Lab 5: Remote Access

Windows Server Labs

<PLACEHOLDER NAME>

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## Introduction

In previous labs we introduced multiple ways to interact with and manage Windows machines. Server manager, PowerShell Sessions and WAC are some examples. Some other ways such as SSH for Windows, Windows Remote Management and VNC will be introduced in other courses but feel free to explore these options to your own liking.

In this lab, we’ll explore one more method of remote access that can be used to manage both Windows servers and Windows clients, called the “Remote Desktop Protocol” (RDP). Additionally, we’ll also summarise some of the other access methods that were seen before, and have a look at how they integrate with each other and remote desktop.

## Learning Goals

# Knowledge (what you need to know)

* What is remote desktop and how do you start it.

# Abilities (what you need to be able to do)

* Manage machines with remote desktop
* Configure remote desktop

## Requirements

Your Win11, CORE and GUI machines are part of the same Active Directory domain, and can access each other.

## Remote Desktop Services

1. The Remote Desktop Protocol (RDP) is a network protocol developed by Microsoft to “securely” connect to an external desktop of a GUI server. However, even though RDP is called secure, remote desktop connections are not enabled by default. Check this in the following 2 ways (make sure that at least your GUI and Win11 machines are fully booted up before doing this!):
   1. Sign in to your Windows 11 VM with your personal domain user account and try to connect to your GUI server using the tool: “mstsc” (win + r). Does this work? After some time, a popup window will provide a number of possible reasons/explanations. What is - according to you – the real/main reason it fails?

Remote access to the server is not enabled

* 1. Sign in directly on your GUI server with the built-in Administrator account and check the properties of the “local server” in Server Manager. Take a look at the line “Remote Desktop”. It is indeed disabled by default. Change this default setting to ensure that your GUI server is accessible via RDP. Make sure that you add user **authentication** as an additional security measure. Use NLA = Network Level Authentication. Paste a screenshot below where you changed this setting.

Graphical user interface, text, application, email

Description automatically generated

1. Based on the default configuration of your now-enabled RDP, which users can create an RDP connection to the GUI server? TIP: use the “select users…” button. Do not add any extra users.

Graphical user interface, text, application, email

Description automatically generated

1. Test the custom setting by creating an RDP connection to your GUI server from the Windows 11 VM. Use the options below (via the “show options” button).
   1. Computer: The **name** of your GUI server
   2. User name: Your personal domain user account

Graphical user interface, text, application, email

Description automatically generated

* 1. Local disk drive (i.e. from your win11) must be accessible in the RDP session.

Graphical user interface, text, application

Description automatically generated

Test this last setting, after you’ve created an RDP connection. Open the Windows file explorer and go to “This PC”. Paste below a screenshot that shows that the Win11 drive is available in the RDP session.

Graphical user interface, application

Description automatically generated

1. Take a look (in VMware workstation) directly on your GUI server. Did you logout?

no

1. Now we’ll find out how many users can simultaneously create an RDP connection to the GUI server. From your host (laptop), create an RDP connection to your GUI server using the following options:
   1. Computer: the IP of your GUI server
   2. User name: your personal domain user account

Please note that MAC users will need to download and install the Microsoft Remote Desktop client tool. Why do you think you get a warning about the certificate that is used by RDP?

For security reasons

1. Is the RDP from the win11 VM still up, are you still logged in on the GUI? Finally, switch back to an RDP session from your win11 VM.

You cannot do RDP simultaneously

1. On your GUI server (directly, not the RDP session), use Task manager to:
   1. Verify that 2 users are indeed logged in to your GUI server (1 via console, 1 via RDP from the win11 VM). Paste below a screenshot of the complete task manager window, showing all logged in users.

Graphical user interface

Description automatically generated with medium confidence

* 1. Do the same thing with PowerShell using the get-ciminstance cmdlet with the classname win32\_computersystem and selecting the username(s). Do you see 2 users?

No, I only see

Text

Description automatically generated

* 1. Send a message to your personal domain user account (check in the RDP session if you have succeeded)

Graphical user interface, text, application, email

Description automatically generated

* 1. Disconnect your personal domain user account and paste a screenshot of the message you get on your win11 VM.

Graphical user interface, application

Description automatically generated

1. Start the RDP session once more from your win11. On your GUI server, use the legacy Windows command **query user** and **query session** to get information about users and sessions on your GUI server. Disconnect the RDP session and run the commands again and note the difference. Paste below a screenshot of both commands along with their output.

A picture containing graphical user interface

Description automatically generated

1. Through task manager, you can **disconnect** users from the server, but also permanently log out users. The legacy Windows command logoff also has an option (use /? for more information) with which the administrator can completely log out your personal domain user account. Try this and verify with the commands of the previous question(s).

Graphical user interface

Description automatically generated

1. From your host (laptop), create an RDP connection to your GUI server using the following options:
   1. Computer: the IP of your GUI server
   2. User name: your personal domain user account
2. Create a new domain administrator account on your GUI server named Administrator2 by copying the built-in Administrator account. Because we copy, the new user will be immediately member of all groups of the first user.   
     
   From your host, now try to make a second (simultaneous) RDP connection to your GUI server, using the following options:
   1. Computer: the IP of your GUI
   2. User name: the new administrator2 account

A new window will appear on your screen (paste a screenshot below) and disconnect your personal user account. After issuing the disconnection go to your RDP window of your personal user account. You should be prompted the question to either agree or disagree. If you don’t do anything you will be automatically disconnected after a few seconds, how many seconds?

Graphical user interface, text, application

Description automatically generated

About 15 second.

## Mixing it up: WAC, Remote Desktop and (Remote) Powershell

As we’ve seen before, Windows Admin Center (WAC) is a new, browser-based remote management interface for Windows machines. To allow for more flexibility in administering these machines, Microsoft has integrated a number of other tools, like RDP and Powershell, into this interface. In the following section, we’ll explore some of the possibilities this provides. Now, we’ll remotely manage the CORE server, so make sure that all three virtual machines (GUI, CORE and Win11) are booted up (the GUI server is needed to provide DNS services).

1. Log in to the Win11 VM with your domain administrator account, start Windows Admin Center and connect to the CORE server. Go to the “Remote Desktop” tool page, and try to remotely log in (allow to connect with the provided certificate). Does this work? Why (not)?

I am not allowed to click on the connect button.

1. Like with the GUI server, we’ll first need to change the server’s configurations. Fortunately, this time we don’t need to go to the server itself to change this setting. Go to the “Settings” tool page in WAC (bottom left) and correct the required setting. Do you notice something missing, compared to the configuration window in question 1.b.? WAC is still under development, and from time to time, you’ll find some omissions like this.

There is no select users

Graphical user interface, text, application, email

Description automatically generated

1. Now go back to the Remote Desktop tool page, and try to log in to the CORE server. Does sconfig show that remote desktop connections are possible? Use the legacy commands to check the currently active users and sessions on the CORE server.

Graphical user interface, text

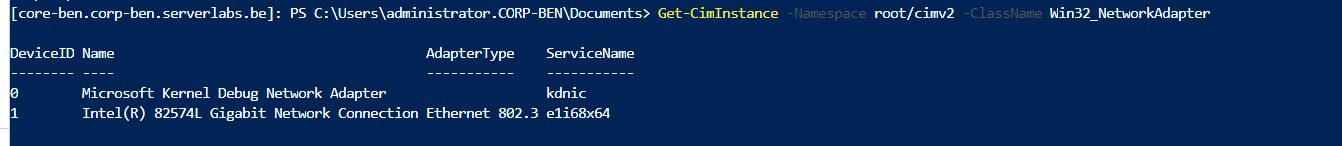
Description automatically generated

1. Now let’s look at the integrated remote powershell feature in WAC. Go to the “Powershell” tool page, and notice that a remote powershell environment is set up automatically. By pressing the “up” arrow key, you can see some of the commands that were used to do this. Was a remote desktop session initiated for this? (check this with the legacy “query” command). As what user are you working on the core server?

Text

Description automatically generated

1. In its back-end services, WAC actually uses powershell commands to configure and retrieve settings of the remote host. Microsoft even decided to include some samples of the code they used for this in the WAC interface. For each of the tool windows, you can find this sample code by clicking the “>\_” button at the top right of the interface. Search for the code that is used in the Overview window to retrieve properties of the server’s Network Interface Cards, and test if you can run this code yourself in the powershell window for the CORE server. Take a screenshot of the results and paste it below.



## Extensions - Optional Assignments

1. From your host, you should be able to configure all 3 machines to have remote access using the Enter-PSSession and Invoke-Command. Check if this is already possible for your machines and if not make sure it works.

Search a new PowerShell cmdlet to create PS-sessions instead of entering one. Figure out a way to create 3 sessions to each of your virtual machines (the gui, the core and the win11). Using a PowerShell oneliner retrieve the IP addresses of all machines using the previously created sessions.