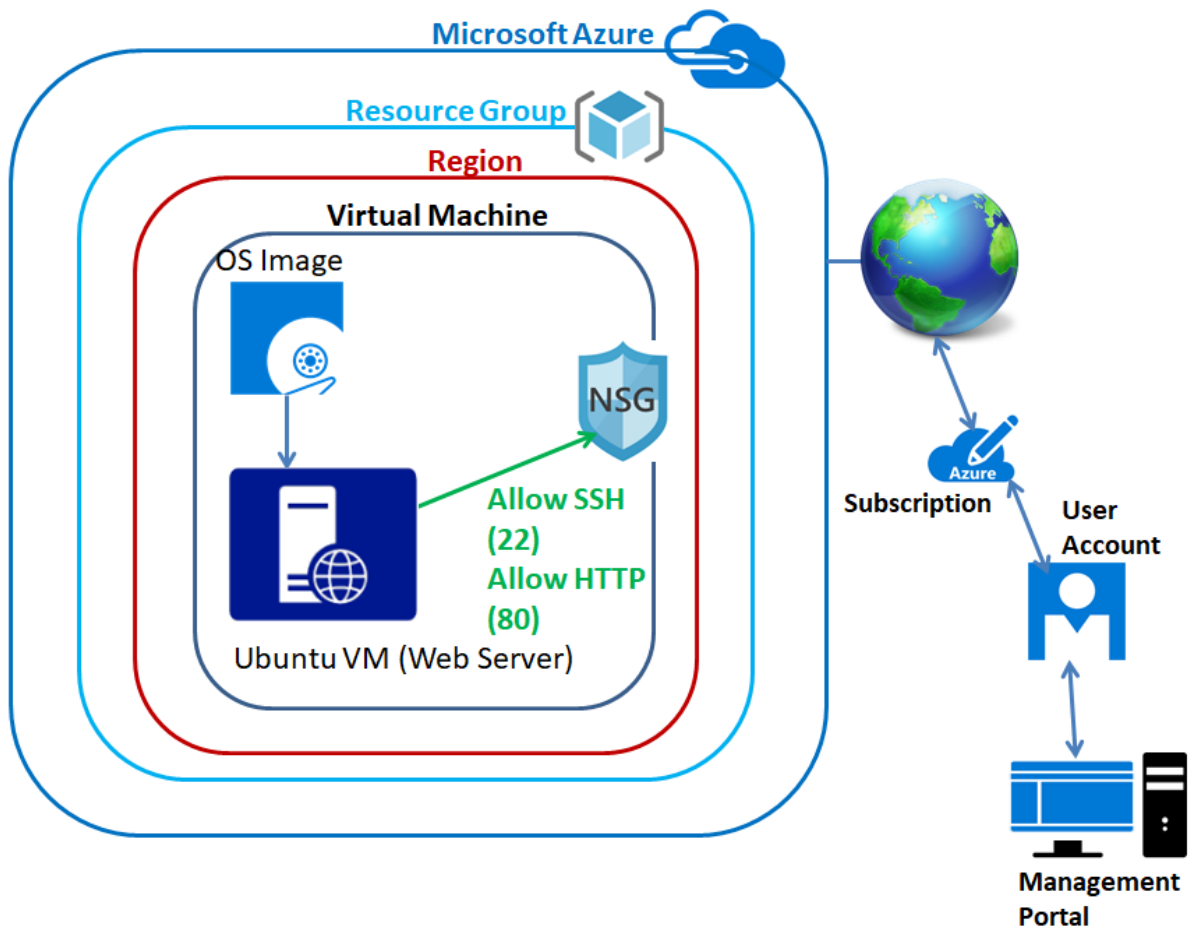
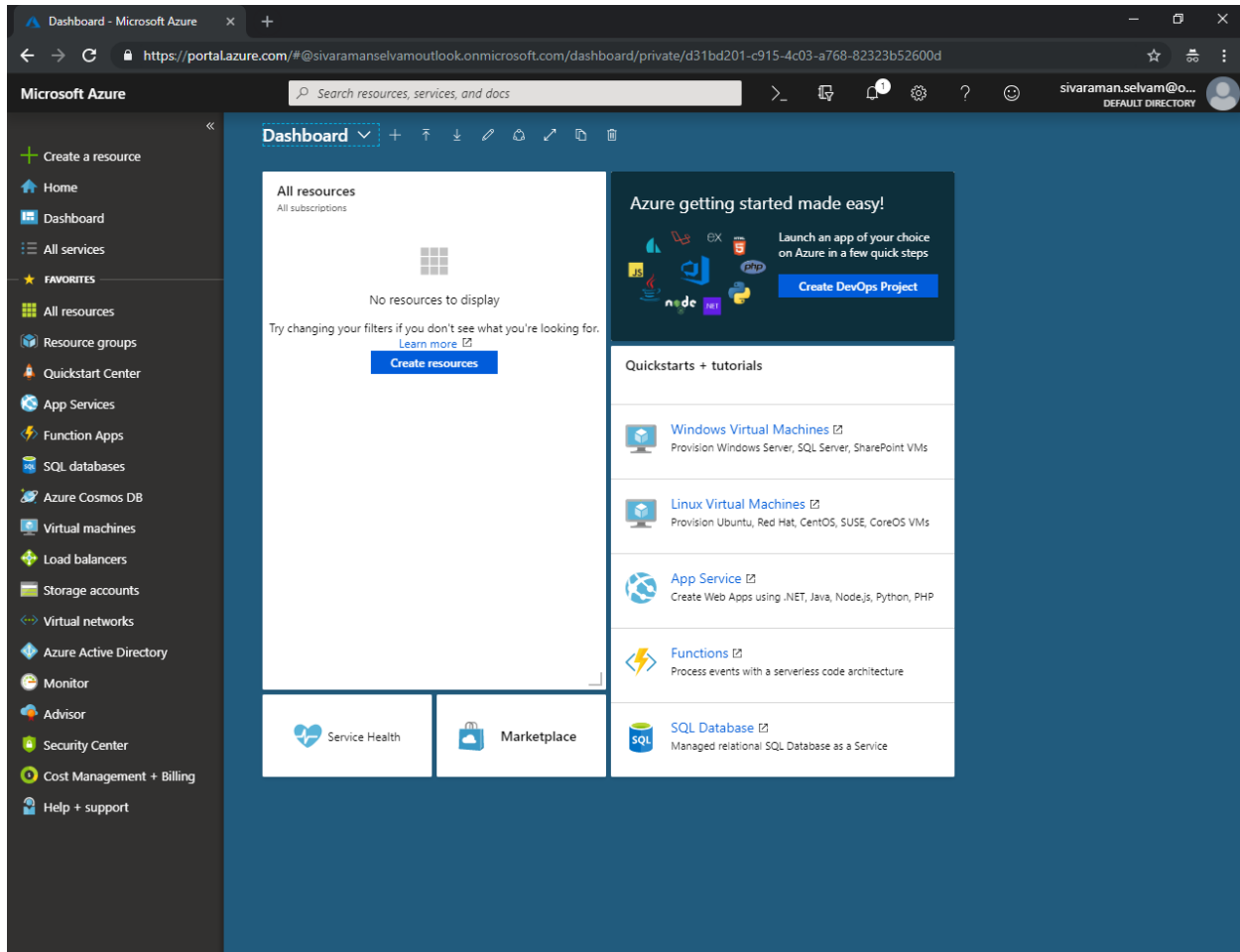


Lab4 – Installing Apache in Ubuntu Virtual Machine - Azure

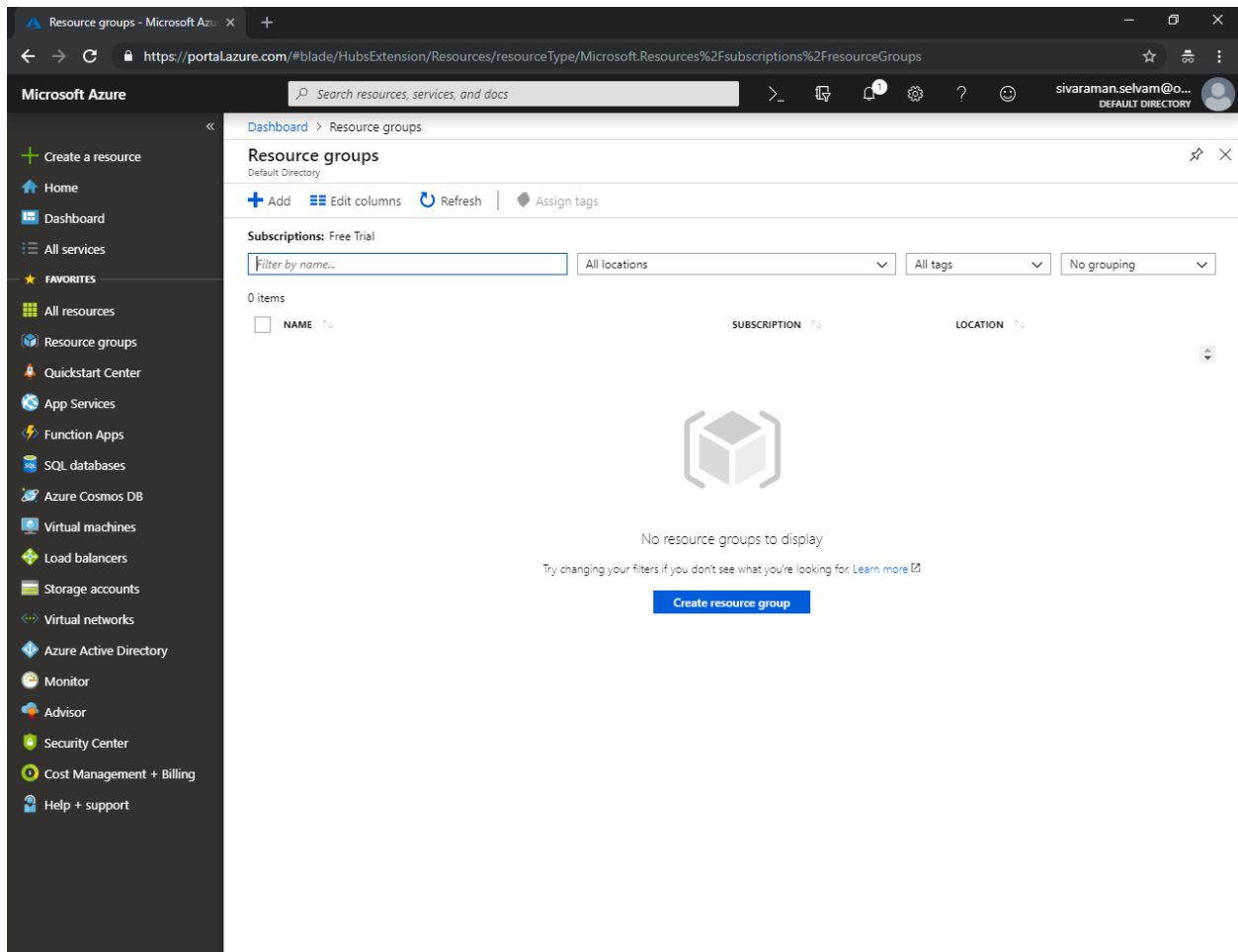
Topology



In Azure portal, click **“Resource groups”** in left side panel.



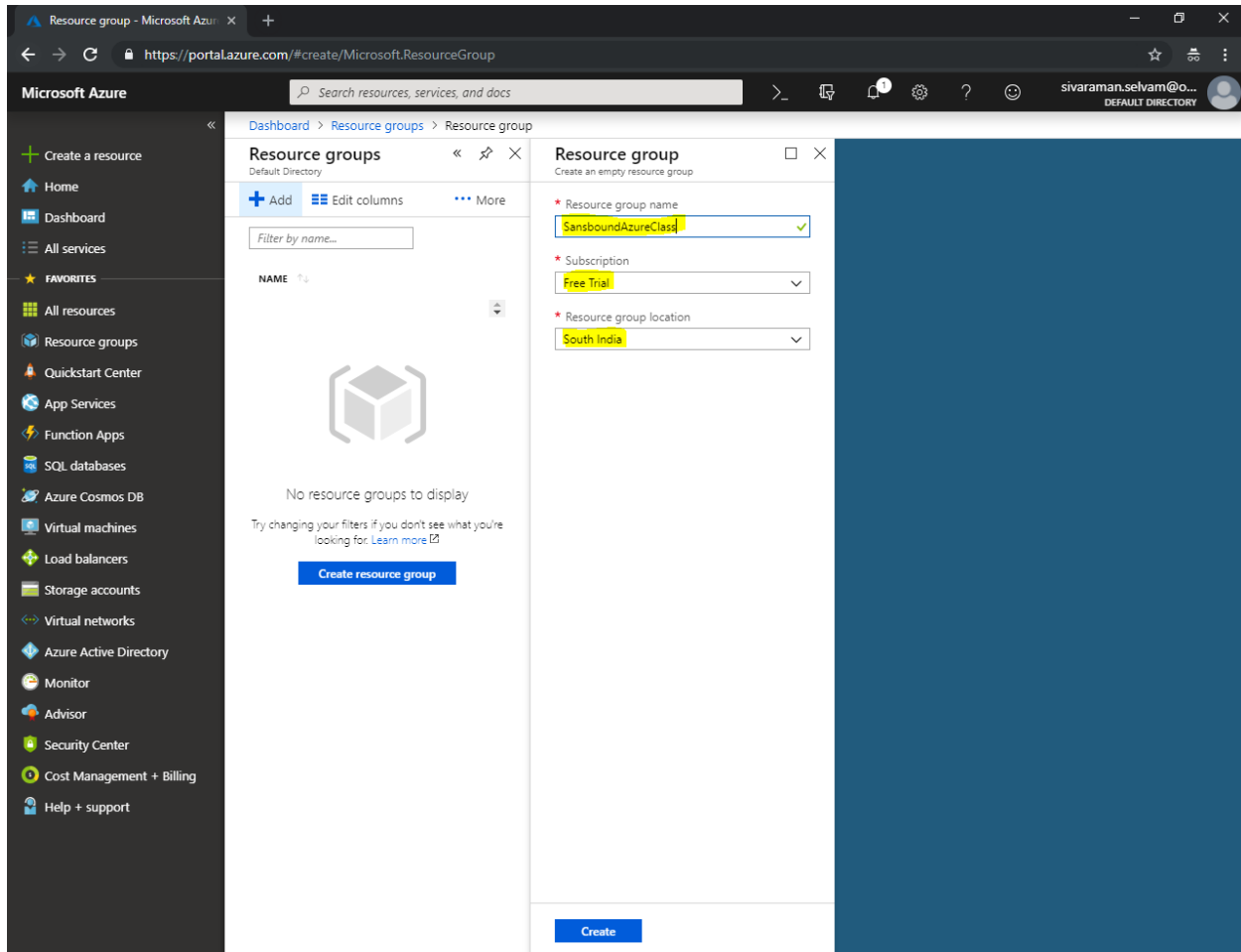
In “Resource groups” click “Add”



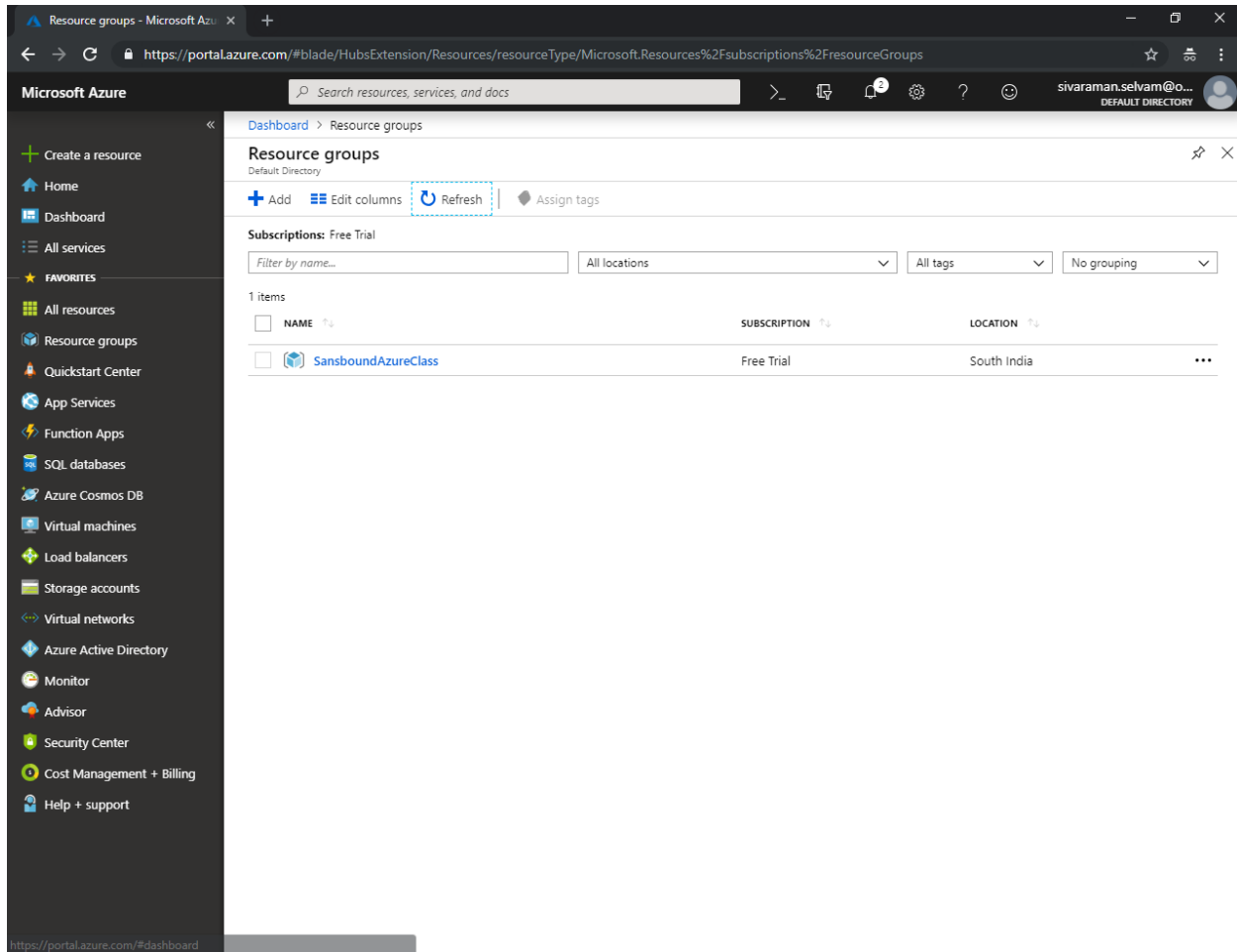
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links such as 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area is titled 'Resource groups' and includes a search bar and filters. The filters are set to 'Subscriptions: Free Trial', 'All locations', 'All tags', and 'No grouping'. Below the filters, it indicates '0 items' and displays a message: 'No resource groups to display. Try changing your filters if you don't see what you're looking for. Learn more.' A blue button labeled 'Create resource group' is positioned at the bottom of the main content area.

While creating “Resource group”, type Resource group name as “SansboundAzureClass”.

Click “Create” to create the Resource Group.



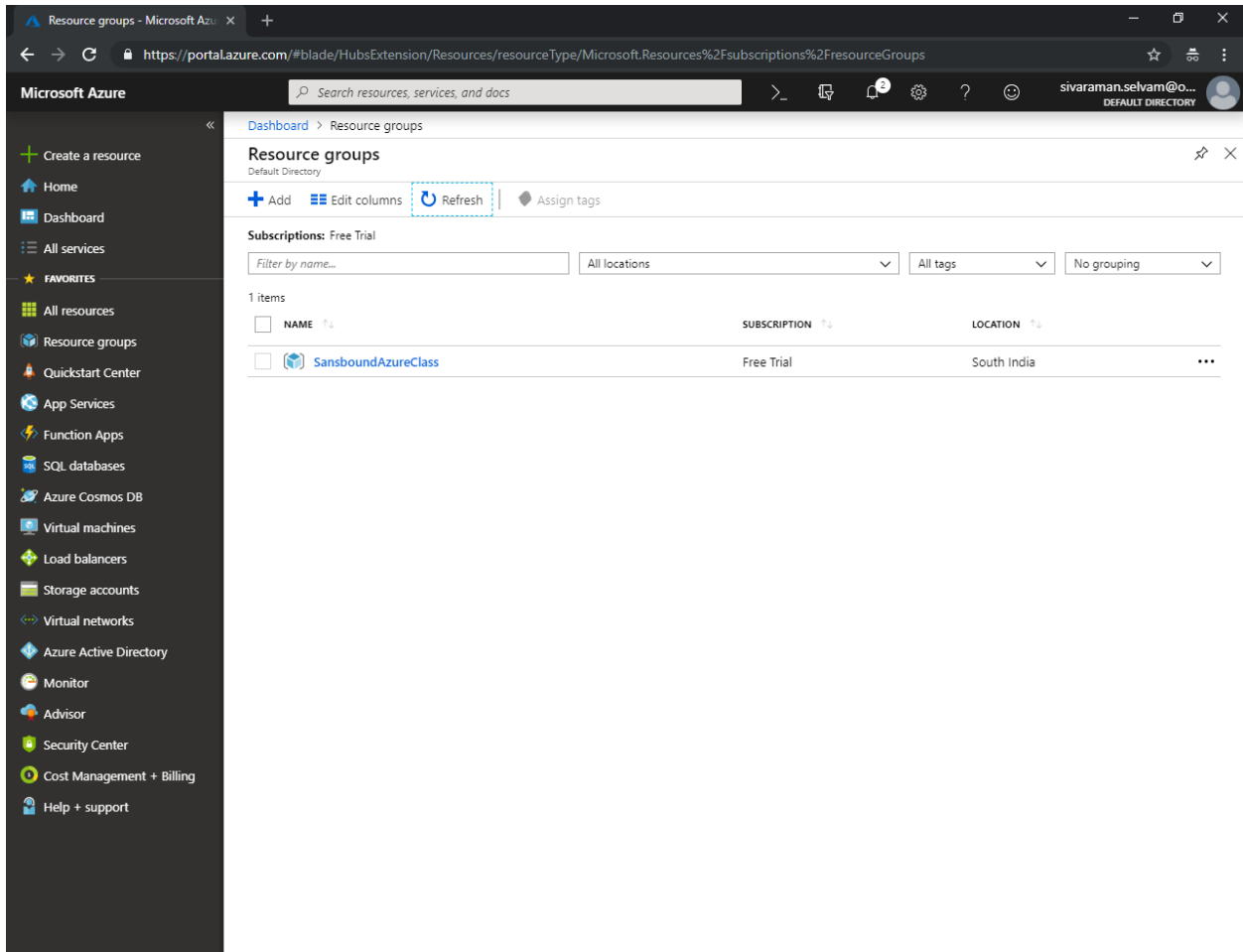
Click **“Refresh”** to review the **“Resource group”** which you have created.




The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links for various services. The main content area displays the 'Resource groups' page under the 'Subscriptions: Free Trial' filter. A table lists the resource groups, with one item visible: 'SansboundAzureClass' under the 'Free Trial' subscription and 'South India' location. The 'Refresh' button in the top toolbar is highlighted with a dashed blue box.

NAME	SUBSCRIPTION	LOCATION
SansboundAzureClass	Free Trial	South India

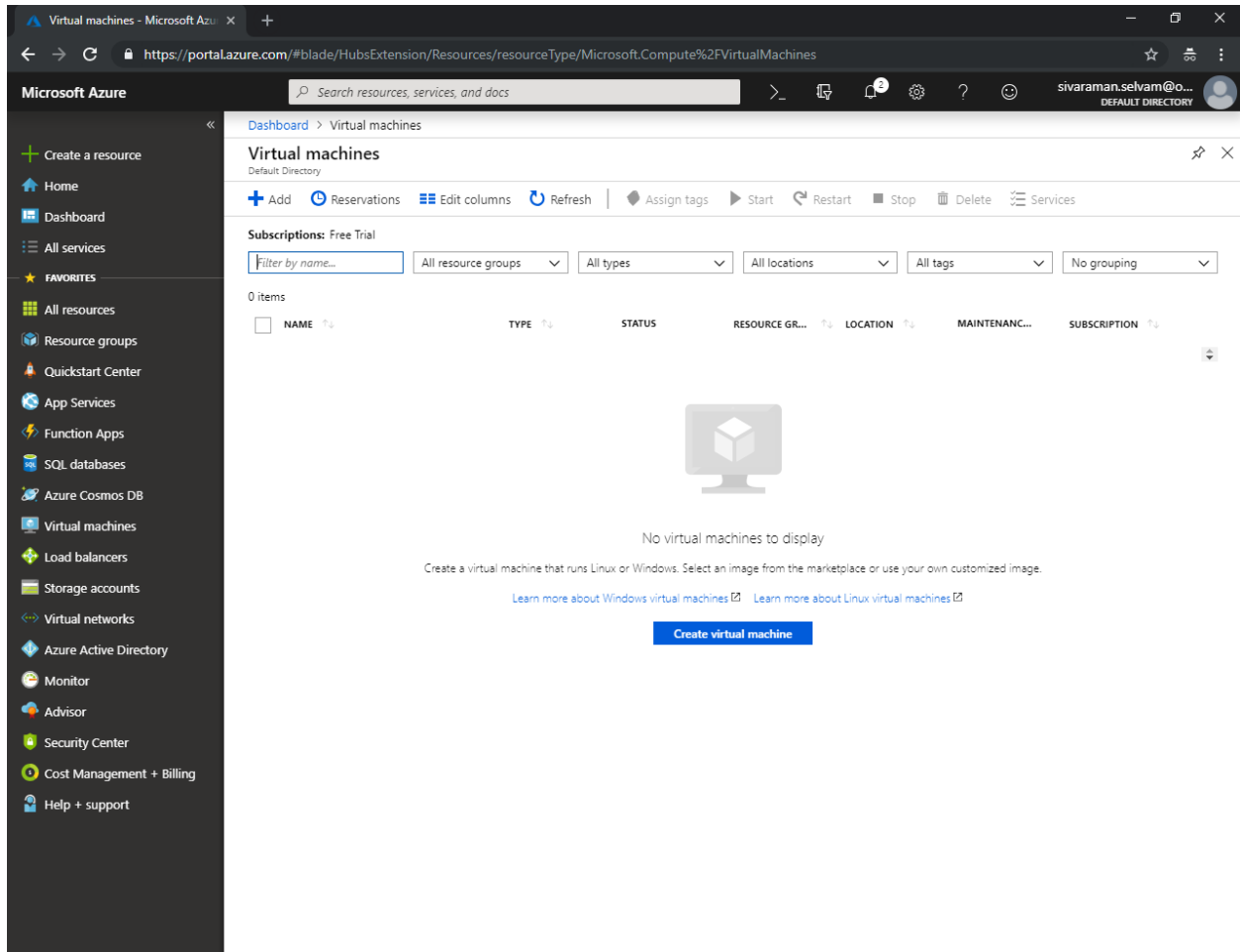
Click **“Virtual machines”** in left side panel.



The screenshot shows the Microsoft Azure portal interface. On the left, the 'FAVORITES' section lists various services, with 'Virtual machines' selected. The main area displays the 'Resource groups' page for the 'Default Directory'. It includes a table with one resource group: 'SansboundAzureClass'.

NAME	SUBSCRIPTION	LOCATION
 SansboundAzureClass	Free Trial	South India

Click **"Add"** to create new virtual machine.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links for various services, including Virtual machines. The main content area displays the 'Virtual machines' page, which is currently empty. A message states 'No virtual machines to display' and provides instructions on how to create a new virtual machine. A blue button labeled 'Create virtual machine' is prominently displayed at the bottom of the main content area.

Virtual machines - Microsoft Azure

https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Compute%2FVirtualMachines

Microsoft Azure

Search resources, services, and docs

Dashboard > Virtual machines

Virtual machines

Subscriptions: Free Trial

Filter by name... All resource groups All types All locations All tags No grouping

0 items

NAME TYPE STATUS RESOURCE GR... LOCATION MAINTENANC... SUBSCRIPTION

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

[Learn more about Windows virtual machines](#) [Learn more about Linux virtual machines](#)

Create virtual machine

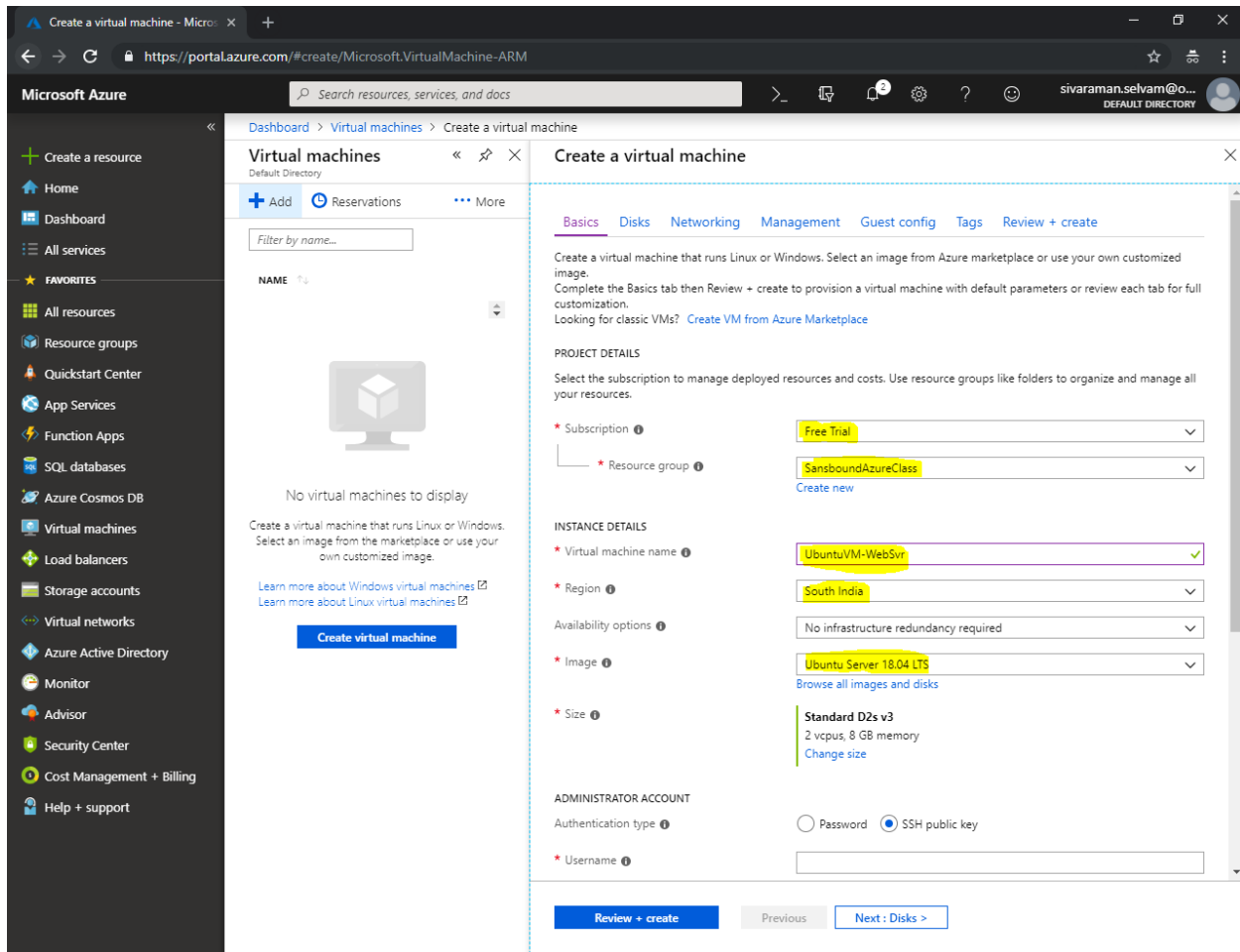
In **"Subscription"** select as **"Free trial"**.

In **"Resource Group"** should be select as **"SansboundAzureClass"**.

In **Virtual machine name**, type the virtual machine name as **"UbuntuVM-WebSvr"**.

Select **"Region"** as **"South India"**.

Select **"OS Image"** as **"Ubuntu Server 18.04"**.



Microsoft Azure

Search resources, services, and docs

Dashboard > Virtual machines > Create a virtual machine

Virtual machines

Default Directory

+ Add Reservations More

Filter by name...

NAME

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

Learn more about Windows virtual machines

Learn more about Linux virtual machines

Create virtual machine

Create a virtual machine

Basics Disks Networking Management Guest config Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Looking for classic VMs? [Create VM from Azure Marketplace](#)

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription

* Resource group [Create new](#)

INSTANCE DETAILS

* Virtual machine name

* Region

Availability options

* Image [Browse all images and disks](#)

* Size [Change size](#)

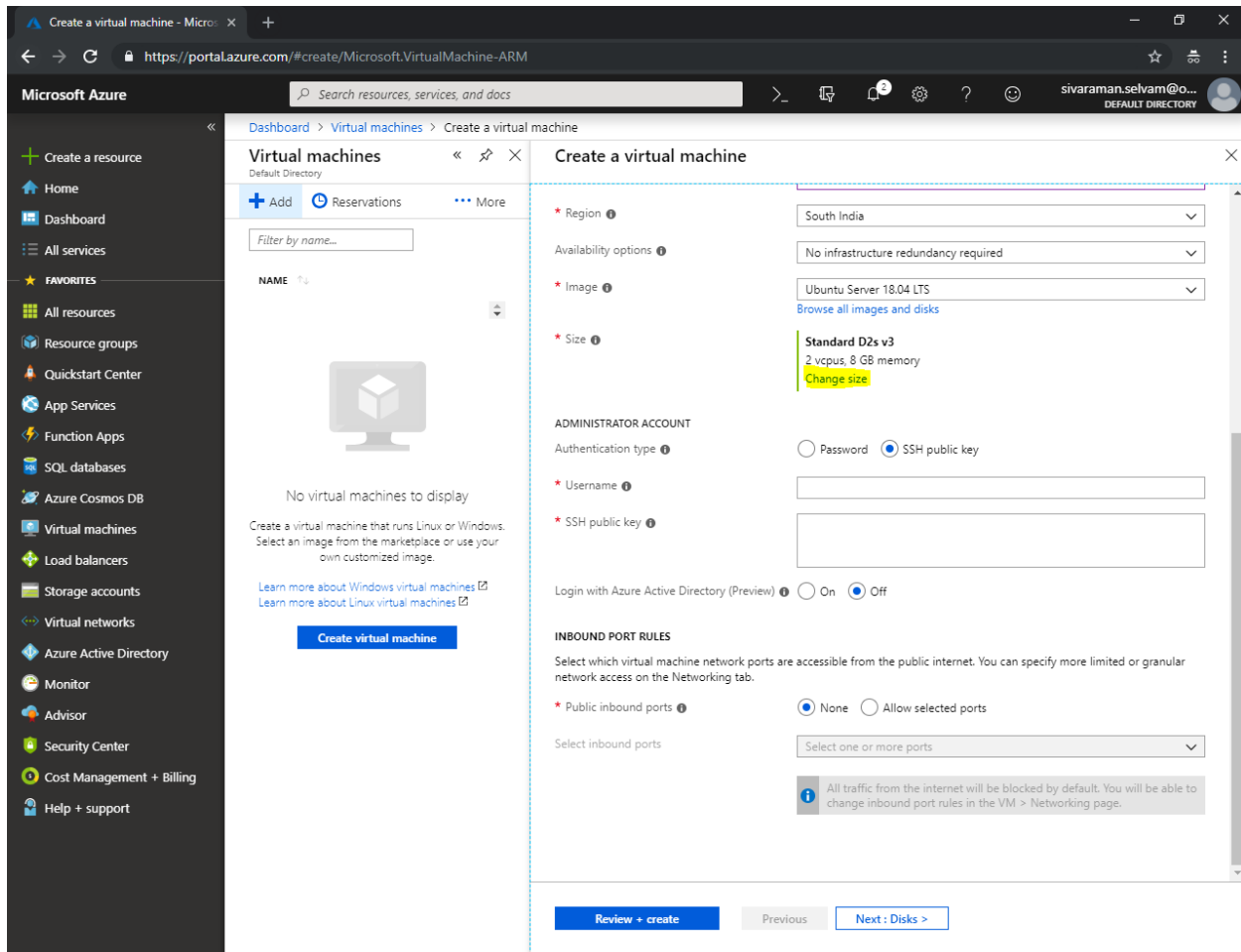
ADMINISTRATOR ACCOUNT

Authentication type ☐ Password ☒ SSH public key

* Username

Review + create Previous Next : Disks >

In Virtual machine size by default **“Standard D2sv3”** has been selected. Click **“Change size”** to change the VM Size as **“Standard B1s”** which is eligible for Free trial.



Microsoft Azure

Dashboard > Virtual machines > Create a virtual machine

Virtual machines

Filter by name...

NAME

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

[Learn more about Windows virtual machines](#)

[Learn more about Linux virtual machines](#)

Create virtual machine

Create a virtual machine

* Region South India

Availability options No infrastructure redundancy required

* Image Ubuntu Server 18.04 LTS

[Browse all images and disks](#)

* Size Standard D2s v3
2 vcpus, 8 GB memory
[Change size](#)

ADMINISTRATOR ACCOUNT

Authentication type Password SSH public key

* Username

* SSH public key

Login with Azure Active Directory (Preview) On Off

INBOUND PORT RULES

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

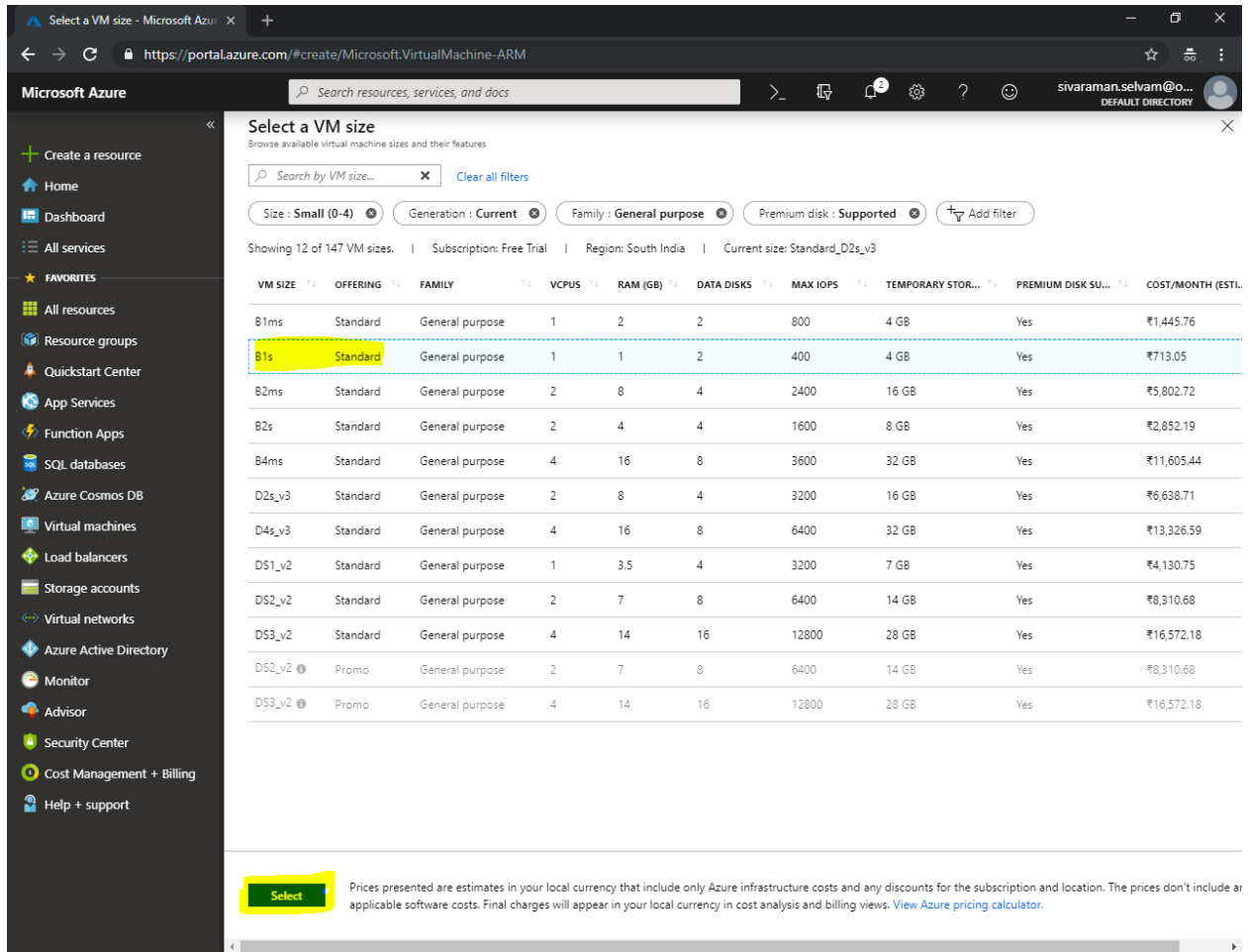
* Public inbound ports None Allow selected ports

Select inbound ports Select one or more ports

All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Review + create Previous Next: Disks >

Click on **"B1s Standard"** and click **"Select"** button.



Select a VM size - Microsoft Azure

https://portal.azure.com/#create/Microsoft.VirtualMachine-ARM

Microsoft Azure

Search resources, services, and docs

Search by VM size... Clear all filters

Size: Small (0-4) Generation: Current Family: General purpose Premium disk: Supported Add filter

Showing 12 of 147 VM sizes. Subscription: Free Trial Region: South India Current size: Standard_D2s_v3

VM SIZE	OFFERING	FAMILY	VCPUS	RAM (GB)	DATA DISKS	MAX IOPS	TEMPORARY STOR...	PREMIUM DISK SU...	COST/MONTH (ESTI..)
B1ms	Standard	General purpose	1	2	2	800	4 GB	Yes	₹1,445.76
B1s	Standard	General purpose	1	1	2	400	4 GB	Yes	₹713.05
B2ms	Standard	General purpose	2	8	4	2400	16 GB	Yes	₹5,802.72
B2s	Standard	General purpose	2	4	4	1600	8 GB	Yes	₹2,852.19
B4ms	Standard	General purpose	4	16	8	3600	32 GB	Yes	₹11,605.44
D2s_v3	Standard	General purpose	2	8	4	3200	16 GB	Yes	₹6,638.71
D4s_v3	Standard	General purpose	4	16	8	6400	32 GB	Yes	₹13,326.59
DS1_v2	Standard	General purpose	1	3.5	4	3200	7 GB	Yes	₹4,130.75
DS2_v2	Standard	General purpose	2	7	8	6400	14 GB	Yes	₹8,310.68
DS3_v2	Standard	General purpose	4	14	16	12800	28 GB	Yes	₹16,572.18
DS2_v2	Promo	General purpose	2	7	8	6400	14 GB	Yes	₹8,310.68
DS3_v2	Promo	General purpose	4	14	16	12800	28 GB	Yes	₹16,572.18

Select

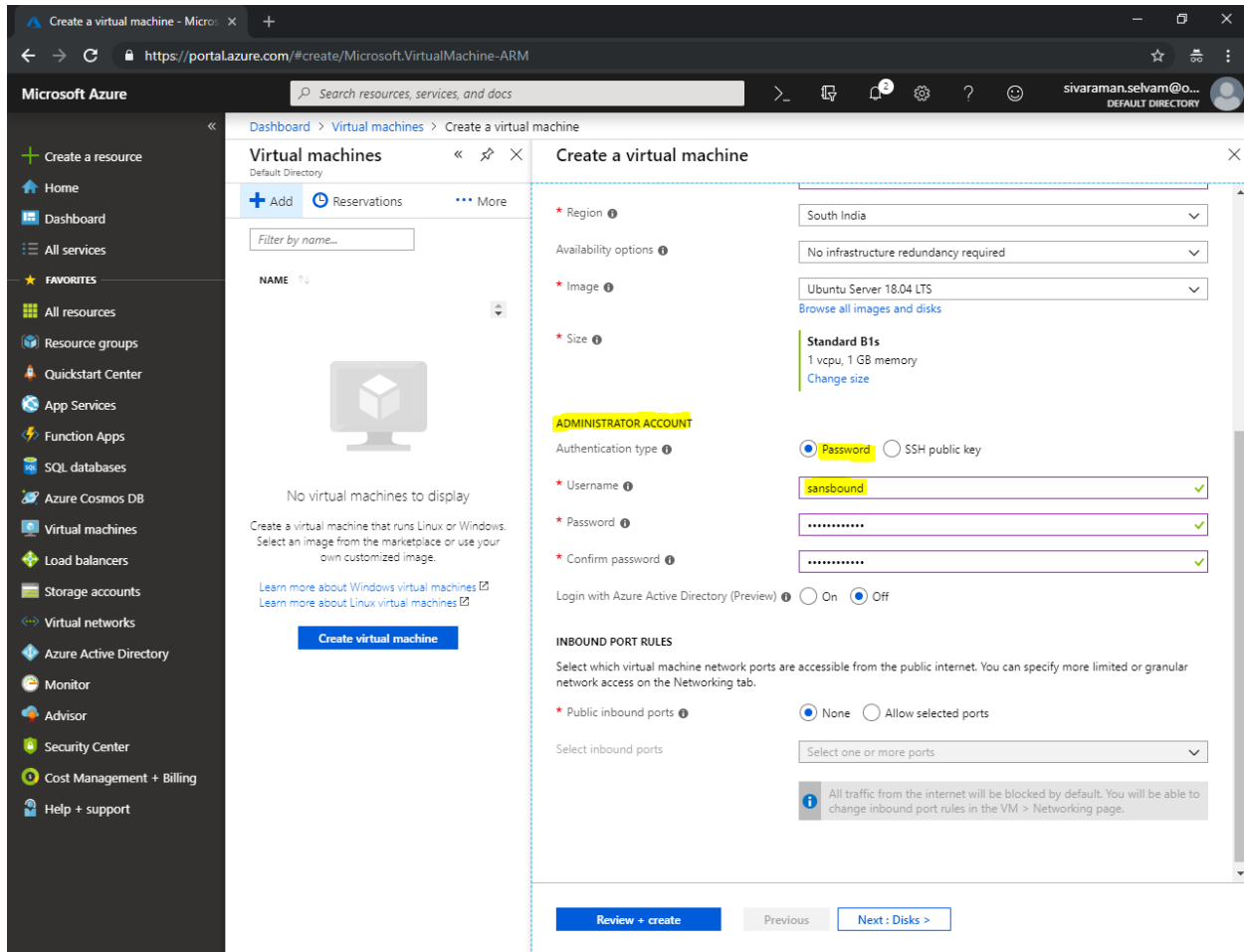
Prices presented are estimates in your local currency that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Final charges will appear in your local currency in cost analysis and billing views. [View Azure pricing calculator.](#)

Ensure that **“Standard B1s”** has been selected.

In **“Administrator Account”**, set authentication type as **“Password”** by click the option.

Type the user name which you have required to access the Ubuntu server.

Type your own password to access the Ubuntu server.



Microsoft Azure

Dashboard > Virtual machines > Create a virtual machine

Virtual machines

Filter by name...

NAME

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

Learn more about Windows virtual machines

Learn more about Linux virtual machines

Create virtual machine

Create a virtual machine

* Region South India

Availability options No infrastructure redundancy required

* Image Ubuntu Server 18.04 LTS

Browse all images and disks

* Size Standard B1s

1 vcpu, 1 GB memory

Change size

ADMINISTRATOR ACCOUNT

Authentication type Password SSH public key

* Username sansbound

* Password

* Confirm password

Login with Azure Active Directory (Preview) On Off

INBOUND PORT RULES

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

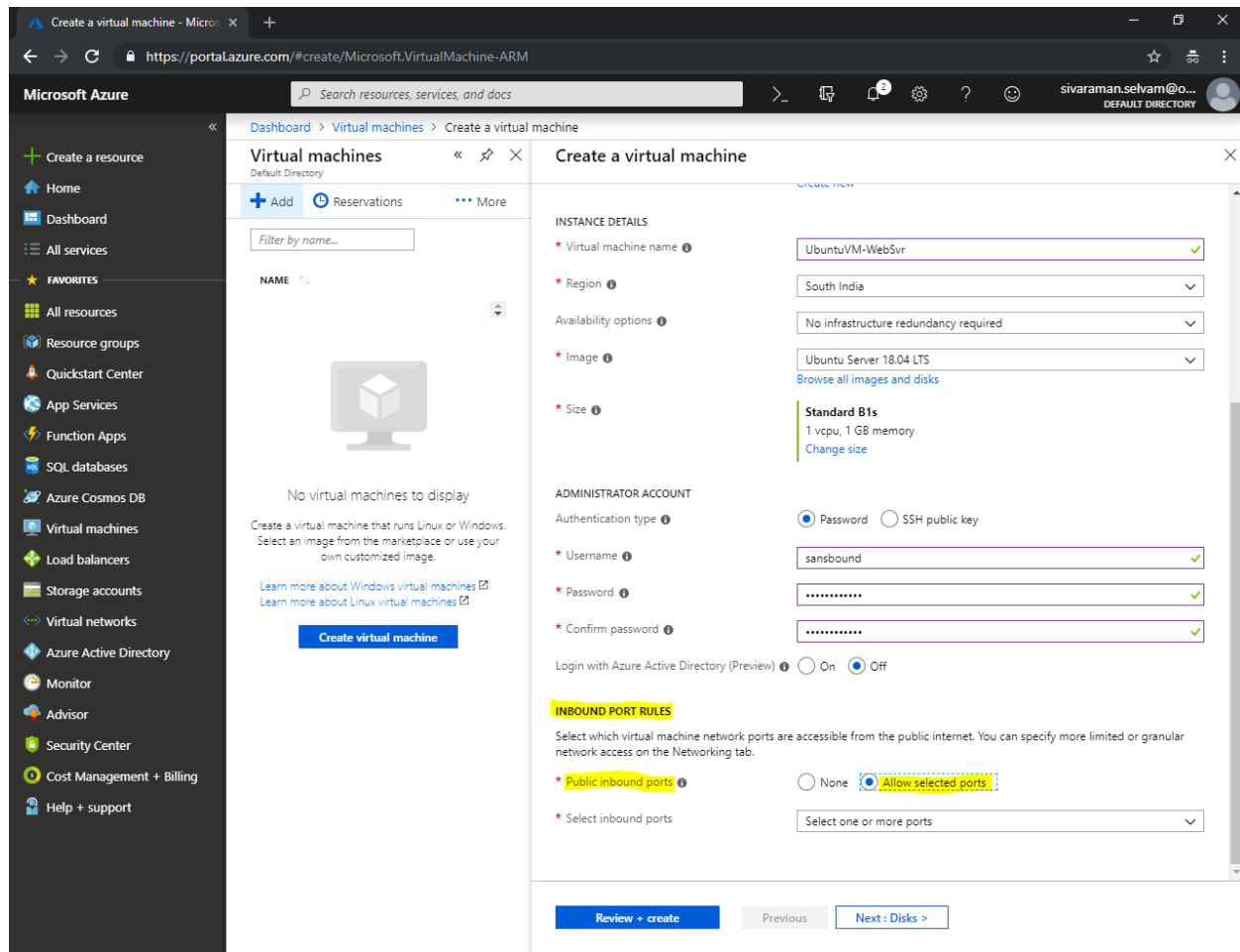
* Public inbound ports None Allow selected ports

Select inbound ports Select one or more ports

All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Review + create Previous Next : Disks >

In **"Inbound Port Rules"**, set Public inbound ports as **"Allowed selected ports"**.



Microsoft Azure

Dashboard > Virtual machines > Create a virtual machine

Virtual machines

Filter by name...

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

Learn more about Windows virtual machines

Learn more about Linux virtual machines

Create virtual machine

Create a virtual machine

INSTANCE DETAILS

- * Virtual machine name: UbuntuVM-WebSvr
- * Region: South India
- Availability options: No infrastructure redundancy required
- * Image: Ubuntu Server 18.04 LTS
- * Size: Standard B1s (1 vcpu, 1 GB memory)

ADMINISTRATOR ACCOUNT

Authentication type: Password (selected), SSH public key

- * Username: sansbound
- * Password: [REDACTED]
- * Confirm password: [REDACTED]

Login with Azure Active Directory (Preview): On, Off (selected)

INBOUND PORT RULES

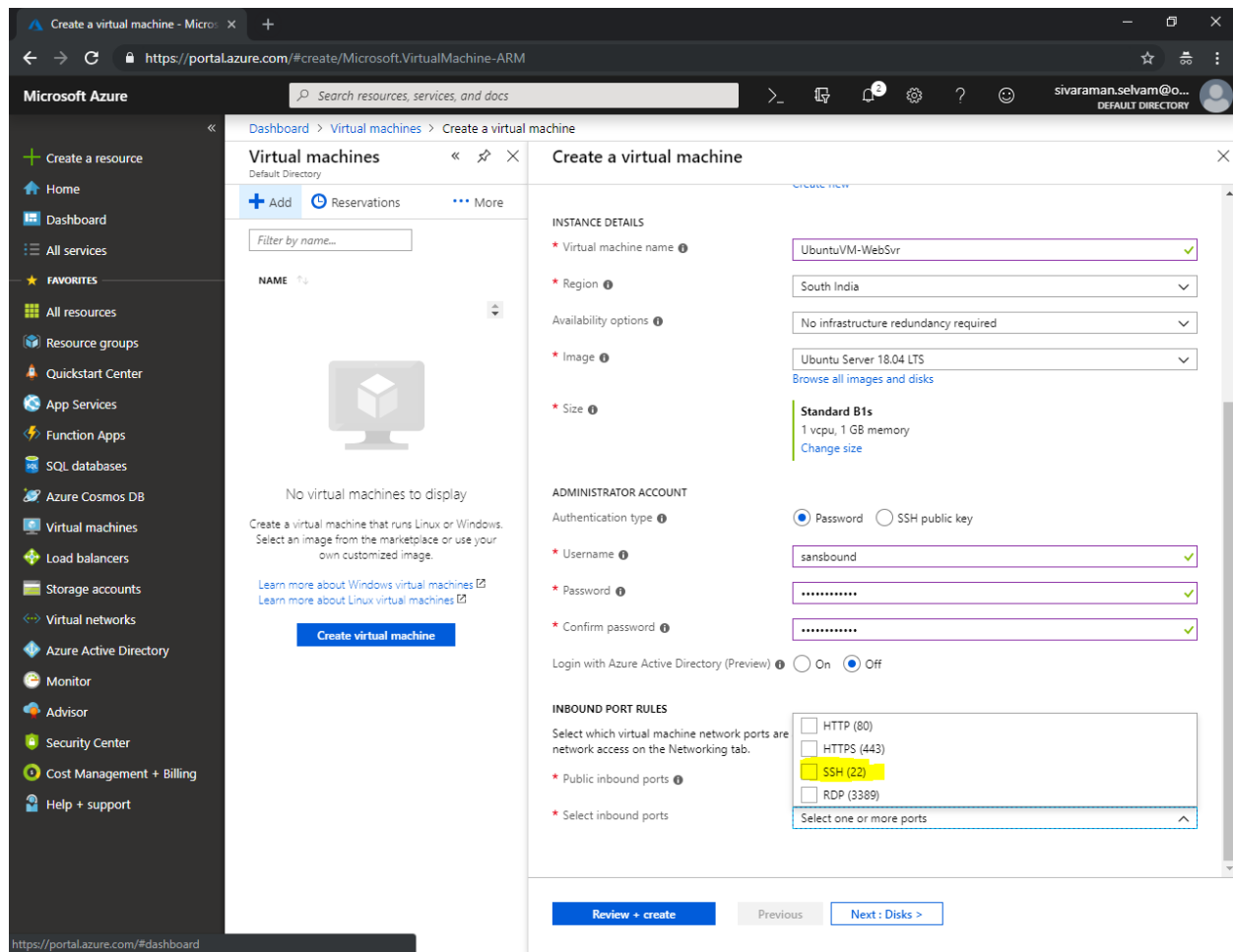
Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

- * Public inbound ports: None, **Allowed selected ports** (selected)
- * Select inbound ports: Select one or more ports

Review + create, Previous, Next : Disks >

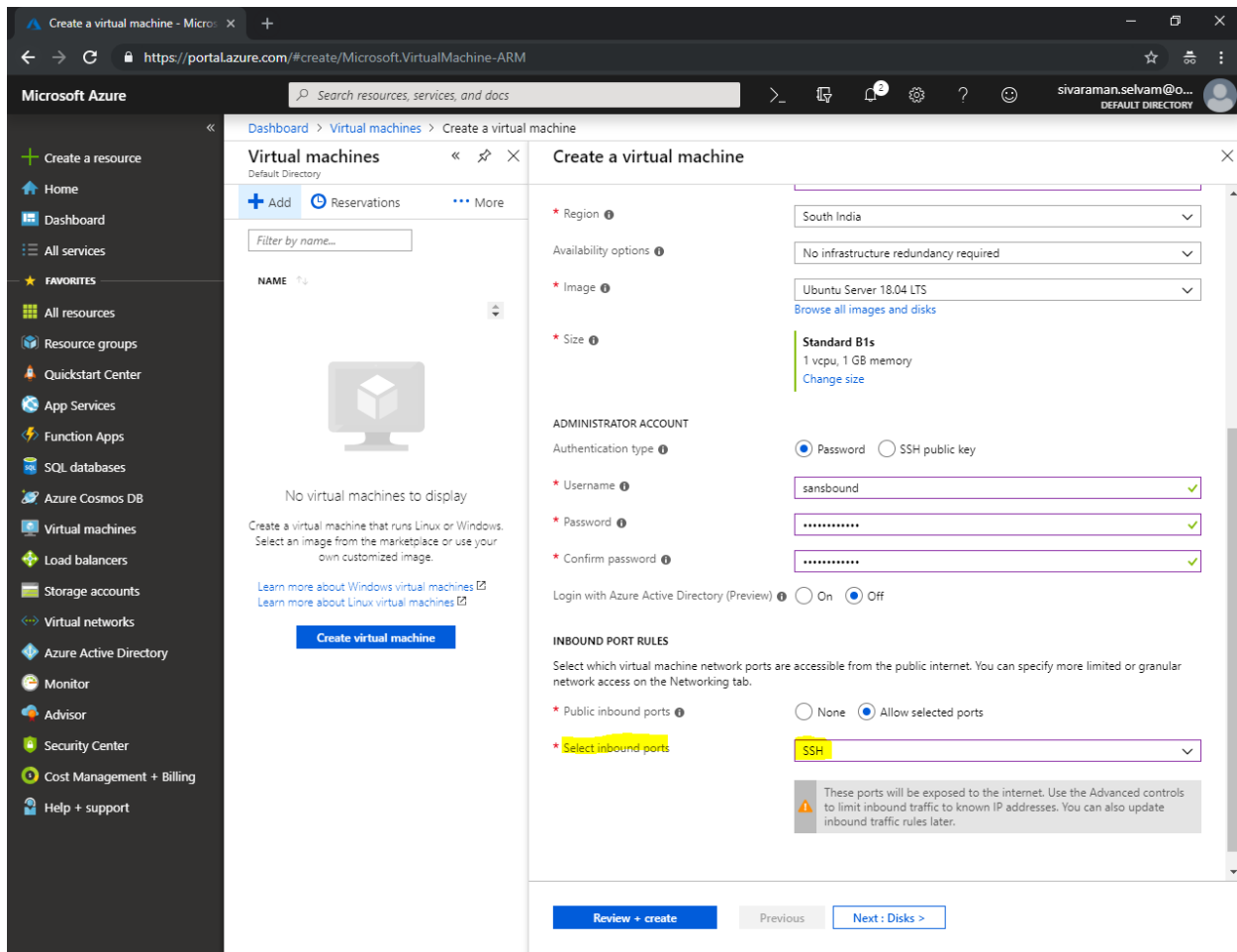
In “Inbound Port Rules”

In “**Select inbound ports**”, click the drop down list and select “**SSH (22)**” to access the Ubuntu server through SSH remotely.



The screenshot displays the Microsoft Azure portal interface for creating a virtual machine. The left sidebar shows the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and various resource categories. The main content area is titled 'Create a virtual machine' and is divided into two panes. The left pane shows a list of virtual machines (currently empty) and a 'Create virtual machine' button. The right pane contains the configuration details for the new VM. Under 'INSTANCE DETAILS', the 'Virtual machine name' is 'UbuntuVM-WebSvr', 'Region' is 'South India', 'Image' is 'Ubuntu Server 18.04 LTS', and 'Size' is 'Standard B1s'. Under 'ADMINISTRATOR ACCOUNT', 'Authentication type' is set to 'Password', 'Username' is 'sansbound', and a password is entered and confirmed. Under 'INBOUND PORT RULES', the 'SSH (22)' port is selected from a dropdown menu. At the bottom, there are buttons for 'Review + create', 'Previous', and 'Next: Disks >'. The URL in the browser address bar is 'https://portal.azure.com/#create/Microsoft.VirtualMachine-ARM'.

In “Select inbound Ports” you are able to see that “SSH” is selected.

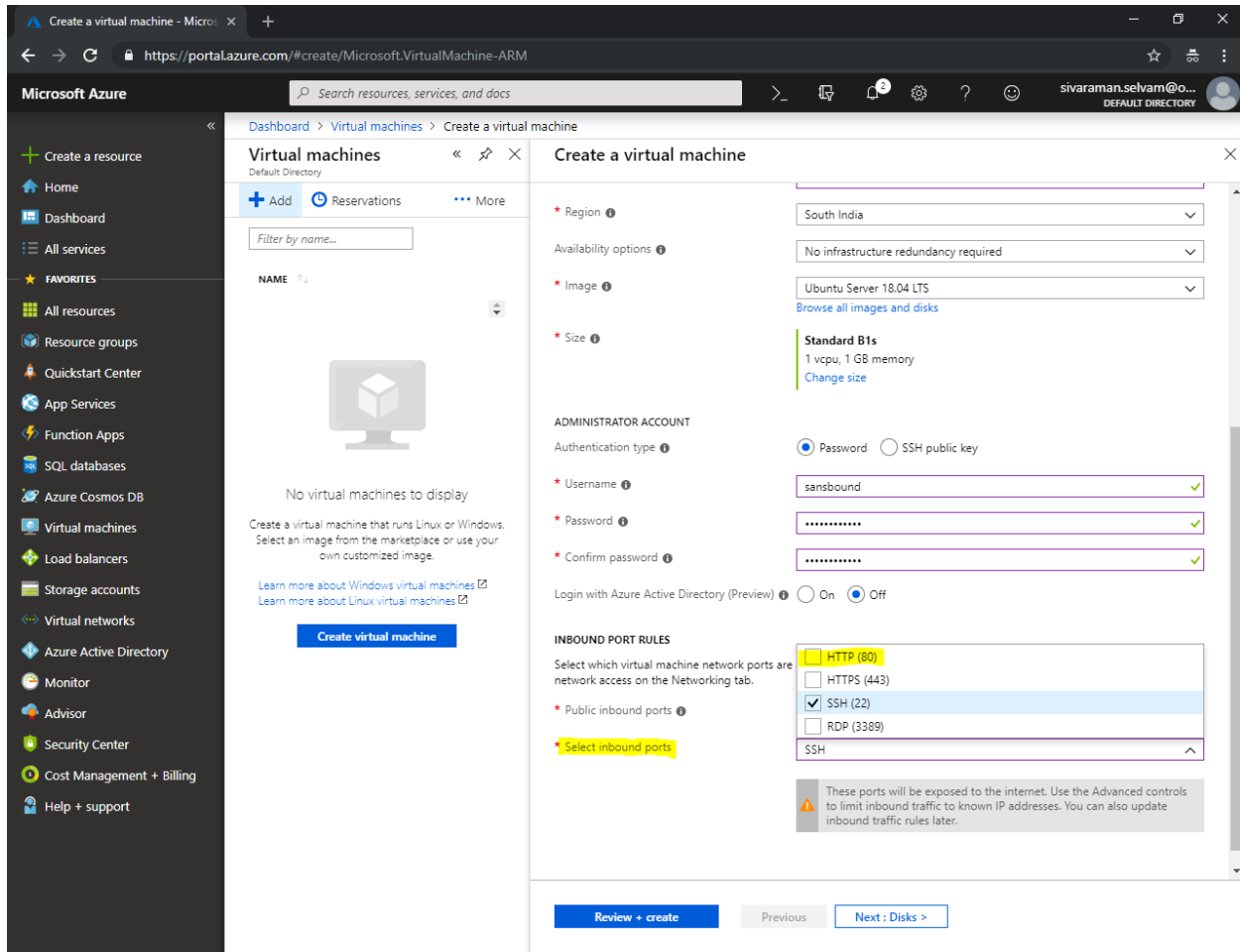


The screenshot shows the Azure portal interface for creating a virtual machine. The left sidebar contains navigation links for various Azure services. The main content area is titled "Create a virtual machine" and includes the following sections:

- Region:** South India
- Availability options:** No infrastructure redundancy required
- Image:** Ubuntu Server 18.04 LTS
- Size:** Standard B1s (1 vcpu, 1 GB memory)
- ADMINISTRATOR ACCOUNT:** Authentication type is set to Password. Username is "sansbound". Password and Confirm password fields are filled with masked characters.
- INBOUND PORT RULES:** Public inbound ports are set to "Allow selected ports". Under "Select inbound ports", "SSH" is selected.

At the bottom, there are buttons for "Review + create", "Previous", and "Next : Disks >".

In **“Select inbound ports”**, click the drop down list and check **“HTTP (80)”** also. Because, we are going to install **“Apache”** in Ubuntu server.



The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'INBOUND PORT RULES' section is highlighted, showing a list of ports to select. The 'HTTP (80)' port is selected, and the 'SSH (22)' port is also checked. A warning message states: 'These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.'

Region: South India
Availability options: No infrastructure redundancy required
Image: Ubuntu Server 18.04 LTS
Size: Standard B1s (1 vcpu, 1 GB memory)
Authentication type: Password
Username: sansbound
Password: [masked]
Confirm password: [masked]
Login with Azure Active Directory (Preview): Off

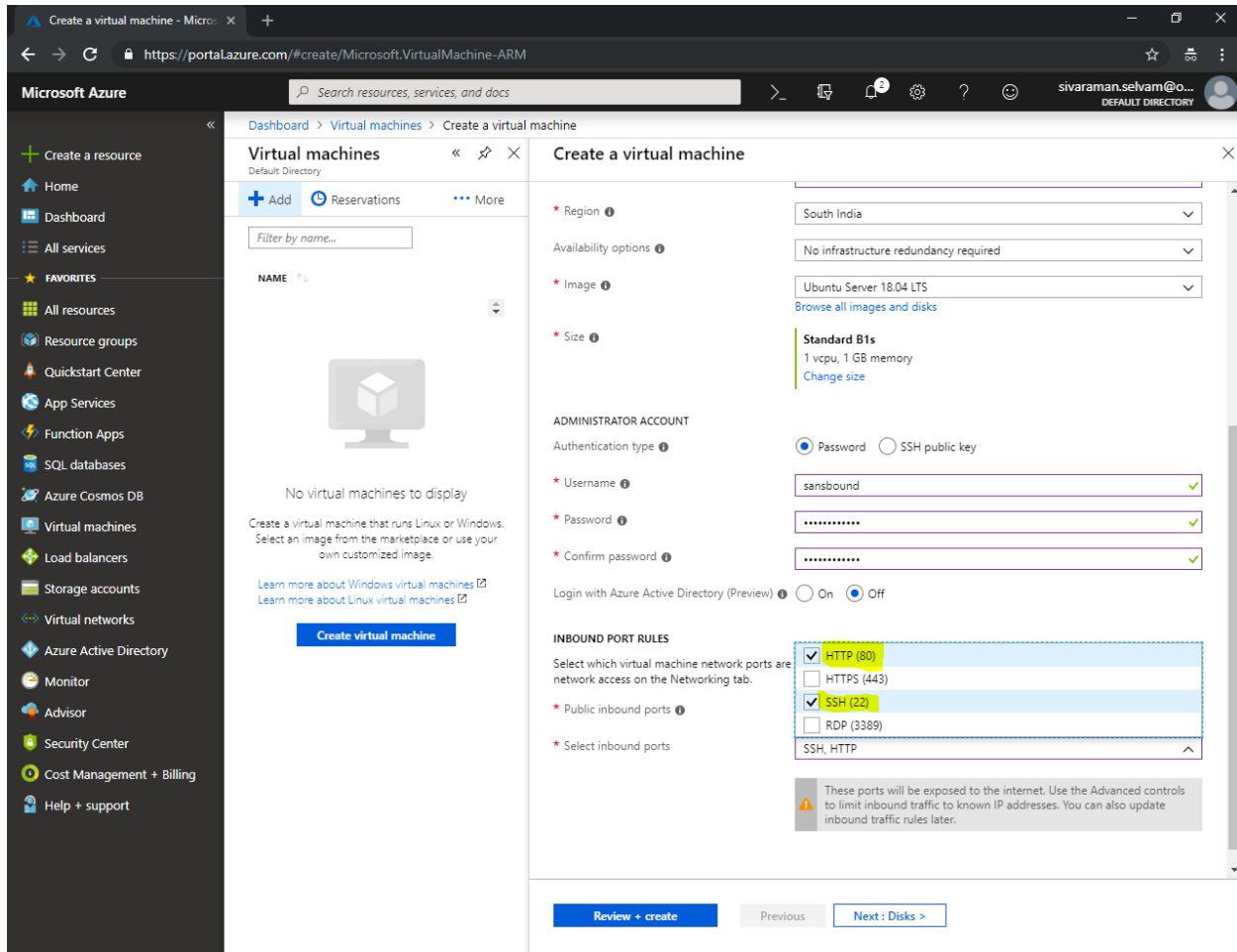
INBOUND PORT RULES
Select which virtual machine network ports are network access on the Networking tab.

Port	Protocol	Selected
80	HTTP	<input checked="" type="checkbox"/>
443	HTTPS	<input type="checkbox"/>
22	SSH	<input checked="" type="checkbox"/>
3389	RDP	<input type="checkbox"/>

Public inbound ports: SSH

Review + create | Previous | Next: Disks >

Ensure that “**HTTP (80)** and **SSH (22)**” ports are allowed to connect from **public network**.



The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. The 'INBOUND PORT RULES' section is highlighted, showing the selection of 'HTTP (80)' and 'SSH (22)' for public access. The 'Public inbound ports' field shows 'SSH, HTTP'.

Region: South India

Availability options: No infrastructure redundancy required

Image: Ubuntu Server 18.04 LTS

Size: Standard B1s (1 vcpu, 1 GB memory)

ADMINISTRATOR ACCOUNT: Password authentication type selected. Username: sansbound, Password: [REDACTED], Confirm password: [REDACTED].

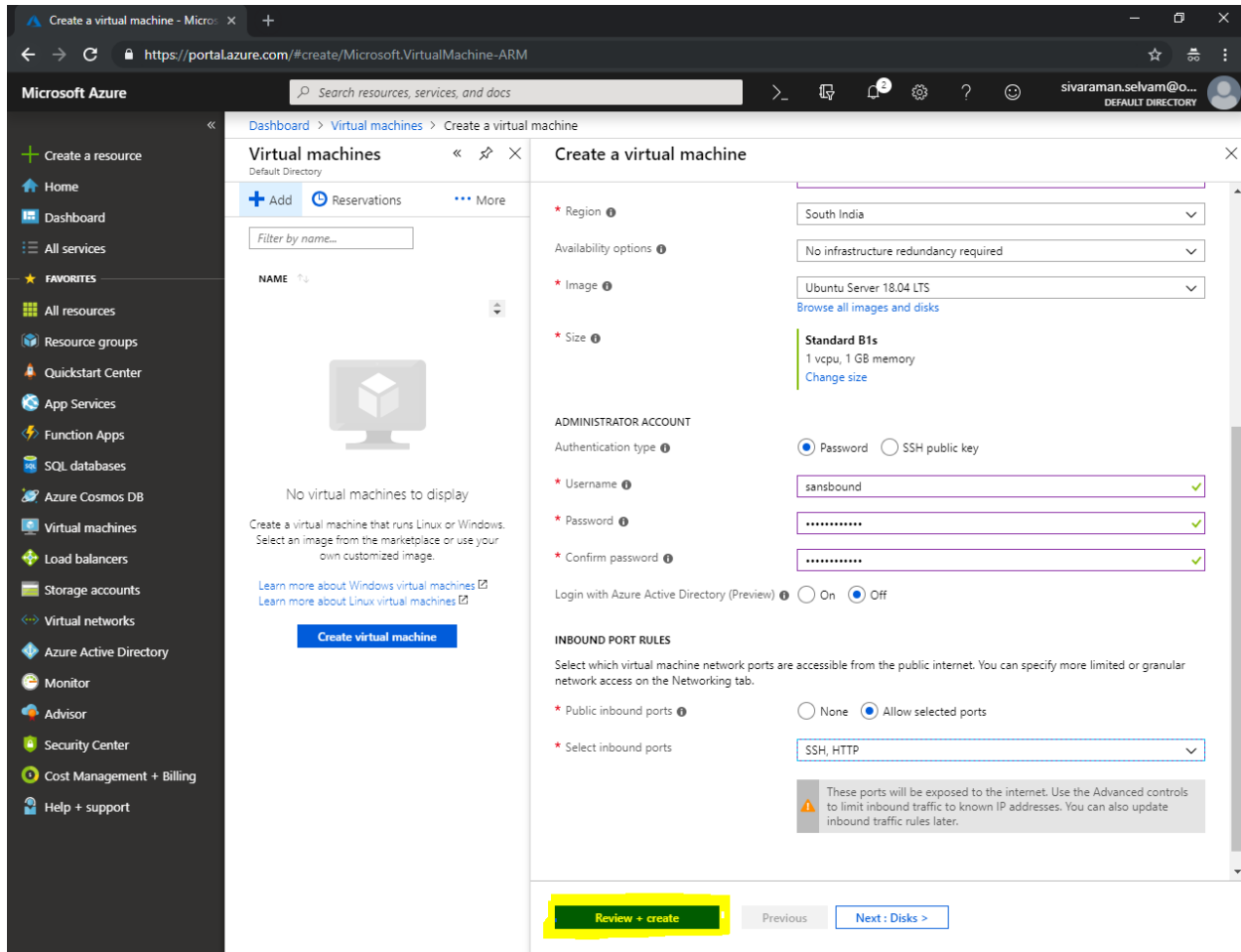
INBOUND PORT RULES: Select which virtual machine network ports are network access on the Networking tab.

Port	Selected
HTTP (80)	<input checked="" type="checkbox"/>
HTTPS (443)	<input type="checkbox"/>
SSH (22)	<input checked="" type="checkbox"/>
RDP (3389)	<input type="checkbox"/>

Public inbound ports: SSH, HTTP

Next steps: Review + create, Previous, Next : Disks >

Click **“Review + Create”**.



The screenshot shows the Azure portal interface for creating a virtual machine. The left sidebar contains navigation links for various Azure services. The main content area is titled 'Create a virtual machine' and displays configuration options for a new VM. The 'Review + create' button at the bottom is highlighted in yellow.

Virtual machines

Filter by name...

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

[Learn more about Windows virtual machines](#) [Learn more about Linux virtual machines](#)

Create a virtual machine

Region: South India

Availability options: No infrastructure redundancy required

Image: Ubuntu Server 18.04 LTS

Size: Standard B1s (1 vcpu, 1 GB memory)

ADMINISTRATOR ACCOUNT

Authentication type: ☒ Password ☐ SSH public key

Username: sansbound

Password: [masked]

Confirm password: [masked]

Login with Azure Active Directory (Preview): ☐ On ☒ Off

INBOUND PORT RULES

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

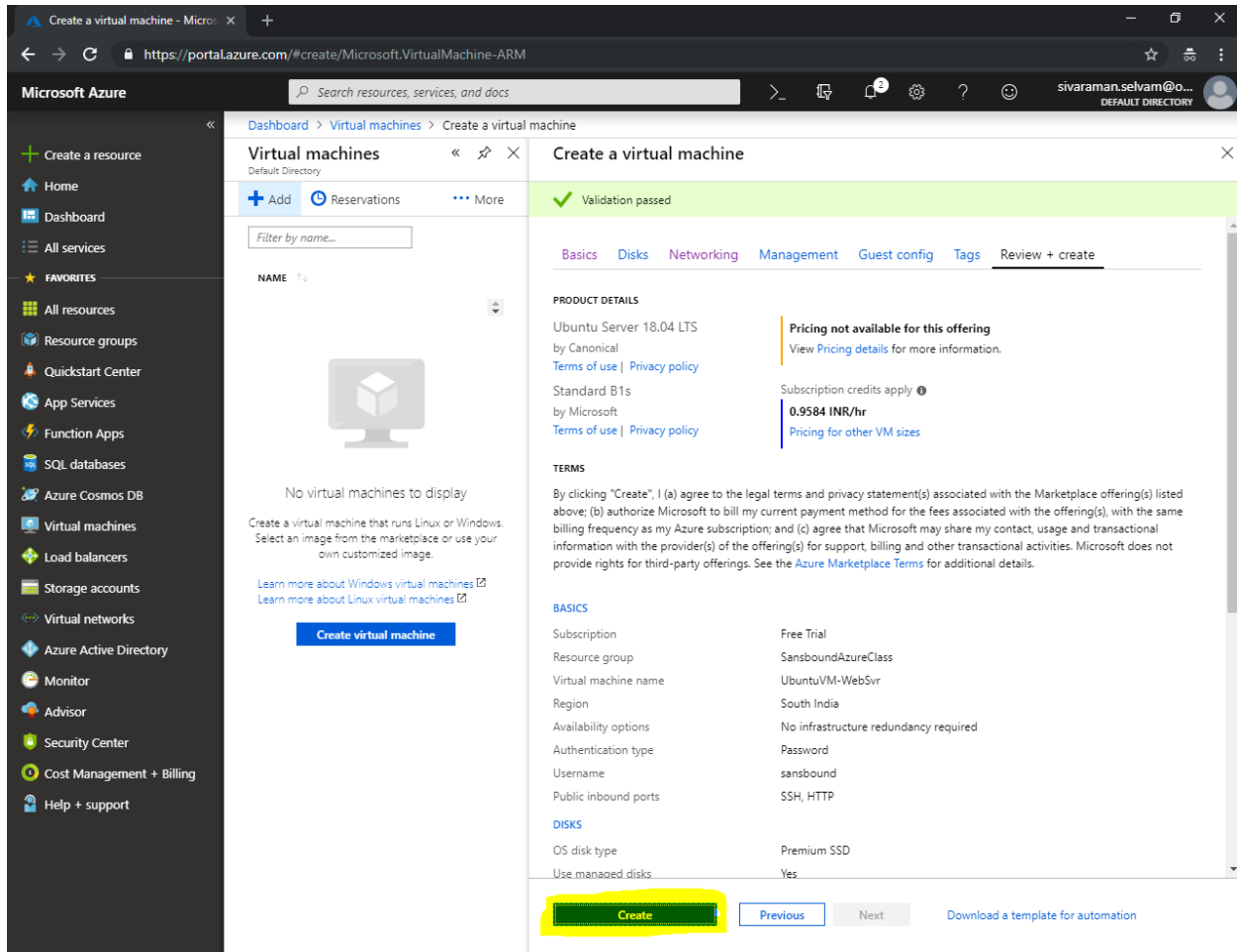
Public inbound ports: ☐ None ☒ Allow selected ports

Select inbound ports: SSH, HTTP

These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.

Review + create Previous Next : Disks >

Click **“Create”**.



The screenshot displays the Microsoft Azure portal interface for creating a new virtual machine. The left-hand navigation pane shows various Azure services, with 'Virtual machines' selected. The main content area is titled 'Create a virtual machine' and shows a 'Validation passed' status. The 'Basics' tab is active, displaying the following configuration details:

PRODUCT DETAILS	
Ubuntu Server 18.04 LTS by Canonical Terms of use Privacy policy	Pricing not available for this offering View Pricing details for more information.
Standard B1s by Microsoft Terms of use Privacy policy	Subscription credits apply 0.9584 INR/hr Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

BASICS

Subscription	Free Trial
Resource group	SansboundAzureClass
Virtual machine name	UbuntuVM-WebSvr
Region	South India
Availability options	No infrastructure redundancy required
Authentication type	Password
Username	sansbound
Public inbound ports	SSH, HTTP

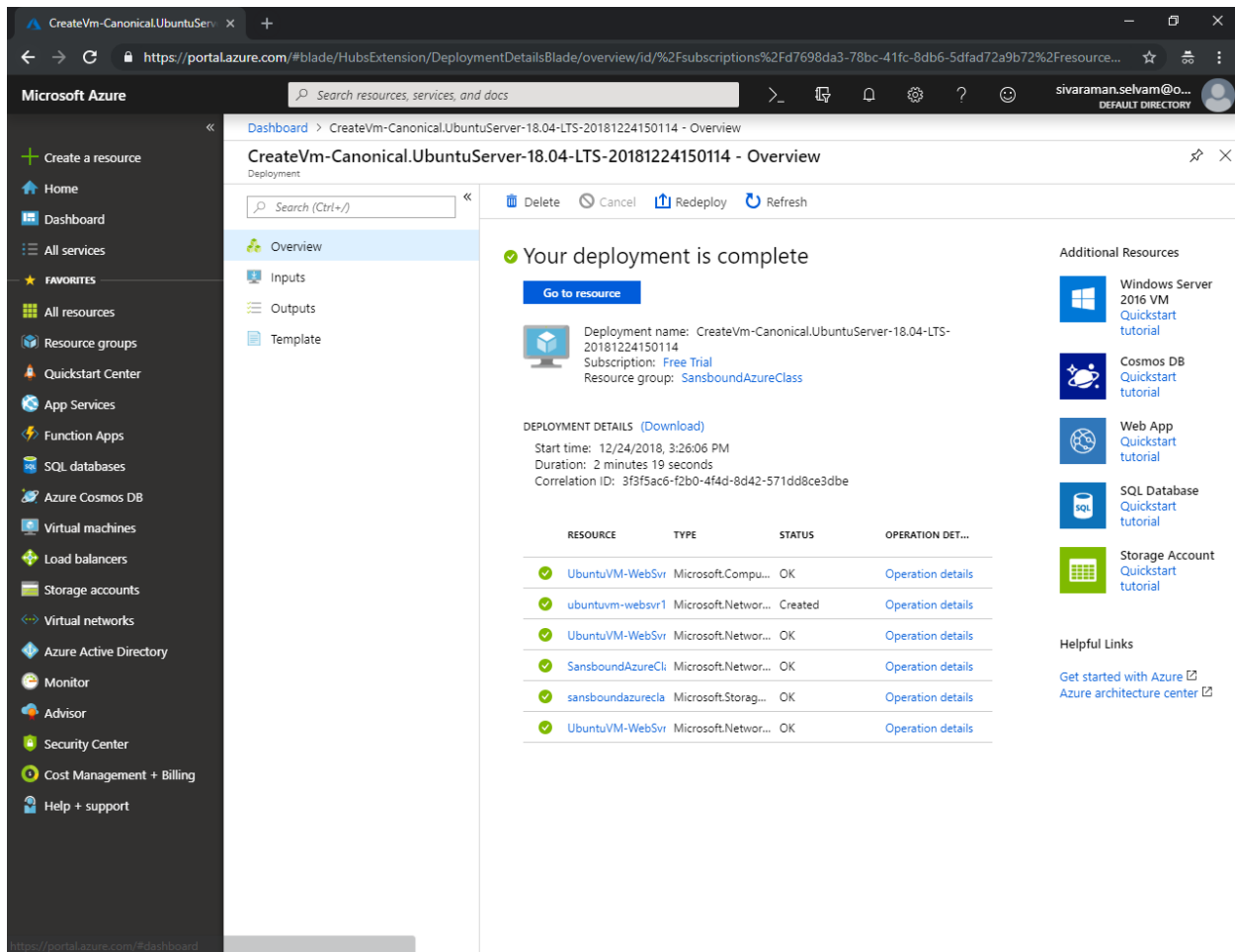
DISKS

OS disk type	Premium SSD
Use managed disks	Yes

At the bottom of the configuration pane, the 'Create' button is highlighted in yellow, with 'Previous' and 'Next' buttons on either side. A link to 'Download a template for automation' is also present.

Your deployment has been successfully completed.

Click **“Go to resource”**.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main area displays the 'Overview' of a deployment named 'CreateVm-Canonical.UbuntuServer-18.04-LTS-20181224150114'. A green checkmark indicates 'Your deployment is complete'. Below this, deployment details are listed: Start time (12/24/2018, 3:26:06 PM), Duration (2 minutes 19 seconds), and Correlation ID. A table lists the resources created, all with a status of 'OK'. On the right, there are 'Additional Resources' and 'Helpful Links'.

Deployment Details:

- Deployment name: CreateVm-Canonical.UbuntuServer-18.04-LTS-20181224150114
- Subscription: Free Trial
- Resource group: SansboundAzureClass
- Start time: 12/24/2018, 3:26:06 PM
- Duration: 2 minutes 19 seconds
- Correlation ID: 3f3f5ac6-f2b0-4f4d-8d42-571dd8ce3dbe

RESOURCE	TYPE	STATUS	OPERATION DET...
✓ UbuntuVM-WebSvr	Microsoft.Compu...	OK	Operation details
✓ ubuntuvm-websvr1	Microsoft.Networ...	Created	Operation details
✓ UbuntuVM-WebSvr	Microsoft.Networ...	OK	Operation details
✓ SansboundAzureCli	Microsoft.Networ...	OK	Operation details
✓ sansboundazurecla	Microsoft.Storag...	OK	Operation details
✓ UbuntuVM-WebSvr	Microsoft.Networ...	OK	Operation details

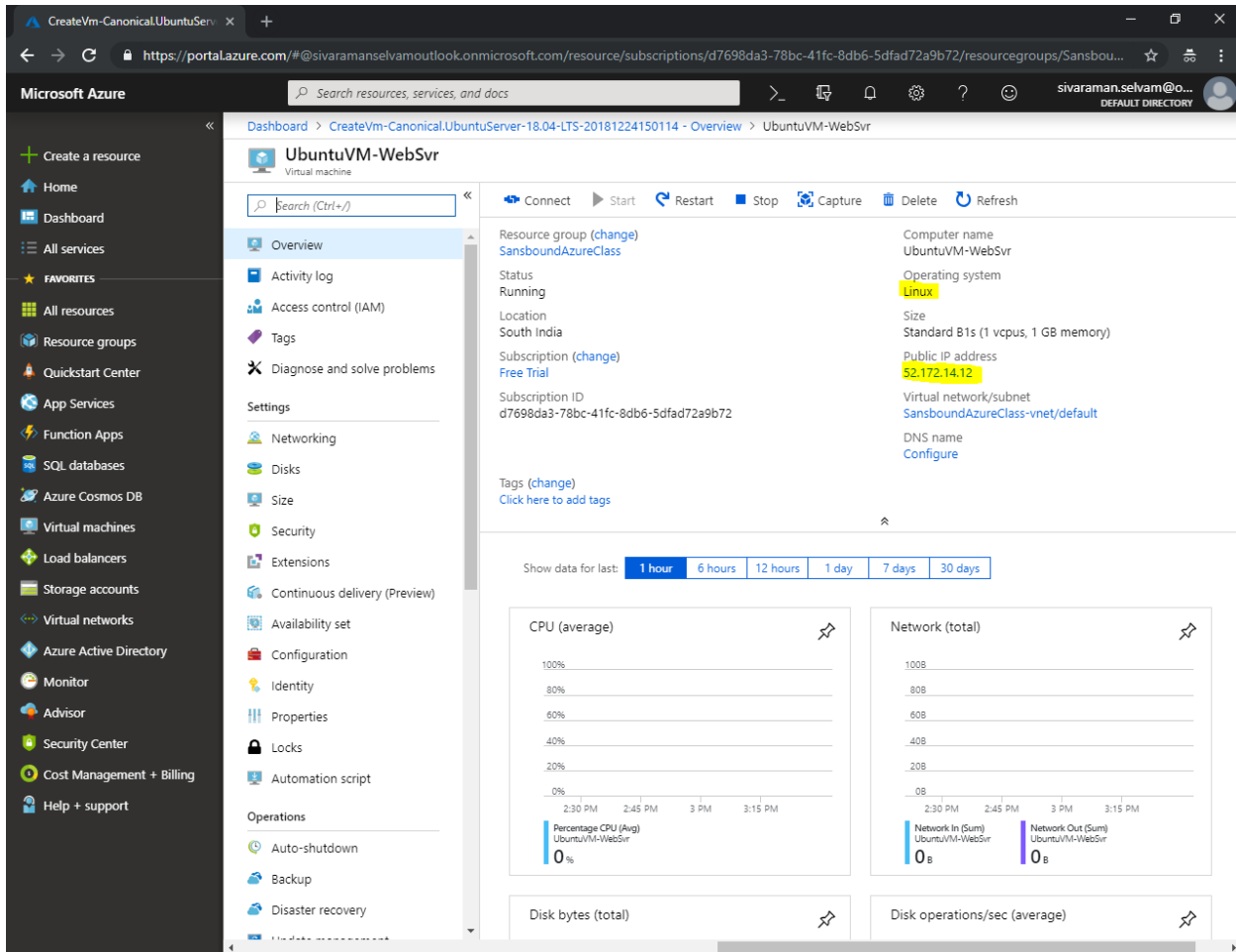
Additional Resources:

- Windows Server 2016 VM [Quickstart tutorial](#)
- Cosmos DB [Quickstart tutorial](#)
- Web App [Quickstart tutorial](#)
- SQL Database [Quickstart tutorial](#)
- Storage Account [Quickstart tutorial](#)

Helpful Links:

- [Get started with Azure](#)
- [Azure architecture center](#)

Kindly note the Public IP address which has required to access the Ubuntu server from public.



The screenshot displays the Azure portal interface for a virtual machine named 'UbuntuVM-WebSvr'. The left sidebar shows the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area shows the 'Overview' tab for the virtual machine. Key details include:

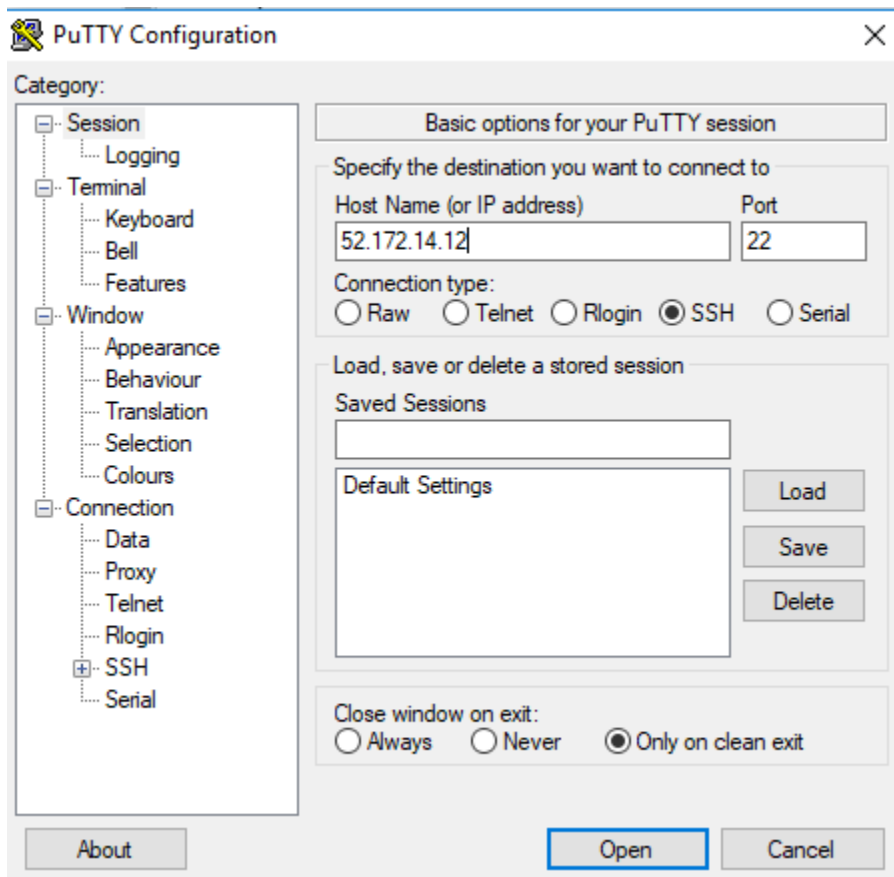
- Resource group:** SansboundAzureClass
- Status:** Running
- Location:** South India
- Subscription:** Free Trial
- Subscription ID:** d7698da3-78bc-41fc-8db6-5dfad72a9b72
- Computer name:** UbuntuVM-WebSvr
- Operating system:** Linux
- Size:** Standard B1s (1 vcpu, 1 GB memory)
- Public IP address:** 52.172.14.12
- Virtual network/subnet:** SansboundAzureClass-vnet/default
- DNS name:** Configure

Below the overview, there are performance metrics for the last 1 hour:

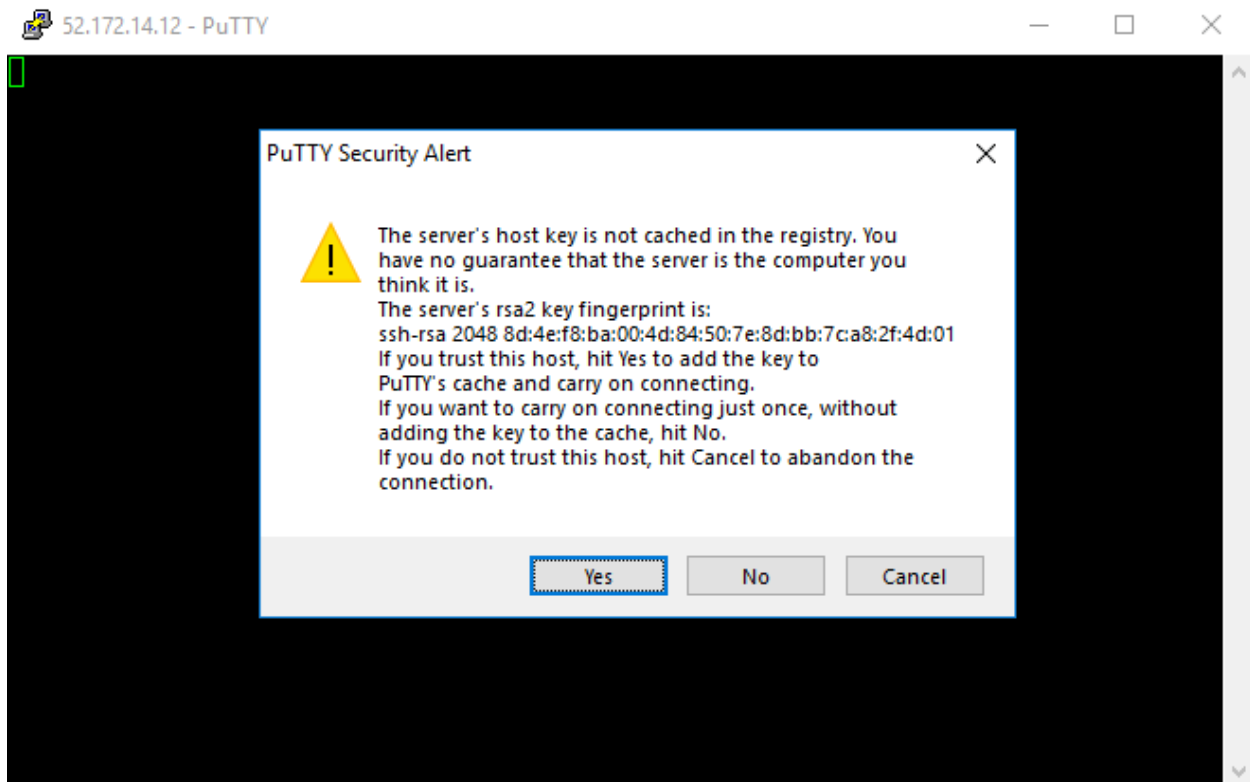
- CPU (average):** A line graph showing CPU usage, currently at 0%.
- Network (total):** A line graph showing network activity, currently at 0 B.
- Disk bytes (total):** A line graph showing disk usage, currently at 0 B.
- Disk operations/sec (average):** A line graph showing disk operations, currently at 0 B.

Download the putty from <https://www.putty.org/> and install it and launch the “putty.exe”.

In Putty, type the Public IP address of Ubuntu server and click “Open” to connect.



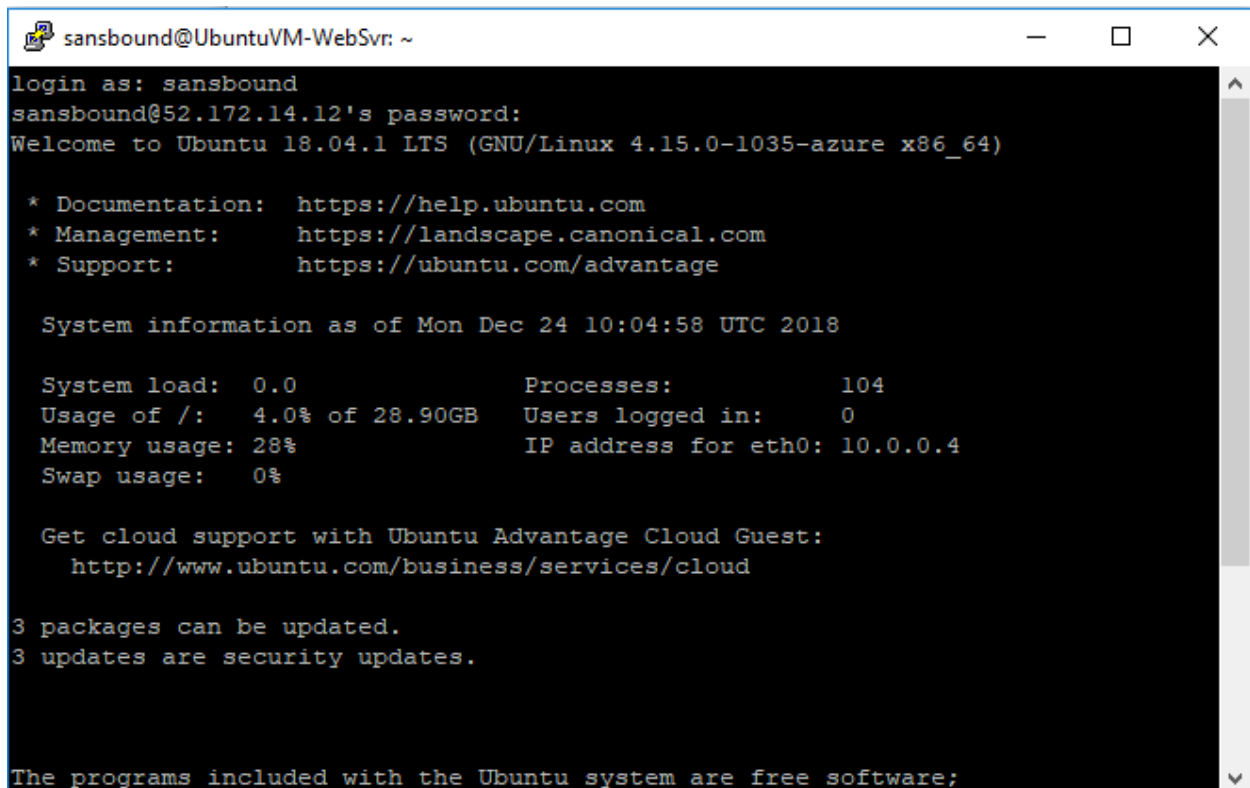
Click **"Yes"**.



Type Username as “sansbound” and press “Enter”.



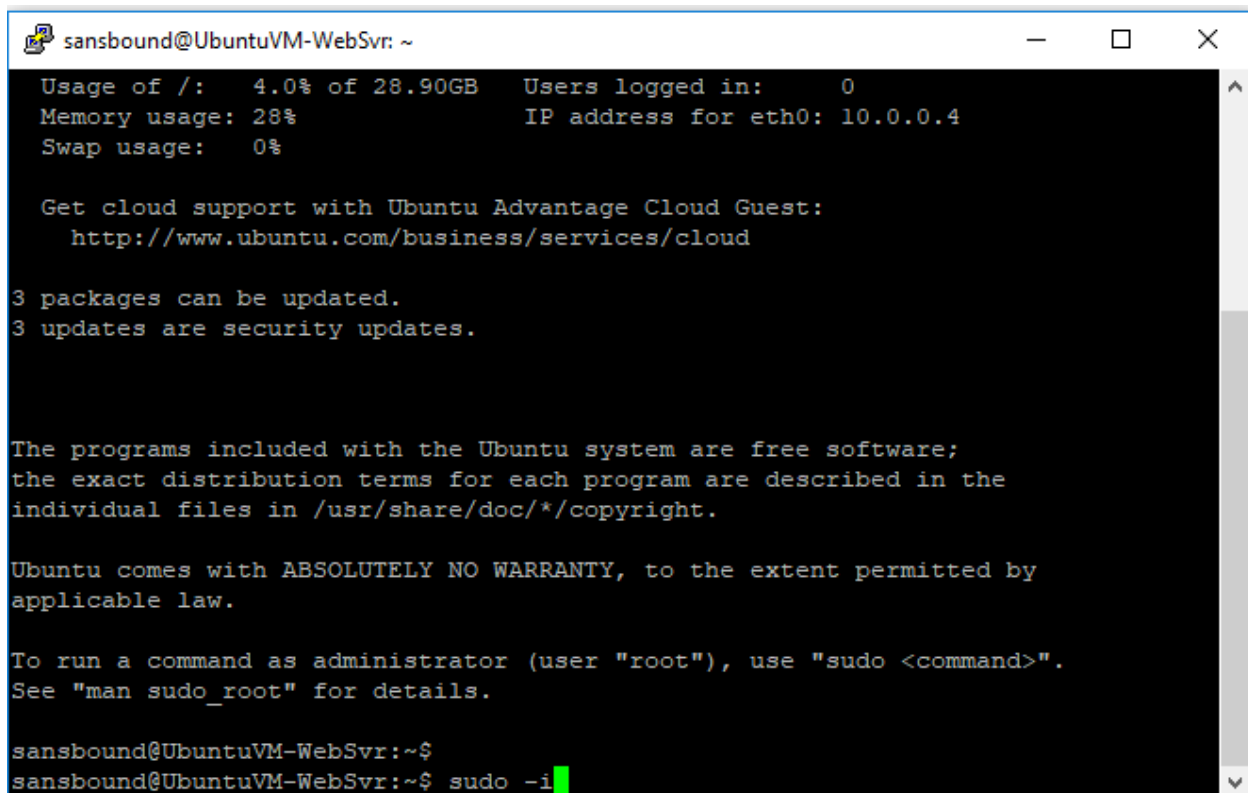
It will require password, type the password which you have specified while creating the Virtual machine in Azure.



```
sansbound@UbuntuVM-WebSvr: ~  
login as: sansbound  
sansbound@52.172.14.12's password:  
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-1035-azure x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
System information as of Mon Dec 24 10:04:58 UTC 2018  
  
System load:  0.0           Processes:            104  
Usage of /:   4.0% of 28.90GB Users logged in:       0  
Memory usage: 28%          IP address for eth0: 10.0.0.4  
Swap usage:   0%  
  
Get cloud support with Ubuntu Advantage Cloud Guest:  
http://www.ubuntu.com/business/services/cloud  
  
3 packages can be updated.  
3 updates are security updates.  
  
The programs included with the Ubuntu system are free software;
```

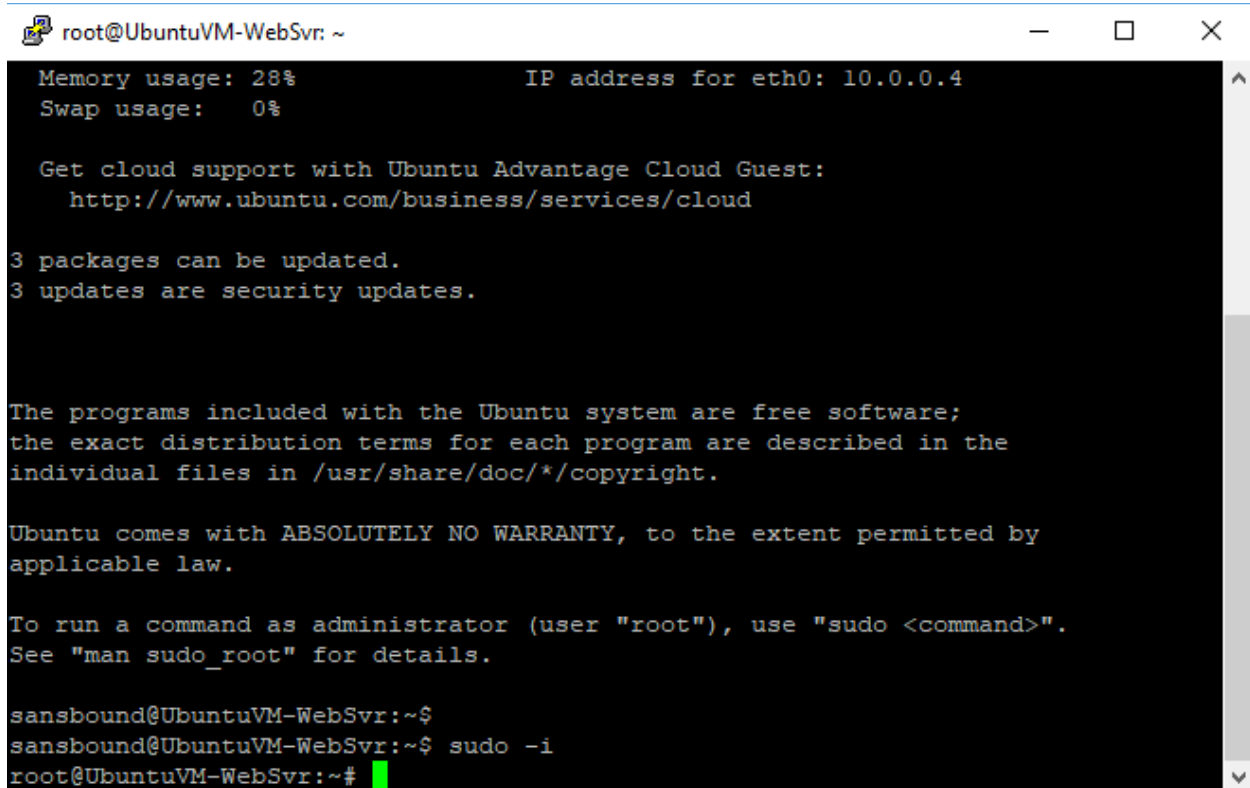

Now I have required to login as root account.

Then type “sudo -i” and press “Enter”.



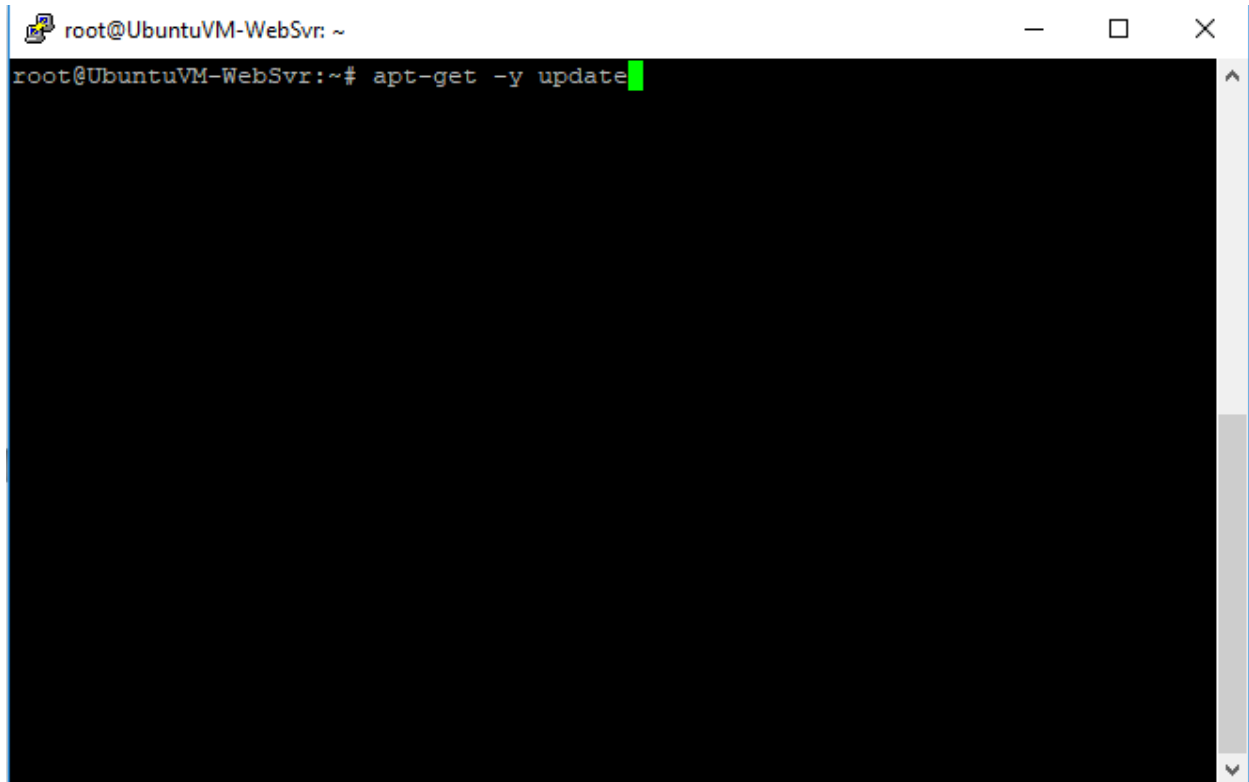
```
sansbound@UbuntuVM-WebSvr: ~  
Usage of /: 4.0% of 28.90GB  Users logged in: 0  
Memory usage: 28%          IP address for eth0: 10.0.0.4  
Swap usage: 0%  
  
Get cloud support with Ubuntu Advantage Cloud Guest:  
http://www.ubuntu.com/business/services/cloud  
  
3 packages can be updated.  
3 updates are security updates.  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
sansbound@UbuntuVM-WebSvr:~$  
sansbound@UbuntuVM-WebSvr:~$ sudo -i
```

Now you have successfully logged in as a root user.



```
root@UbuntuVM-WebSvr: ~  
Memory usage: 28%          IP address for eth0: 10.0.0.4  
Swap usage: 0%  
  
Get cloud support with Ubuntu Advantage Cloud Guest:  
  http://www.ubuntu.com/business/services/cloud  
  
3 packages can be updated.  
3 updates are security updates.  
  
The programs included with the Ubuntu system are free software;  
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applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
sansbound@UbuntuVM-WebSvr:~$  
sansbound@UbuntuVM-WebSvr:~$ sudo -i  
root@UbuntuVM-WebSvr:~#
```

Type “apt-get -y update” and press “Enter”.

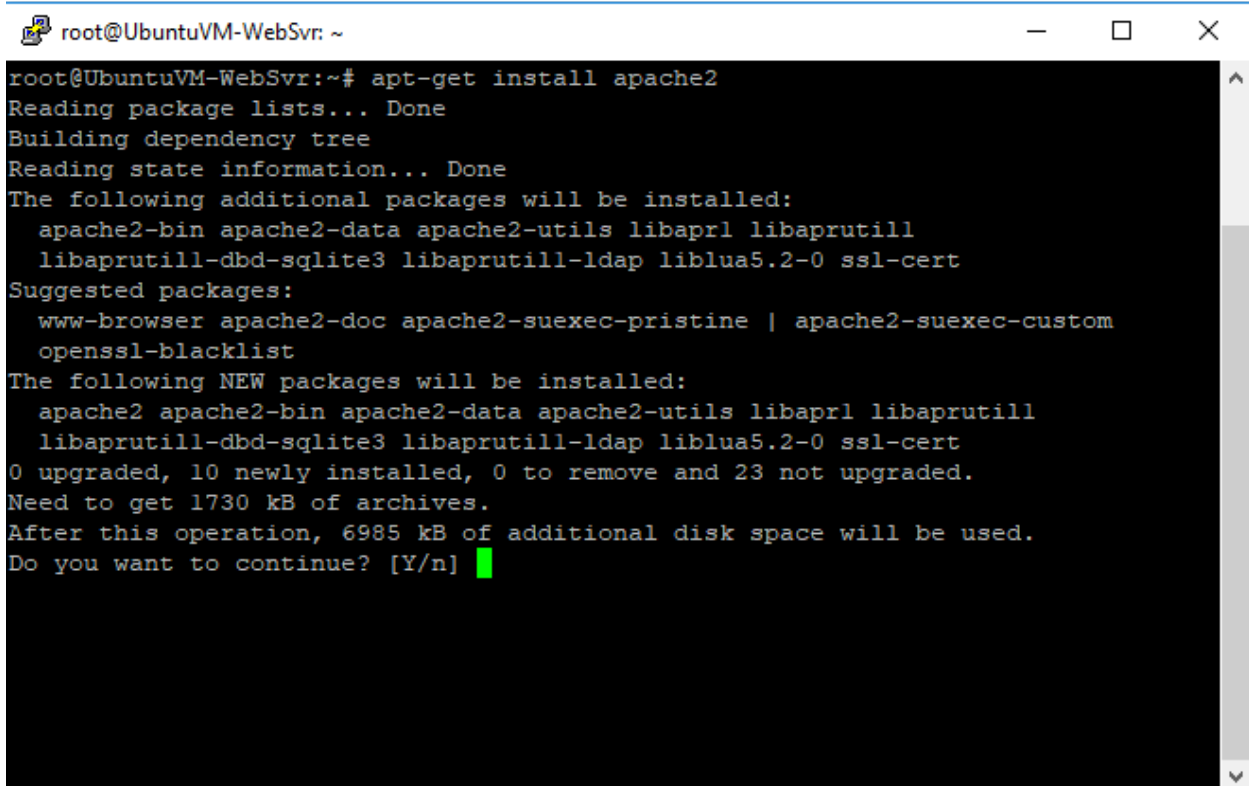


```
root@UbuntuVM-WebSvr: ~  
root@UbuntuVM-WebSvr:~# apt-get -y update
```

Now packages has been updated from internet.

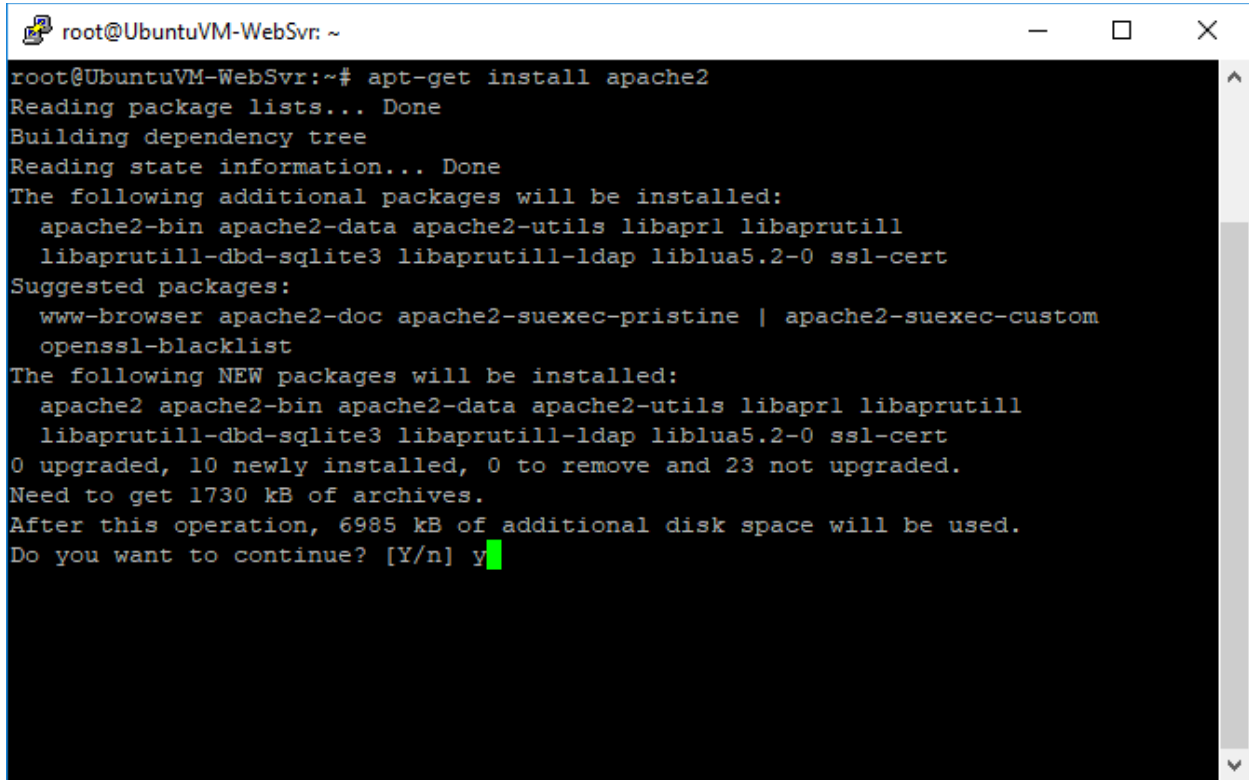
```
root@UbuntuVM-WebSvr: ~  
Get:14 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [177 kB]  
Get:15 http://azure.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [706 kB]  
Get:16 http://azure.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [171 kB]  
Get:17 http://azure.archive.ubuntu.com/ubuntu bionic-backports/universe Sources [2068 B]  
Get:18 http://security.ubuntu.com/ubuntu bionic-security/multiverse Sources [1336 B]  
Get:19 http://security.ubuntu.com/ubuntu bionic-security/main Sources [66.7 kB]  
Get:20 http://security.ubuntu.com/ubuntu bionic-security/universe Sources [28.6 kB]  
Get:21 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [235 kB]  
Get:22 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [88.9 kB]  
Get:23 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [110 kB]  
Get:24 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [62.2 kB]  
Fetched 12.8 MB in 4s (3122 kB/s)  
Reading package lists... Done  
root@UbuntuVM-WebSvr:~#
```

Type “apt-get install apache2” and press “Enter”.



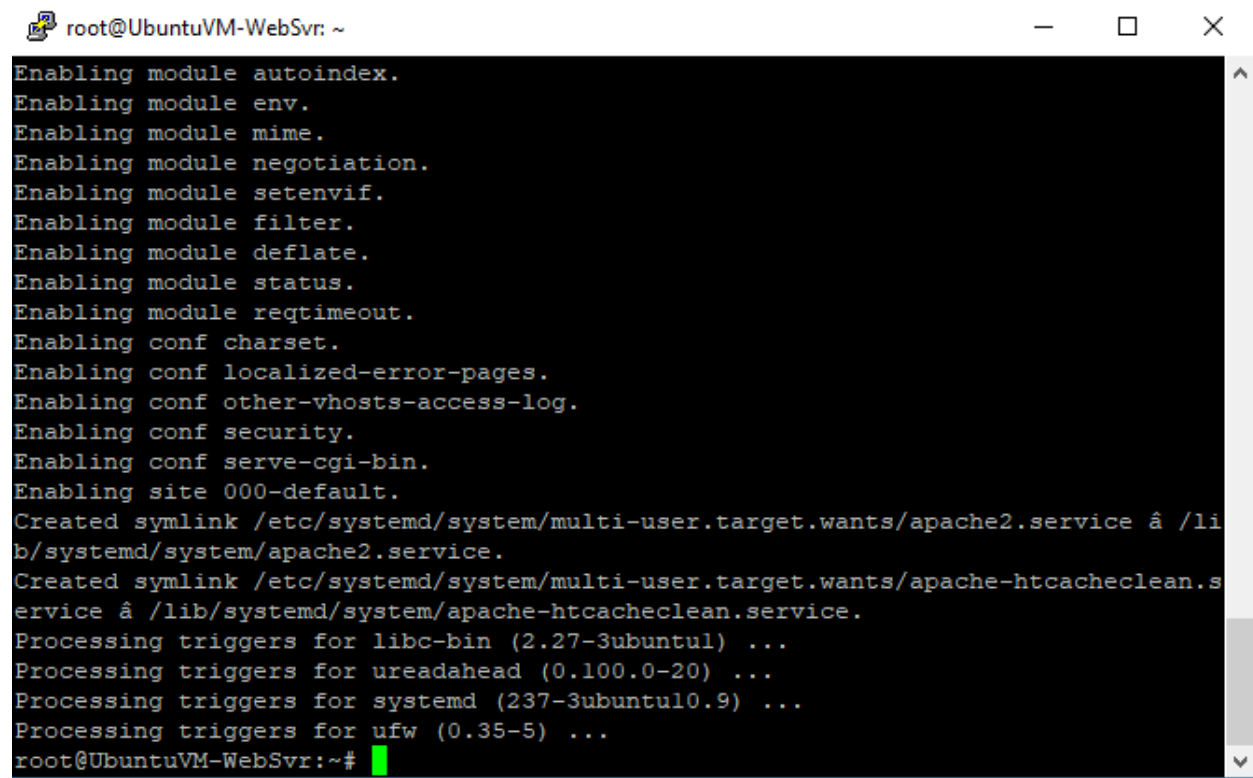
```
root@UbuntuVM-WebSvr: ~  
root@UbuntuVM-WebSvr:~# apt-get install apache2  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0 ssl-cert  
Suggested packages:  
  www-browser apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
  openssl-blacklist  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0 ssl-cert  
0 upgraded, 10 newly installed, 0 to remove and 23 not upgraded.  
Need to get 1730 kB of archives.  
After this operation, 6985 kB of additional disk space will be used.  
Do you want to continue? [Y/n]
```

Type “Y” and press “Enter” to install package.



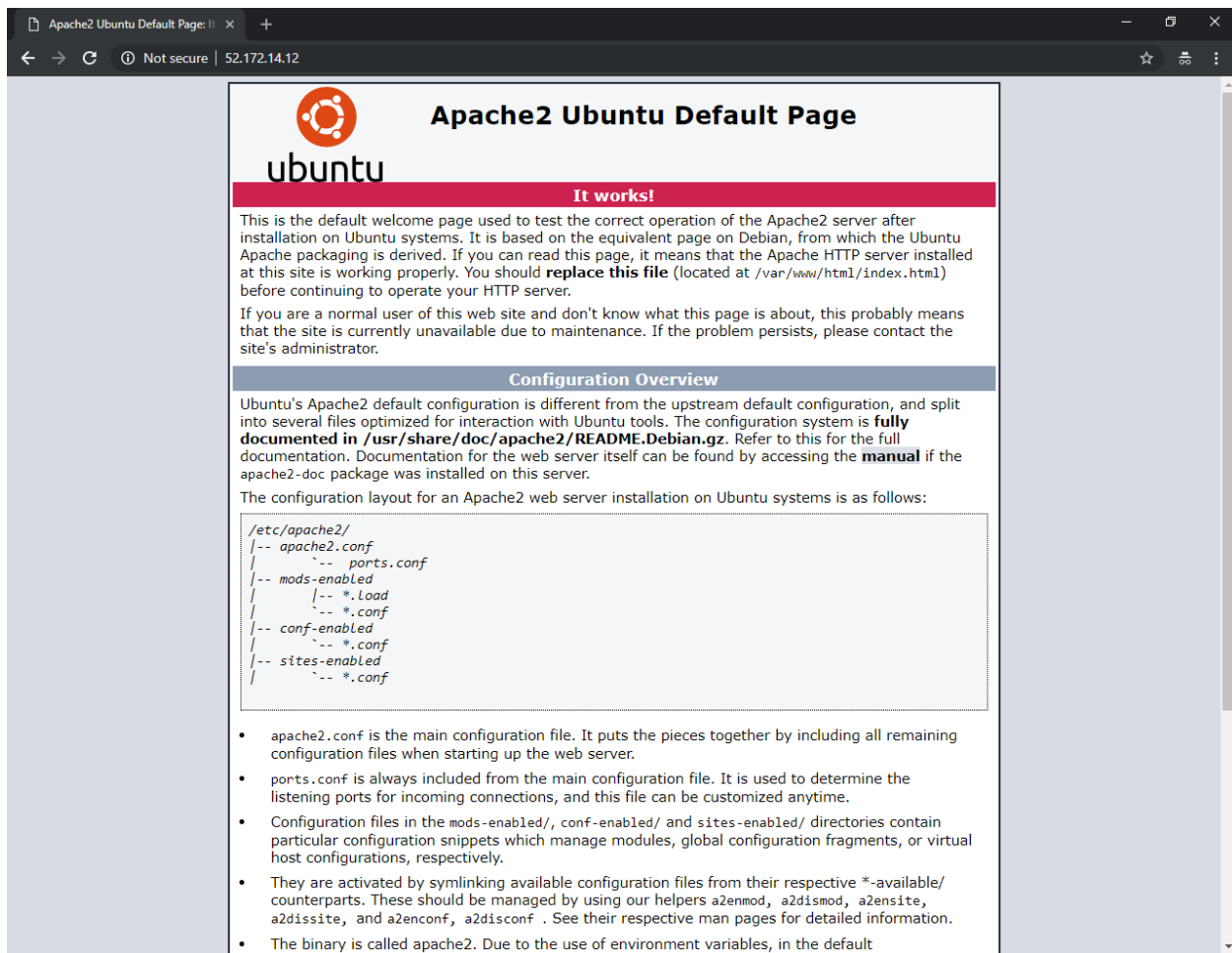
```
root@UbuntuVM-WebSvr: ~  
root@UbuntuVM-WebSvr:~# apt-get install apache2  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0 ssl-cert  
Suggested packages:  
  www-browser apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
  openssl-blacklist  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0 ssl-cert  
0 upgraded, 10 newly installed, 0 to remove and 23 not upgraded.  
Need to get 1730 kB of archives.  
After this operation, 6985 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y
```

You have successfully installed the apache.



```
root@UbuntuVM-WebSvr: ~  
Enabling module autoindex.  
Enabling module env.  
Enabling module mime.  
Enabling module negotiation.  
Enabling module setenvif.  
Enabling module filter.  
Enabling module deflate.  
Enabling module status.  
Enabling module reqtimeout.  
Enabling conf charset.  
Enabling conf localized-error-pages.  
Enabling conf other-vhosts-access-log.  
Enabling conf security.  
Enabling conf serve-cgi-bin.  
Enabling site 000-default.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service â /lib/systemd/system/apache2.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service â /lib/systemd/system/apache-htcacheclean.service.  
Processing triggers for libc-bin (2.27-3ubuntu1) ...  
Processing triggers for ureadahead (0.100.0-20) ...  
Processing triggers for systemd (237-3ubuntu10.9) ...  
Processing triggers for ufw (0.35-5) ...  
root@UbuntuVM-WebSvr:~#
```

Type the IP address of Ubuntu in browser at your local machine. You have successfully got the default web server.



Apache2 Ubuntu Default Page: | x +

← → ↻ ⓘ Not secure | 52.172.14.12

Apache2 Ubuntu Default Page

ubuntu

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/  
|-- apache2.conf  
|  
|   |-- ports.conf  
|  
|-- mods-enabled  
|   |-- *.load  
|   |-- *.conf  
|  
|-- conf-enabled  
|   |-- *.conf  
|  
|-- sites-enabled  
|   |-- *.conf  
|
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective `*-available/` counterparts. These should be managed by using our helpers `a2enmod`, `a2dismod`, `a2ensite`, `a2dissite`, and `a2enconf`, `a2disconf`. See their respective man pages for detailed information.
- The binary is called `apache2`. Due to the use of environment variables, in the default