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CT5052NP Network Operating System

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Logbook 5

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1.Introduction

Remote Desktop Protocol

Remote Desktop Protocol (RDP) is a Microsoft proprietary which enables remote access to Windows servers, allowing users to run applications remotely. It provides network access for a remote user over an encrypted channel. While RDP employs authentication and encryption, security vulnerabilities persist, necessitating enhanced approaches. Desktop-as-a-Service solutions offer similar functionality in cloud environments, with bandwidth requirements varying based on application types and user mix. Mobile cloud computing faces challenges in adapting standard thin client solutions like RDP to wireless environments, requiring efficient compression techniques to reduce data exchange and conserve battery life. RDP's widespread use by network administrators and remote workers has led to its exploitation by threat actors for malicious activities such as data infiltration and malware deployment. Consequently, understanding RDP-based artifacts is crucial for digital forensics investigations where RDP involvement is suspected. These findings highlight the importance of considering security, performance, and forensic implications when implementing RDP solutions. (Protocol, 2019)

Bridge Adapter

Bridge adapters play a crucial role in enabling seamless interoperability between heterogeneous devices in various network environments. The multimedia room bridge adapter (MRBA) system manages diverse devices and supports multiple services in distributed home networks. In the imaging domain, PTP/IP adapters allow legacy Picture Transfer Protocol (PTP) devices to connect to TCP/IP networks, combining PTP's ease of use with network ubiquity. These adapters can be plugged into USB ports of cameras and printers, enabling them to function over wireless LANs. In high-performance computing, the Infini Bridge adapter integrates switching capabilities and supports high-speed links, hardware transport, and quality of service for InfiniBand networks. These bridge adapters demonstrate the importance of facilitating communication between different network protocols and standards, enhancing connectivity and functionality across various devices and systems. (Dash, 2013)

Network Address Translation (NAT)

Network Address Translation (NAT) is a technology that allows multiple devices on a local network to share a single public IP address, addressing the limitations of IPv4 address space. NAT operates by mapping IP addresses from one realm to another, providing transparent routing to hosts. There are two main types of NAT: Basic NAT, which maps IP addresses between groups, and Network Address Port Translation (NAPT), which translates multiple network addresses and their TCP/UDP ports into a single network address and its ports. While NAT is valuable for network administrators, it poses challenges for security infrastructure, particularly for intrusion detection and prevention systems (IDS/IPS). Despite these challenges, NAT remains a crucial tool in managing IPv4 address exhaustion and facilitating the transition to IPv6. (Dash, 2013)

2. Objective

In this log 5 the main objective of this log is host static website in guest OS in windows server 2022 and access it from host OS as well as from other computer devices within the same LAN. There is an another objective for log 5 which is enabling remote desktop features in windows server 2022 and access it from host OS.

3 Steps for log

Step 1

First open Virtual Box and select the virtual environment. After selecting the virtual environment, select the “settings” button.

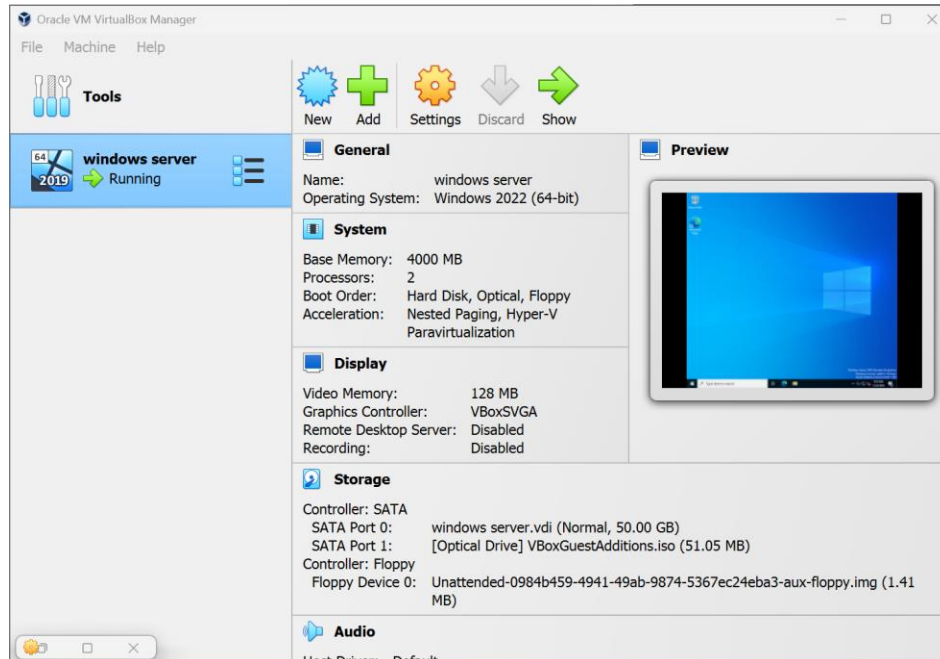


Figure 1: Virtual Box

Step 2

Now, click on setting and go to network select Bridged Adapter in Attached to option on right side. Now click on Ok button and run our Windows Server 2022

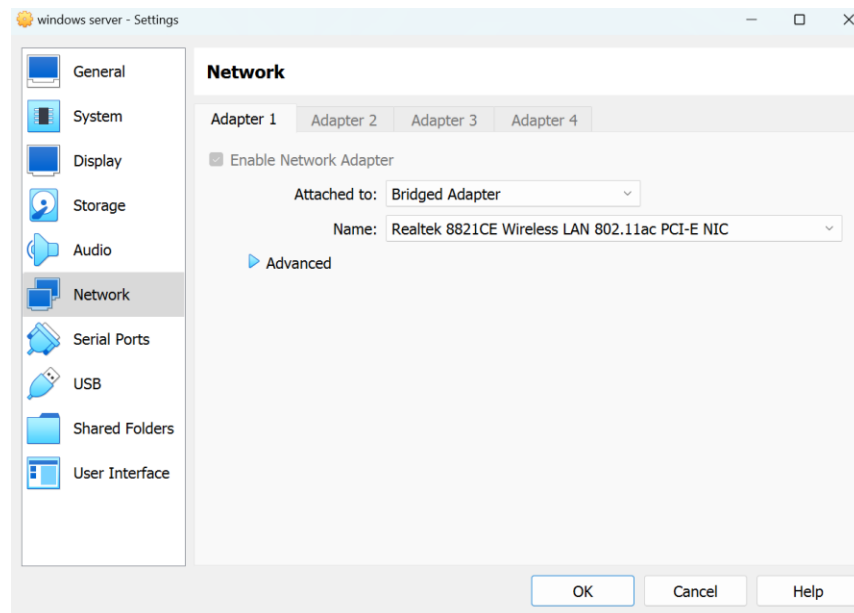
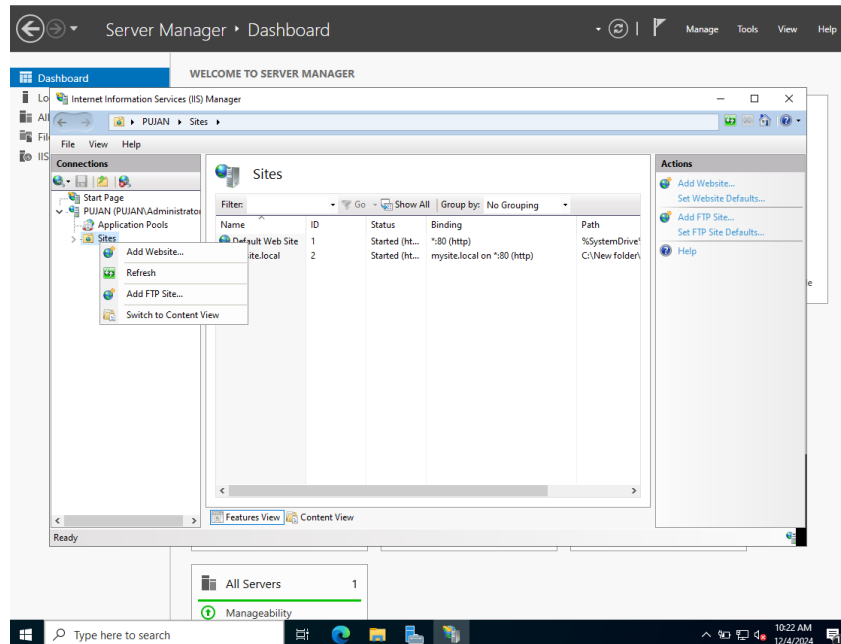
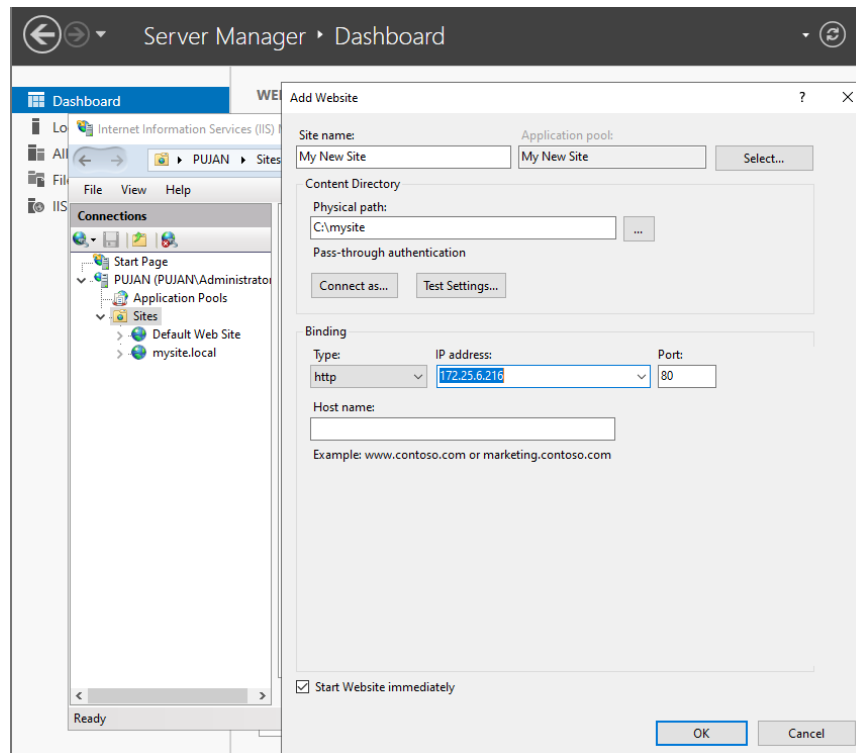


Figure 2: Network Adapter enable

Step 3

Open IIS and add website with given instructions

*Figure 3: Opening (IIS)**Figure 4: Add new website*

Step 4

After that we can see our site name on the list. let's browse our site by clicking on "Browse" followed by your IP address on the right side. This will open our website in browser.

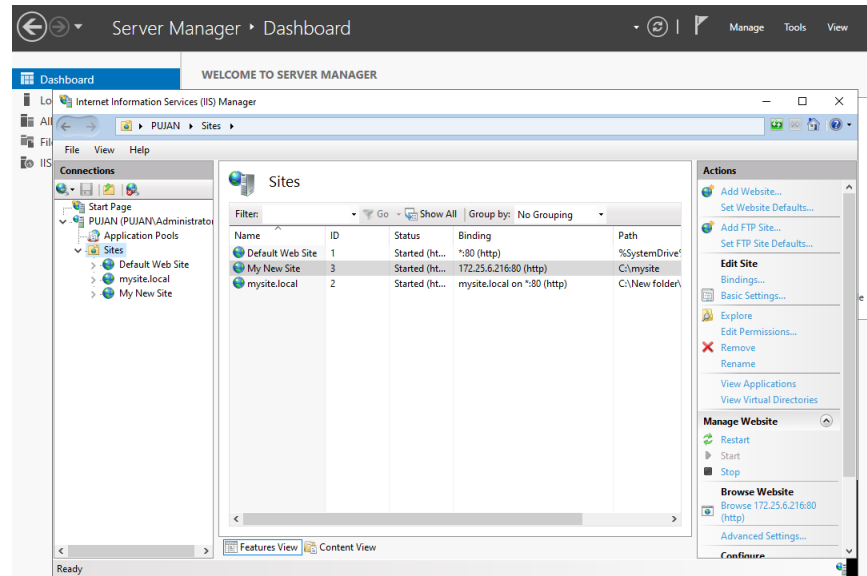


Figure 5: After web site added.

Step 5

Now, we can see the website live.

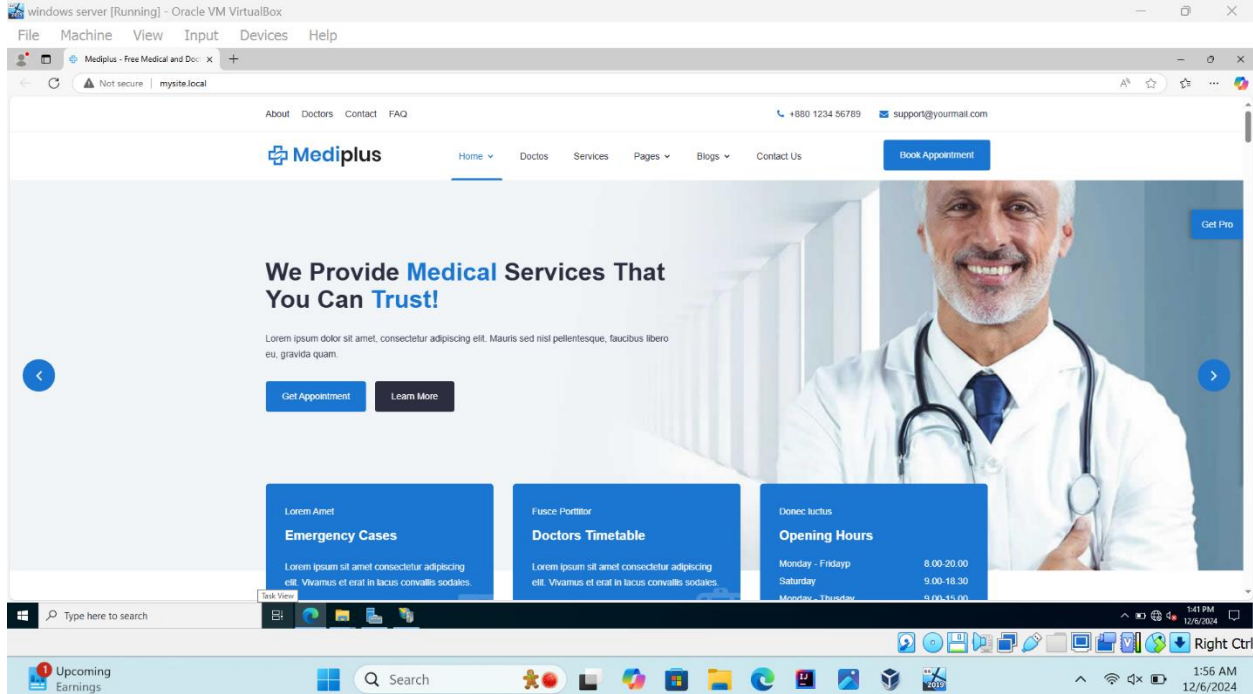


Figure 6: website

Step 6

Type the IP address of Guest OS in the browser of Host OS and see if your website is accessible from Host OS or not.

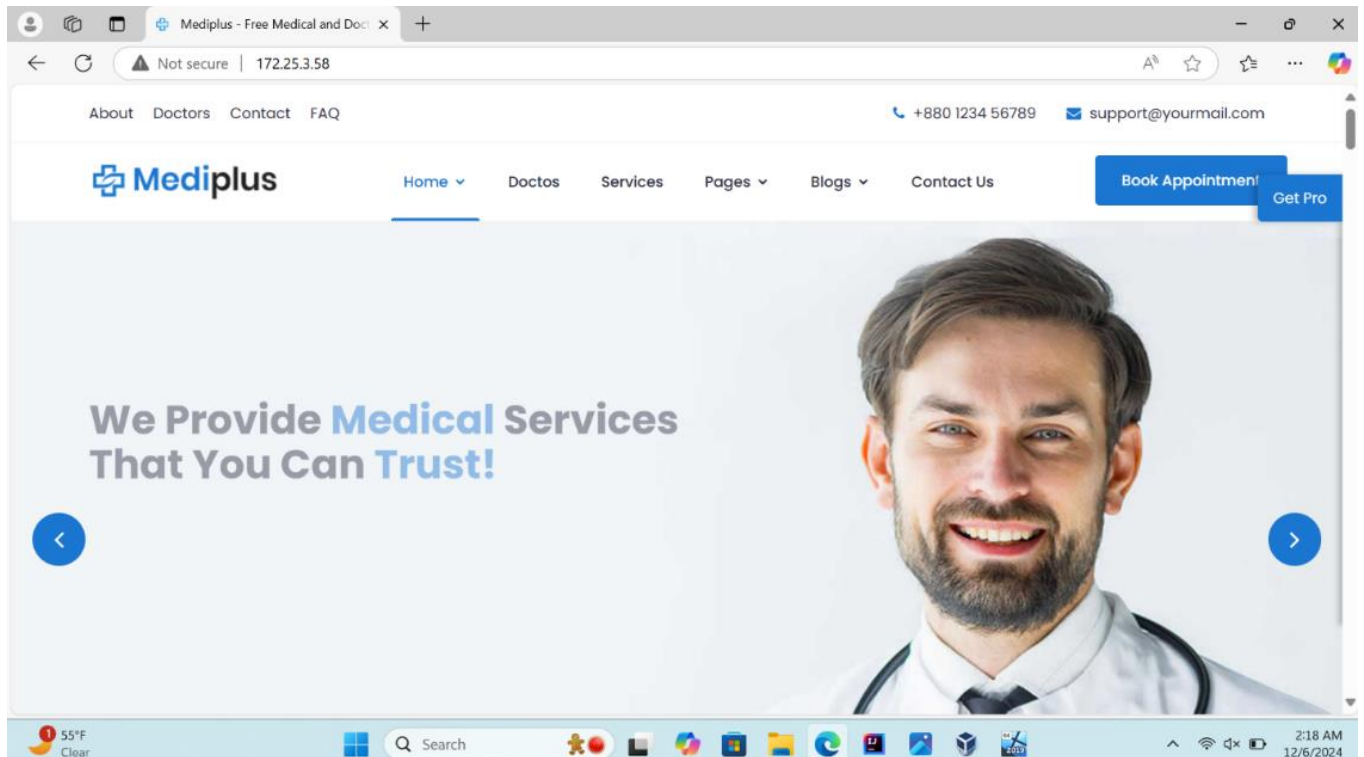


Figure 7: Website from Ip address

Requirements: We need to download the Extension pack for virtual box. First confirm the version of Virtual box that you have and download the extension pack from the following link :
<https://download.virtualbox.org/virtualbox/>

Step 7

You can check version of your virtual box by clicking on Help on Virtual Box manager and then click on About VirtualBox.

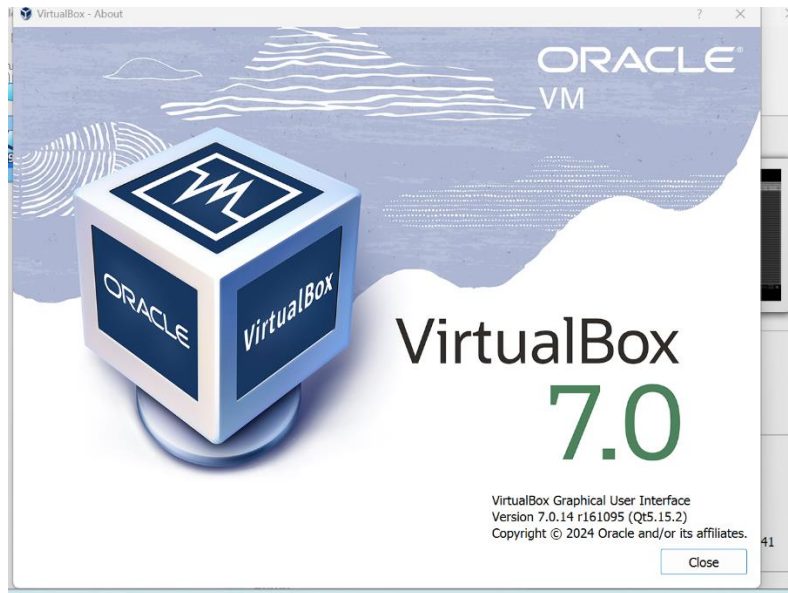


Figure 8: Checking VM version

Step 8

Now, we should connect our windows server from host OS with remote connection. Considering the VM's above setting now we are heading towards remote connection to Guest OS from Host OS.

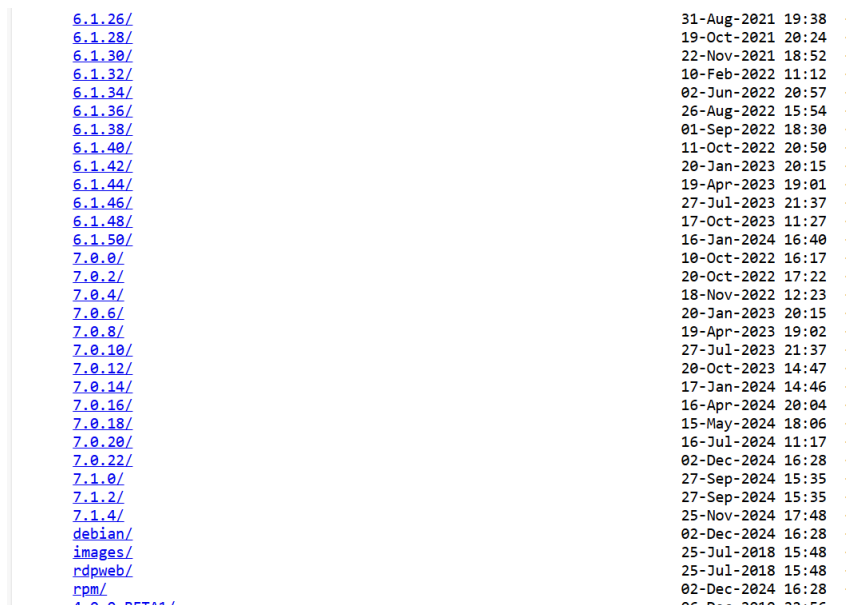


Figure 9: Selecting the version you have

Step 9

After choosing your version link click on the Ext pack as on the following pic and download it.

Index of /virtualbox/7.0.14

Name	Last modified	Size
Parent Directory		
MD5SUMS	17-Jan-2024 15:50	1.9K
Oracle_VM_VirtualBox_Extension_Pack-7.0.14-161095.vbox-extpack	15-Jan-2024 17:39	18M
Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack	15-Jan-2024 17:39	18M
SDKRef.pdf	15-Jan-2024 17:39	3.1M
SHA256SUMS	17-Jan-2024 15:50	2.7K
UserManual.pdf	15-Jan-2024 17:39	4.4M
VBoxGuestAdditions_7.0.14.iso	15-Jan-2024 17:39	52M
VirtualBox-7.0-7.0.14_161095_el7-1.x86_64.rpm	15-Jan-2024 17:43	95M
VirtualBox-7.0-7.0.14_161095_el8-1.x86_64.rpm	15-Jan-2024 17:43	95M
VirtualBox-7.0-7.0.14_161095_el9-1.x86_64.rpm	15-Jan-2024 17:43	93M
VirtualBox-7.0-7.0.14_161095_fedora35-1.x86_64.rpm	15-Jan-2024 17:43	93M
VirtualBox-7.0-7.0.14_161095_fedora36-1.x86_64.rpm	15-Jan-2024 17:43	93M
VirtualBox-7.0-7.0.14_161095_openSUSE153-1.x86_64.rpm	15-Jan-2024 17:43	88M
VirtualBox-7.0.14-161095-linux_amd64.run	15-Jan-2024 17:39	114M
VirtualBox-7.0.14-161095-OSX.dmg	15-Jan-2024 17:39	128M
VirtualBox-7.0.14-161095-Solaris.p5p	15-Jan-2024 17:39	122M
VirtualBox-7.0.14-161095-SunOS.tar.gz	15-Jan-2024 17:39	121M
VirtualBox-7.0.14-161095-Win.exe	15-Jan-2024 17:39	107M
VirtualBox-7.0.14.tar.bz2	15-Jan-2024 17:39	168M
VirtualBox-7.0.14a.tar.bz2	17-Jan-2024 15:50	168M
VirtualBoxSDK-7.0.14-161095.zip	15-Jan-2024 17:39	15M
virtualbox-7.0_7.0.14-161095~Debian~bookworm_amd64.deb	15-Jan-2024 17:22	89M
virtualbox-7.0_7.0.14-161095~Debian~bullseye_amd64.deb	15-Jan-2024 17:22	88M
virtualbox-7.0_7.0.14-161095~Debian~buster_amd64.deb	15-Jan-2024 17:22	88M
virtualbox-7.0_7.0.14-161095~Ubuntu~bionic_amd64.deb	15-Jan-2024 17:22	89M
virtualbox-7.0_7.0.14-161095~Ubuntu~focal_amd64.deb	15-Jan-2024 17:22	89M

Figure 10: After Downloading it.

Step 10

Install the extension pack which we just down now

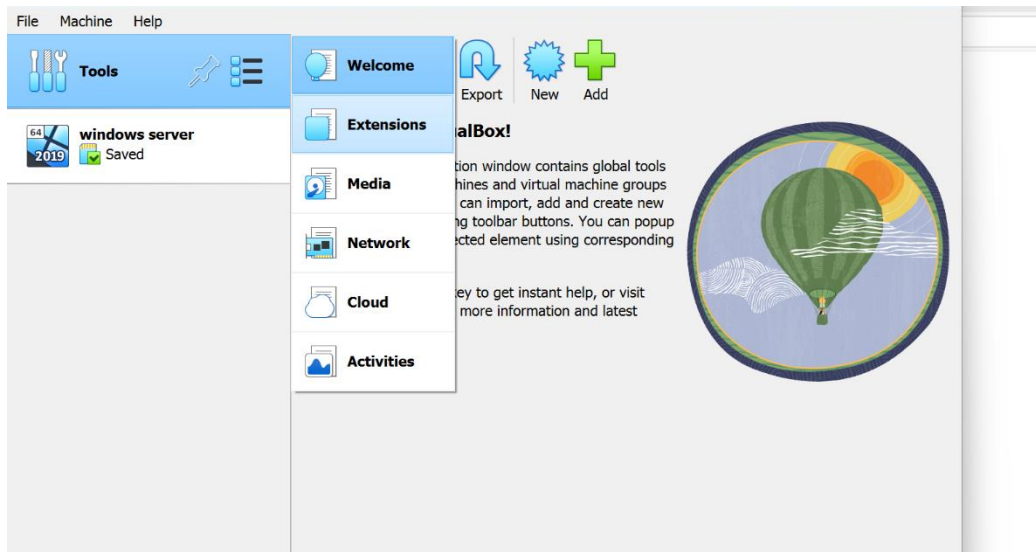


Figure 11: Click extension

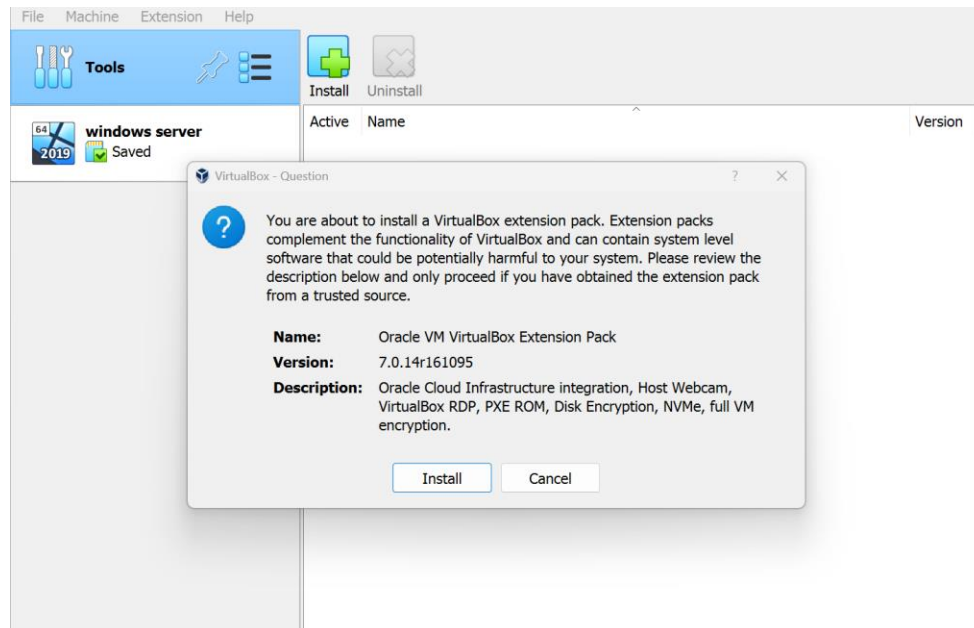


Figure 12: Click the install

Step 11

Now, close the VMs running including Virtual Box then again open VirtualBox by clicking on right side and click run as administrator.

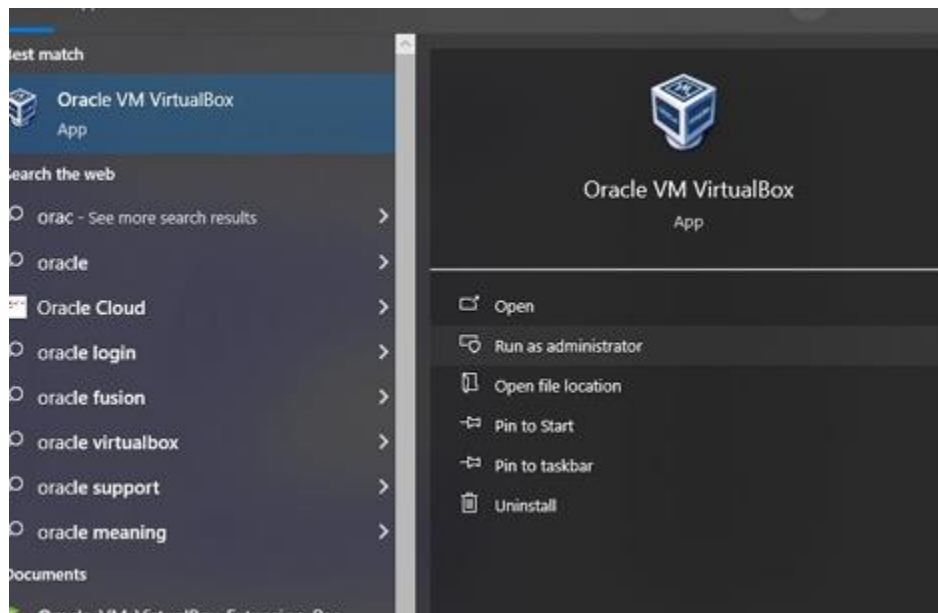


Figure 13: Select Virtual Box with run as administrator.

Step 12

select the Server 2022 Virtual Environment and click on Settings and Click on Display and click on Remote Display and click on Enable Server and click Ok

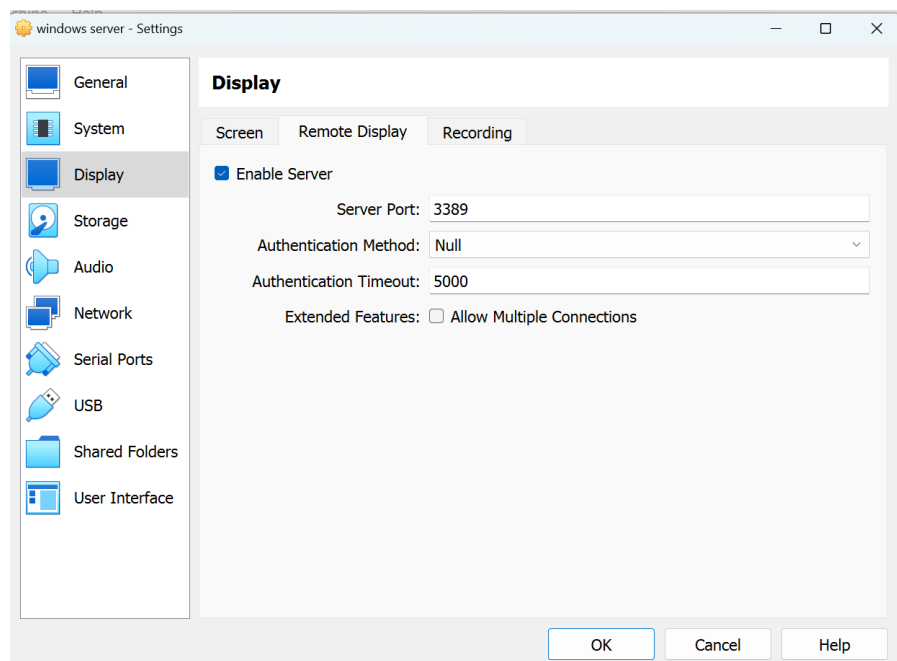


Figure 14: remote display

Step 13

Now, start our Windows Server 2022 and see your IP address of your Guest OS.

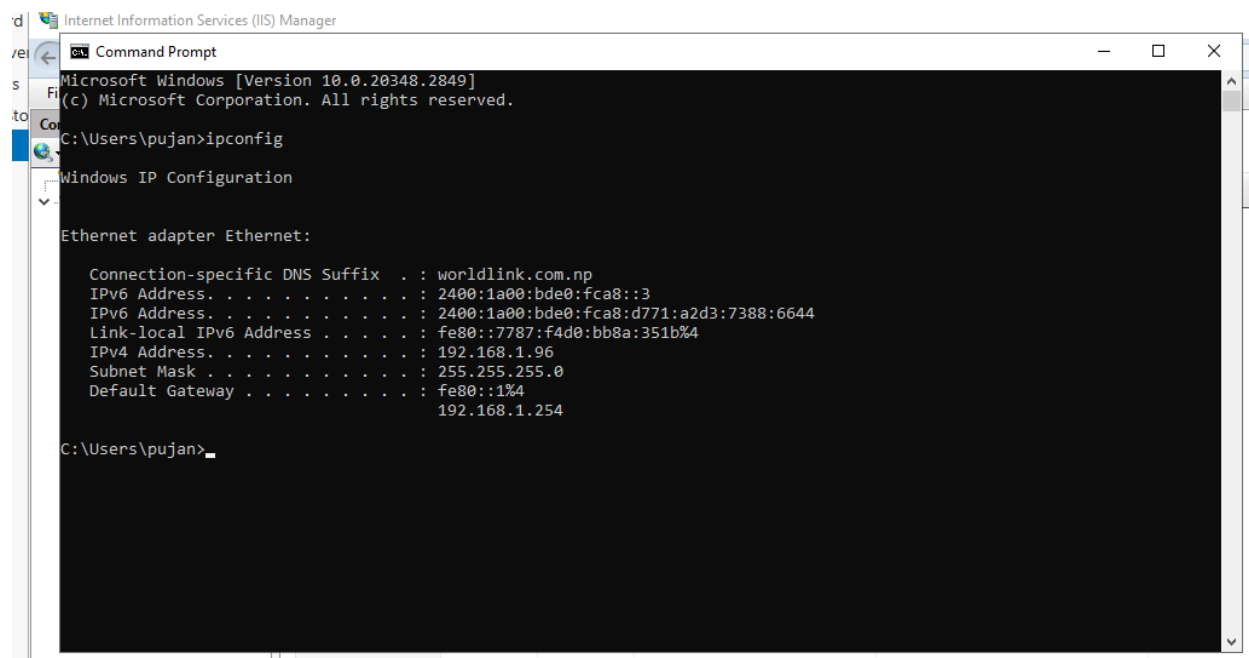


Figure 15: IP Address

Step 14

Go to the Remote Desktop Connection from Host OS and insert IP of Guest OS and click on Connect.

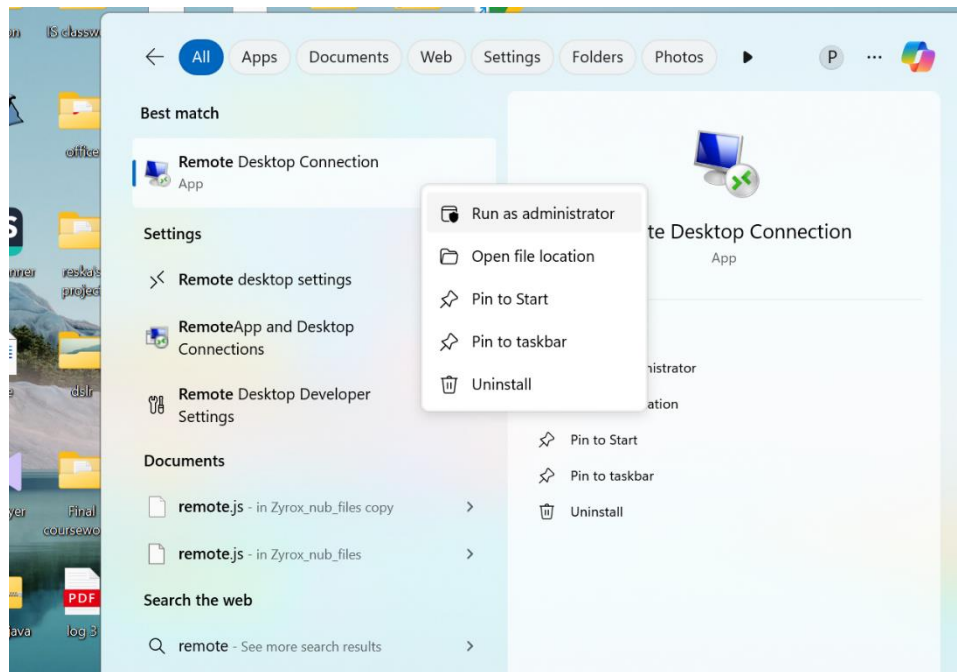


Figure 16: Opening remote desktop as run as administrator

Now, Enter the IP address

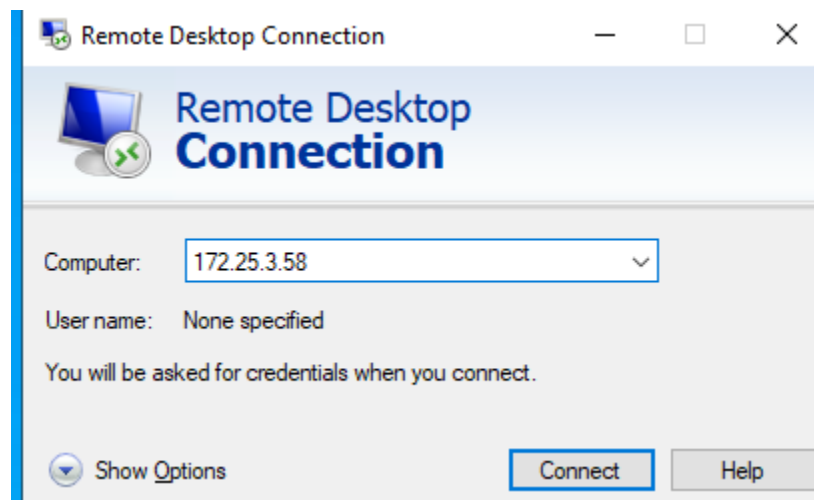


Figure 17: Entering the IP address

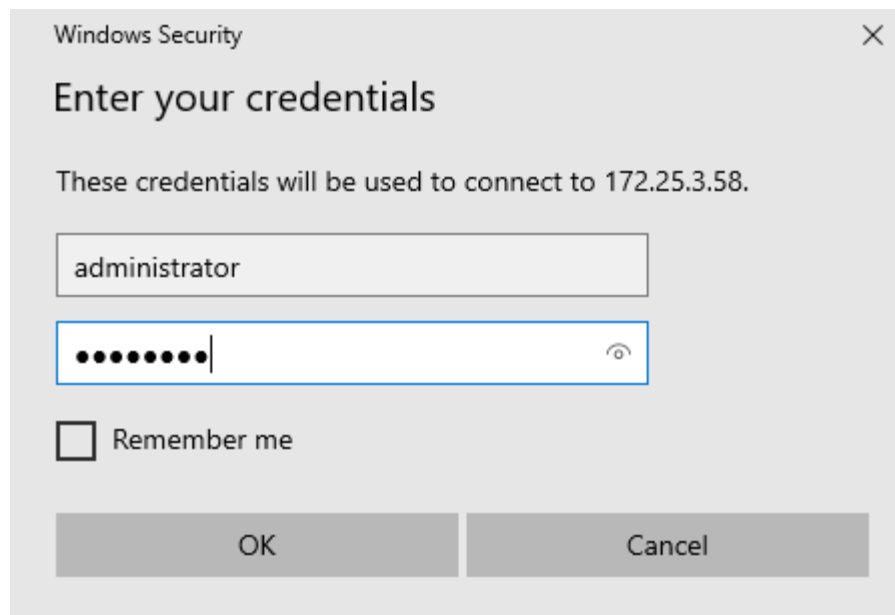


Figure 18: Enter username and password

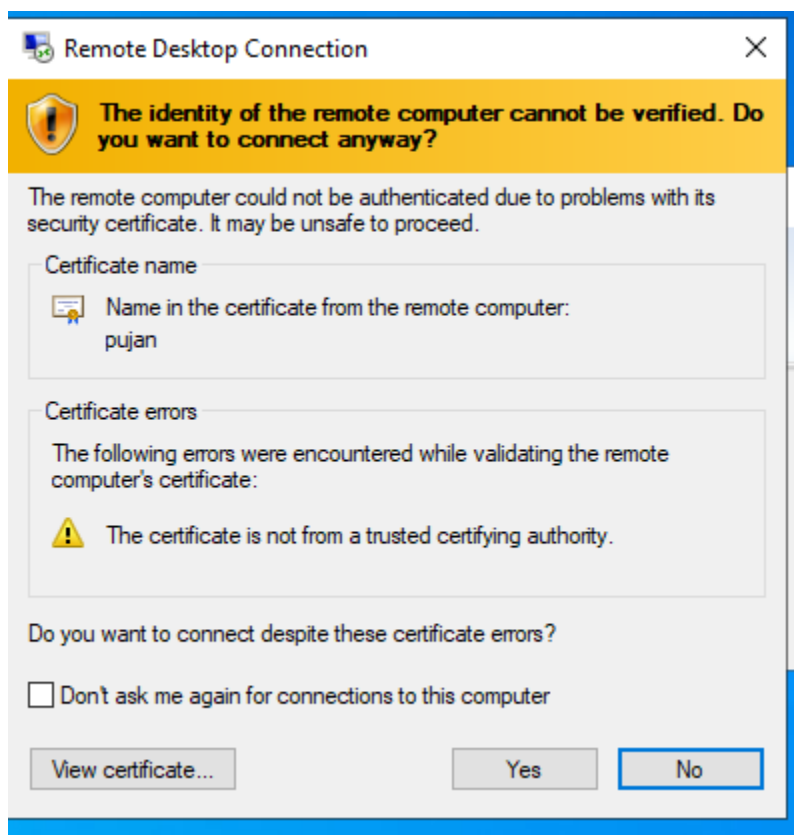


Figure 19: Click yes

Step 15

Now, we are able to access our Guest OS from Host OS using Remote Desktop.

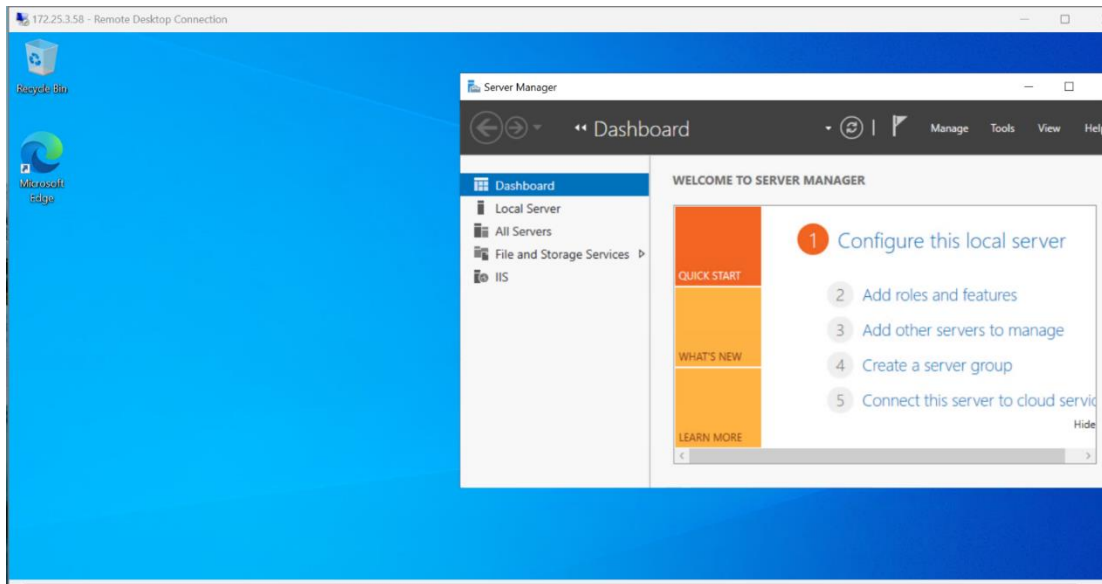


Figure 20: Remote Desktop Connection

References

Dash, P., 2013. In: *Getting started with oracle vm virtualbox..* Birmingham, UK: Packt Publishing., p. 59.

Dash, P., 2013. Getting started with oracle vm virtualbox. In: Birmingham, UK:: Packt Publishing., p. 57.

Protocol, R., 2019. Remote Desktop Protocol.. In: s.l.:MS-ISAC.