# 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

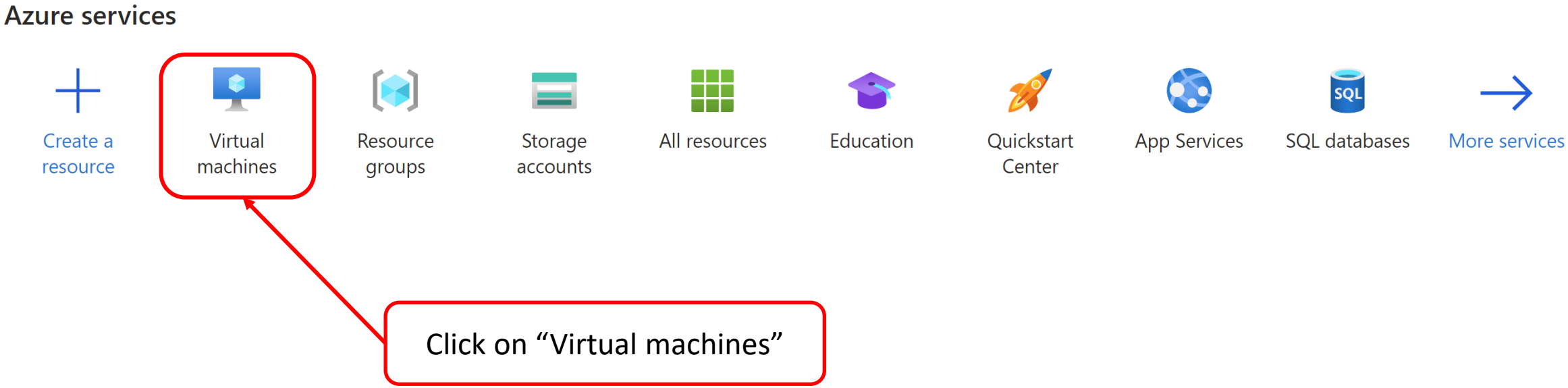
To begin with, we will START the VM …

# 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.

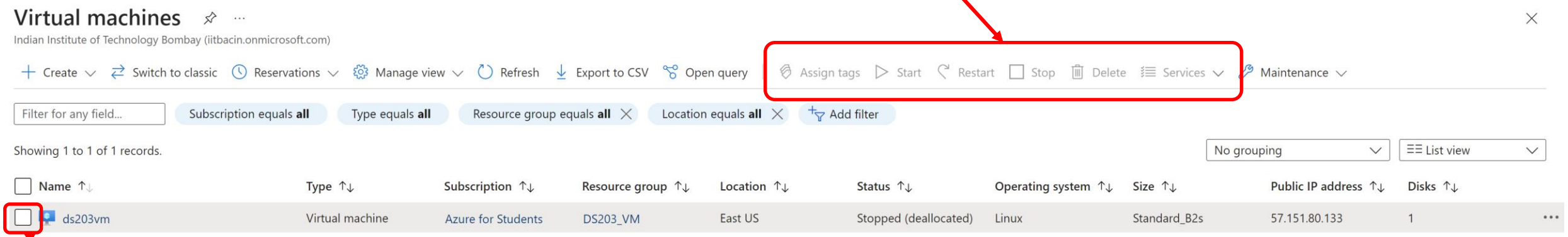
# Starting the VM (1)

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



# Starting the VM (2)

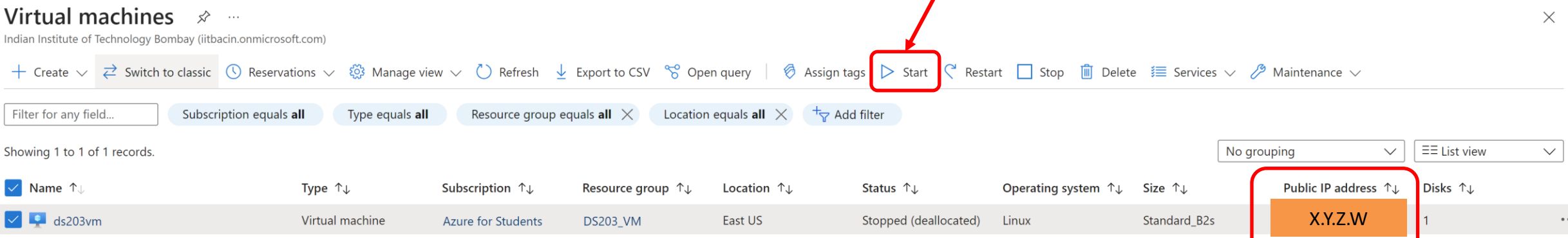
- You should see “ds203vm” listed in here.
- To begin with, the option for starting the VM would be disabled.




To enable the option, click on the checkbox

# Starting the VM (3)

Click on “start” to start the VM.




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 …

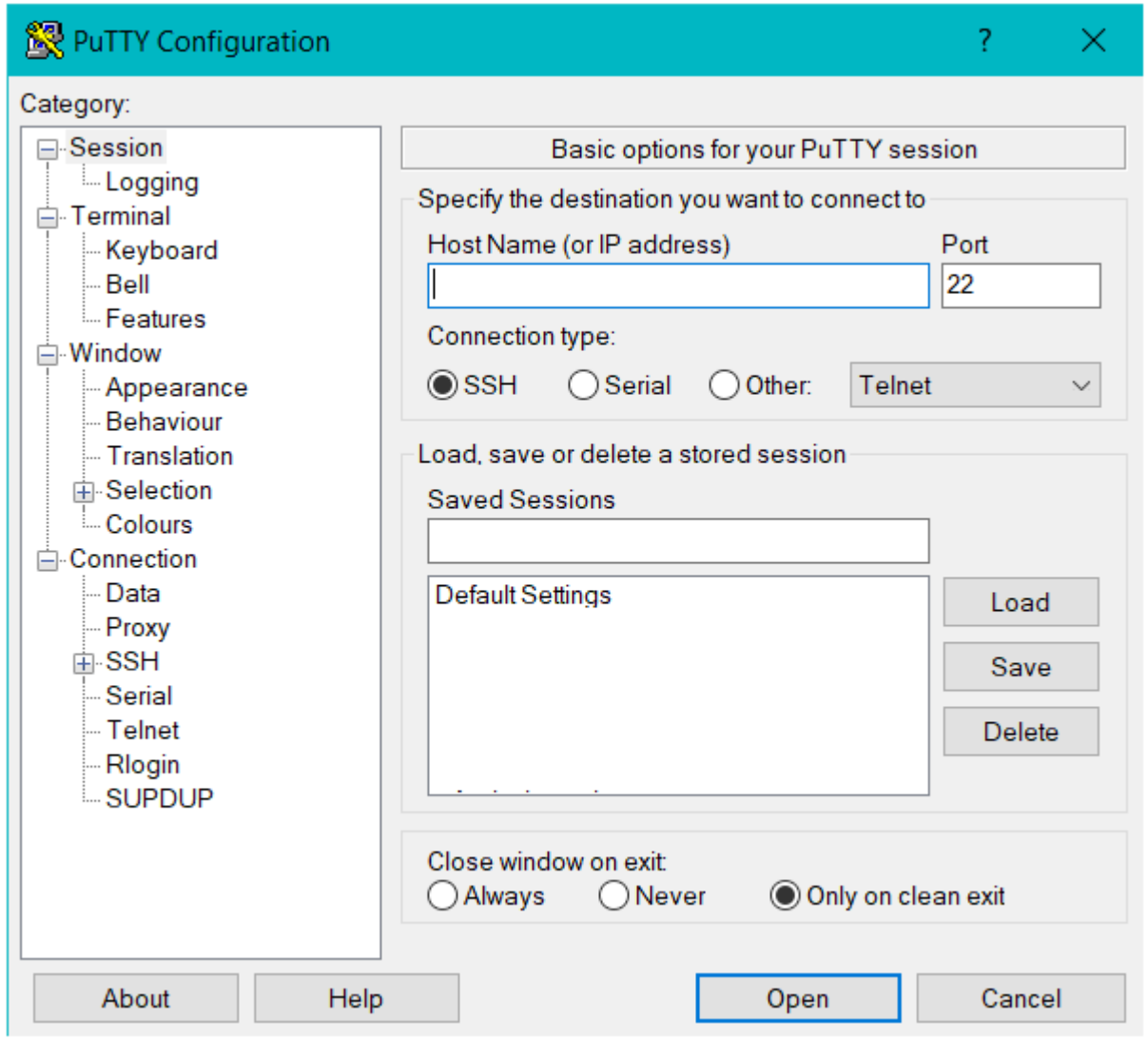
# **PuTTY :** Program to connect to remote VMs

- 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** | `sudo apt-get install putty` |
| **Red Hat-based Systems** | `sudo dnf install putty` |
| **Arch-based Systems** | `sudo pacman -S putty` |

# Configuring PuTTY

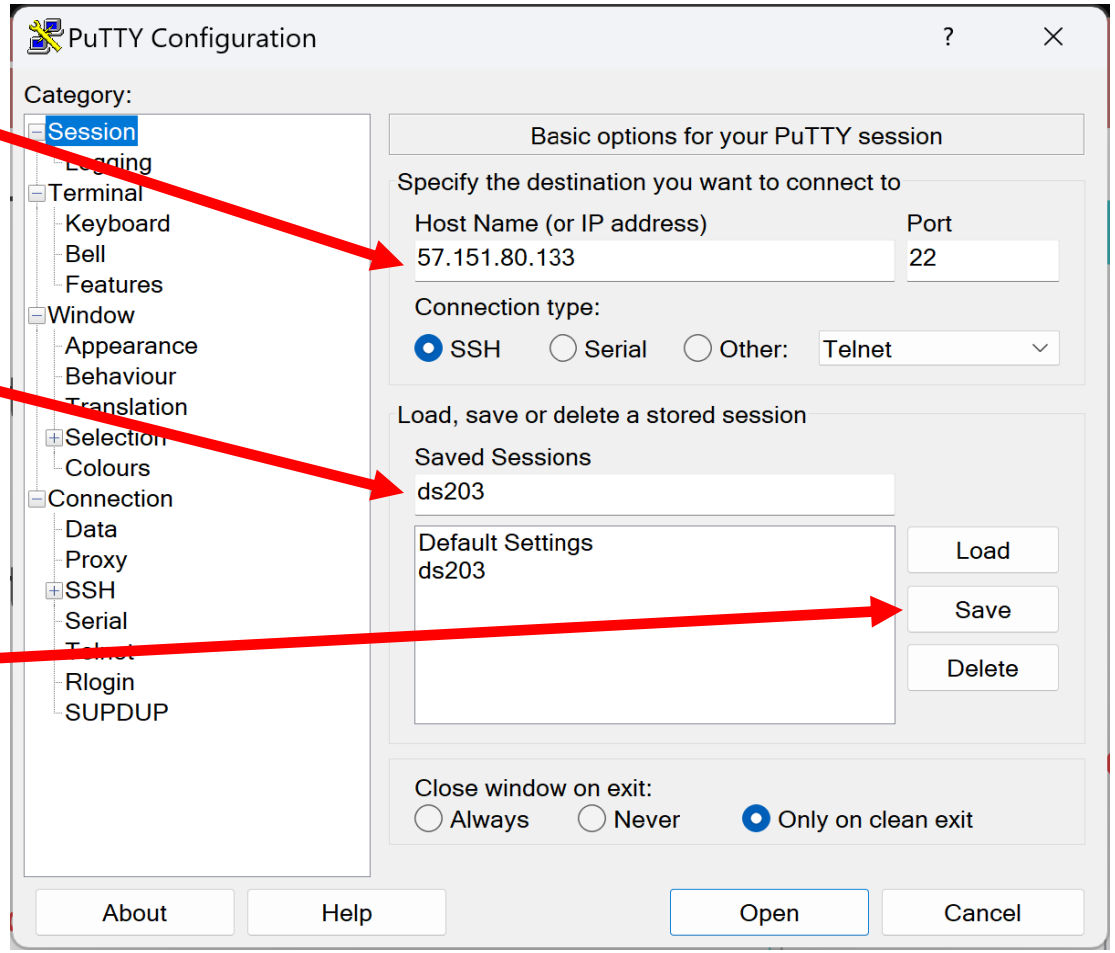
- TODO: Download and save the file **ds203-azure-vm.ppk** that has been shared with you on Moodle
- Start **putty** – it will create a Window as shown alongside
- A number of options have to be specified, as explained in the following slides



# Configuring PuTTY

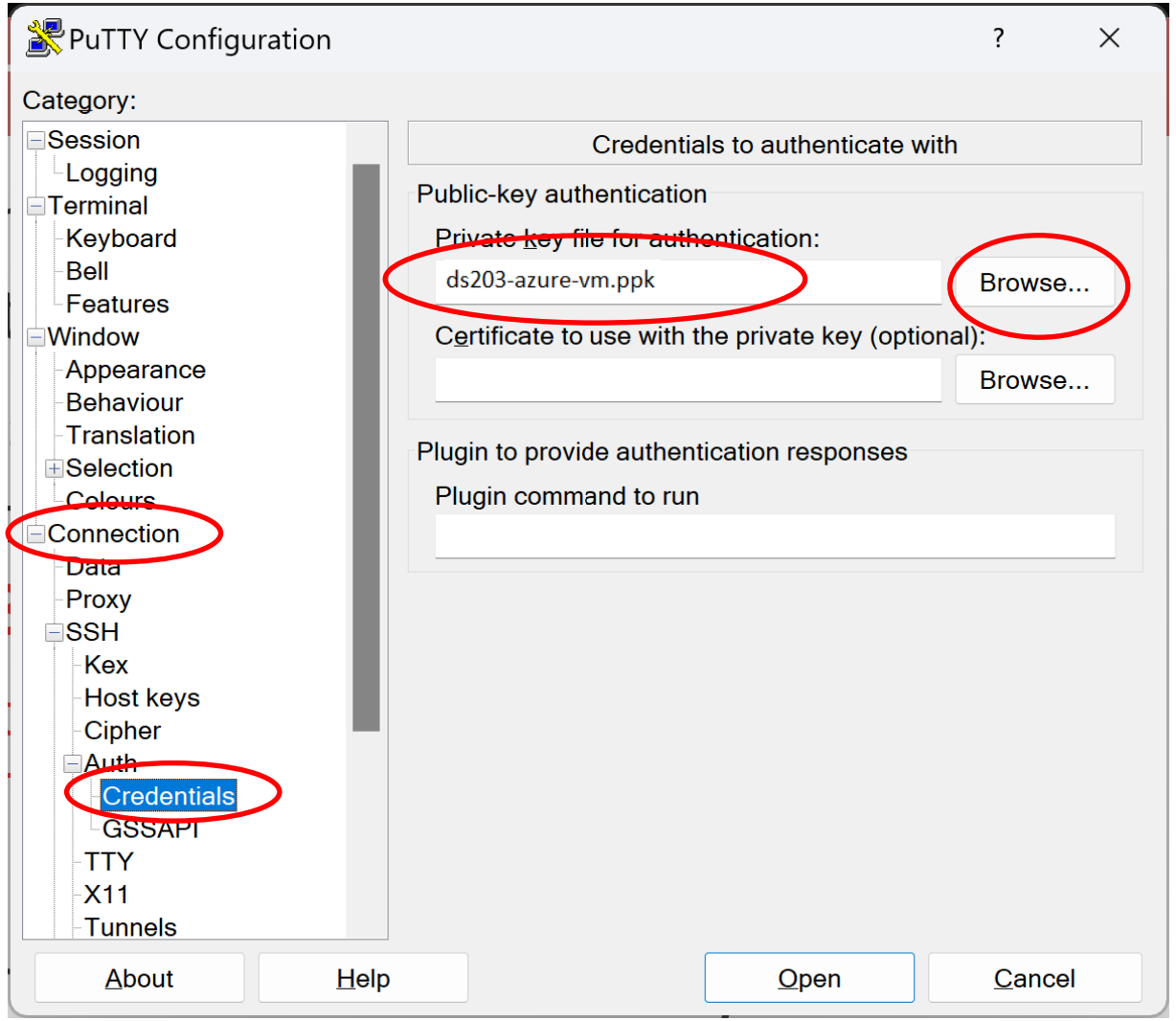
1. Copy the **External IP** of your VM (see slide **6** of this deck)
2. Paste it into the **Host Name (or IP address)** field
3. Add a session name in the **Saved Session** field
4. **Save** the configuration

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

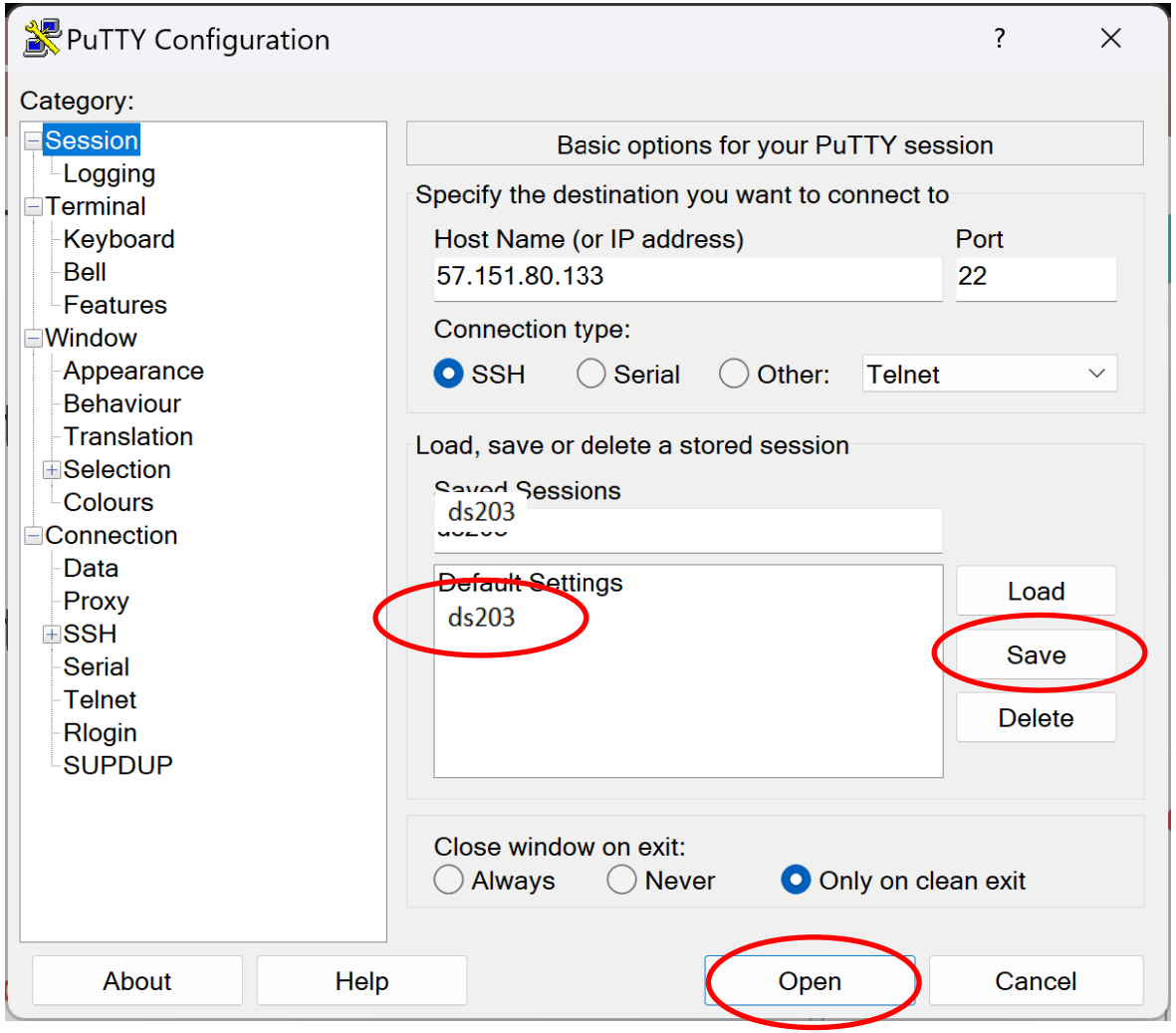


# Configuring PuTTY

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)

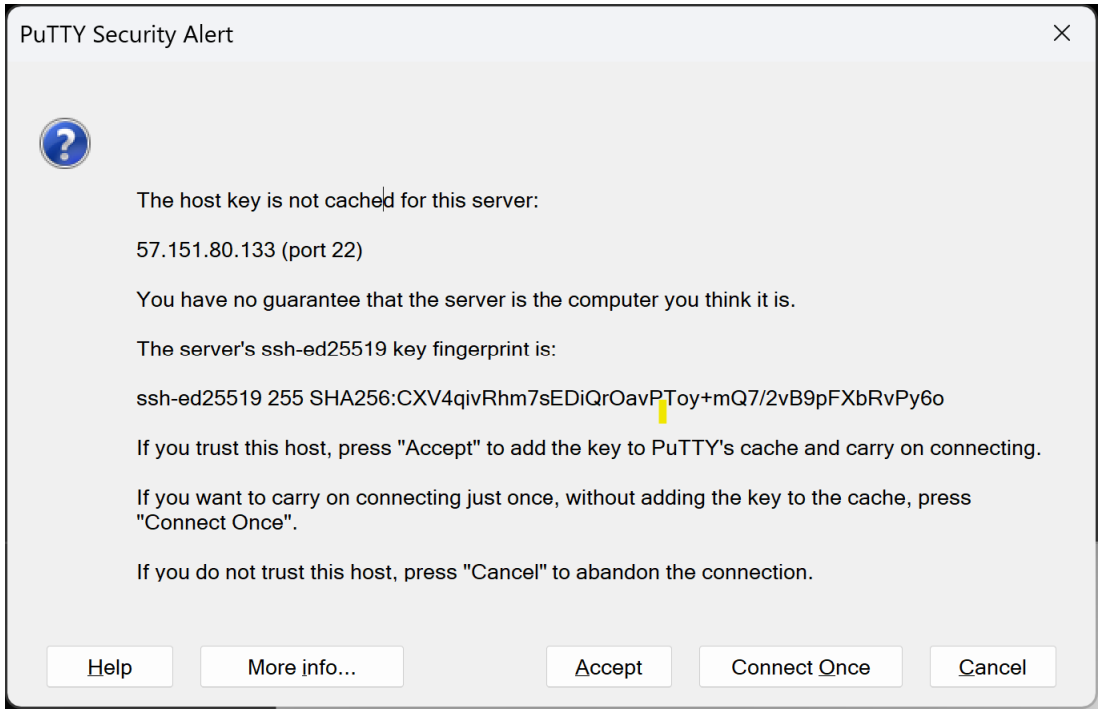
**Note**:

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.

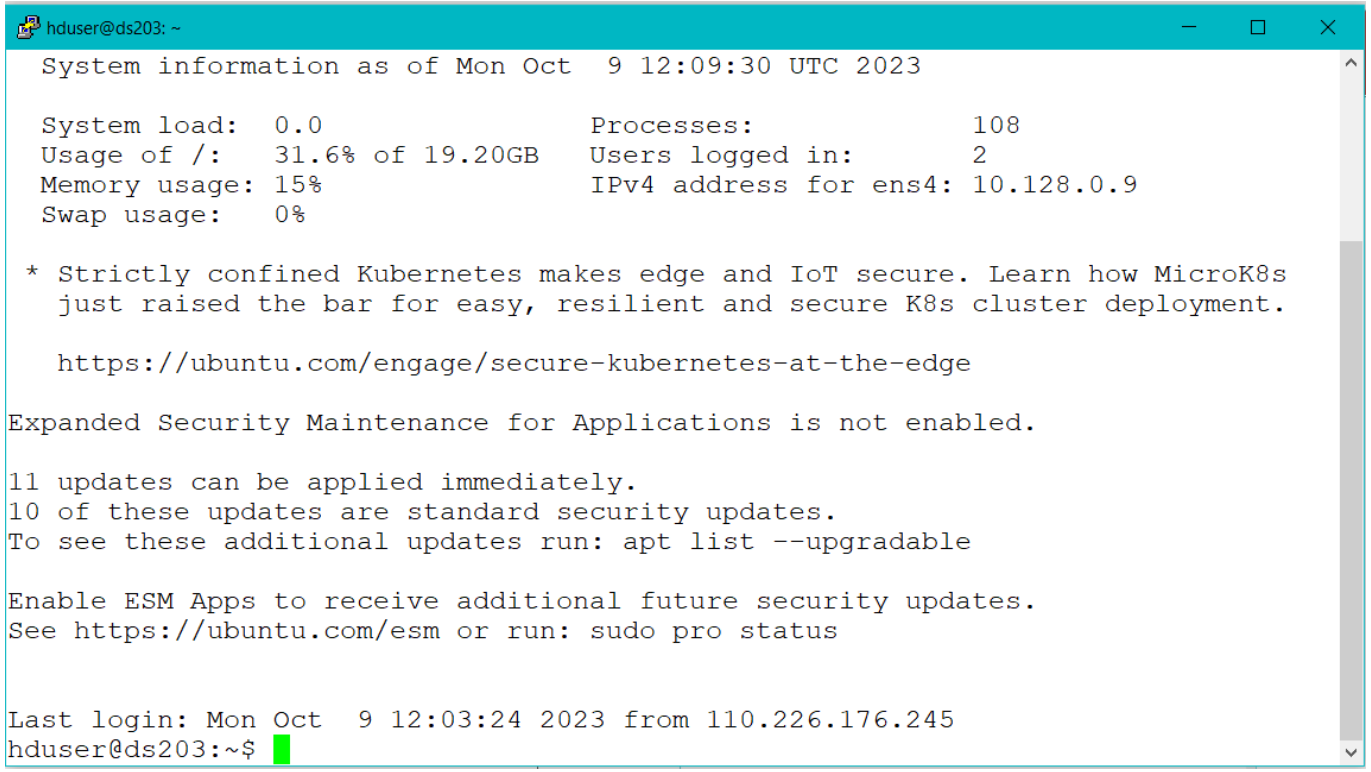


# Logging in from PuTTY

- 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

# Logged in

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




- 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

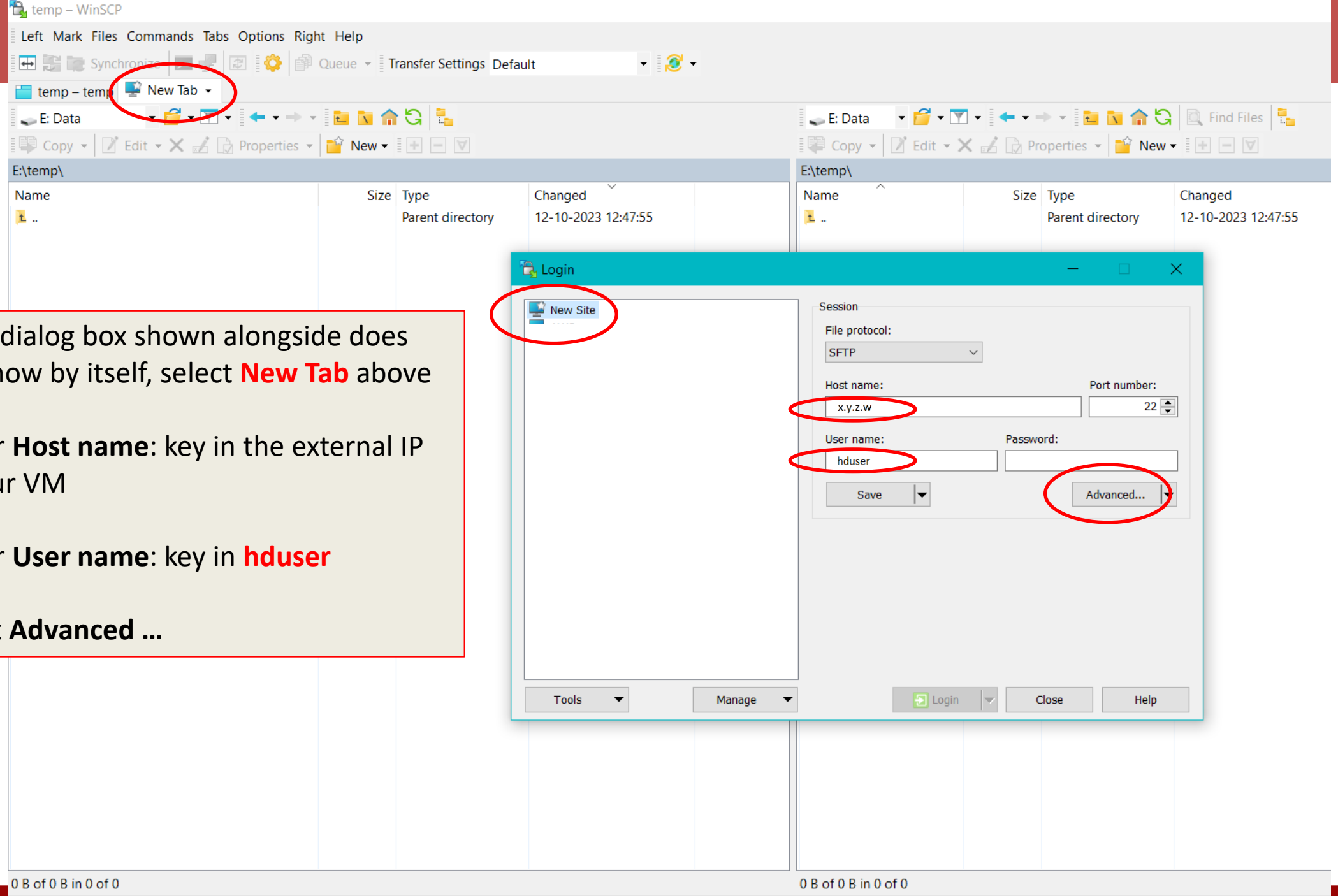
# Terminal based VM access non UI Unix / Linux systems

- 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 transfering 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

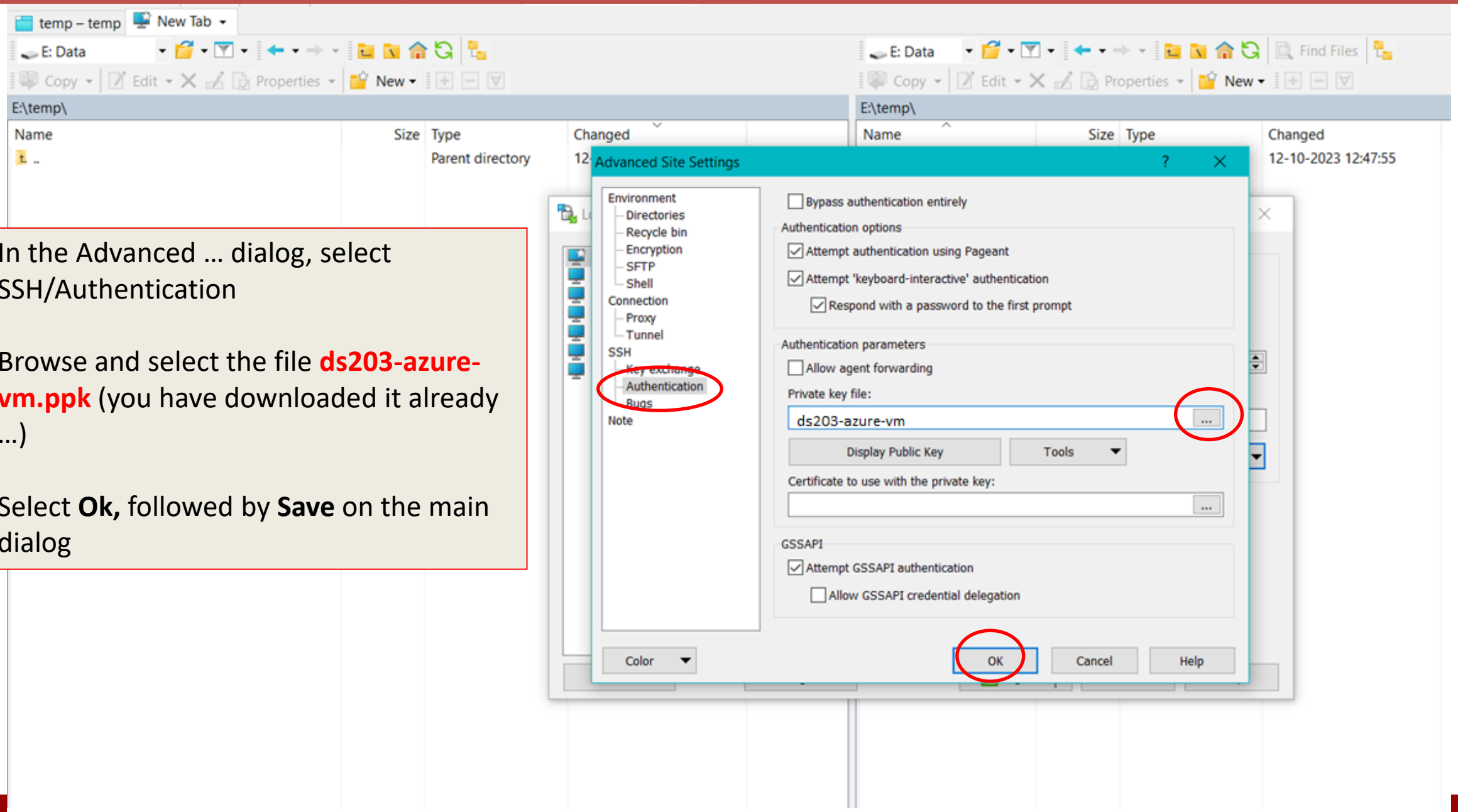
Under **User name**: key in **hduser**

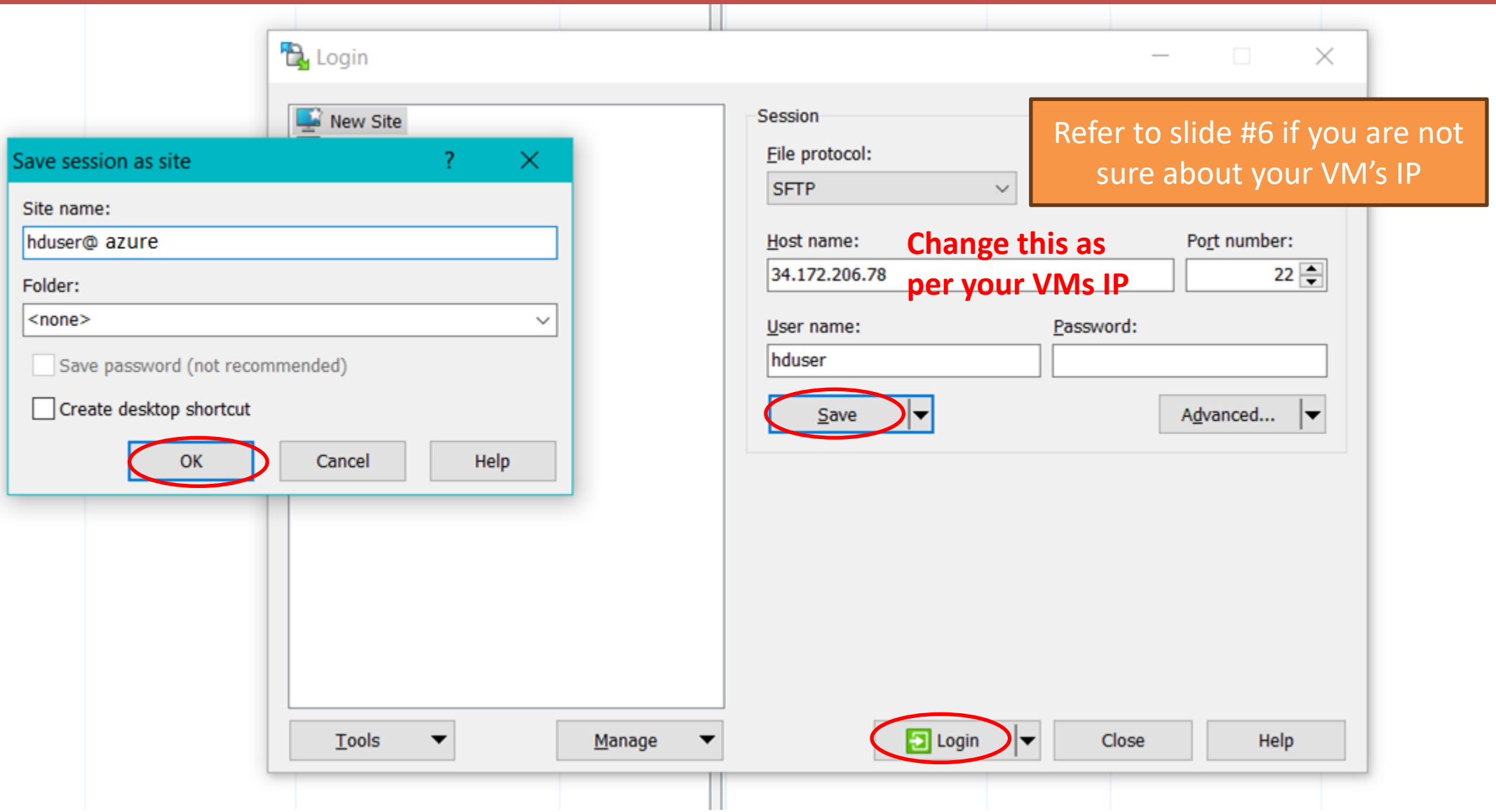
Select **Advanced …**

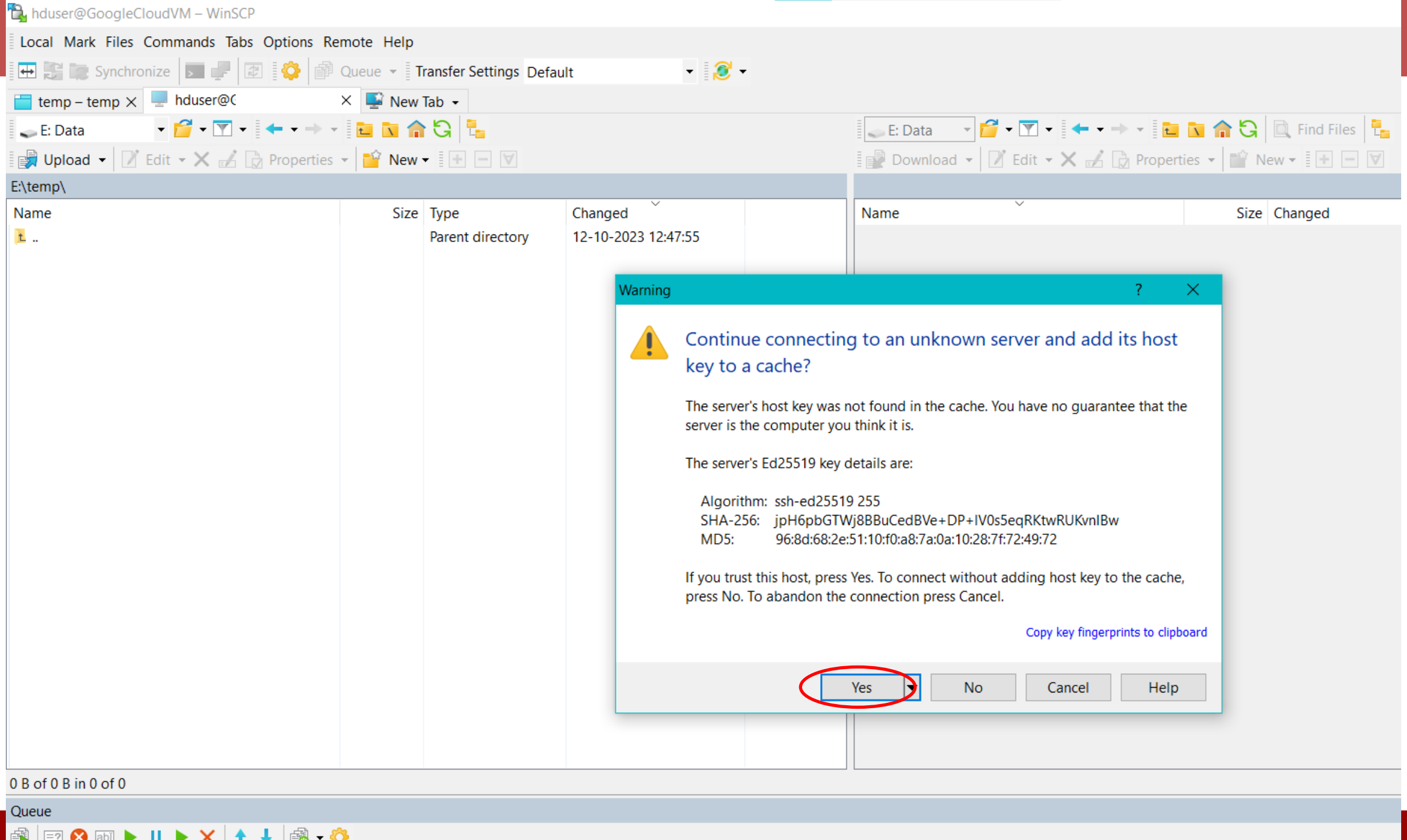
In the Advanced … dialog, select SSH/Authentication

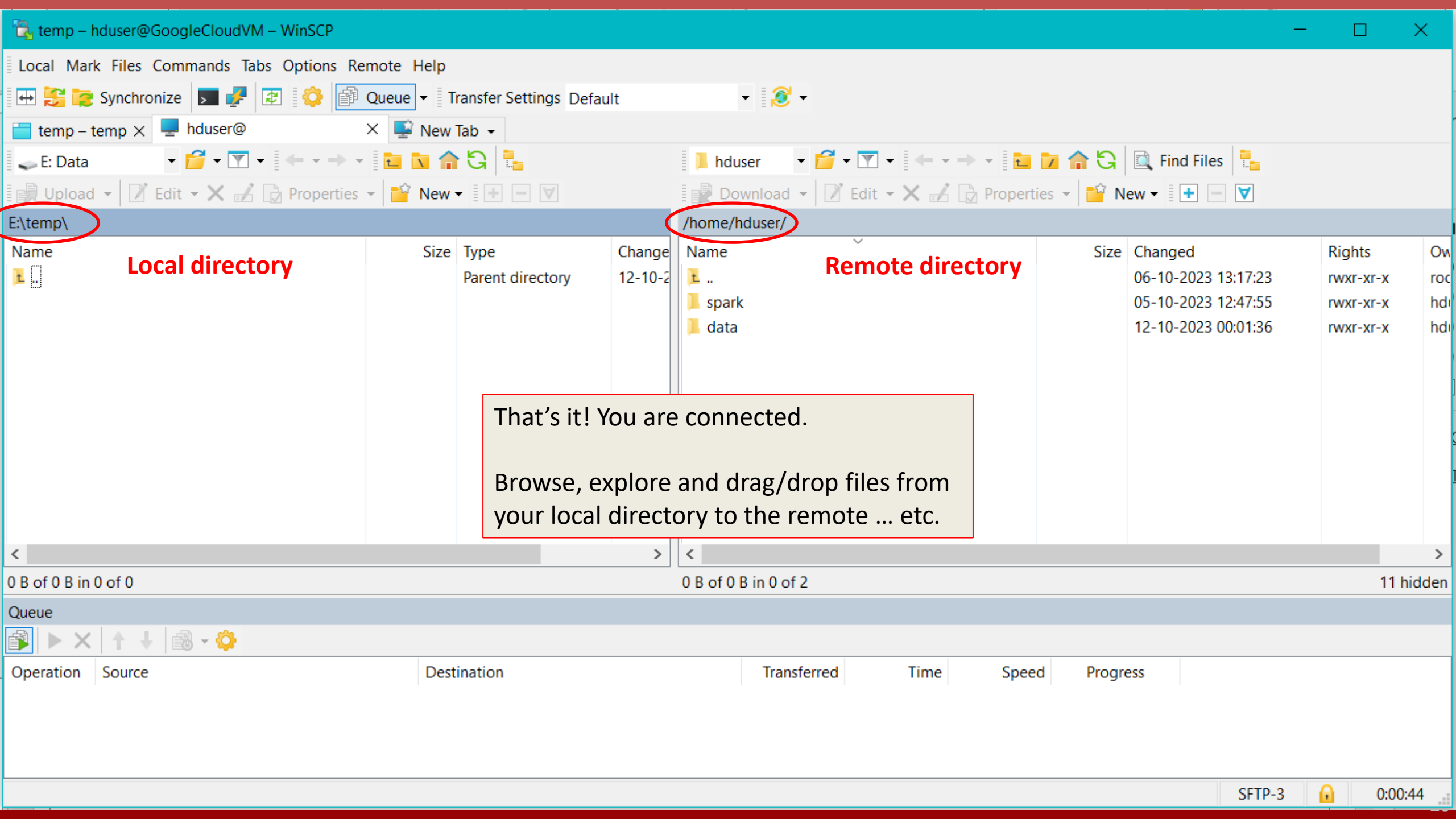
Browse and select the file **ds203-azure-vm.ppk** (you have downloaded it already …)

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




Login
New Site
Session
File protocol:
SFTP
Host name:
34.172.206.78
Change this as per your VMs IP
Port number:
22
User name:
hduser
Password:
Save
Advanced...
Tools
Manage
Login
Close
Help
Save session as site
Site name:
hduser@ azure
Folder:
<none>
Save password (not recommended)
Create desktop shortcut
OK
Cancel
Help
Refer to slide #6 if you are not sure about your VM's IP


hduser@GoogleCloudVM – WinSCP
Local Mark Files Commands Tabs Options Remote Help
Synchronize
Queue
Transfer Settings Default
temp – temp
hduser@C
New Tab
E: Data
Upload
Edit
Properties
New
E:\temp\
Name
Size
Type
Changed
..
Parent directory
12-10-2023 12:47:55
Download
Find Files
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+IV0s5eqRKtwRUKvnIBw
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


temp – hduser@GoogleCloudVM – WinSCP
Local Mark Files Commands Tabs Options Remote Help
Synchronize
Queue
Transfer Settings Default
temp – temp
hduser@
New Tab
E: Data
hduser
Find Files
Upload
Edit
Properties
New
Download
E:\temp\
/home/hduser/
Local directory
Remote directory
Name
Size
Type
Change
Parent directory
Changed
Rights
spark
data
06-10-2023 13:17:23
05-10-2023 12:47:55
12-10-2023 00:01:36
rwxr-xr-x
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
SFTP-3
0:00:44

# 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>`

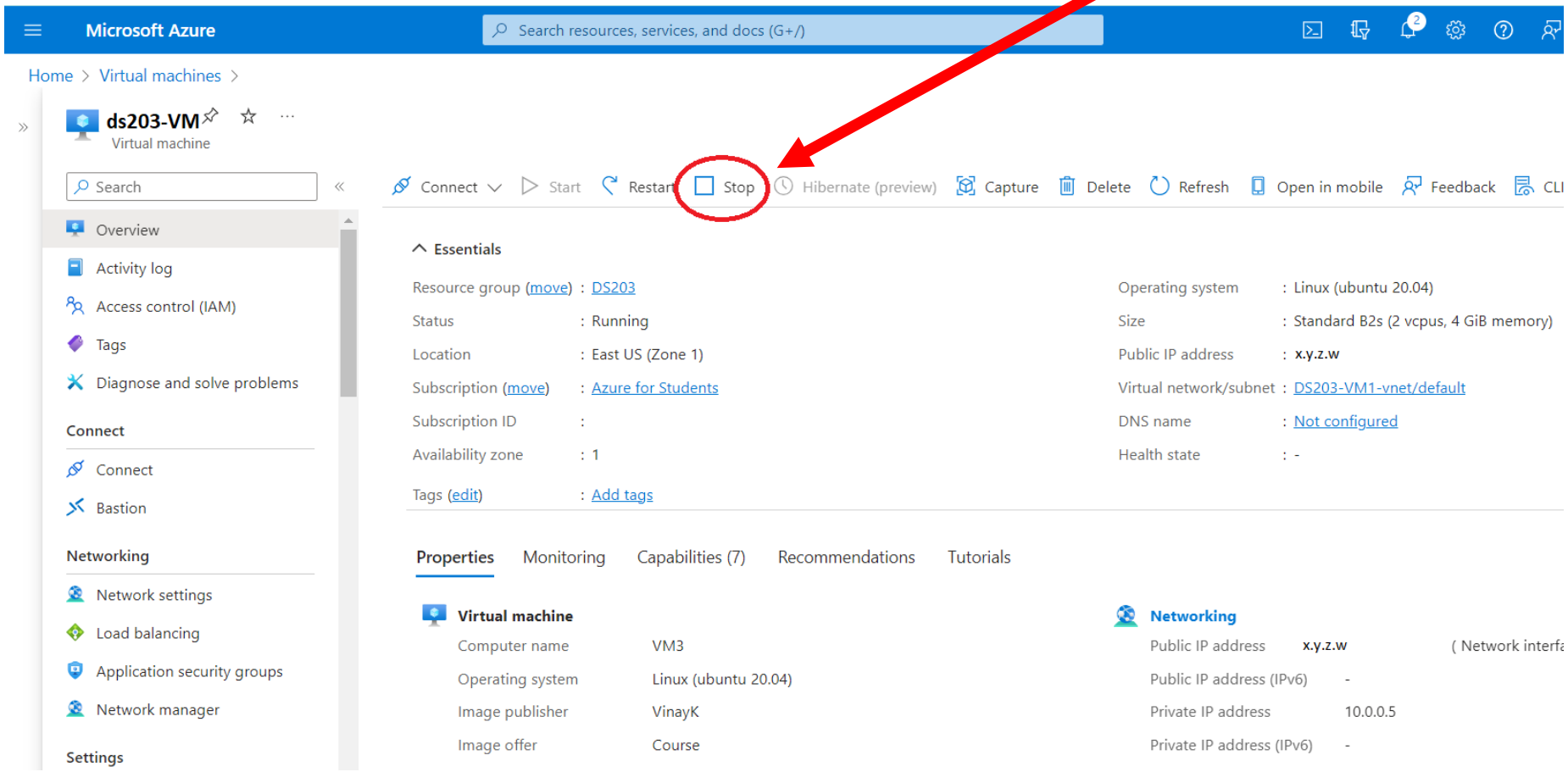
Example:

```
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]



# 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 …