Cloud Computing

Practical-7 Creating and running virtual machines on Bare-Metal Hypervisors Type 0

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1)Bare-Metal Hypervisors

A bare-metal hypervisor, also known as a Type 1 hypervisor, is virtualization software that runs directly on the host's hardware, without requiring an underlying operating system. This setup allows the hypervisor to have direct access to the hardware resources, resulting in improved performance, security, and efficiency. Bare-metal hypervisors are commonly used in data centers and enterprise environments where high-performance virtual machine (VM) hosting is essential.

2) Bare-Metal Hypervisors Type 0

Type 0 hypervisors are highly specialized, vendor-specific hypervisors built directly into the hardware (firmware or microcode) rather than as a separate software layer. Type 0 hypervisors are often found in large, specialized hardware systems where the hypervisor functions as a minimal layer that handles virtualization tasks, allowing for close integration with hardware resources. These hypervisors are generally more efficient but less flexible, as they are tailored for specific hardware use cases.

Examples: IBM PR/SM (Processor Resource/Systems Manager), Hitachi's Virtage.

3) Bare-Metal Hypervisors Type 1

Type 1 hypervisors, often simply called bare-metal hypervisors, are installed directly on the physical hardware. They control the hardware resources and allow multiple virtual machines to run independently on the host. Type 1 hypervisors offer high performance, reliability, and security, as they are optimized for managing virtualized environments in production.

Examples: VMware ESXi, Microsoft Hyper-V, Citrix XenServer.

4)VMware

VMware is a company specializing in cloud computing and virtualization technology, and it is best known for its Type 1 hypervisor, VMware ESXi. VMware's suite of products includes both enterprise-level and desktop-level virtualization solutions. VMware ESXi is widely used in enterprise environments due to its reliability, performance, and rich feature set, including advanced management and automation tools.

VMware also offers VMware Workstation and VMware Fusion, which are desktop virtualization products (Type 2 hypervisors) that run on top of existing operating systems, such as Windows and macOS. These solutions are geared more towards individual users or developers rather than large-scale, production-grade virtualization.

5)VirtualBox

VirtualBox is an open-source Type 2 hypervisor developed by Oracle. It allows users to run multiple operating systems on a single machine by installing the hypervisor as an application on a host operating system. VirtualBox is popular among developers, testers, and students due to its flexibility, cross-platform support, and cost-effectiveness.

As a Type 2 hypervisor, VirtualBox runs on top of an existing operating system, which makes it easy to install and use but may have slightly lower performance and security compared to Type 1 hypervisors. However, it provides an accessible entry point for running virtual machines on personal computers for testing, learning, and development.

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Virtualisation

MOBAXTERM

Using Ubuntu Instance

Create EC2 insatnce on AWS for Ubuntu

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name

moba

Add additional tags

▼ **Application and OS Images (Amazon Machine Image)** Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

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Recents | **Quick Start**

| Amazon Linux | macOS | Ubuntu | Windows | Red Hat | SUSE Li |
| aws | Mac | ubuntu | Microsoft | RedHat | SUS |

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type
ami-0522ab6e1ddcc7055 (64-bit (x86)) / ami-0000791bad666add5 (64-bit (Arm))
Virtualization: hvm   ENA enabled: true   Root device type: ebs

Free tier eligible
▼

Create a new key pair and launch the instance.

Connect the instance once ready and copy the public IP address

Open MOBAXTERM and click on Session
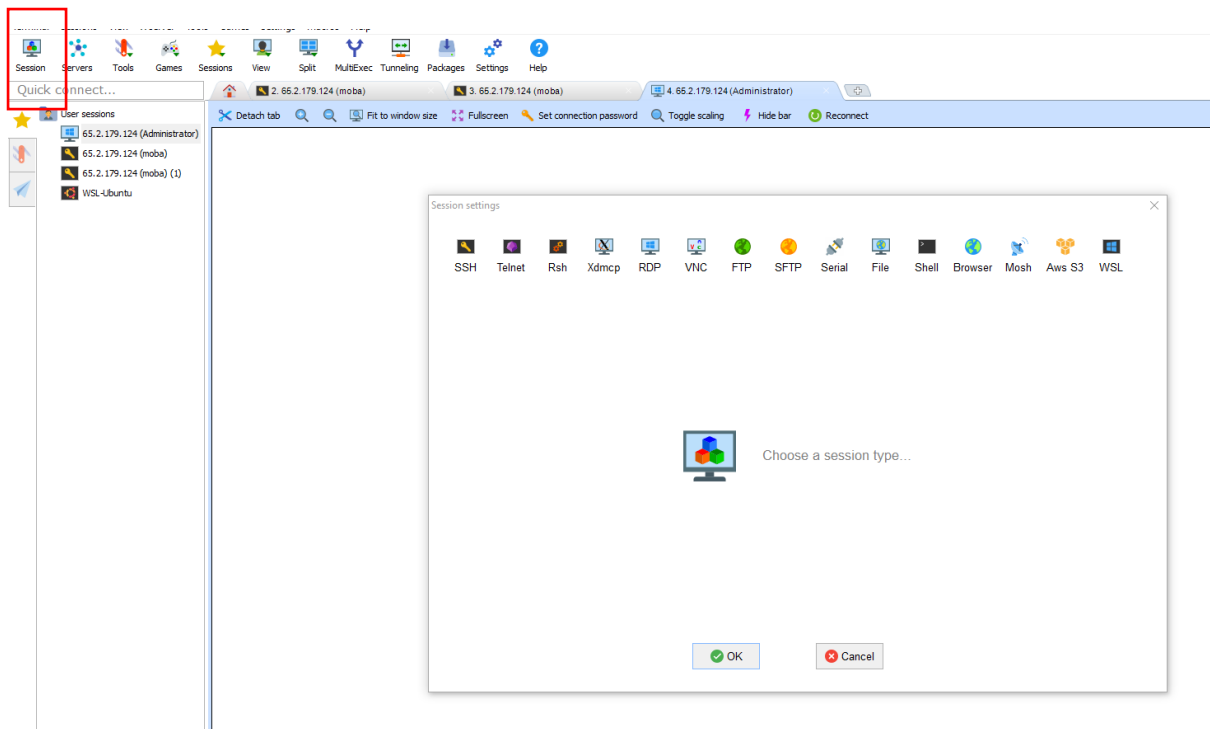
Select SSH and insert public IP address in remote host
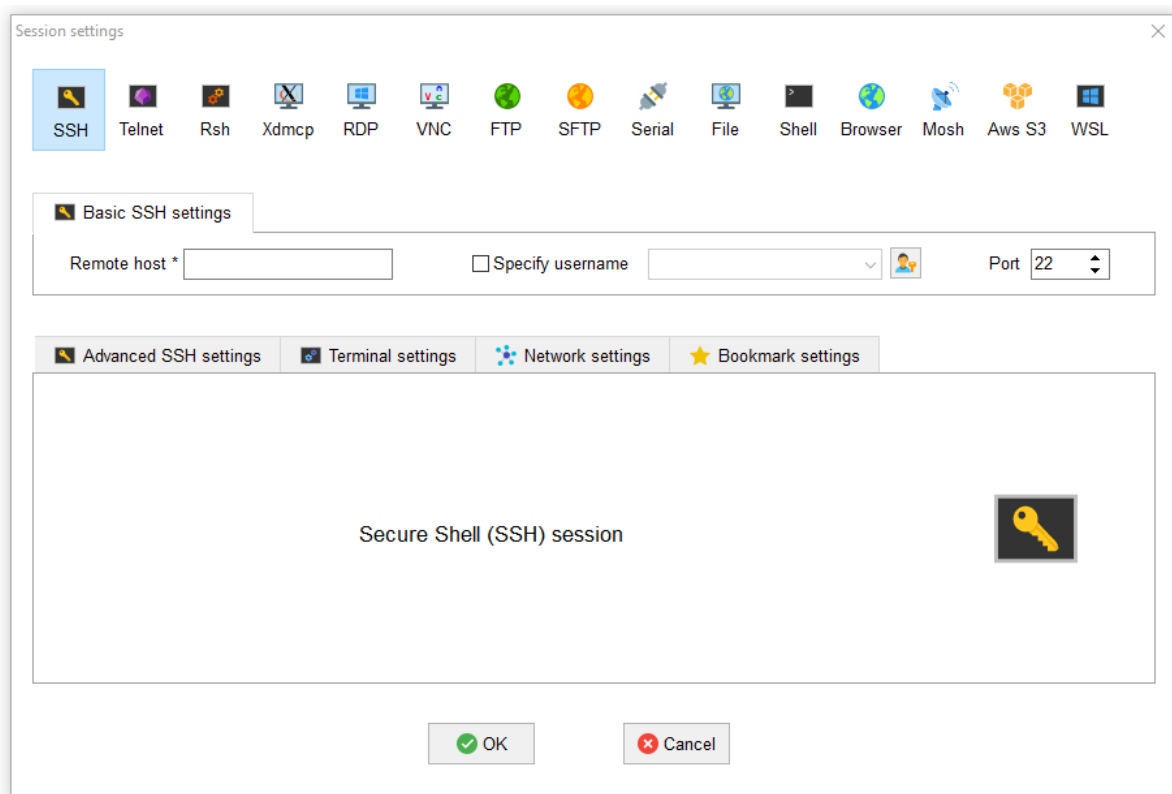
Choose specify username and insert instance's name

Select Advanced SSH settings

Select use private key and attach the new key pair file created and press okay

Using Windows

Create an EC2 instance with windows server

Create new key pair and launch the instance.

While connecting the instance open the RDP client section for Username and password

Open mobaxterm and Select Sessions>RDP

Copy the Public IP address and username from Window instance :

Now we need to decrypt the password by uploading the key pair file created.

Get Windows password Info

Use your private key to retrieve and decrypt the initial Windows administrator password for this instance.

Instance ID

☐ i-0025b9d4d87fd8a7a (mobawindow)

Key pair associated with this instance

☐ windowkeyy

Private key
Either upload your private key file or copy and paste its contents into the field below.

☐ Upload private key file

⊘ windowkeyy.pem
1.678KB

Private key contents - *optional*

```
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEA8oSBzjbAlu9u04HaGKTABBxlmyMpTnrXH/VxeNivn7gcGNDt
Hb+avqerPLfWVUjZp2gGyuodM7rbETFEccmS+5Eq52GBFJlZV7qZwOC6st7IqCpW
bvUrL2MUFwZPgbLY6YP0ZgS9A5AHGK9U5MRCfB6WNCQjF1KOSABeebTnStDj5NXz
XiUPtux2tCA6VSVmp33WXE5uAKnIY024sb0BkaViFo5pnwTgiUjLupKQETSCgA1/
p0/GsA0PnNmLLXZCIWVuFNEh8orTdnICQ7dFI4BOyCMLy3DJhular4EqVH5Zne/g
N30JsMhdRc17qyk4dcMEC623WwwODEqqsvBzYQIDAQABAoIBABvVvZhPjHdGb+/y
vXeKoUdXgwn1VS5exwYyA54dMLsiRIdMo4qAjWBImkzTxNPxEpo2RGFR0Zw4XCBz
```

Cancel   **Decrypt password**

The password is decrypted

And now after entering the password the Virtual environment is created .