domains**.
- We are going to create a single domain, so our selection will be to create a new domain in a new forest.
- You will enter “savn.local” as the FQDN (fully qualified domain name).
- Because we will have one forest with one domain, the DNS name is called the **forest root domain**.





Installing AD DS In Mark-Server1

- Recall from our earlier discussions about Active Directory that domain controllers can run different versions of Windows Server operating systems.
- The AD DS functional level of a domain or forest depends on which versions of Windows Server operating systems you run on the domain controllers in the domain or forest.
- The domain or forest's advanced features are related to its functional level.
- In our case, we will set the highest functional level, which is Windows Server 2016, since all of our virtual servers are running Windows Server 2016 or above and we do not have any servers running an older version of the operating system.



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Active Directory Domain Services Configuration Wizard

Domain Controller Options

Deployment Configuration... Domain Controller Opt... (selected)

- DNS Options
- Additional Options
- Paths
- Review Options
- Prerequisites Check
- Installation
- Results

Select functional level of the new forest and root domain

Forest functional level: Windows Server 2016

Domain functional level: Windows Server 2016

Specify domain controller capabilities

Domain Name System (DNS) server

Global Catalog (GC)

Read only domain controller (RODC)

Type the Directory Services Restore Mode (DSRM) password

Password:

Confirm password:

More about domain controller options

< Previous Next > Install Cancel

TARGET SE MJL-SP22-S22-1

Real-Time Protection: Off Settings On (UTC-05:00) Eastern Time

Intel(R) Core(TM) i5-8500 2 GB 49.39 GB

TASKS

Time

MJL-SP22-S22-1 7000 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM

MJL-SP22-S22-1 7009 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:51 PM 3/29/2022

1. Set both to Server 2016 level (default).

2. Administrator password on MJL-SP22-S22-1

3. Click "Next"

CNT 4603: Project Four

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Dr. Mark Llewellyn ©



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Active Directory Domain Services Configuration Wizard

DNS Options

A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found... Show more X

Deployment Configuration... Domain Controller Options DNS Options Additional Options Paths Review Options Prerequisites Check Installation Results

Specify DNS delegation options Create DNS delegation

More about DNS delegation < Previous Next > Install Cancel

TARGET SERVER MJL-SP22-S22-1

Never Download updates only Never

Real-Time Protection: C Settings On (UTC-05:00) Eastern Time Not activated

Intel(R) Core(TM) i5-850 2 GB 49.39 GB

Since we will have only one DNS server in our network and a delegation is not required, you can ignore the warning message that will appear.. Click the X to close this warning.

Type here to search

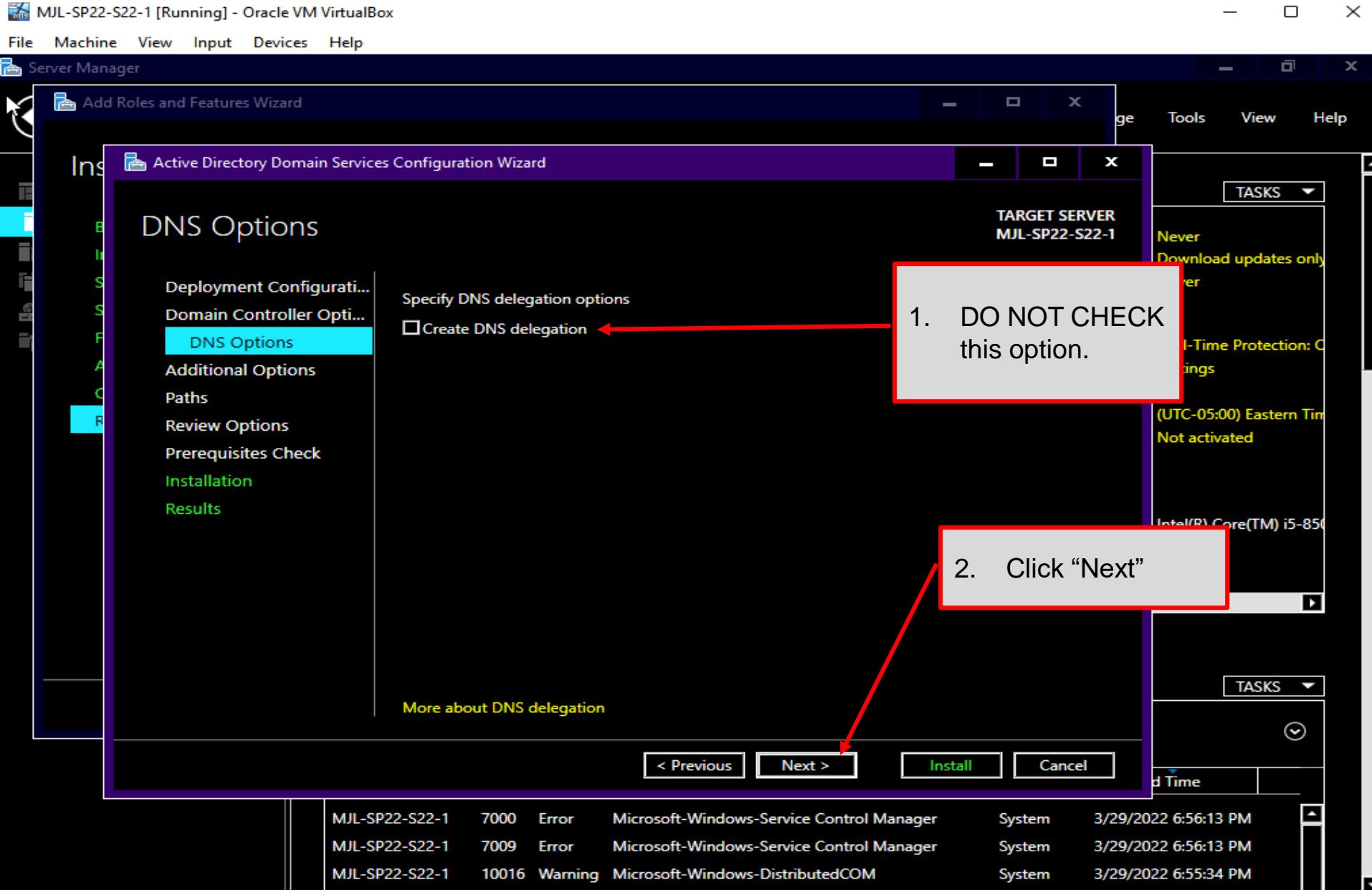
8:53 PM 3/29/2022

CNT 4603: Project Four

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Dr. Mark Llewellyn ©





MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Add Roles and Features Wizard

Active Directory Domain Services Configuration Wizard

Additional Options

Deployment Configuration...
Domain Controller Opti...
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Verify the NetBIOS name assigned to the domain and change it if necessary

The NetBIOS domain name: **SAVN**

TARGET SERVER
MJL-SP22-S22-1
Never
Download updates only
Never
Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

More about additional options

< Previous **Next >** Install Cancel

MJL-SP22-S22-1 7000 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM
MJL-SP22-S22-1 7009 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM
MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM

Type here to search

8:57 PM 3/29/2022

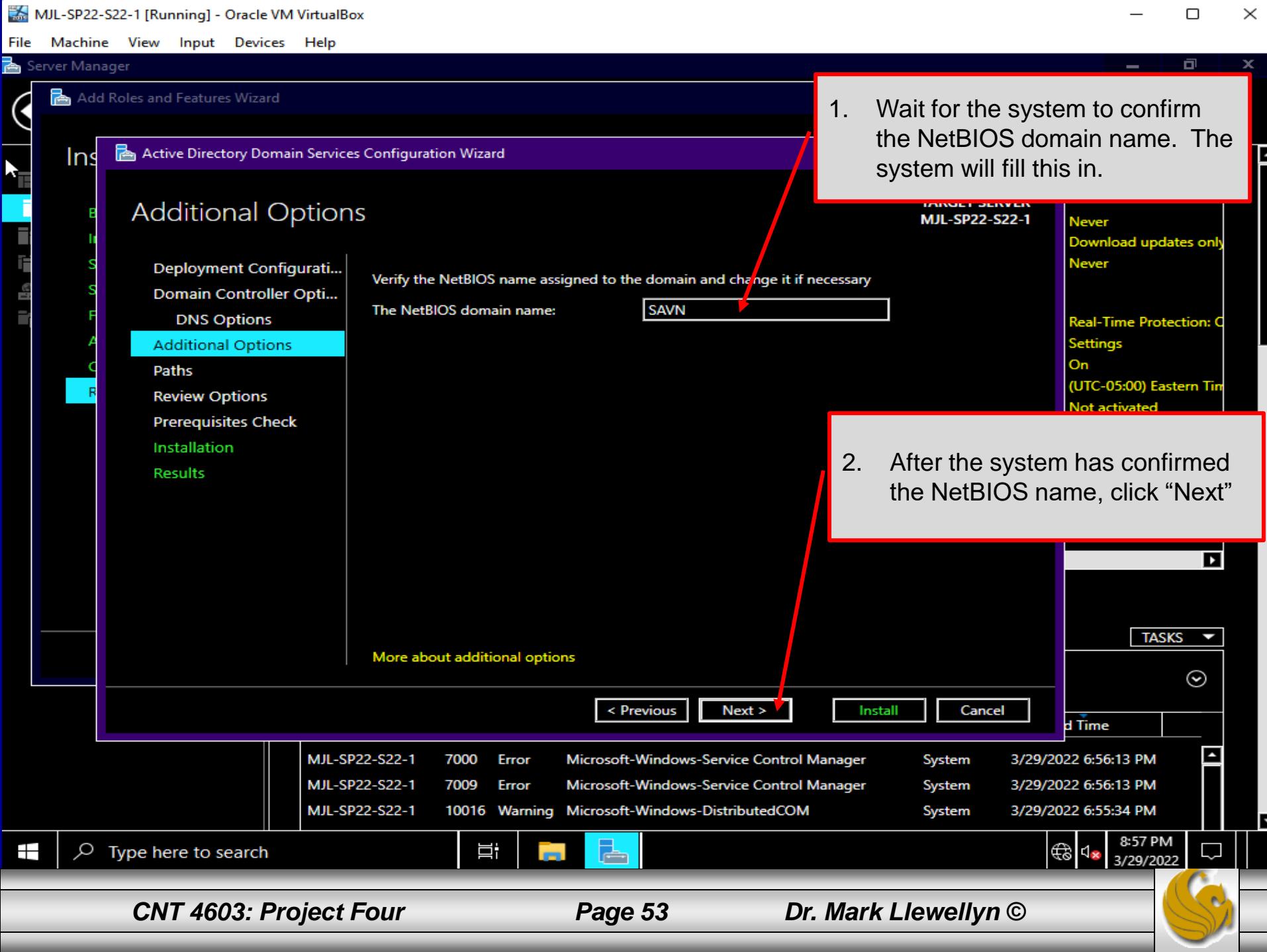
CNT 4603: Project Four

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Dr. Mark Llewellyn ©

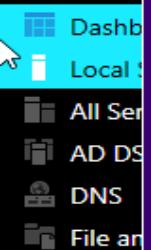
1. Wait for the system to confirm the NetBIOS domain name. The system will fill this in.

2. After the system has confirmed the NetBIOS name, click "Next"



Server Manager ▸ Local Server

Active Directory Domain Services Configuration Wizard



Paths

Deployment Configuration...

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Specify the location of the AD DS database, log files, and SYSVOL

Database folder:

Log files folder:

SYSVOL folder:

TARGET SERVER
MJL-SP22-S22-1Never
Download updates only
NeverReal-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activatedIntel(R) Core(TM) i5-850
2.80 GHz

1. Wait for the system to confirm these three values. The system will fill these in.

2. After the system confirms these three locations. Click "Next".

< Previous

Next >

Install

Cancel

More about Active Directory paths

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Active Directory Domain Services Configuration Wizard

Review Options

Deployment Configuration...
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Review your selections:

Configure this server as the first Active Directory domain controller in a new forest.

The new domain name is "savn.local". This is also the name of the new forest.

The NetBIOS name of the domain: SAVN

Forest Functional Level: Windows Server 2016

Domain Functional Level: Windows Server 2016

Additional Options:

Global catalog: Yes

DNS Server: Yes

Create DNS Delegation: No

These settings can be exported to a Windows PowerShell script to automate additional installations

View script

More about installation options

< Previous Next > Install Cancel

Review the option settings. If anything is incorrect, go back now and fix it. If ok, then click "Next".

Real-Time Protection: C
Settings On (UTC-05:00) Eastern Time Not activated

Intel(R) Core(TM) i5-850 2 GB 49.39 GB

TASKS

Time

MJL-SP22-S22-1 7000 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM

MJL-SP22-S22-1 7009 Error Microsoft-Windows-Service Control Manager System 3/29/2022 6:56:13 PM

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM System 3/29/2022 6:55:34 PM



Type here to search



9:00 PM
3/29/2022





Manage

Tools

View

Help

Active Directory Domain Services Configuration Wizard

TARGET SERVER
MJL-SP22-S22-1

TASKS

Never
Download updates only
Never

Real-Time Protection: C

Prerequisites Check

Deployment Configurati...

Domain Controller Opti...

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

Verifying prerequisites for domain controller operation...

View results

⚠ If you click Install, the server automatically reboots at the end of the promotion operation.

More about prerequisites

< Previous

Next >

Install

Cancel

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

System will check prerequisites necessary for the installation. Go to the next page.



Type here to search

9:01 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager Local Se

Active Directory Domain Services Configuration Wizard

Prerequisites Check

TARGET SERVER
MJL-SP22-S22-1

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Tim
Not activated

Intel(R) Core(TM) i5-850
2 GB
49.39 GB

All prerequisite checks passed successfully. Click 'Install' to begin installation.

Show more ×

Deployment Configuration...
Domain Controller Opti...
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

Rerun prerequisites check

View results

Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (<http://go.microsoft.com/fwlink/?LinkId=104751>).

A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "savn.local". Otherwise, no action is required.

If you click Install, the server automatically reboots at the end of the promotion operation.

More about prerequisites

< Previous Next > Install Cancel

Time

MJL-SP22-S22-1	7000	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	7009	Error	Microsoft-Windows-Service Control Manager	System	3/29/2022 6:56:13 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 6:55:34 PM

Type here to search

9:03 PM
3/29/2022

CNT 4603: Project Four

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Dr. Mark Llewellyn ©

1. Hopefully, you will see this: All prerequisite checks passed successfully.
2. If not, take care of anything that didn't pass – it will tell you what to do.

3. Click "Install"

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▸ Local Server

Active Directory Domain Services Configuration Wizard

Results

This server was successfully configured as a domain controller

Deployment Configuration... ▾ View detailed operation results

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

TARGET SERVER
MJL-SP22-S22-1

Never
Download updates only
Never

Real-Time Protection: C
Settings
On
(UTC-05:00) Eastern Time
Not activated

Intel(R) Core(TM) i5-850
2 GB

More about results

< Previous Next > Close Cancel

MJL-SP22-S22-1 34 Warning disk System 3/29/2022 9:05:59 PM

MJL-SP22-S22-1 34 Warning disk System 3/29/2022 9:05:59 PM

MJL-SP22-S22-1 34 Warning disk System 3/29/2022 9:05:59 PM

Type here to search

9:06 PM 3/29/2022

Successful configuration of the domain controller. Note that both of the warnings listed are fine.

Click "Close" (system may auto restart before you get the chance).

The screenshot shows the 'Active Directory Domain Services Configuration Wizard' window in the 'Results' step. A red arrow points from the top right text to the 'View detailed operation results' section, which contains two warning messages. A second red box highlights the 'Close' button at the bottom right of the wizard window. The status bar at the bottom shows system logs for disk warnings and the current date and time.



Note the new login screen. You are now logging in as the domain server administrator.



SAVN\Administrator

 →

SAVN\Administrat...



Other user



MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager > Dashboard

Dashboard

Local Server

All Servers

AD DS

DNS

File and Storage Services

ROLES AND SERVER GROUPS

Roles: 3 | Server groups: 1 | Servers total: 1

AD DS 1

- Manageability
- Events
- Services
- Performance
- BPA results

DNS 1

- Manageability
- Events
- Services
- Performance
- BPA results

File and Storage Services 1

- Manageability
- Events
- Services
- Performance
- BPA results

Local Server 1

- Manageability
- Events
- 1 Services
- Performance
- BPA results

All Servers 1

- Manageability
- Events
- 1 Services
- Performance
- BPA results

3/29/2022 9:13 PM 3/29/2022 9:13 PM

Be sure the server name shows in ALL screen shots.

When the server has restarted, go to the Server Manager console and from the Dashboard view, you should now show 2 additional roles installed: AD DS and DNS server.

Do a screen capture of this page.

Label it: 1 – AD DS and DNS roles installed.

Type here to search

9:13 PM
3/29/2022



Server Manager ▶ Local Server



Manage

Tools

View

Help

- Dashboard
- Local Server**
- All Servers
- AD DS
- DNS
- File and Storage Services ▾

PROPERTIES		
For MJL-SP22-S22-1		
Computer name	MJL-SP22-S22-1	Last installed update
Domain	savn.local	Windows Update
Microsoft Defender Firewall	Public: Off	Microsoft Defender
Remote management	Enabled	Feedback & Diagn
Remote Desktop	Disabled	IE Enhanced Secur
NIC Teaming	Disabled	Time zone
Ethernet	192.168.0.101	Product ID
Operating system version	Microsoft Windows Server 2022 Standard	Processors
Hardware information	innotek GmbH VirtualBox	Installed memory
		Total disk space

EVENTS

All events | 21 total

TASKS ▾

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	1014	Warning	Microsoft-Windows-DNS Client Events	System	3/29/2022 9:12:25 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 9:11:19 PM
MJL-SP22-S22-1	1014	Warning	Microsoft-Windows-DNS Client Events	System	3/29/2022 9:09:42 PM

Type here to search

9:14 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Manage Tools View Help

Dashboard Local Services All Servers AD DS DNS File and Storage Active Directory Users and Computers

File Action View Help

Active Directory Users and Computers

Name Type DC Type Site

Name	Type	DC Type	Site
MJL-SP22-S22-1	Computer	GC	Default-First-Site

Saved Queries
savn.local
Builtin
Computers
Domain Controllers
ForeignSecurityPrincipals
Managed Service Accounts
Users

Do a screen capture of this page.

Label it: 3 – MJL-SP22-S22-1 set as domain controller for savn.local.

Server Name ID Severity Source Log Date and Time

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-1	1014	Warning	Microsoft-Windows-DNS Client Events	System	3/29/2022 9:12:25 PM
MJL-SP22-S22-1	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 9:11:19 PM
MJL-SP22-S22-1	1014	Warning	Microsoft-Windows-DNS Client Events	System	3/29/2022 9:09:42 PM

Type here to search

9:16 PM 3/29/2022

CNT 4603: Project Four

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Project Four – Joining The Domain

- For a VM to access the network resources of the savn.local domain, the VM must be a member of the domain.
- This process is called **joining a domain**.
- In this part of the project, you will contact the domain controller (MJL-SP22-S22-1) from a VM and request to become a member of the domain.
- The actual process of joining a domain varies somewhat from operating system to operating system, so you will see some differences between the actions when MJL-SP22-S22-2 and MJL-SP22-W10-1 join the domain, but in both cases, you will use the Computer Name/Domain Changes dialog box to accomplish the join.



Joining A Domain – MJL-SP22-S22-2

- To begin the process of joining MJL-SP22-S22-2 to the savn.local network, start both MJL-SP22-S22-1 and MJL-SP22-S22-2 running.
- From a command prompt, have MJL-SP22-S22-2 ping MJL-SP22-S22-1 to verify connectivity. Even though you already did this in Project 3, re-verify here before proceeding. If connectivity is not established, none of the remaining steps will work correctly.
- Also, note that the Preferred DNS Server IP address must now be set to MJL-SP22-S22-1.



MJL-SP22-S22-2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Dashboard PROPERTIES For MJL-SP22-S22-2 TASKS

Administrator: Command Prompt

Administrator: Command Prompt

```
Microsoft windows [Version 10.0.20348.169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping MJL-SP22-S22-1

Pinging MJL-SP22-S22-1 [192.168.0.101] with 32 bytes of data:
Reply from 192.168.0.101: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\Administrator>
```

MJL-SP22-S22-2 pings MJL-SP22-S22-1 to verify connectivity



Joining A Domain – MJL-SP22-S22-2

- From the main screen of the Server Manager in MJL-SP22-S22-2, Select the Local Server and then click on link that represents the workgroup for the server.
- This is shown on the next slide.



Server Manager ▶ Local Server

PROPERTIES
For MJL-SP22-S22-2

Computer name	MJL-SP22-S22-2	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Download updates only
		Last checked for updates	Never
Microsoft Defender Firewall	Public: Off	Microsoft Defender Antivirus	Real-Time Protection: C
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC-05:00) Eastern Time
Ethernet	192.168.1.10		Not activated
Operating system version	Microsoft Windows Server 2022 Standard	Processors	Intel(R) Core(TM) i5-8500
Hardware information	innotek GmbH VirtualBox	Installed memory (RAM)	2 GB
		Total disk space	49.39 GB

EVENTS

All events | 10 total

Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-2	1014	Error	Microsoft-Windows-Security-SPP	Application	3/29/2022 9:31:22 PM
MJL-SP22-S22-2	8200	Error	Microsoft-Windows-Security-SPP	Application	3/29/2022 9:31:22 PM
MJL-SP22-S22-2	1014	Error	Microsoft-Windows-Security-SPP	Application	3/29/2022 9:22:11 PM

1. Click "WORKGROUP" link

Dashboard Local Server All Servers File and Storage Services



MJL-SP22-S22-2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

System Properties

Computer Name | Hardware | Advanced | Remote

Windows uses the following information to identify your computer on the network.

Computer description: Server 2 - Spring 2022 - CNT 4603

For example: "IIS Production Server" or "Accounting Server".

Full computer name: MJL-SP22-S22-2

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.

Change...

OK Cancel Apply

1. Click "Change"

TASKS

Last installed updates Windows Update Never

Download updates only

Last checked for updates Never

Microsoft Defender Antivirus Real-Time Protection: On

Settings (UTC-05:00) Eastern Time Not activated

Product ID

Windows Server 2022 Standard Processors Intel(R) Core(TM) i5-8500

Processor VirtualBox Installed memory (RAM) 2 GB

Total disk space 49.39 GB

EVENTS

All events | 10 total

Filter

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-2 1014 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM ACTIVATE WINDOWS

MJL-SP22-S22-2 8200 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM ACTIVATE WINDOWS

MJL-SP22-S22-2 1014 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM ACTIVATE WINDOWS

Type here to search

10:09 PM 3/29/2022

CNT 4603: Project Four

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Mark Llewellyn ©

10:09 PM 3/29/2022

MJL-SP22-S22-2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

System Properties

Computer Name/Domain Changes

You can change the name and the membership of this computer. Changes might affect access to network resources.

Computer name: MJL-SP22-S22-2

Full computer name: MJL-SP22-S22-2

Member of

Domain: savn.local

Workgroup: WORKGROUP

Windows Update

Last checked for updates

Download updates only

Microsoft Defender Antivirus

Feedback & Diagnostics

IE Enhanced Security Configuration

Time zone

Product ID

Real-Time Protection: C

Settings

On

(UTC-05:00) Eastern Time

Not activated

Windows Server 2022 Standard

Core(TM) i5-850

Installed memory (RAM)

2 GB

Total disk space

49.39 GB

EVENTS

All events | 10 total

Filter

Server Name ID Severity Source Log Date and Time

MJL-SP22-S22-2 1014 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM

MJL-SP22-S22-2 8200 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM

MJL-SP22-S22-2 1014 Error Microsoft-Windows-Security-SPP Application 3/29/2022 9:22:11 PM

TASKS

Activate Windows

Go to 2022-03-29 to activate Windows

10:10 PM 3/29/2022

Type here to search

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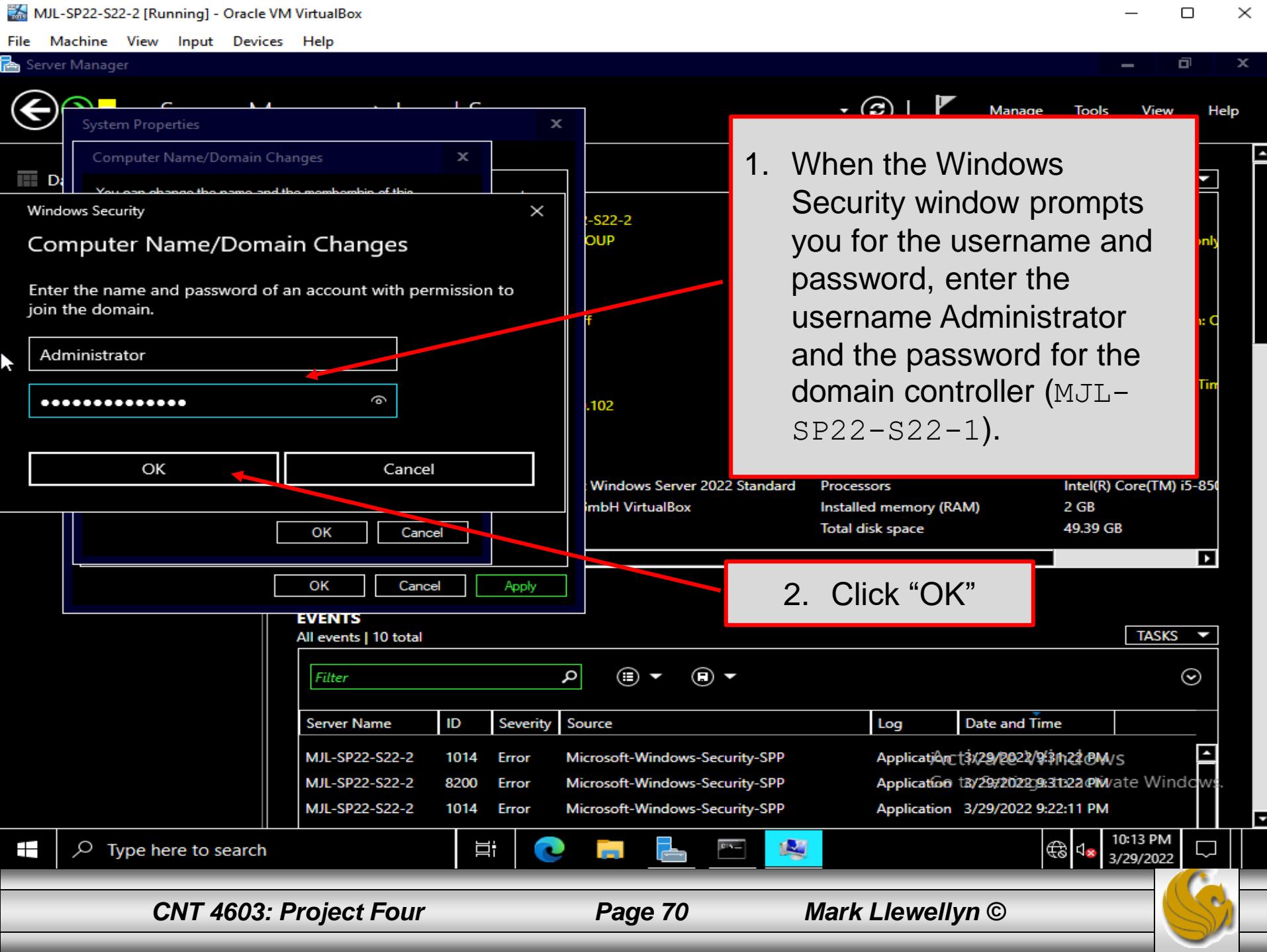
CNT 4603: Project Four

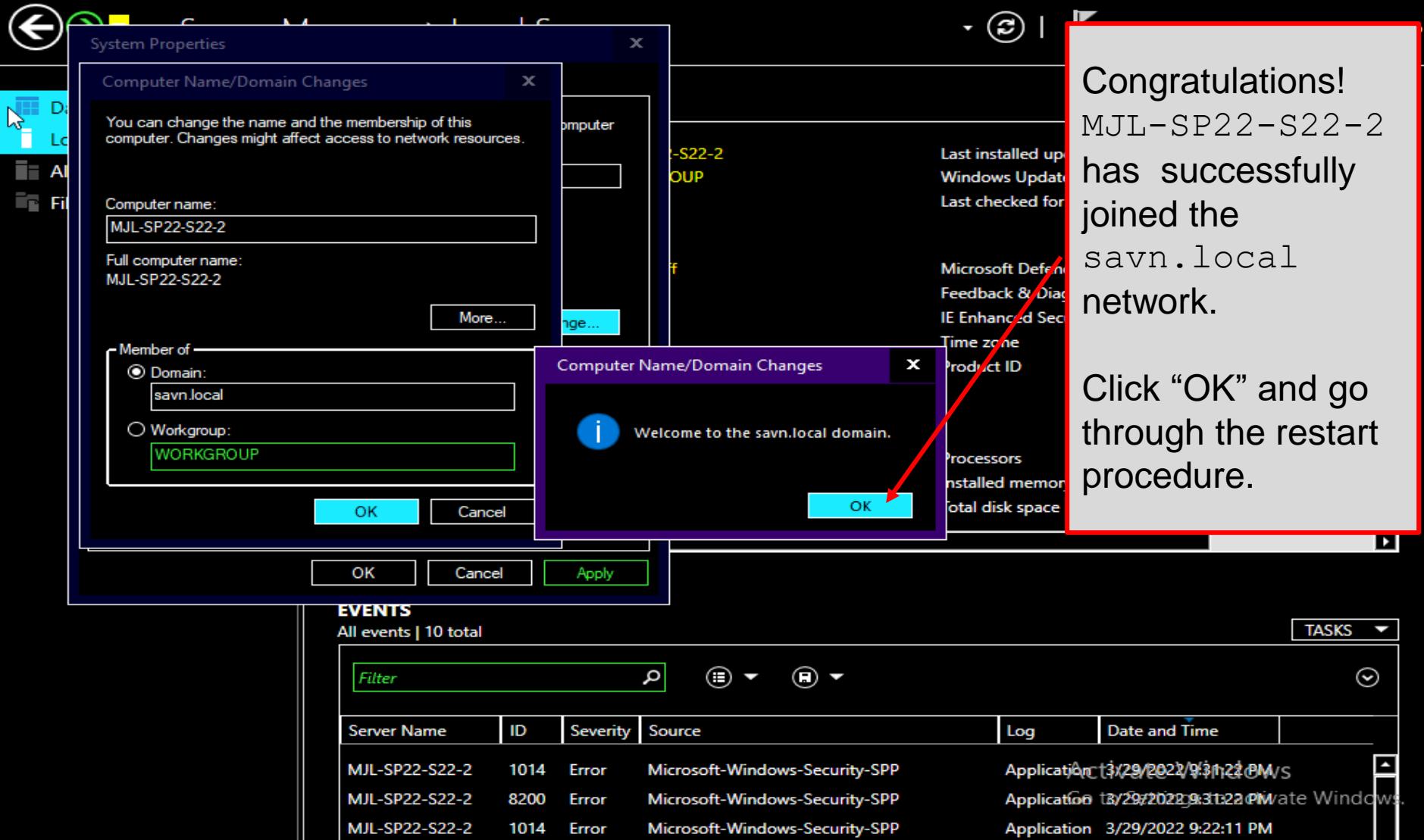
Mark Llewellyn ©

1. Select “Domain” and enter “savn.local”.

2. Click “OK”

The screenshot shows the Windows Server 2022 System Properties window with a 'Computer Name/Domain Changes' dialog open. A red arrow points from the text '1. Select “Domain” and enter “savn.local”.' to the 'Domain:' field in the dialog, which contains 'savn.local'. Another red arrow points from the text '2. Click “OK”' to the 'OK' button at the bottom left of the dialog. The background shows system information like Windows Update, Microsoft Defender, and event logs.





Server Manager ▶ Local Server



Manage

Tools

View

Help

Dashboard

Local Server

All Servers

PROPERTIES
For MJL-SP22-S22-2

Computer name

MJL-SP22-S22-2

Last installed upda

Domain

savn.local

Windows Update

Last checked for

Microsoft Defender Firewall

Domain: On

Microsoft Defender

Remote management

Enabled

Feedback & Diag

Remote Desktop

Disabled

IE Enhanced Secu

NIC Teaming

Disabled

Time zone

Ethernet

192.168.0.102

Product ID

Operating system version

Microsoft Windows Server 2022 Standard

Processors

Hardware information

innotek GmbH VirtualBox

Installed memory

Total disk space

EVENTS

All events | 16 total

Filter



Server Name	ID	Severity	Source	Log	Date and Time
MJL-SP22-S22-2	1014	Warning	Microsoft-Windows-DNS Client Events	System	3/29/2022 10:19:58 PM
MJL-SP22-S22-2	10016	Warning	Microsoft-Windows-DistributedCOM	System	3/29/2022 10:19:53 PM
MJL-SP22-S22-2	6006	Warning	Microsoft-Windows-Winlogon	Application	3/29/2022 10:19:15 PM



Type here to search

10:21 PM
3/29/2022

Joining A Domain – MJL-SP22-W10-1

- The procedure for getting the client VM to join the domain is essentially the same as that of the Server 2022 MJL-SP22-S22-2. I am using a Windows 10 Education OS (you should be too) for MJL-SP22-W10-1 to illustrate joining the savn.local domain.
- Before proceeding, open a Command Prompt in MJL-SP22-W10-1 and verify that MJL-SP22-S22-1 is accessible by pinging the server, as shown on the next page. Make sure that MJL-SP22-W10-1 has its DNS server set to MJL-SP22-S22-1.





Recycle Bin

Command Prompt

Command Prompt

Microsoft Windows [Version 10.0.19043.928]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mark Llewellyn>ping MJL-SP22-S22-1

```
Pinging MJL-SP22-S22-1 [192.168.0.101] with 32 bytes of data:  
Reply from 192.168.0.101: bytes=32 time<1ms TTL=128  
Reply from 192.168.0.101: bytes=32 time=1ms TTL=128  
Reply from 192.168.0.101: bytes=32 time<1ms TTL=128  
Reply from 192.168.0.101: bytes=32 time<1ms TTL=128
```

```
Ping statistics for 192.168.0.101:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

C:\Users\Mark Llewellyn>

MJL-SP22-W10-1 pings MJL-
SP22-S22-1 to verify
connectivity



Type here to search

10:23 PM
3/29/2022

MJL-SP22-W10-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Settings

1. From the Start menu, click Settings. From this page click Accounts

The screenshot shows the Windows Settings interface. At the top left is a circular profile picture of a person named "Mark Llewellyn" with the subtitle "Local Account". Below the profile picture is a search bar with the placeholder "Find a setting" and a magnifying glass icon. To the right of the search bar are three tiles: "OneDrive Sign In" (with a cloud icon), "Web browsing Recommended settings" (with a globe icon), and "Windows Update Last checked: 3 hours ago" (with a refresh icon). The main area contains nine settings categories arranged in a 3x3 grid: "System" (Display, sound, notifications, power), "Devices" (Bluetooth, printers, mouse), "Phone" (Link your Android, iPhone); "Network & Internet" (Wi-Fi, airplane mode, VPN), "Personalization" (Background, lock screen, colors), "Apps" (Uninstall, defaults, optional features); "Accounts" (Your accounts, email, sync, work, family) - this category has a red arrow pointing to it from the instruction above, "Time & Language" (Speech, region, date), and "Ease of Access" (Narrator, magnifier, high contrast); "Search" (Find my files, permissions), "Privacy" (Location, camera, microphone), and "Update & Security" (Windows Update, recovery, backup). The bottom of the screen shows the Windows taskbar with the Start button, a search bar, and icons for File Explorer, Edge, File History, Mail, and Settings. The system tray shows the date and time (10:55 PM 3/29/2022) and a notification icon.

Mark Llewellyn

Local Account

Sign In

OneDrive
Sign In

Windows Update
Last checked: 3 hours ago

Find a setting

System
Display, sound, notifications, power

Devices
Bluetooth, printers, mouse

Phone
Link your Android, iPhone

Network & Internet
Wi-Fi, airplane mode, VPN

Personalization
Background, lock screen, colors

Apps
Uninstall, defaults, optional features

Accounts
Your accounts, email, sync, work, family

Time & Language
Speech, region, date

Ease of Access
Narrator, magnifier, high contrast

Search
Find my files, permissions

Privacy
Location, camera, microphone

Update & Security
Windows Update, recovery, backup

Type here to search

10:55 PM
3/29/2022

CNT 4603: Project Four

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[← Settings](#)[Home](#) [Accounts](#)[Your info](#)[Email & accounts](#)[Sign-in options](#)[Access work or school](#)[Family & other users](#)[Sync your settings](#)

Your info

**MARK LLEWELLYN**

Local Account

Administrator

1. Select Access work or school

Windows is better when your settings and files automatically sync. Use a Microsoft account to easily get all your stuff on all your devices.

[Sign in with a Microsoft account instead](#)

Create your picture



Camera



Browse for one



Type here to search

10:59 PM
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[← Settings](#)[Home](#)Find a setting 

Accounts

[Your info](#)[Email & accounts](#)[Sign-in options](#)[Access work or school](#)[Family & other users](#)[Sync your settings](#)

Access work or school

1. Click Connect

Get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.

[Connect](#)

Related settings

[Add or remove a provisioning package](#)[Export your management log files](#)[Set up an account for taking tests](#)[Enroll only in device management](#)[Get help](#)[Give feedback](#)

< Settings

Home

Find a setting

Accounts

Your info

Email & accounts

Sign-in options

Access work or school

Family & other users

Sync your settings

Microsoft account

X

Set up a work or school account

You'll get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.

Email address

1. Don't enter your email address. Click this link

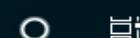
Alternate actions:

[Join this device to a local Active Directory domain](#)

Next



Type here to search

11:03 PM
3/29/2022

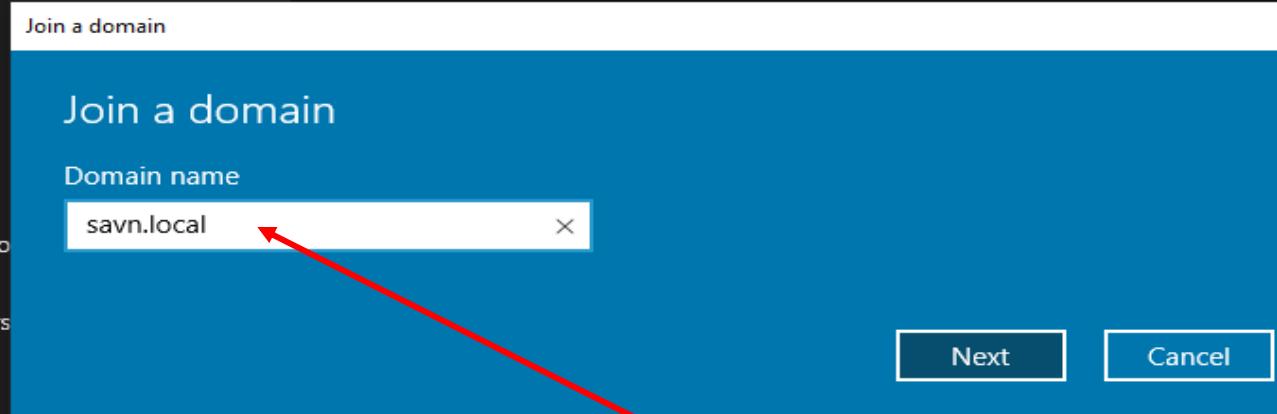
[← Settings](#)[Home](#)Find a setting

Access work or school

Get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.

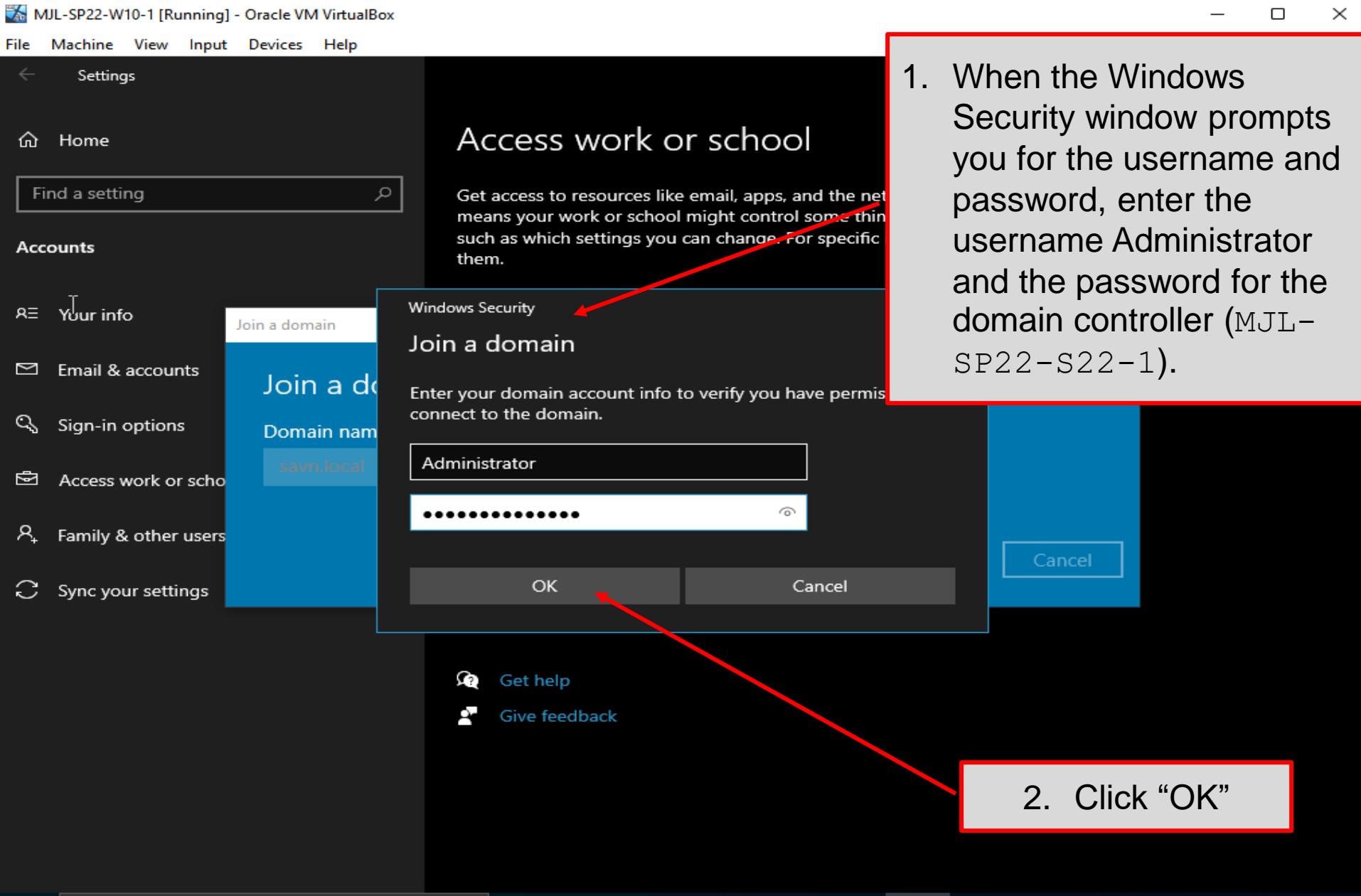
Accounts

Your info

[Email & accounts](#)[Sign-in options](#)[Access work or school](#)[Family & other users](#)[Sync your settings](#)

1. Enter savn.local, then click Next.





Find a setting



Access work or school

Get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device.

Accounts

Add an account

Add an account

Enter the account info for the person who'll be using this PC. If you skip this step, the user will have default permissions for the domain.

User account

Administrator

Account type

Administrator



1. Make sure the Administrator has administrator privileges.

Next

Skip

2. Click "Next"



[← Settings](#)[Home](#) Find a setting **Accounts** Your info Email & accounts Sign-in options Access work or school Family & other users Sync your settings

Access work or school

Get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.

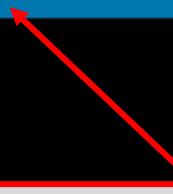
 Connect

Restart your PC

Restart your PC

After you restart, your PC will be joined to this domain: savn.local

[Restart now](#)[Restart later](#)[Enroll only in device management](#) Get help Give feedback

- 
1. MJL-SP22-W10-1 will join the savn.local domain.
 2. Click Restart and go through the restart procedure.



Type here to search

11:13 PM
3/29/2022



← Settings

Home

Find a setting

System

- Storage
- Tablet
- Multitasking
- Projecting to this PC
- Shared experiences
- Clipboard
- Remote Desktop

About

Device specifications

Device name	MJL-SP22-W10-1
Full device name	MJL-SP22-W10-1.savn.local
Processor	Intel(R) Core(TM) i5-8500 CPU @ 3.00GHz
Installed RAM	2.00 GB
Device ID	96786351-ABC7-4E49-BBEB-8EBA59A4DAO
Product ID	00328-50604-99219-AA135
System type	64-bit operating system, x64-based proces
Pen and touch	No pen or touch input is available for this c

Copy

Rename this PC

Windows specifications

Edition	Windows 10 Education N
Version	21H1
Installed on	3/14/2022

After the restart, go back into the Settings → About to see that the VM is now part of the savn.local domain.

Do a screen shot of this page . Label it “ 5 – MJL-SP22-W10-1 joins savn.local domain”



Type here to search

11:23 PM
3/29/2022

MJL-SP22-S22-1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Server Manager

Server Manager ▶ Local Server

Active Directory Users and Computers

File Action View Help

Dashboard Local Services All Servers AD DS DNS File and Storage

Active Directory Users and Computers

Name Type Description

MJL-SP22-S22-2 Computer

MJL-SP22-W10-1 Computer

Saved Queries

savn.local

Builtin

Computers

Domain Controllers

ForeignSecurityPrincipals

Managed Service Accounts

Users

Server Name ID Severity Source

MJL-SP22-S22-1 1014 Warning Microsoft-Windows-DNS Client Events

MJL-SP22-S22-1 10016 Warning Microsoft-Windows-DistributedCOM

MJL-SP22-S22-1 1014 Warning Microsoft-Windows-DNS Client Events

Type here to search

Manage Tools View Help

In the Active Directory Users and Computers administrative tool for MJL-SP22-S22-1, go to the savn.local domain and select Computers. **Do a screen capture of this screen as your final deliverable for this project. Label it: 6 – Computers in savn.local AD.**

This screen shows both MJL-SP22-S22-2 and MJL-SP22-W10-1 as part of the savn.local domain as controlled by MJL-SP22-S22-1.

System 3/29/2022 9:09:42 PM 11:17 PM 3/29/2022

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Scalable Systems logo

Project Four

- CONGRATULATIONS! You have successfully installed AD onto your VPN of three VMs. This is a major system administration task that you have completed.
- The deliverables for this project consists of the six screen shots as shown on pages 60, 61, 62, 72, 83, and 84 respectively.
- Do not destroy any of your VMs that are now part of the savn.local network.
- Be sure to properly shutdown each VM after you use it by selecting the correct option from the power option menu. DO NOT just close the VM window, or just shut down your host system. Always do a proper stop of each VM.

