2024

IST 615 – Cloud Management

LAB #1 – VIRTUAL MACHINES IN AZURE

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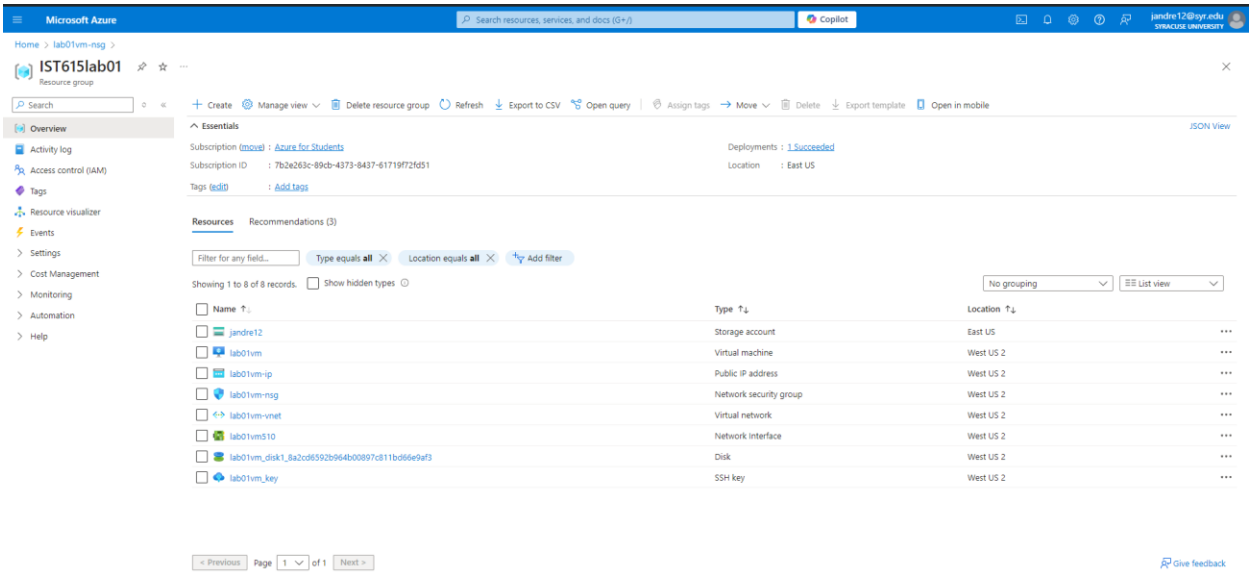
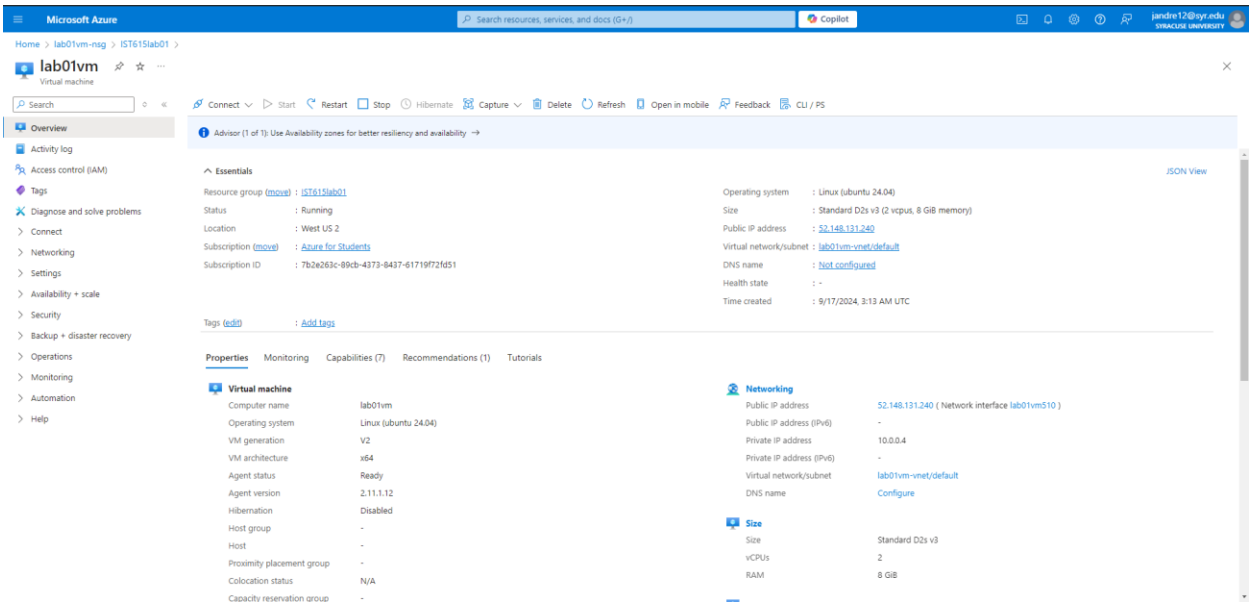
Part 1:

1. VM Overview Screenshot:



This screenshot shows the Azure VM overview page, confirming that the virtual machine is running with the public IP address assigned.

2. SSH Connection Screenshot:

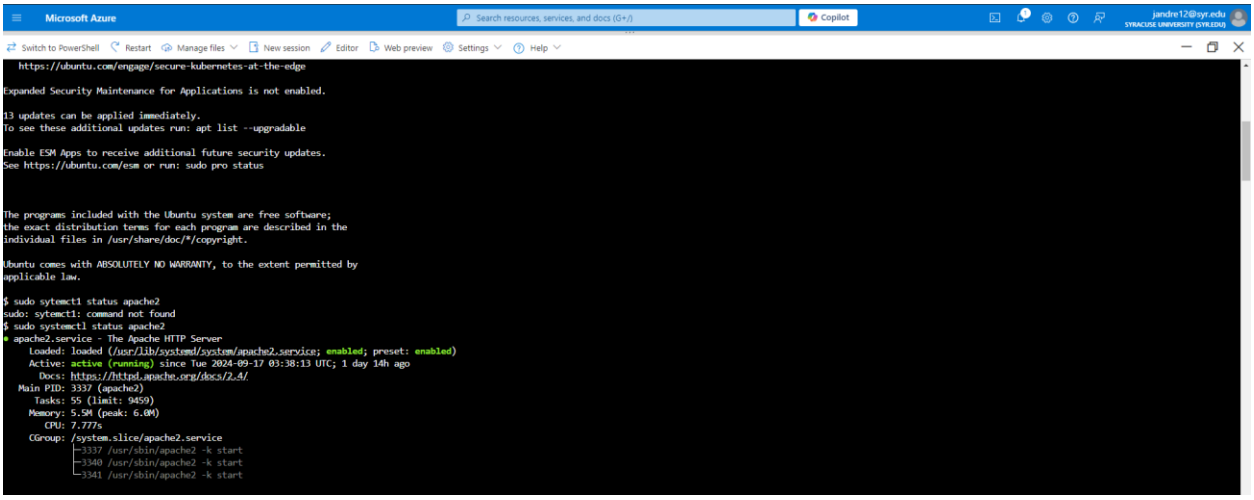


This screenshot captures the successful SSH connection to the virtual machine using the private key and the public IP address.

3. Apache Installation:

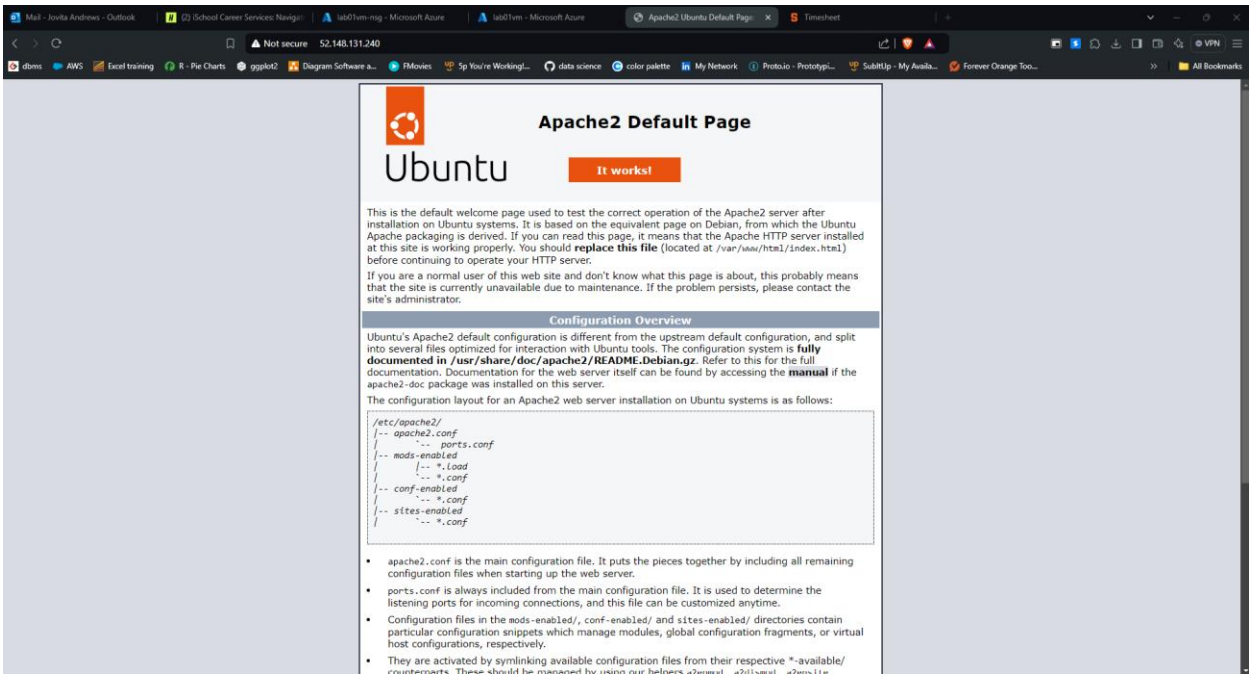
This screenshot allows the terminal output during the installation of Apache, verifying that the web server was installed correctly.

Apache Status:



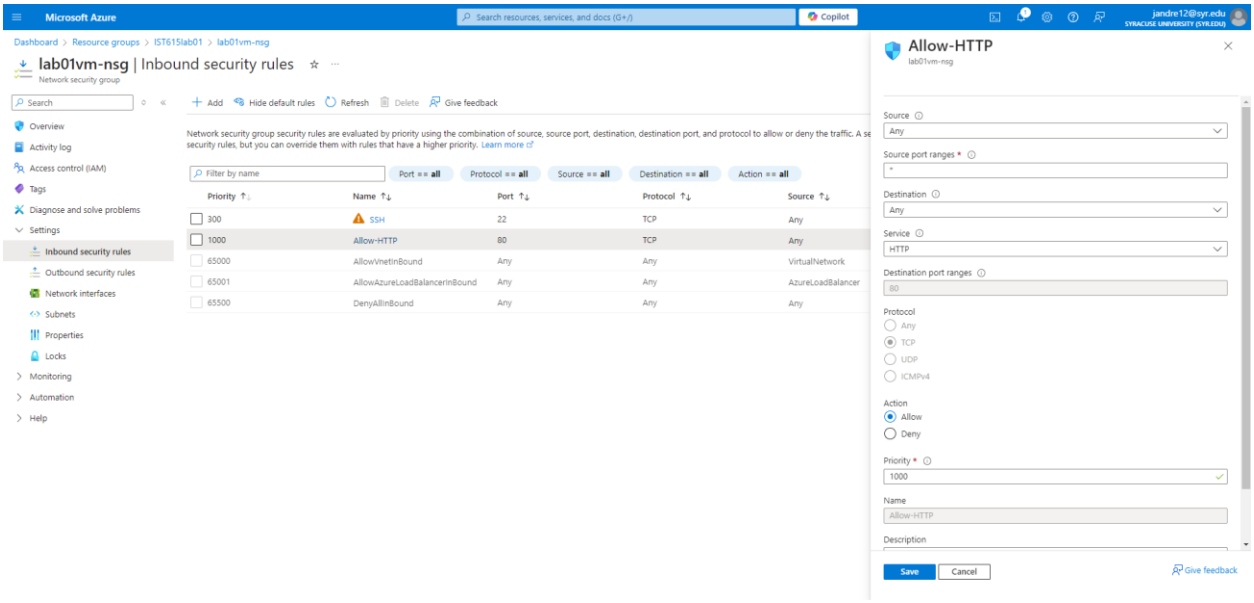
This status of Apache after installation. The service is running and active, confirming that the web server is functioning properly.

4. Public IP with Apache Web Page:



This screenshot shows the default Apache web page accessed through the Vm's public IP, indicating that the server is accessible from the internet.

5. Network Security Group Rule:



This screenshot captures the configuration of the Network Security Group, showing that port 80 (HTTP) is open to allow web traffic.

Part 2:

1. What is a key pair and what is it used for?

   Solution: A key pair consists of a public key and a private key, which are used for encrypting and decrypting data. In the context of SSH, key pairs are used for authentication. The public key is stored on the server, the server uses the public key to verify that the user has the correct private key.

2. Who stores the public portion of the key pair? Who stores the private portion of the key pair?

   Solution: The public key is stored on the server. The private key is stored securely by the user, usually on their local machine. The private key should never be shared, as it is used to authenticate the user to the server.

3. What is SSH? What is it used for?

   Solution: SHH (Secure Shell) is a cryptographic network protocol used to securely connect to a remote machine or server over an unsecured network. It is commonly used to manage servers and network devices remotely. SSH ensures that data exchanged between the client and server is encrypted and secure.

4. When you make a change to a network security group rule, does the change affect only the instance you're currently working on or other instances, too? Explain.

Solution: A change to a Network Security Group (NSG) rule affects all resources associated with that specific NSG. If multiple virtual machines or instances are attached to the same NSG, they will all be affected by the rule changes. If you want to limit the changes to a specific VM, you will need to create and assign a unique NSG to that instance.

5. What is the effect of the default network security settings for a new virtual machine?
a) Neither outbound nor inbound requests are allowed.
b) Outbound requests are allowed. Inbound traffic is only allowed from within the virtual network.
c) There are no restrictions: all outbound and inbound requests are allowed.

Solution: **b) Outbound requests are allowed. Inbound traffic is only allowed from within the virtual network.**
This means that the VM can send outbound traffic, but inbound traffic is restricted unless explicitly allowed by security group rules.

5. Suppose you have several Linux virtual machines hosted in Azure. You will administer these VMs remotely over SSH from three dedicated machines in your corporate headquarters. Which of the following authentication methods would typically be considered best-practice for this situation?
a) Username and password
b) Private key
c) Private key with passphrase

Solution: **c) Private key with passphrase**
This is considered the best practice because the private key provides a secure way to authenticate, and the passphrase adds an additional layer of security in case the private key is compromised.