Jacob Chedore

Lab 1 – Preparing the Course Environment

Windows-Server-2022

File   Edit   View   VM   Tabs   Help   ▶

New Virtual Machine...   Ctrl+N

New Virtual Machine Wizard   ×

vmware
WORKSTATION
PRO™
17

Welcome to the New Virtual Machine Wizard

What type of configuration do you want?

○ Typical (recommended)

Create a Workstation 17.5 or later virtual machine in a few easy steps.

● Custom (advanced)

Create a virtual machine with advanced options, such as a SCSI controller type, virtual disk type and compatibility with older VMware products.

| Help | < Back | Next > | Cancel |

New Virtual Machine Wizard   ×

Choose the Virtual Machine Hardware Compatibility
Which hardware features are needed for this virtual machine?

Virtual machine hardware compatibility

Hardware compatibility: Workstation 17.5 or later   ∨

Compatible with: ☑ ESX Server

Compatible products: Limitations:

Fusion 13.5 or later   ▲   128 GB memory   ▲
Workstation 17.5 or later   32 processors
                                   10 network adapters
                                   8 TB disk size
                                   8 GB shared graphics memory

                            ▼   ▼

| Help | < Back | Next > | Cancel |

New Virtual Machine Wizard ✕

Guest Operating System Installation
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

○ Installer disc:

No drives available

● Installer disc image file (iso):

C:\ISOs\WindowsServer2022-EN\Windows_server_20 ∨ | Browse... |

▭ Windows Server 2022 detected.
This operating system will use Easy Install. (What's this?)

○ I will install the operating system later.

The virtual machine will be created with a blank hard disk.

| Help | | < Back | Next > | Cancel |

New Virtual Machine Wizard ✕

Easy Install Information
This is used to install Windows Server 2022.

Windows product key

7FW3K - 3NWHH - R8WFG - GDTRR - R3PY7

Version of Windows to install

Windows Server 2022 Datacenter ∨

Personalize Windows

Full name: administrator

Password: •••••••• (optional)

Confirm: ••••••••

☐ Log on automatically (requires a password)

| Help | | < Back | Next > | Cancel |

New Virtual Machine Wizard ✕

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:

DC110

Location:

C:\VMs\DC110 | Browse... |

The default location can be changed at Edit > Preferences.

| < Back | Next > | Cancel |

New Virtual Machine Wizard   ✕

Firmware Type
What kind of boot device should this virtual machine have?

Firmware type
○ BIOS
● UEFI
   ☐ Secure Boot

< Back   Next >   Cancel

New Virtual Machine Wizard   ✕

Ready to Create Virtual Machine
Click Finish to create the virtual machine and start installing Windows
Server 2022 and then VMware Tools.

The virtual machine will be created with the following settings:

Name:	DC110
Location:	C:\VMs\DC110
Version:	Workstation 17.5 or later
Operating System:	Windows Server 2022
Hard Disk:	100 GB, Split
Memory:	8192 MB
Network Adapter:	NAT, LAN Segment
Other Devices:	4 CPU cores, CD/DVD, USB Controller, Sound Card

Customize Hardware...

☑ Power on this virtual machine after creation

< Back   Finish   Cancel

IPv4 Address   192.168.10.1
IPv4 Subnet Mask   255.255.255.0
IPv4 Default Gateway
IPv4 DNS Server   192.168.10.1

System Properties ✕

Computer Name Hardware Advanced **Remote**

Remote Assistance

☐ Allow Remote Assistance connections to this computer

[Advanced...]

Remote Desktop

Choose an option, and then specify who can connect.

◯ Don't allow remote connections to this computer

◉ Allow remote connections to this computer

☑ Allow connections only from computers running Remote Desktop with Network Level Authentication (recommended)

Help me choose   [Select Users...]

[OK]   [Cancel]   [Apply]

| Computer name | DC110 |
| Workgroup | WORKGROUP |

Microsoft Defender Firewall	Public: On
Remote management	Enabled
Remote Desktop	Enabled
NIC Teaming	Disabled
Ethernet0	IPv4 address assigned by DHCP, IPv6 enabled
Ethernet1	192.168.10.1, IPv6 enabled

```
PS C:\Users\Administrator> netsh advfirewall firewall add rule name="Allow ICMPv4-In" protocol=icmpv4:8,any dir=in actio
n=allow
Ok.
```

Windows-Server-2025

New Virtual Machine Wizard   ✕

Guest Operating System Installation
A virtual machine is like a physical computer; it needs an operating
system. How will you install the guest operating system?

Install from:

○ Installer disc:

No drives available   ⌄

● Installer disc image file (iso):

C:\ISOs\WindowsServer2025-EN\Windows_server_20 ⌄   [Browse...]

☐ Windows Server 2025 detected.
This operating system will use Easy Install. (What's this?)

○ I will install the operating system later.

The virtual machine will be created with a blank hard disk.

[Help]   [< Back] [Next >]   [Cancel]

New Virtual Machine Wizard   ✕

Easy Install Information
This is used to install Windows Server 2025.

Windows product key

HMP2Y - T9NJ2 - Q8MH6 - 2VGM9 - CDQMB

Version of Windows to install

Windows Server 2025 Standard Core   ⌄

Personalize Windows

Full name: administrator

Password: •••••••••   (optional)

Confirm: •••••••••

☐ Log on automatically (requires a password)

[Help]   [< Back] [Next >]   [Cancel]

New Virtual Machine Wizard   ✕

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:

DC210

Location:

C:\VMs\DC210   [Browse...]

The default location can be changed at Edit > Preferences.

[< Back] [Next >]   [Cancel]

New Virtual Machine Wizard   ✕

Firmware Type
    What kind of boot device should this virtual machine have?

Firmware type

○ BIOS

● UEFI

    ☐ Secure Boot

                         [< Back]   [Next >]   [Cancel]

New Virtual Machine Wizard   ✕

Ready to Create Virtual Machine
    Click Finish to create the virtual machine and start installing Windows
    Server 2025 and then VMware Tools.

The virtual machine will be created with the following settings:

Name:	DC210
Location:	C:\VMs\DC210
Version:	Workstation 17.5 or later
Operating System:	Windows Server 2025
Hard Disk:	60 GB, Split
Memory:	8192 MB
Network Adapter:	LAN Segment
Other Devices:	2 CPU cores, CD/DVD, USB Controller, Sound Card

[Customize Hardware...]

☑ Power on this virtual machine after creation

                         [< Back]   [Finish]   [Cancel]

```
================================================================
              Welcome to Windows Server 2025 Standard
================================================================

   1)  Domain/workgroup:            Workgroup: WORKGROUP
   2)  Computer name:               DC210
   3)  Add local administrator
   4)  Remote management:           Enabled

   5)  Update setting:              Download only
   6)  Install updates
   7)  Remote desktop:              Enabled (more secure clients)

   8)  Network settings
   9)  Date and time
   10) Diagnostic data setting:     Required
   11) Windows activation

   12) Log off user
   13) Restart server
   14) Shut down server
   15) Exit to command line (PowerShell)

Enter number to select an option:
```

```
NIC index:      5
Name:           Ethernet0
Description:    Intel(R) 82574L Gigabit Network Connection
IP address:     192.168.10.2,
                fe80::599:4b4e:d6b8:f3bf
Subnet mask:    255.255.255.0
DHCP enabled: False

Default gateway: 192.168.10.1
1st DNS server:  192.168.10.1
2nd DNS server:
3rd DNS server:

   1) Set network adapter address
   2) Set DNS servers
   3) Clear DNS server settings
   4) Rename network adapter

Enter selection (Blank=Cancel):
```

```
PS C:\Users\Administrator> netsh advfirewall firewall add rule name="Allow ICMPv4-In" protocol=icmpv4:8,any dir=in a
ction=allow
Ok.
```

Windows-Server-2022 (Second)

New Virtual Machine Wizard   ✕

Guest Operating System Installation
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

○ Installer disc:

    No drives available   ⌄

⦿ Installer disc image file (iso):

    C:\ISOs\WindowsServer2022-EN\Windows_server_20 ⌄   [Browse...]

    ⌷ Windows Server 2022 detected.
       This operating system will use Easy Install. (What's this?)

○ I will install the operating system later.

    The virtual machine will be created with a blank hard disk.

[Help]   [< Back]   [Next >]   [Cancel]

New Virtual Machine Wizard   ✕

Easy Install Information
This is used to install Windows Server 2022.

Windows product key

    7FW3K-3NWHH-R8WFG-GDTRR-R3PY7

Version of Windows to install

    Windows Server 2022 Datacenter   ⌄

Personalize Windows

    Full name: administrator

    Password: ••••••••   (optional)

    Confirm: ••••••••

☐ Log on automatically (requires a password)

[Help]   [< Back]   [Next >]   [Cancel]

New Virtual Machine Wizard   ×

Name the Virtual Machine
   What name would you like to use for this virtual machine?
_____

Virtual machine name:

DC310
_____

Location:

C:\VMs\DC310   [Browse...]
_____

The default location can be changed at Edit > Preferences.

                        [< Back] [Next >] [Cancel]

New Virtual Machine Wizard   ×

Firmware Type
   What kind of boot device should this virtual machine have?
_____

Firmware type

○ BIOS

⦿ UEFI

     ☐ Secure Boot

                        [< Back] [Next >] [Cancel]

New Virtual Machine Wizard   ✕

Ready to Create Virtual Machine
   Click Finish to create the virtual machine and start installing Windows
   Server 2022 and then VMware Tools.

The virtual machine will be created with the following settings:

Name:	DC310
Location:	C:\VMs\DC310
Version:	Workstation 17.5 or later
Operating System:	Windows Server 2022
Hard Disk:	64 GB, Split
Memory:	6144 MB
Network Adapter:	LAN Segment
Other Devices:	4 CPU cores, CD/DVD, USB Controller, Sound Card

   Customize Hardware...

☑ Power on this virtual machine after creation

   < Back   Finish   Cancel

IPv4 Address	192.168.10.3
IPv4 Subnet Mask	255.255.255.0
IPv4 Default Gateway	
IPv4 DNS Server	192.168.10.1

```
PS C:\Users\Administrator> netsh advfirewall firewall add rule name="Allow ICMPv4-In" protocol=icmpv4:8,any dir=in actio
n-allow
Ok.
```

Windows 11

New Virtual Machine Wizard   ✕

Guest Operating System Installation
   A virtual machine is like a physical computer; it needs an operating
   system. How will you install the guest operating system?

Install from:

○ Installer disc:

   No drives available

● Installer disc image file (iso):

   [C:\ISOs\Windows11-EN\Win11-EN.iso   ] Browse...
   🖸 Windows 11 x64 detected.

○ I will install the operating system later.

   The virtual machine will be created with a blank hard disk.

   Help   < Back   Next >   Cancel

New Virtual Machine Wizard   ✕

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:

Client10

Location:

C:\VMs\Client10   Browse...

The default location can be changed at Edit > Preferences.

< Back   Next >   Cancel

New Virtual Machine Wizard   ✕

Encryption Information
How would you like to encrypt this virtual machine?

This Guest OS requires an encrypted Trusted Platform Module to operate.

Your files will be encrypted using a password you must set. This password is stored in the systems credential manager. Keep a copy of the password in a safe place, you can not start this VM without it.

Choose Encryption Type

⚪ All the files (.vmdk, .vmx, etc) for this virtual machine are encrypted.

🔵 Only the files needed to support a TPM are encrypted. (.nvram, .vmss, .vmem, .vmx, .vmsn)

Password   ••••••••••••••••••••   Copy

Confirm Password   ••••••••••••••••••••

☑ Remember the password on this machine in Credential Manager

< Back   Next >   Cancel

New Virtual Machine Wizard   ✕

Firmware Type
What kind of boot device should this virtual machine have?

Firmware type

⚪ BIOS

🔵 UEFI

☐ Secure Boot

< Back   Next >   Cancel

New Virtual Machine Wizard   ✕

Ready to Create Virtual Machine
   Click Finish to create the virtual machine and start installing Windows 11
   x64.

The virtual machine will be created with the following settings:

Name:	Client10
Location:	C:\VMs\Client10
Version:	Workstation 17.5 or later
Operating System:	Windows 11 x64
Hard Disk:	64 GB, Split
Memory:	6144 MB
Network Adapter:	LAN Segment, NAT
Other Devices:	2 CPU cores, CD/DVD, USB Controller, Sound Card

   Customize Hardware...

☑ Power on this virtual machine after creation

                    < Back   Finish   Cancel

Product key

The product key should be with the box the DVD came in or on your email receipt.
It looks similar to this: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

Enter Product key
   237NF-QT8QD-YHC2M-D8CG2-76DFM

Your product key works! Continue when you're ready.

Administrator: C:\WINDOWS\system32\cmd.exe   — □ ✕

Microsoft Windows [Version 10.0.26100.1742]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>start ms-cxh:localonly

                                                    Next

Who's going to use this PC?

jchedore

Make it secure.

•••••••••

•••••••••

In case you forget your password

What was your first pet's name?

test

What's the name of the city where yo

test

What was your childhood nickname?

test

IP assignment:
Manual
IPv4 address:
192.168.10.100
IPv4 mask:
255.255.255.0

DNS server assignment:
Manual
IPv4 DNS servers:
192.168.10.1 (Unencrypted)

```
C:\Users\jchedore>hostname
Client10
```

```
PS C:\WINDOWS\system32> netsh advfirewall firewall add rule name="Allow ICMPv4-In" protocol=icmpv4:8,any dir=in action=a
llow
Ok.
```

Ping Tests

From Windows-Server-2022 (DC110)
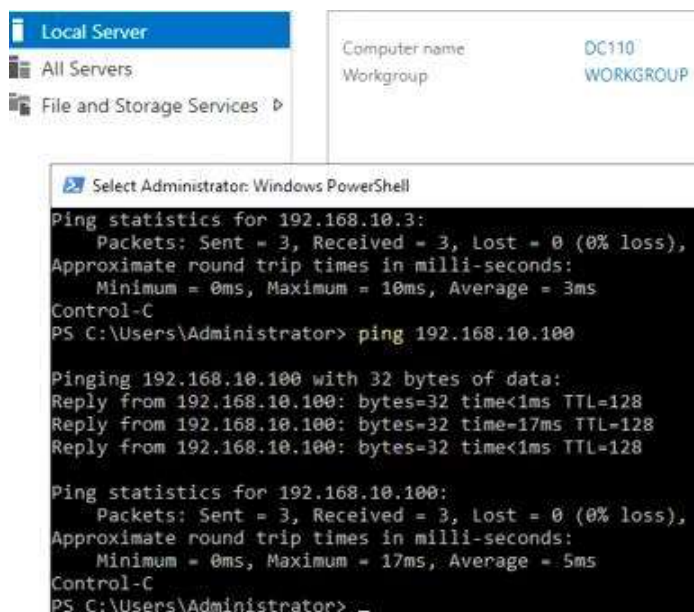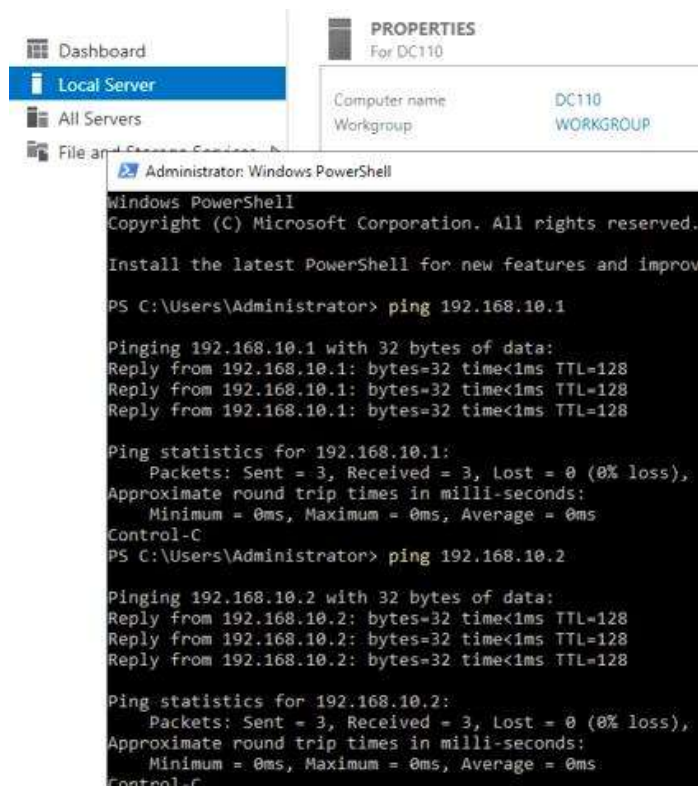
From Windows-Server-2025 (DC210)

```
Administrator: C:\WINDOWS\system32\cmd.exe

WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\Administrator> ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.2:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.3

Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
```



```
Administrator: C:\WINDOWS\system32\cmd.exe

Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.3:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.1000
Ping request could not find host 192.168.10.1000. Please check the name and try again.
PS C:\Users\Administrator> ping 192.168.10.100

Pinging 192.168.10.100 with 32 bytes of data:
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.100:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator>
```

From Windows-Server-2022 (DC310)

Computer name	DC310	La:
Workgroup	WORKGROUP	Wi
		La:

Administrator: Windows PowerShell

```
Ok.

PS C:\Users\Administrator> ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.2:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.3

Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
```

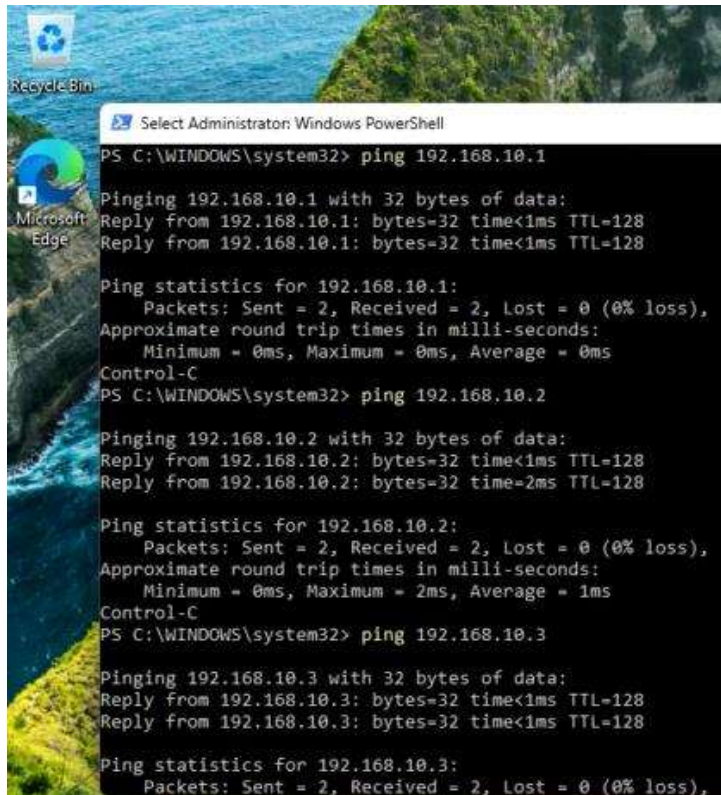| Computer name | DC310 | Last |
| Workgroup | WORKGROUP | Win |
| | | Last |

Administrator: Windows PowerShell

```
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.3

Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.3:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> ping 192.168.10.100

Pinging 192.168.10.100 with 32 bytes of data:
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128
Reply from 192.168.10.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.100:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
PS C:\Users\Administrator> _
```

From Windows 11 (Client10)

Testing remote desktop

Windows Security ✕

Enter your credentials

These credentials will be used to connect to 192.168.10.1.

User name

administrator

Password

•••••••••

☐ Remember me

[OK]   Cancel

Server Manager   ✕ ⏻ ⊿⊿⊿   192.168.10.1   — ▢ ✕   — ▢ ✕

(←)(→) ▾   Server Manager ‣ Local Server   ▾ ↻ | ⌐   Manage Tools View Help

▦ Dashboard

▌ Local Server

▤ All Servers

▥ File and Storage Services ▷

PROPERTIES
For DC110   TASKS ▾

Computer name   DC110   Last installed updates   Never
Workgroup   WORKGROUP   Windows Update   Download updates on
                                        Last checked for updates Today at 7:24 PM

🖳 Remote Desktop Connection   —   ✕

🖥️ **Remote Desktop**
Connection

Computer: 192.168.10.2   ▾

User name: administrator

You will be asked for credentials when you connect.

🔽 Show Options   Connect   Help

Windows Security ✕

Enter your credentials

These credentials will be used to connect to 192.168.10.1.

User name

administrator

Password

•••••••••

☐ Remember me

[OK]   Cancel

SConfig: Windows Server 2025 Standard, DC210

192.168.10.2

```
=================================================================
               Welcome to Windows Server 2025 Standard
=================================================================

    1) Domain/workgroup:           Workgroup: WORKGROUP
    2) Computer name:              DC210
    3) Add local administrator
    4) Remote management:          Enabled
```

Remote Desktop Connection

Remote Desktop Connection

Computer: 192.168.10.3

User name: administrator

You will be asked for credentials when you connect.

Show Options   Connect   Help

🛡 Windows Security   ✕

Enter your credentials

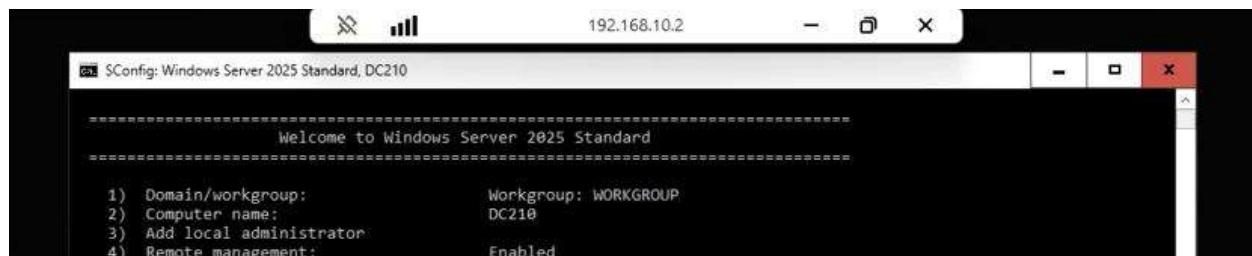These credentials will be used to connect to 192.168.10.3.

User name

administrator

Password

•••••••••

☐ Remember me

| OK | Cancel |

Server Manager

192.168.10.3

Server Manager ‣ Local Server

Manage   Tools   View   Help

- Dashboard
- **Local Server**
- All Servers
- File and Storage Services ▷

PROPERTIES
For DC310   TASKS ▼

Computer name	DC310	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Download updates only, us...
		Last checked for updates	Never