

STARTING THE VM AND CONNECTING TO IT



DS 203

Overview

- You have already created a custom VM in Azure ...
- The next step involves starting this VM and ...
 - Connecting to the VM using one of the following **Terminal** software
 - **PuTTY** : Windows / Unix / Linux
 - **terminal**: Mac OS / Unix / Linux
 - Connecting to the VM using an external **File Transfer** program
 - **WinSCP** : Windows
 - **scp** : Mac OS / Unix / Linux

To begin with, we will START the VM ...

In case of difficulties ...

- Log your issues in the Moodle Forum **Queries and Discussions** and a member of the TA team will respond and guide you.

Starting the VM (1)

- Go to <https://portal.azure.com/#home>

Azure services



Create a
resource



Virtual
machines



Resource
groups



Storage
accounts



All resources



Education



Quickstart
Center



App Services



SQL databases



More services

Click on "Virtual machines"

Starting the VM (2)

- You should see “ds203vm” listed in here.
- To begin with, the option for starting the VM would be disabled.

Virtual machines

Indian Institute of Technology Bombay (iitbacin.onmicrosoft.com)

+ Create ▾ ↺ Switch to classic ⌚ Reservations ▾ ⚙ Manage view ▾ ↻ Refresh ⬇ Export to CSV 🔗 Open query ⚙ Assign tags ▶ Start ↺ Restart ☐ Stop 🗑 Delete ☰ Services ▾ ⚙ Maintenance ▾

Filter for any field... Subscription equals all Type equals all Resource group equals all X Location equals all X Add filter

Showing 1 to 1 of 1 records.

No grouping ▾ List view ▾

<input type="checkbox"/> Name ↑↓	Type ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Size ↑↓	Public IP address ↑↓	Disks ↑↓	
<input type="checkbox"/> ds203vm	Virtual machine	Azure for Students	DS203_VM	East US	Stopped (deallocated)	Linux	Standard_B2s	57.151.80.133	1	...

To enable the option, click on the checkbox

Starting the VM (3)


Click on "start" to start the VM.

Virtual machines ⓘ ...
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+ Create ▾ Switch to classic ⌚ Reservations ▾ ⚙️ Manage view ▾ ↺ Refresh ⬇️ Export to CSV 🔗 Open query | 🏷️ Assign tags ▶ Start ⏮ Restart □ Stop 🗑️ Delete ☰ Services ▾ 🔑 Maintenance ▾

Filter for any field... Subscription equals all Type equals all Resource group equals all × Location equals all × + Add filter

Showing 1 to 1 of 1 records.

✓ Name ↑↓	Type ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Size ↑↓	Public IP address ↑↓	Disks ↑↓	
✓  ds203vm	Virtual machine	Azure for Students	DS203_VM	East US	Stopped (deallocated)	Linux	Standard_B2s	X.Y.Z.W	1	...

This is the IP address of the VM. This will be needed to log in to the VM using the terminals

The login process

Now that the VM has started, you can connect to the VM using the following programs:

- For Windows, and Unix / Linux Laptops
 - The program **PuTTY** can be used
- For Laptops running Mac OS or Unix / Linux
 - A terminal can be created and used

... these processes are described in slides that follow ...

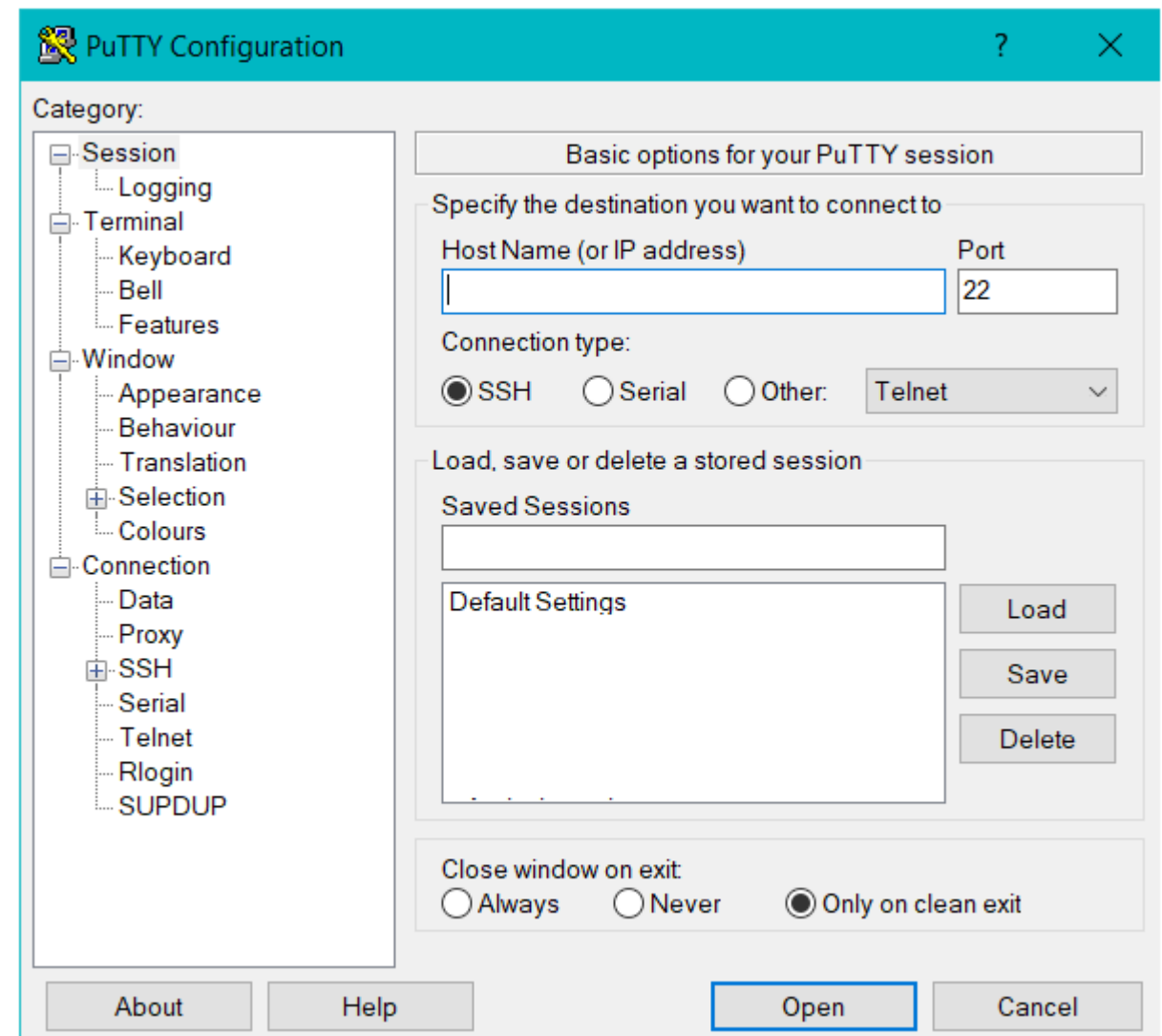
PuTTY : Program to connect to remote VMs

- PuTTY
 - PuTTY is an SSH (secure shell) client originally written for the Windows operating system
 - It has been ported to many Unix / Linux flavours
 - It is NOT available for Mac OS (Mac OS specific instructions are given in a later slide ...)
- Installing PuTTY
 - Windows: Download the latest installer from **putty.org** and install the program
 - Linux / Unix flavours: Install the program by running the relevant command

Operating System	Installation Command
Debian-based Systems	<code>sudo apt-get install putty</code>
Red Hat-based Systems	<code>sudo dnf install putty</code>
Arch-based Systems	<code>sudo pacman -S putty</code>

Configuring PuTTY

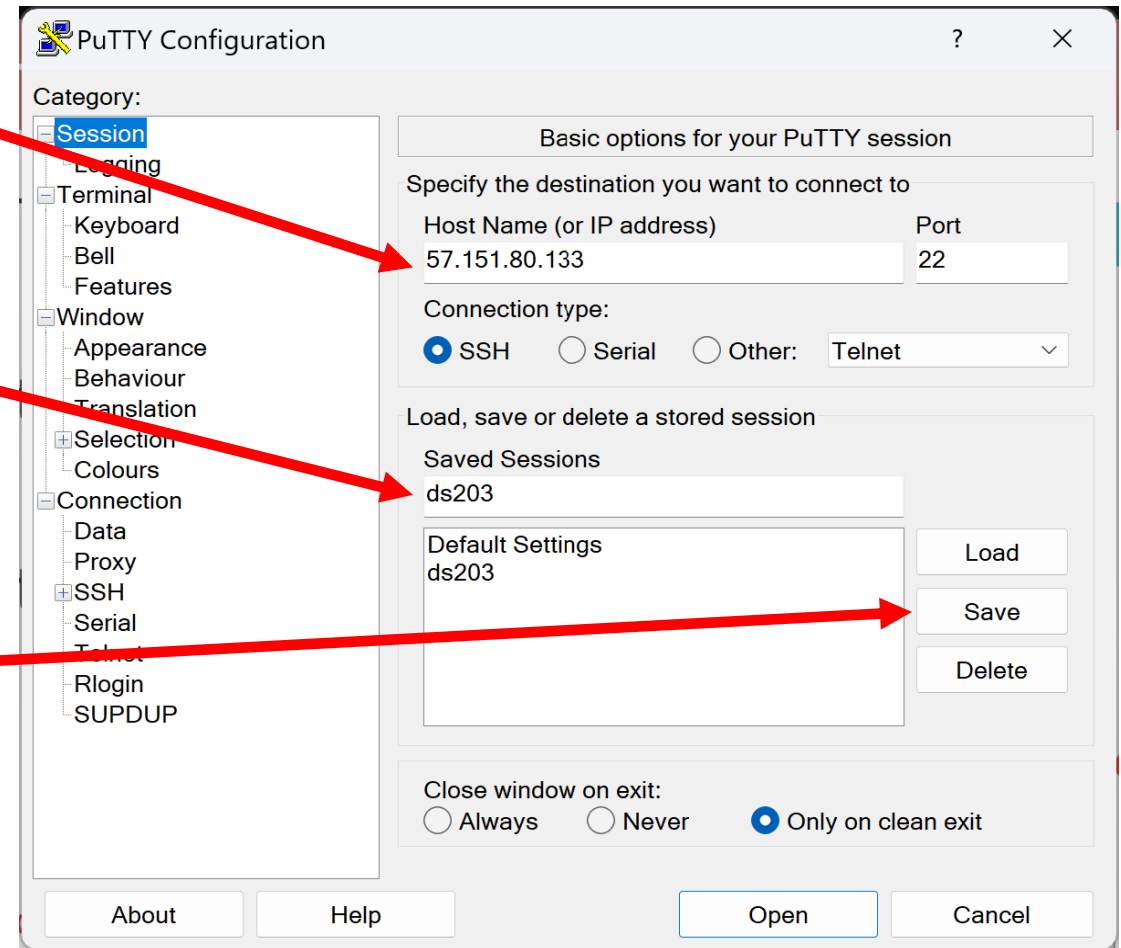
- TODO: Download and save the file **ds203-azure-vm.ppk** that has been shared with you on Moodle
- Start **putty** – it will create a Window as shown alongside
- A number of options have to be specified, as explained in the following slides



Configuring PuTTY

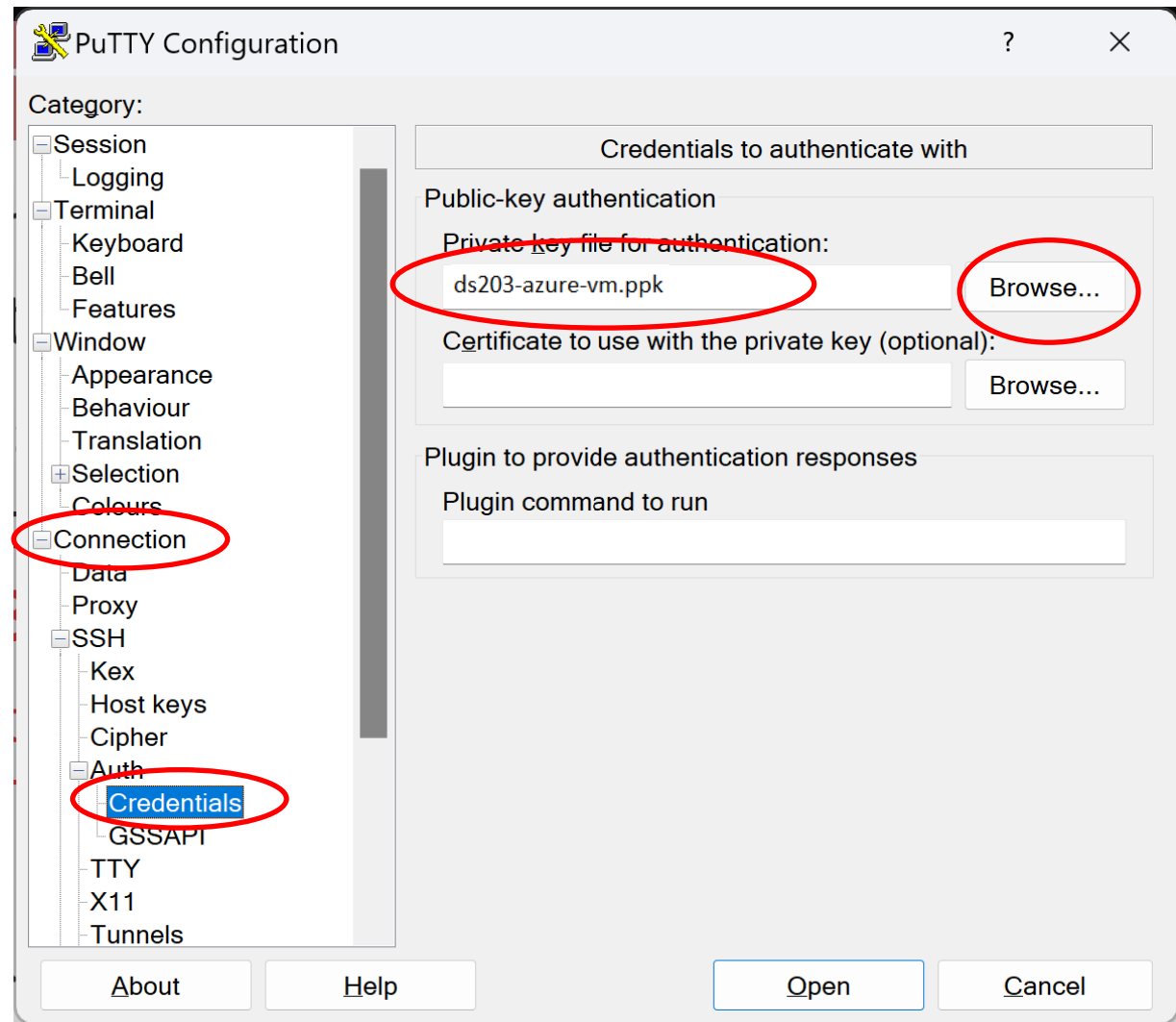
1. Copy the **External IP** of your VM (see slide **6** of this deck)
2. Paste it into the **Host Name (or IP address)** field
3. Add a session name in the **Saved Session** field
4. **Save** the configuration

Continue with more configuration steps ...



Configuring PuTTY

1. Expand the **SSH** node and select **Auth**
2. **Browse** to and select the saved Private Key authentication file : **ds203-azure-vm.ppk**
 - Note: In the Linux version of PuTTY, this field is under **Auth / Credentials**
3. Return to the main screen by selecting the Session node

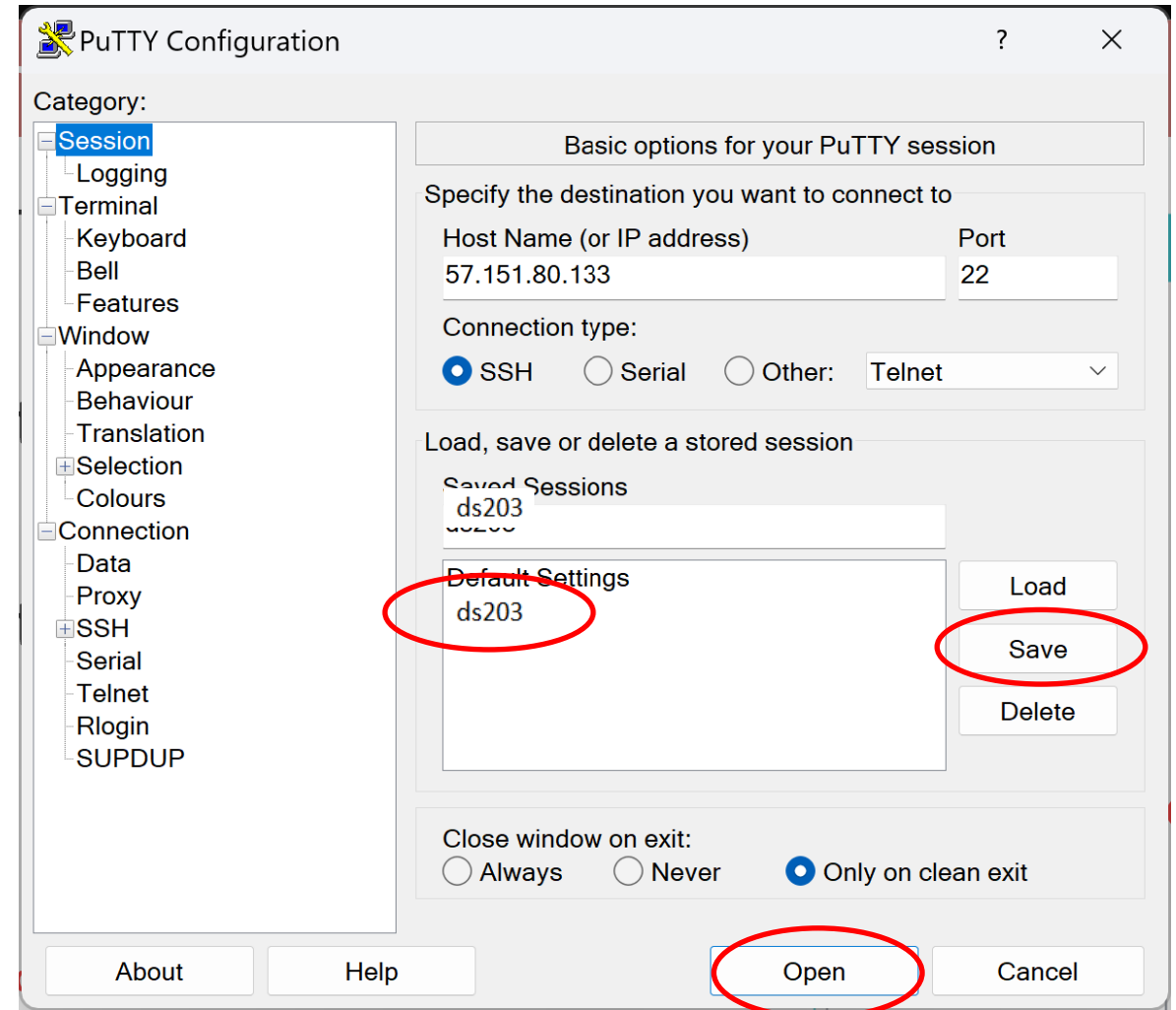


Configuring PuTTY

1. **Save** the configuration once again
2. Select **ds203** from the lower pane and then **Load**
3. Select the **Open** button to make a connection to the VM (... see next slide)

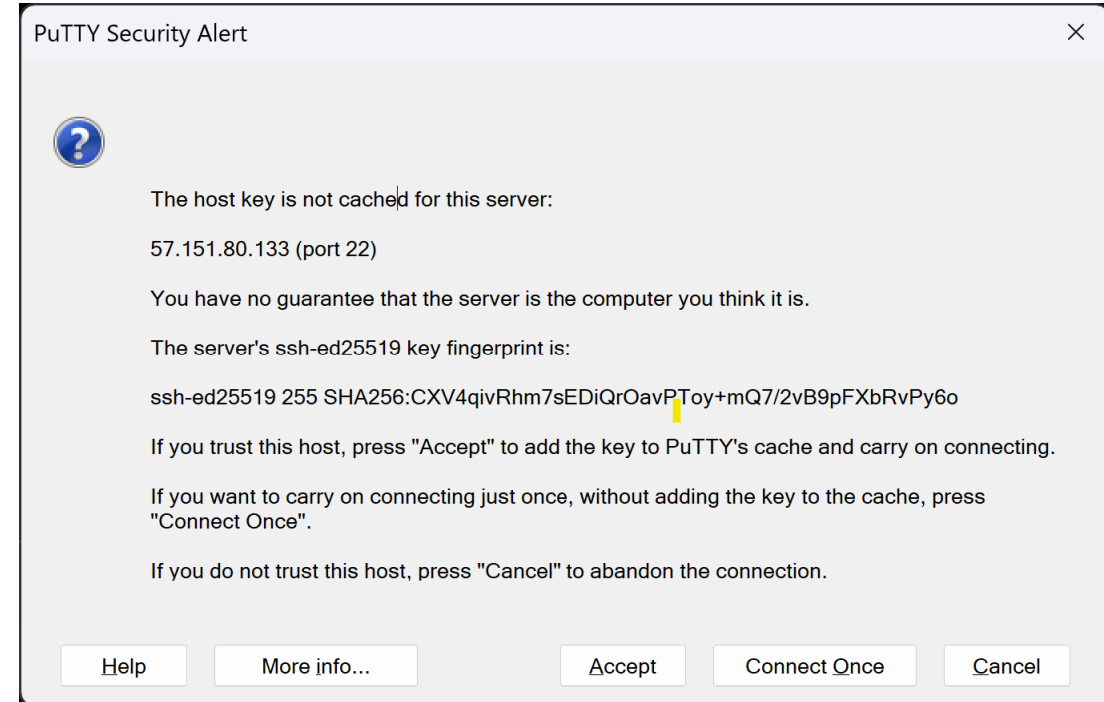
Note:

The IP Address of the VM **might** change every time you **STOP** and **START** the VM. So be sure to check the IP address every time you start PuTTY and Load the configuration.



Security Alert

- Whenever you connect using an SSH client for the first time, this alert will show up.
- Click on “Accept” and you will see a “login as:” prompt.

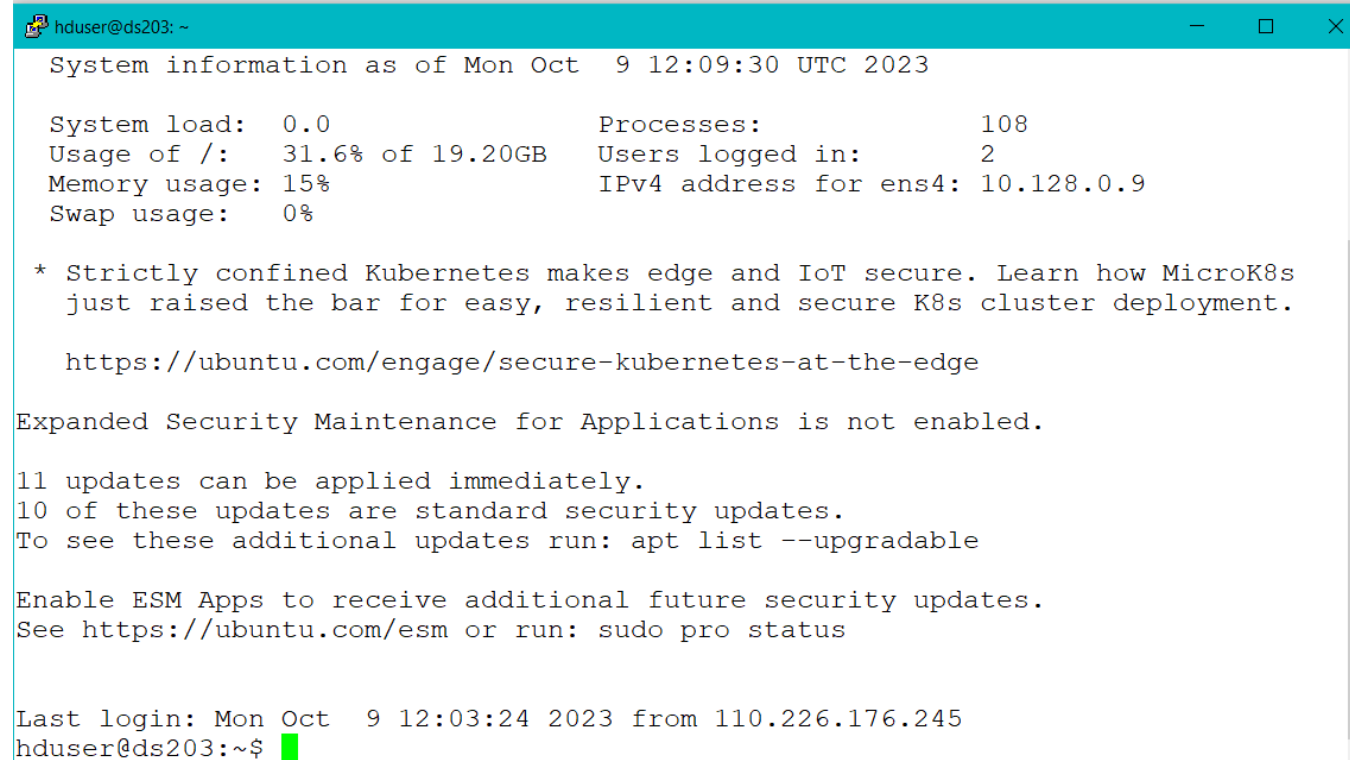


Logging in from PuTTY

- A login window appears
 - Note: a security warning will precede this the first time you make a connection to a new IP.
 - Accept and move ahead
- At the **login as:** prompt, type **hduser** followed by ENTER



- You will be logged in and a window, like the one below, will appear:



```
hduser@ds203: ~  
System information as of Mon Oct 9 12:09:30 UTC 2023  
  
System load: 0.0          Processes:          108  
Usage of /: 31.6% of 19.20GB Users logged in:      2  
Memory usage: 15%        IPv4 address for ens4: 10.128.0.9  
Swap usage: 0%  
  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s  
just raised the bar for easy, resilient and secure K8s cluster deployment.  
  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
  
Expanded Security Maintenance for Applications is not enabled.  
  
11 updates can be applied immediately.  
10 of these updates are standard security updates.  
To see these additional updates run: apt list --upgradable  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
Last login: Mon Oct 9 12:03:24 2023 from 110.226.176.245  
hduser@ds203:~$
```

- The VM is now ready to accept your commands as a normal (non-admin) user! Congrats!!
- More about these commands in a later slide deck ...
- For now, you can type **exit** at the prompt and end the session

Terminal based VM access for Mac OS

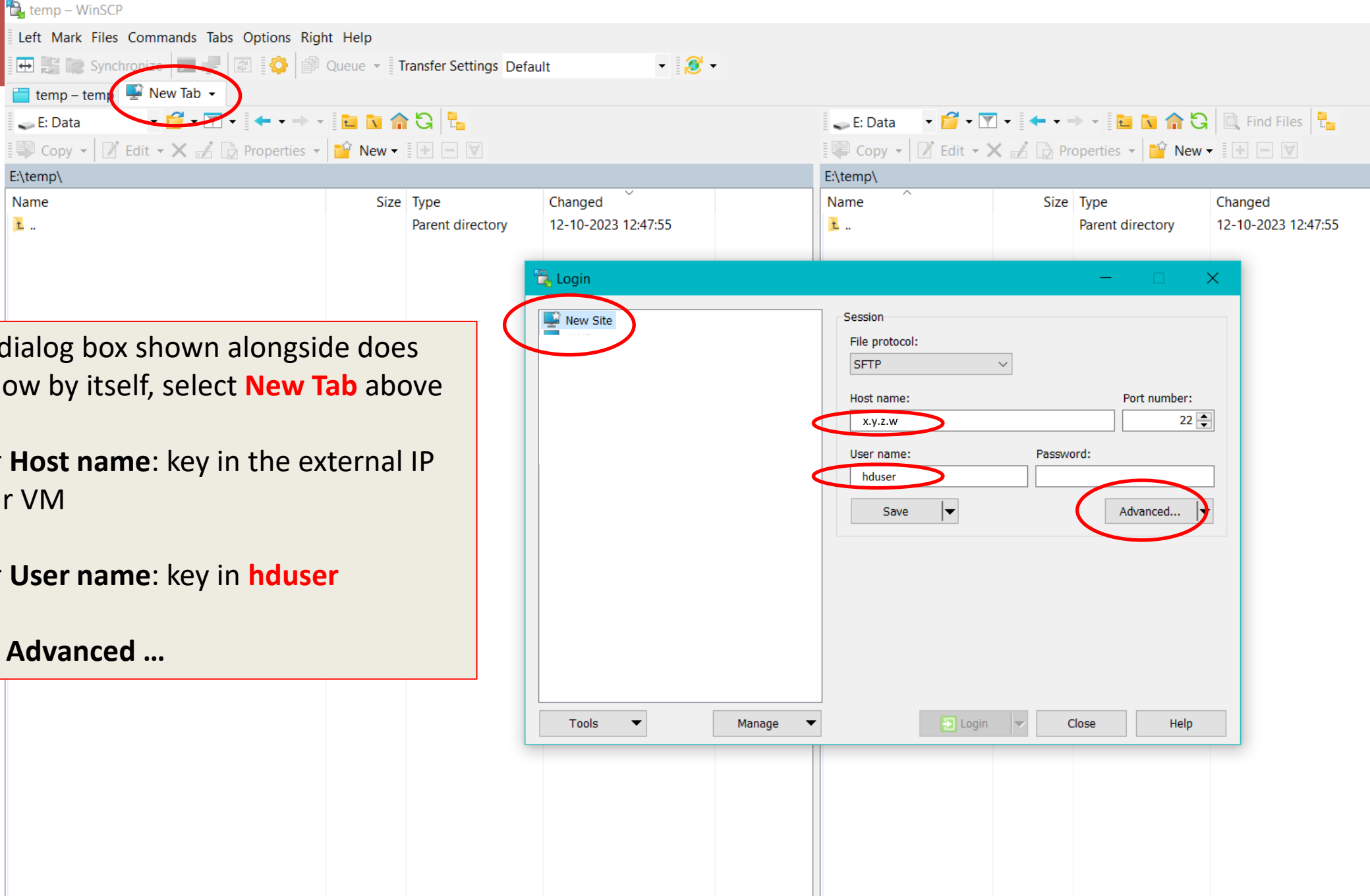
- From Moodle, download the PDF
 - **ssh_configuration_for_Mac_users.pdf**
- Follow the instructions outlined in this document to connect to the VM

Terminal based VM access non UI Unix / Linux systems

- From Moodle, download and save to your home directory the file: **ds203-azure-vm-rsa** (note: this file is without the .ppk extension!)
- Open a **terminal** window and change the permissions of this file using the following command (... this is a one time action ...):
 - `chmod 600 ds203-azure-vm-rsa`
- Using the same terminal window execute the following command to make a connection to the VM
 - `ssh hduser@host_ip -i <type_the_full_path_here>/ds203-azure-vm-rsa`
 - Example: `ssh hduser@x,y,z,w -i /home/ashok/ds203-azure-vm-rsa`
- (type **exit** to close the connection when you are done ...)

WinSCP : Program for interactive file transfer (for Windows only)

- Very often we will have to transfer files between our local computer and the remote VM
- WinSCP is a **Windows** program that can be used for easily browsing the local and remote directories and interactively transferring files between the them
 - For Unix / Linux / Mac OS, **scp** can be used ... (coming up later)
- Download and install the program from: <https://winscp.net>
- Start WinSCP and configure the settings as shown in the following slides ...



If the dialog box shown alongside does not show by itself, select **New Tab** above

Under **Host name**: key in the external IP of your VM

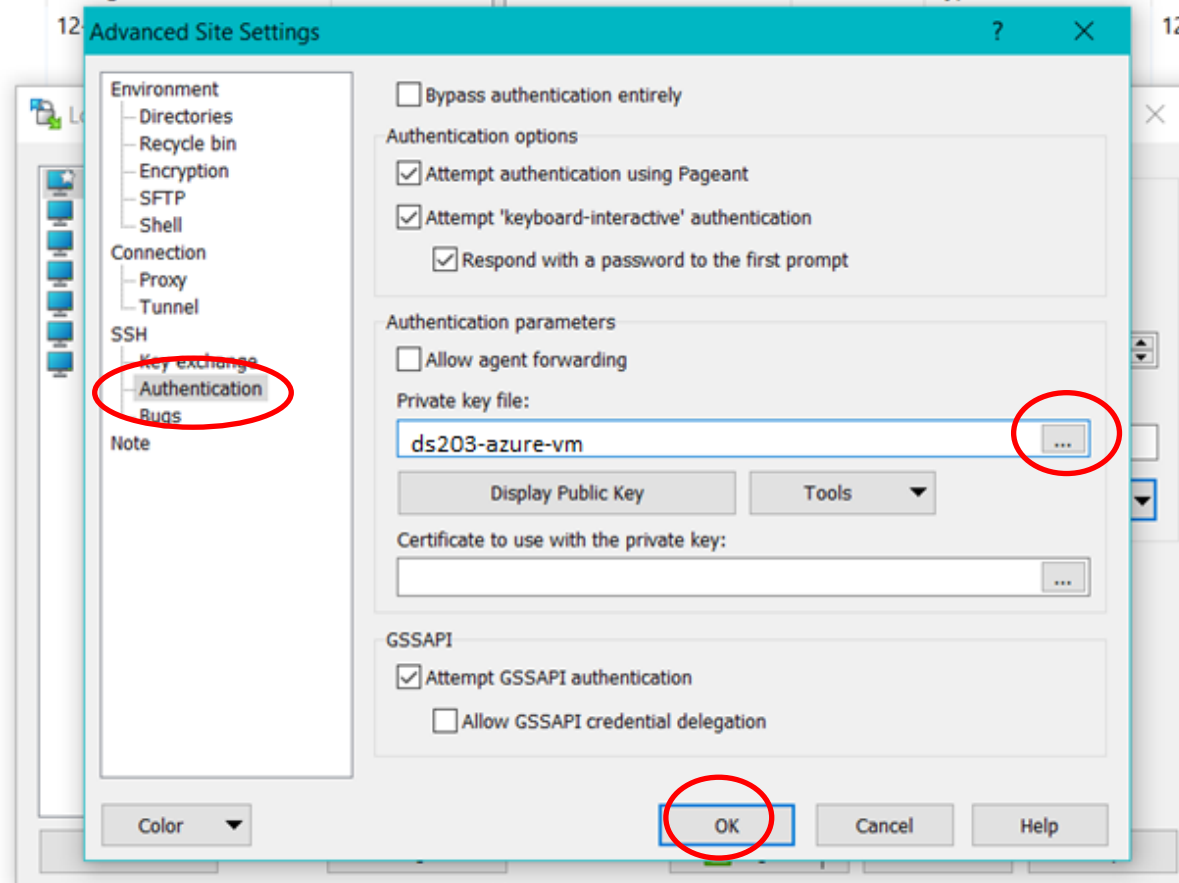
Under **User name**: key in **hduser**

Select **Advanced ...**

In the Advanced ... dialog, select SSH/Authentication

Browse and select the file **ds203-azure-vm.ppk** (you have downloaded it already ...)

Select **Ok**, followed by **Save** on the main dialog



Save session as site ? X

Site name:

Folder:

☐ Save password (not recommended)

☐ Create desktop shortcut

OK Cancel Help

Login - X

New Site

Session

File protocol:
SFTP

Host name:
 Change this as per your VMs IP

Port number:

User name:

Password:

Save Advanced...

Tools Manage **Login** Close Help

Refer to slide #6 if you are not sure about your VM's IP

E:\temp\

Name

t ..

Size

Type

Parent directory

Changed

12-10-2023 12:47:55

Name

Size

Changed

Warning



Continue connecting to an unknown server and add its host key to a cache?

The server's host key was not found in the cache. You have no guarantee that the server is the computer you think it is.

The server's Ed25519 key details are:

Algorithm: ssh-ed25519 255

SHA-256: jpH6pbGTWj8BBuCedBVe+DP+IV0s5eqRKtwRUKvnlBw

MD5: 96:8d:68:2e:51:10:f0:a8:7a:0a:10:28:7f:72:49:72

If you trust this host, press Yes. To connect without adding host key to the cache, press No. To abandon the connection press Cancel.

[Copy key fingerprints to clipboard](#)

Yes

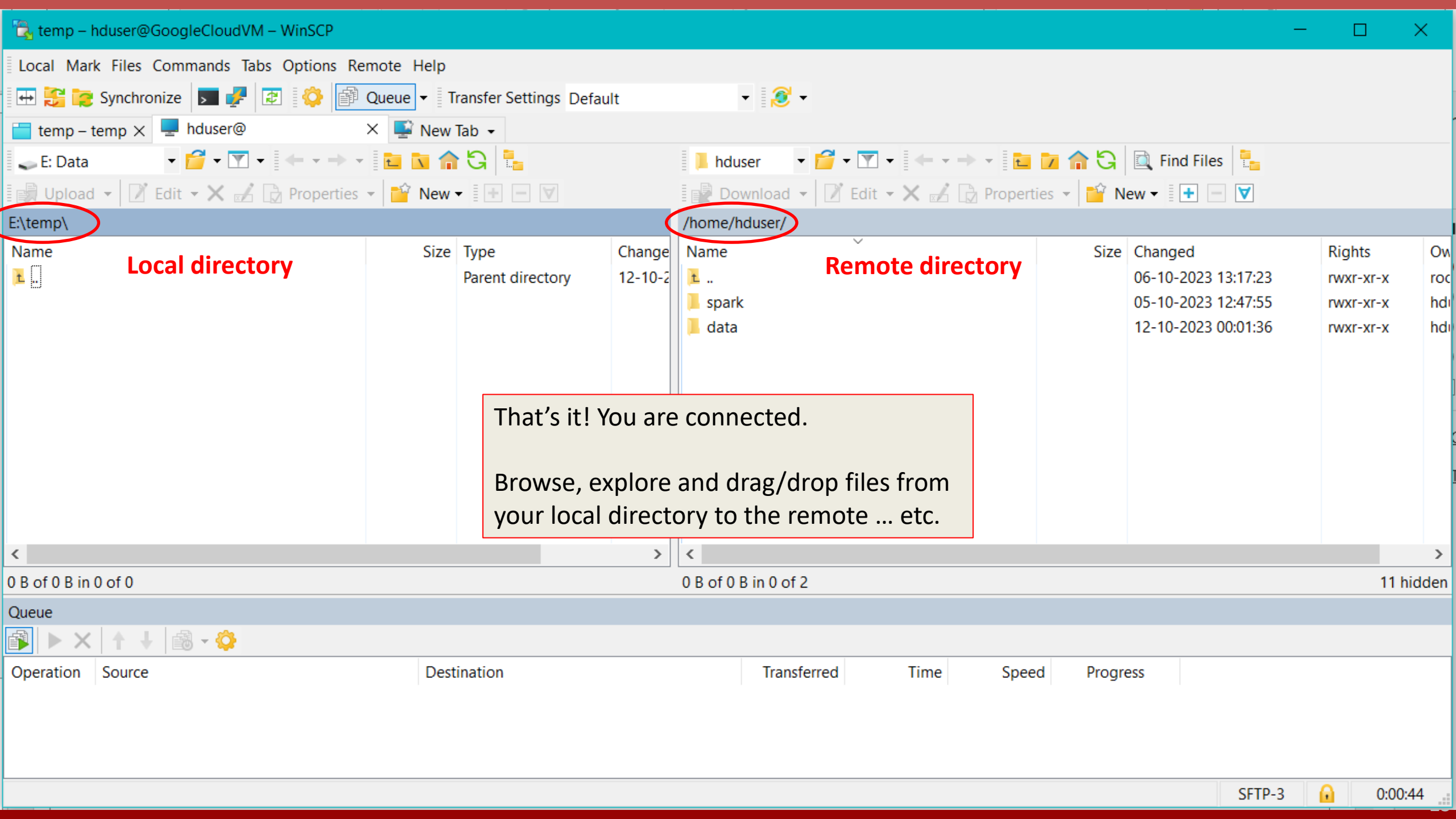
No

Cancel

Help

0 B of 0 B in 0 of 0

Queue



E:\temp\

Local directory

/home/hduser/

Remote directory

That's it! You are connected.
Browse, explore and drag/drop files from
your local directory to the remote ... etc.

0 B of 0 B in 0 of 0

0 B of 0 B in 0 of 2

11 hidden

Queue

Operation	Source	Destination	Transferred	Time	Speed	Progress
-----------	--------	-------------	-------------	------	-------	----------

File Transfer program for Linux / Unix / Mac OS

- On Linux / Unix / Mac OS, **scp** can be used to transfer files between the local computer and the VM
- Open a terminal window on your **local computer** and run the following command to transfer files between the two computers
 - `scp -i <full_path>/ds203-azure-vm-rsa <local_file_name> hduser@x.y.z.w:/<dest_file_path_and_name>`
 - `scp -i <full_path>/ds203-azure-vm-rsa hduser@x.y.z.w:/<remote_file_path_and_name> <local_file_name>`

Example:

```
scp -i /home/myname/ds203-azure-vm-rsa trial.txt hduser@34.172.206.78:/home/hduser/trial.txt  
scp -i /home/myname/ds203-azure-vm-rsa hduser@34.172.206.78:/home/hduser/trial.txt trial2.txt
```

That is it!

IMPORTANT ** IMPORTANT ** IMPORTANT

- Once you are through with your work on / with the VM, be sure to **STOP** it to pause the Billing for this resource! Go to this link: [Virtual machines](#)

The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'ds203-VM'. The top navigation bar includes the 'Microsoft Azure' logo, a search bar, and several utility icons. The breadcrumb trail indicates the path 'Home > Virtual machines >'. The VM's name 'ds203-VM' is displayed with a star icon and a dropdown menu. Below the name is a search bar and a set of action buttons: 'Connect', 'Start', 'Restart', 'Stop' (circled in red), 'Hibernate (preview)', 'Capture', 'Delete', 'Refresh', 'Open in mobile', 'Feedback', and 'CLI'. A red arrow points from the word 'STOP' in the text above to the 'Stop' button. The left-hand navigation menu is expanded, showing categories like 'Overview', 'Connect', 'Networking', and 'Settings'. The main content area is divided into 'Essentials' and 'Properties' sections. The 'Essentials' section provides a summary of the VM's configuration, including its resource group, status, location, subscription, and various identifiers. The 'Properties' section is further divided into 'Virtual machine' and 'Networking' subsections, each containing specific details about the VM's configuration and network settings.

Microsoft Azure Search resources, services, and docs (G+ /)

Home > Virtual machines >

ds203-VM Virtual machine

Search

Connect Start Restart **Stop** Hibernate (preview) Capture Delete Refresh Open in mobile Feedback CLI

Essentials

Resource group (move) : DS203

Status : Running

Location : East US (Zone 1)

Subscription (move) : Azure for Students

Subscription ID :

Availability zone : 1

Tags (edit) : Add tags

Operating system : Linux (ubuntu 20.04)

Size : Standard B2s (2 vcpus, 4 GiB memory)

Public IP address : x.y.z.w

Virtual network/subnet : DS203-VM1-vnet/default

DNS name : Not configured

Health state : -

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine

Computer name : VM3

Operating system : Linux (ubuntu 20.04)

Image publisher : VinayK

Image offer : Course

Networking

Public IP address : x.y.z.w (Network interf

Public IP address (IPv6) : -

Private IP address : 10.0.0.5

Private IP address (IPv6) : -

Next steps ...

- Now that you know how to connect to the VM (and also close the connection), it is time to use other programs to connect to specific services
 - **Dbeaver** for connecting to the MySQL server running on the VM
- This is the focus of the next slide deck ...