

Lab10 – Capturing existing VM & build new VM with customized Image using Managed Disks

Managed disks

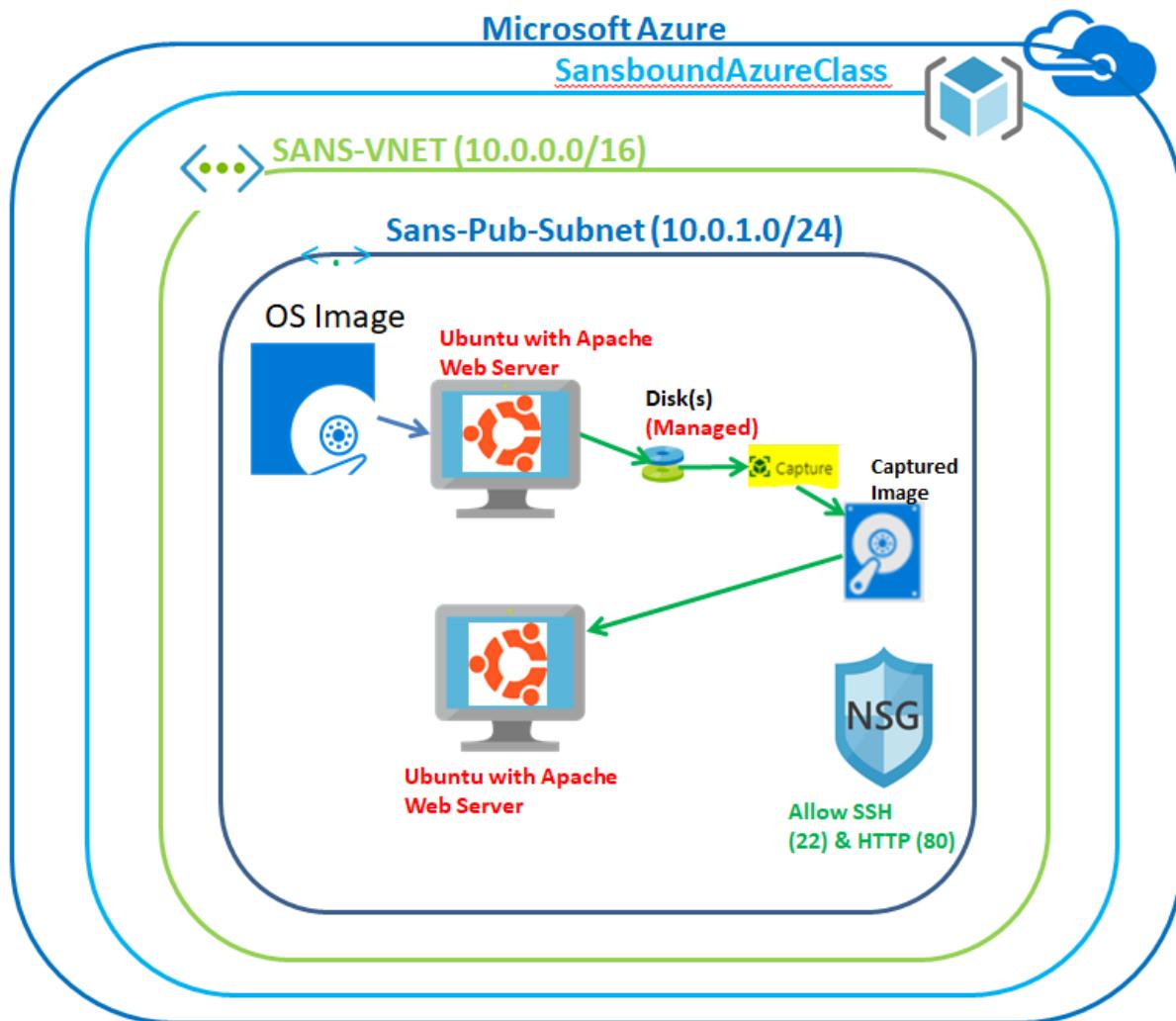
Managed Disks handles the storage account creation/management in the background for you, and ensures that you do not have to worry about the scalability limits of the storage account. You simply specify the disk size and the performance tier (Standard/Premium), and Azure creates and manages the disk for you. As you add disks or scale the VM up and down, you don't have to worry about the storage being used.

You can also manage your custom images in one storage account per Azure region, and use them to create hundreds of VMs in the same subscription. For more information about Managed Disks, see the [Managed Disks Overview](#).

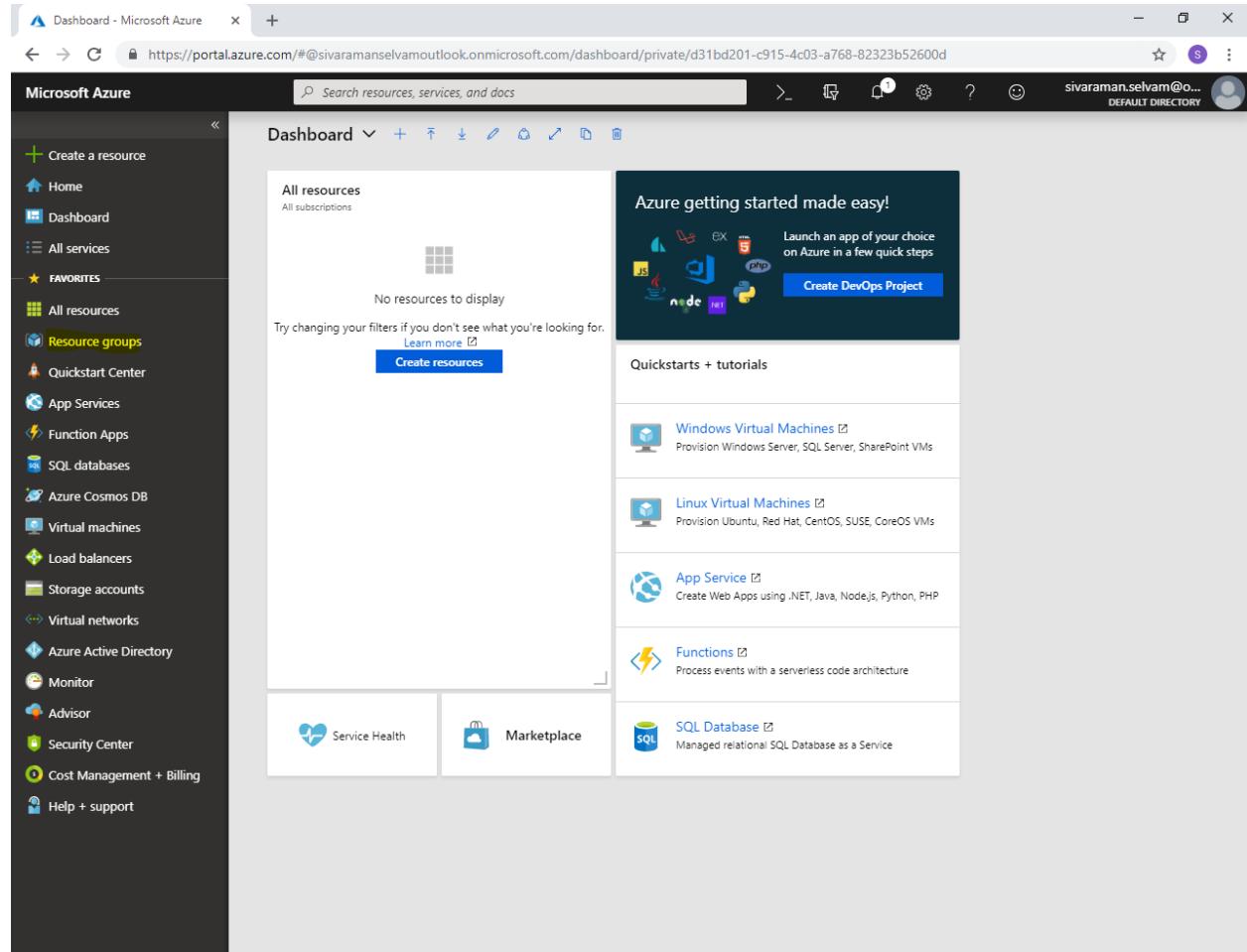
We recommend that you use Azure Managed Disks for new VMs, and that you convert your previous unmanaged disks to managed disks, to take advantage of the many features available in Managed Disks.

Images

Managed Disks also support creating a managed custom image. You can create an image from your custom VHD in a storage account or directly from a generalized (sys-prepped) VM. This process captures in a single image all managed disks associated with a VM, including both the OS and data disks. This managed custom image enables creating hundreds of VMs using your custom image without the need to copy or manage any storage accounts.

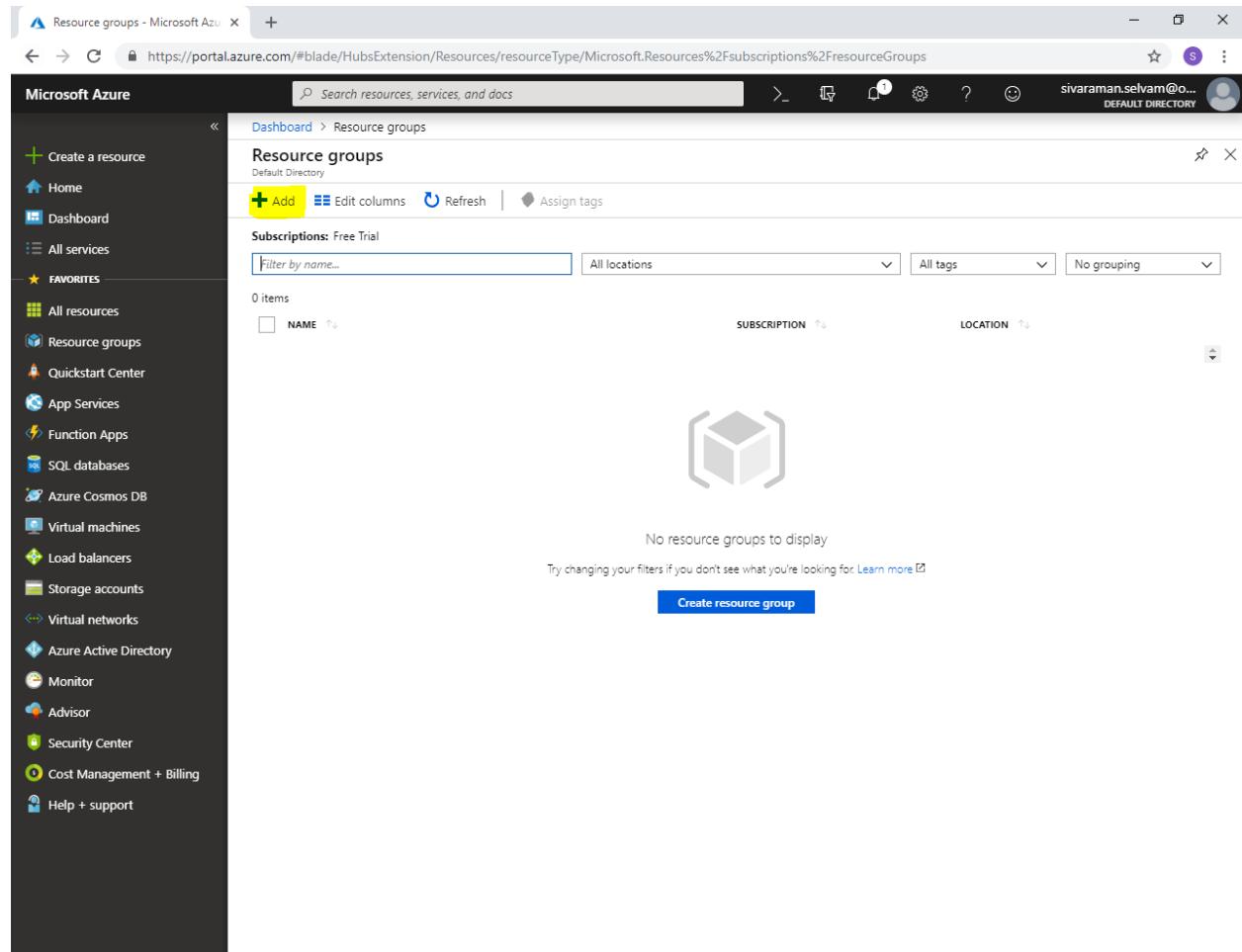
Topology

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



The screenshot shows the Microsoft Azure portal dashboard. On the left, there is a dark sidebar with a list of services under 'FAVORITES'. The 'Resource groups' option is highlighted with a yellow background, indicating it is selected. The main content area shows a 'Dashboard' with a message 'No resources to display' and a 'Create resources' button. To the right, there is a 'Quickstarts + tutorials' section with links to 'Windows Virtual Machines', 'Linux Virtual Machines', 'App Service', 'Functions', and 'SQL Database'.

Click “Add”.



The screenshot shows the Microsoft Azure portal interface. The left sidebar is titled "Microsoft Azure" and includes a "FAVORITES" section with links to various services like Home, Dashboard, All services, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support. The main content area is titled "Resource groups" and shows a "Subscriptions: Free Trial" section. At the top of this section, there is a "Filter by name..." input field, a "NAME" column header, and sorting options for "SUBSCRIPTION" and "LOCATION". A large, light-gray cube icon is centered on the page, indicating that no resource groups are currently displayed. Below the cube, a message reads "No resource groups to display" and "Try changing your filters if you don't see what you're looking for. Learn more". A prominent blue "Create resource group" button is located at the bottom right of the main content area.

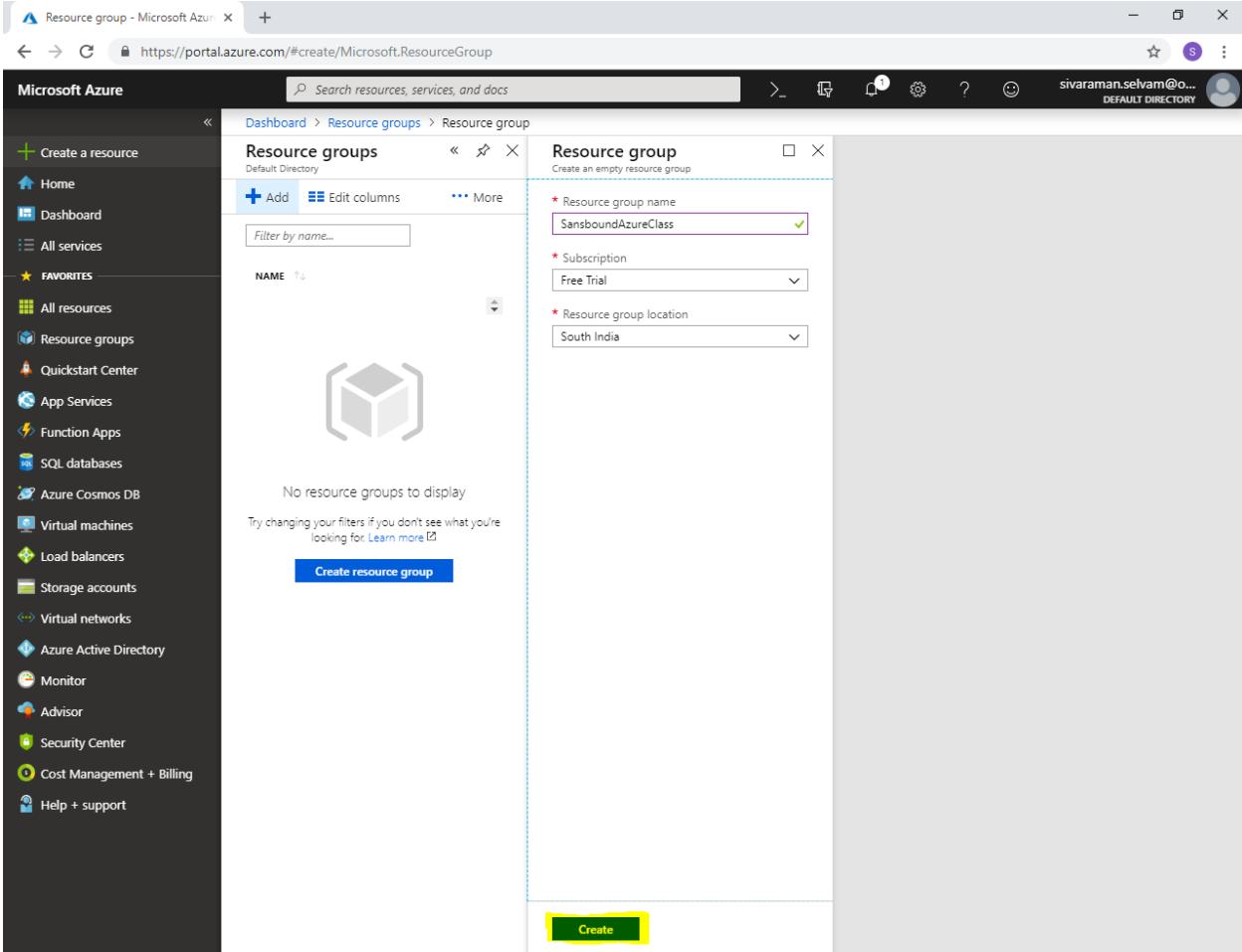
While creating “Resource group”.

Type “Resource group name” as “**SansboundAzureClass**”.

Select “Subscription” as “**Free Trial**”.

Select “Resource group location” as “**South India**”.

Then click “**Create**”.

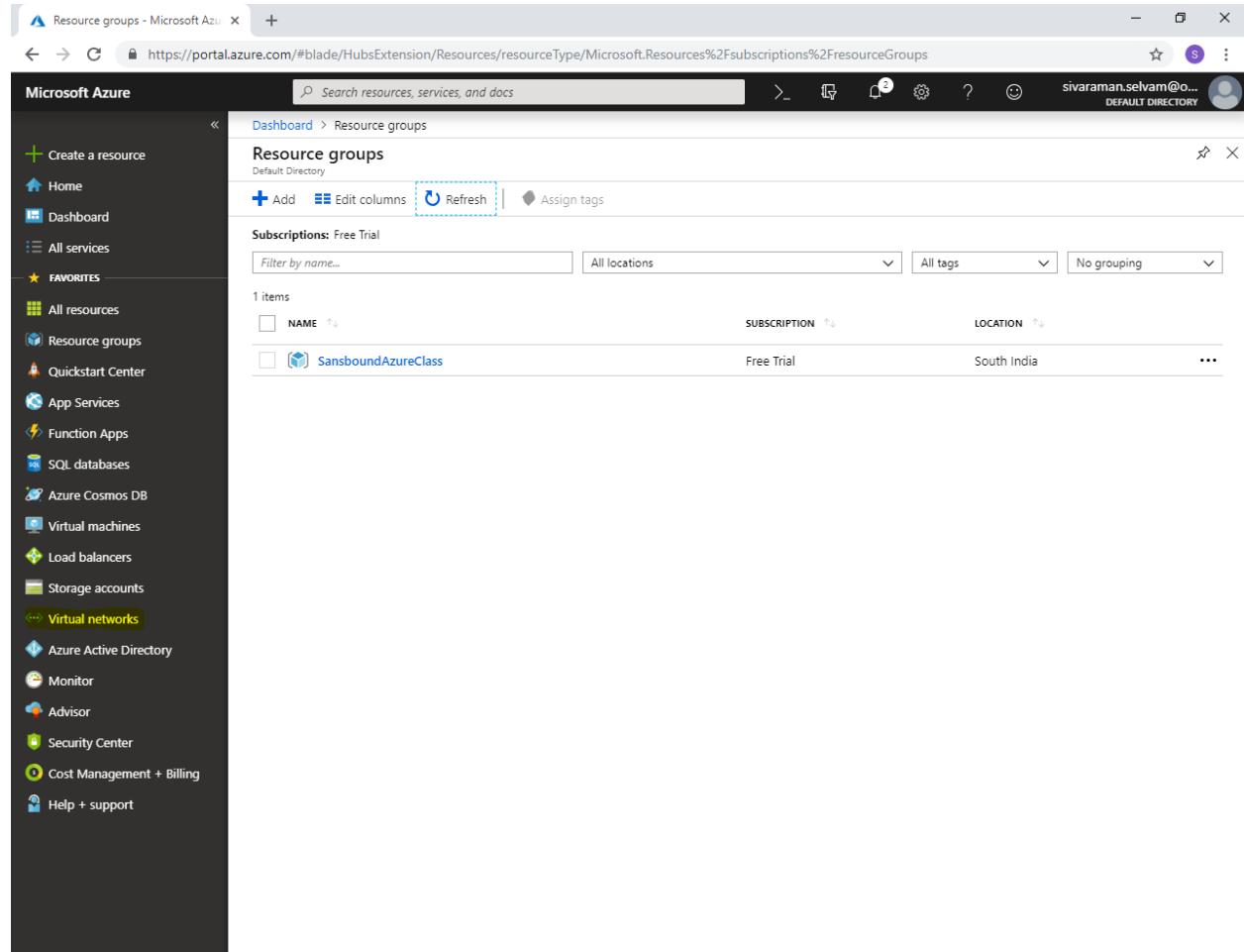


The screenshot shows the Microsoft Azure portal interface for creating a new Resource Group. The left sidebar contains various service icons. The main area shows the 'Resource groups' blade with a single resource group listed. A modal window is open for creating a new resource group, with the following details filled in:

- Resource group name: SansboundAzureClass
- Subscription: Free Trial
- Resource group location: South India

The 'Create' button at the bottom of the modal is highlighted with a yellow box.

Click “Virtual networks” in left side panel.

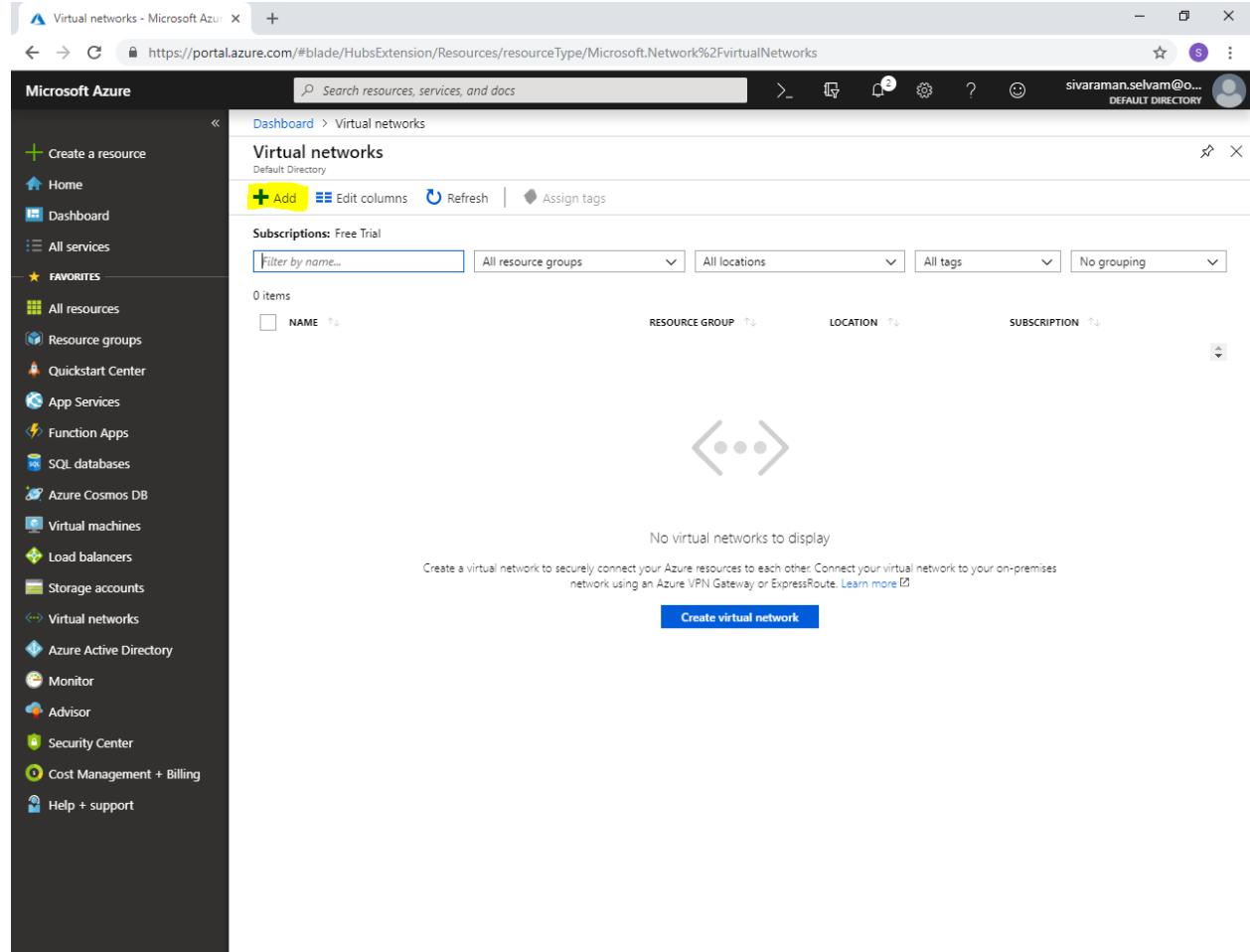


The screenshot shows the Microsoft Azure portal interface. The left sidebar is titled "Microsoft Azure" and contains a list of services. The "Virtual networks" option is highlighted with a yellow background, indicating it is the active section. The main content area is titled "Resource groups" and shows a table of existing resource groups. One group, "SansboundAzureClass", is listed with the following details:

NAME	SUBSCRIPTION	LOCATION
SansboundAzureClass	Free Trial	South India

In “Virtual networks”

Click “**Add**”.



The screenshot shows the Microsoft Azure portal interface. The left sidebar is the navigation menu with various service icons. The main content area is titled "Virtual networks" under "Default Directory". At the top of this section, there are buttons for "+ Add", "Edit columns", "Refresh", and "Assign tags". Below these are filter options: "Subscriptions: Free Trial", "Filter by name...", and dropdown menus for "All resource groups", "All locations", "All tags", and "No grouping". A table header row is visible with columns for "NAME", "RESOURCE GROUP", "LOCATION", and "SUBSCRIPTION". In the center of the page, there is a message: "No virtual networks to display" followed by a descriptive text: "Create a virtual network to securely connect your Azure resources to each other. Connect your virtual network to your on-premises network using an Azure VPN Gateway or ExpressRoute." A blue "Create virtual network" button is located at the bottom of this message. The URL in the browser bar is <https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Network%2FVirtualNetworks>.

While creating “Virtual network”.

Type “Virtual Network name” as “**SANS-VNET**”.

In “Address range” as **10.0.0.0/16**.

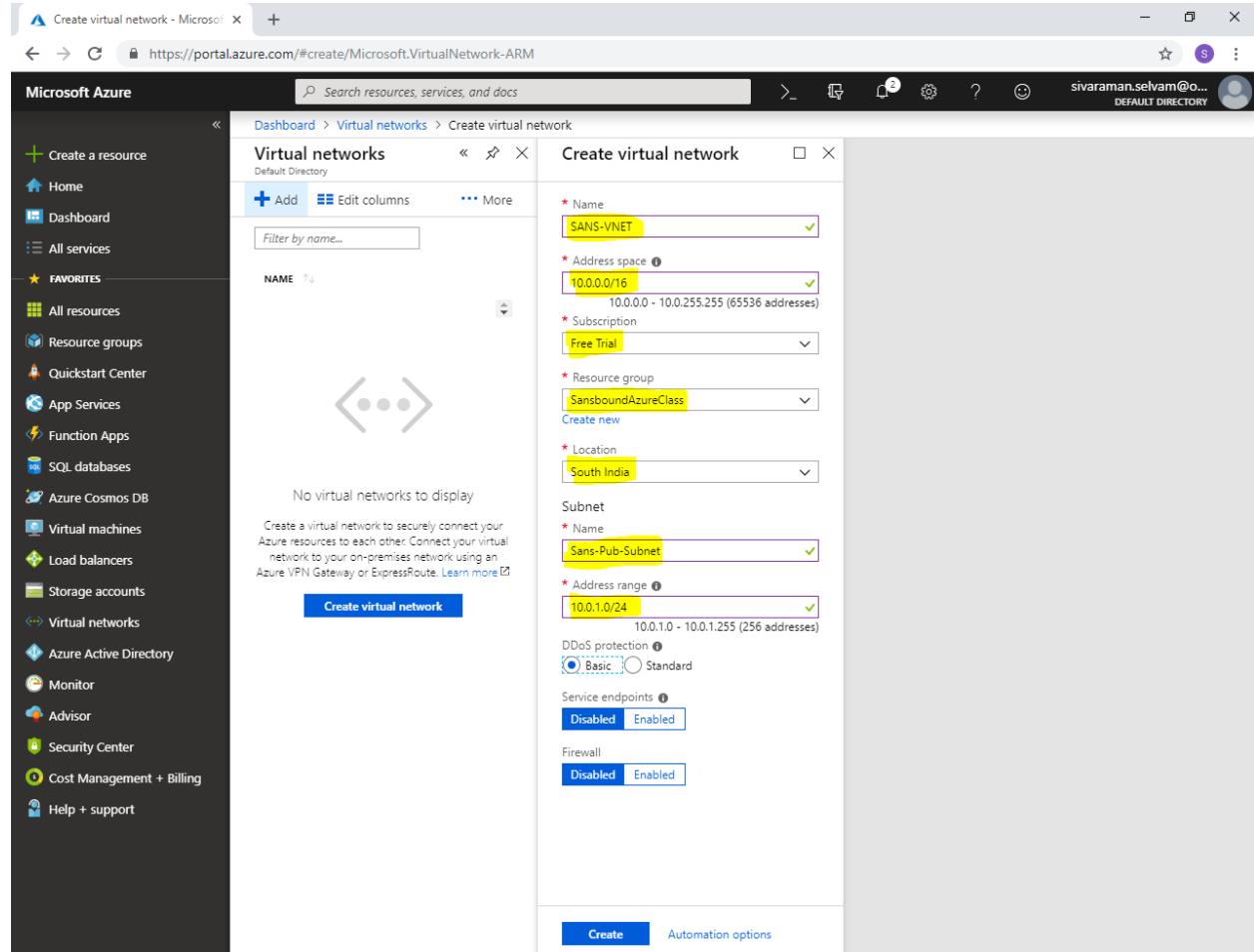
Select “Subscription” as “**Free Trial**”.

Select “Resource group” as “**SansboundAzureClass**”.

Select “Region” as “**South India**”.

In “Subnet” type the name of the Subnet as “**Sans-Pub-Subnet**”.

In Subnet “Address range” type as **10.0.1.0/24**.

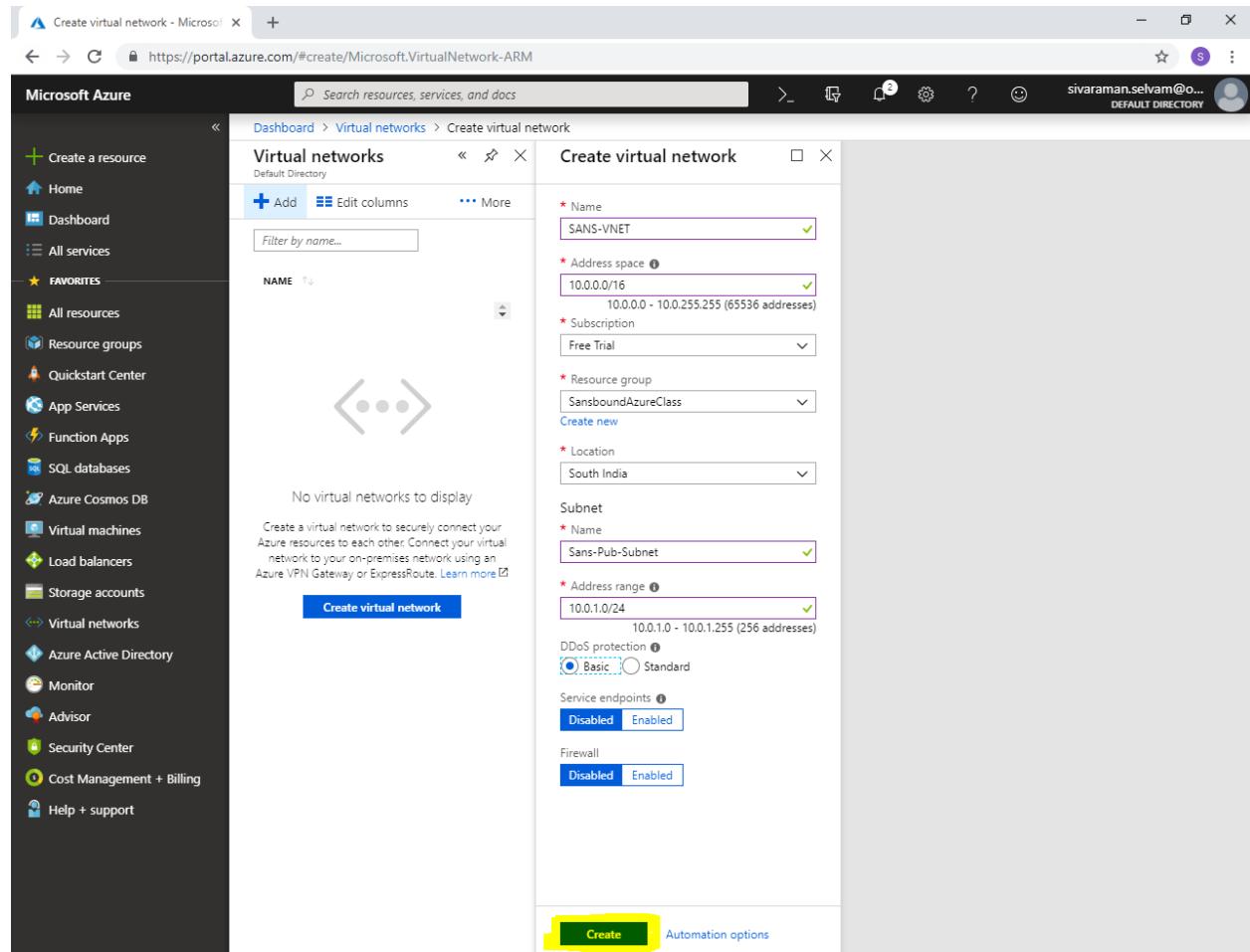


NAME	Address space	Subscription	Resource group	Location
SANS-VNET	10.0.0.0/16	Free Trial	SansboundAzureClass	South India

Subnet

Name	Address range	DDoS protection	Service endpoints	Firewall
Sans-Pub-Subnet	10.0.1.0/24	Basic	Disabled	Disabled

Click “Create”.



The screenshot shows the Microsoft Azure portal interface for creating a virtual network. The left sidebar contains various service icons, and the main area shows the 'Virtual networks' blade with a 'Create virtual network' wizard. The 'Create' button at the bottom of the wizard form is highlighted with a yellow box.

Create virtual network

Name: SANS-VNET

Address space: 10.0.0/16 (10.0.0.0 - 10.0.255.255 (65536 addresses))

Subscription: Free Trial

Resource group: SansboundAzureClass (Create new)

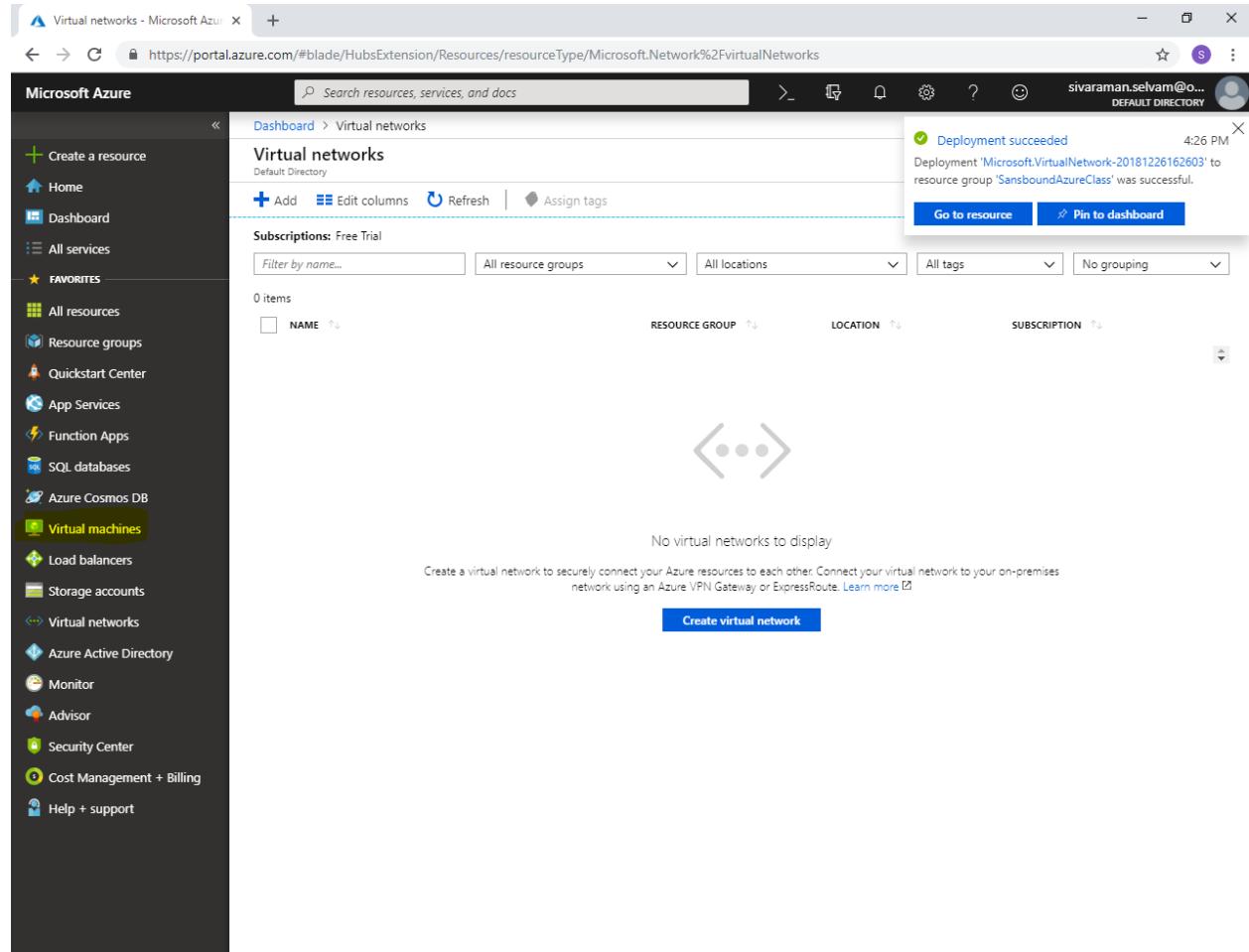
Location: South India

Subnet:

- Name:** Sans-Pub-Subnet
- Address range:** 10.0.1.0/24 (10.0.1.0 - 10.0.1.255 (256 addresses))
- DDoS protection:** Basic (selected)
- Service endpoints:** Disabled (selected)
- Firewall:** Enabled

Create Automation options

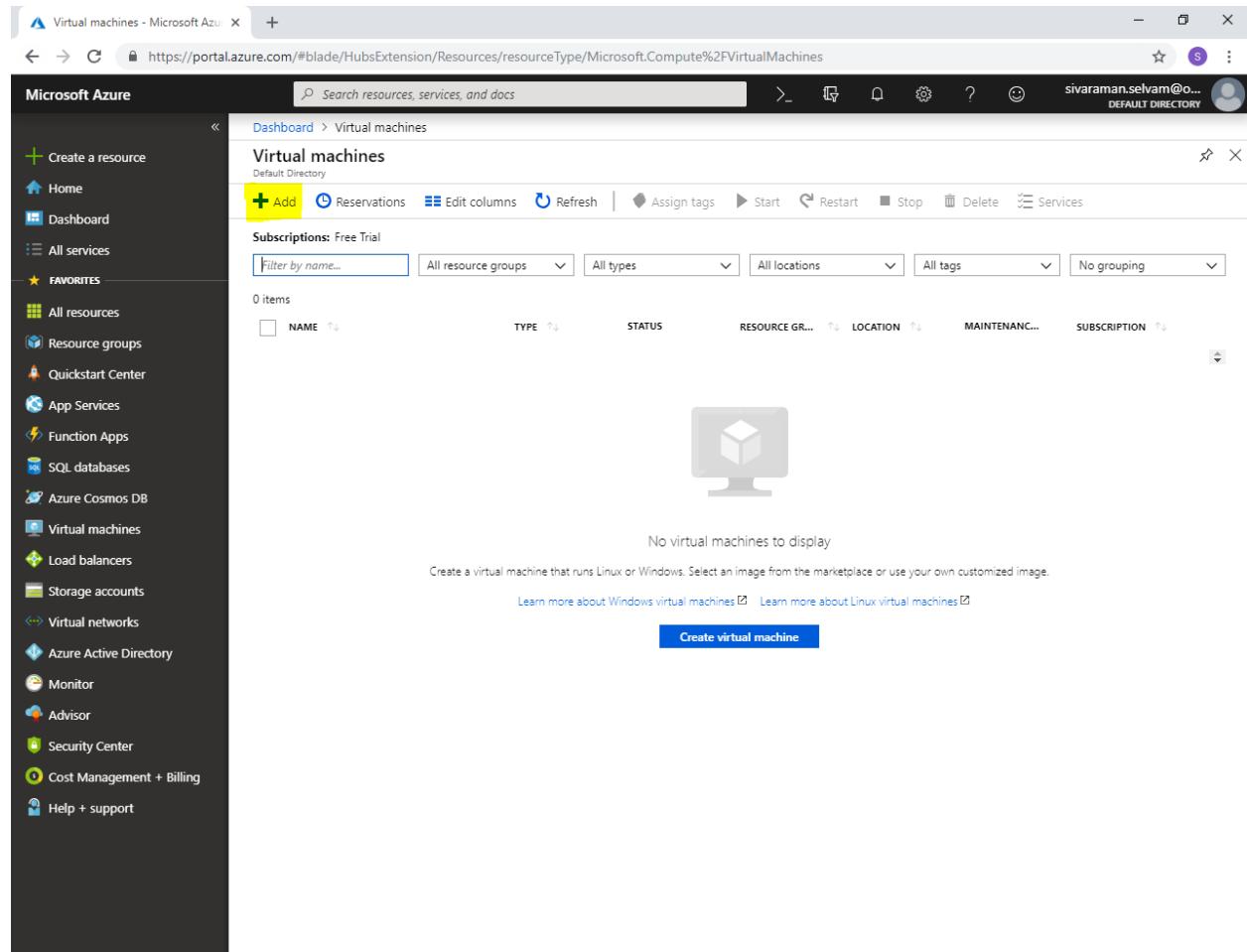
Click “Virtual machines” in left side panel.



The screenshot shows the Microsoft Azure portal interface. The left sidebar navigation bar is visible, showing various service icons. The "Virtual machines" icon is highlighted with a yellow box. The main content area is titled "Virtual networks" under "Default Directory". It displays a message: "Deployment succeeded Deployment 'Microsoft.VirtualNetwork-20181226162603' to resource group 'SansboundAzureClass' was successful." Below this, there are filter options for "Subscriptions: Free Trial", "Filter by name...", "All resource groups", "All locations", "All tags", and "No grouping". A table header row is shown with columns: NAME, RESOURCE GROUP, LOCATION, and SUBSCRIPTION. Below the table, it says "0 items" and "No virtual networks to display". A call-to-action button "Create virtual network" is present. The URL in the browser is https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Network%2FvirtualNetworks.

In “Virtual machines”.

Click “Add” to create Virtual machine.



The screenshot shows the Microsoft Azure portal interface for managing virtual machines. The left sidebar navigation bar includes options like Create a resource, Home, Dashboard, All services, Favorites (Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, Help + support), and a search bar. The main content area is titled "Virtual machines" under "Dashboard > Virtual machines". It displays a table header with columns: NAME, TYPE, STATUS, RESOURCE GR..., LOCATION, MAINTENANC..., and SUBSCRIPTION. Below the table, a message says "No virtual machines to display" and provides links to "Create a virtual machine" and "Learn more about Windows virtual machines" and "Learn more about Linux virtual machines". The URL in the browser address bar is https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Compute%2FVirtualMachines.

While creating “Virtual machine”

Select “Subscription” as “Free Trial”.

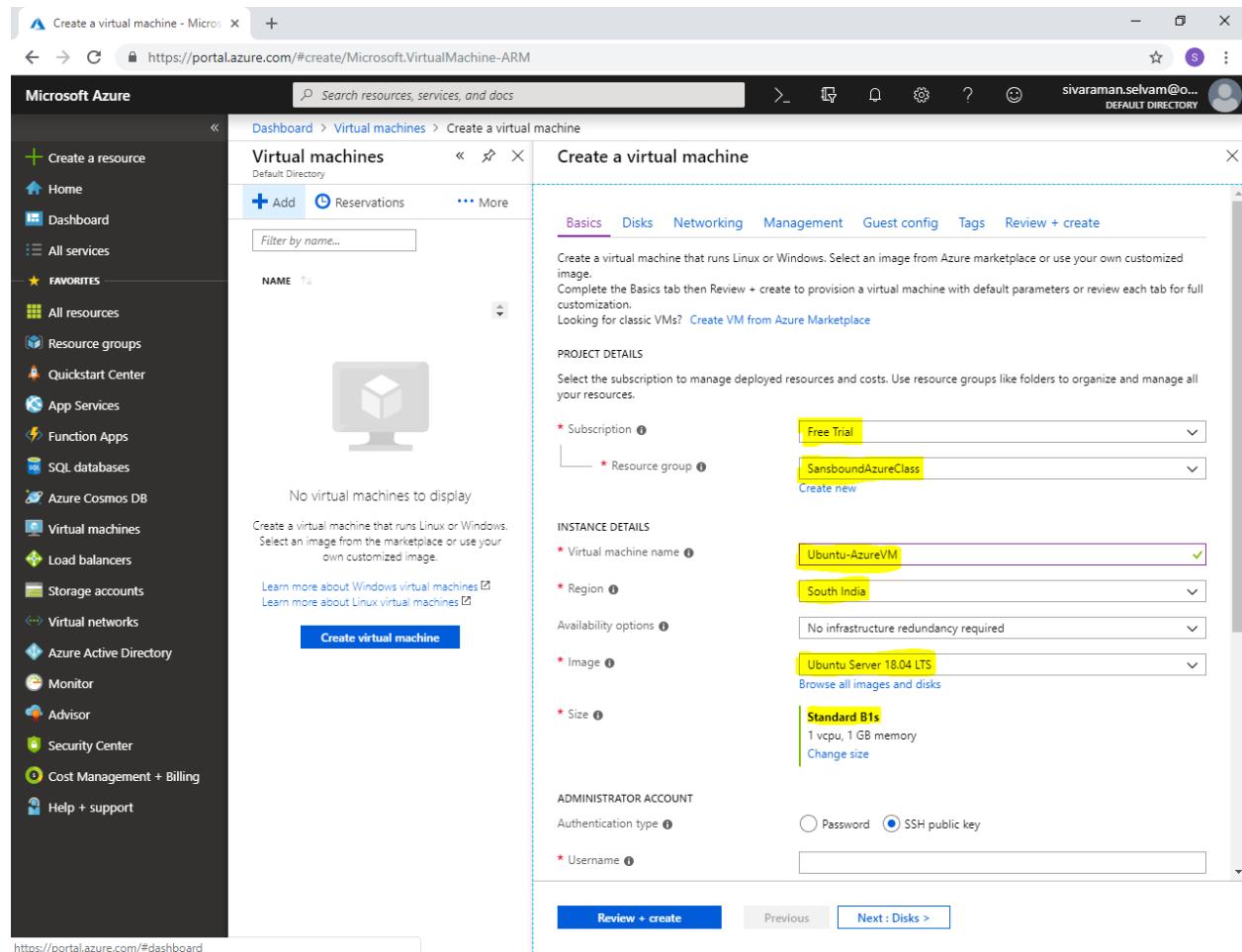
Select “Resource Group” as “SansboundAzureClass”.

In “Virtual machine name” type “Ubuntu-AzureVM”.

Select “Region” as “South India”.

Select “Image” as “Ubuntu Server 18.04 LTS”.

Change “VM Size” as “Standard B1s”



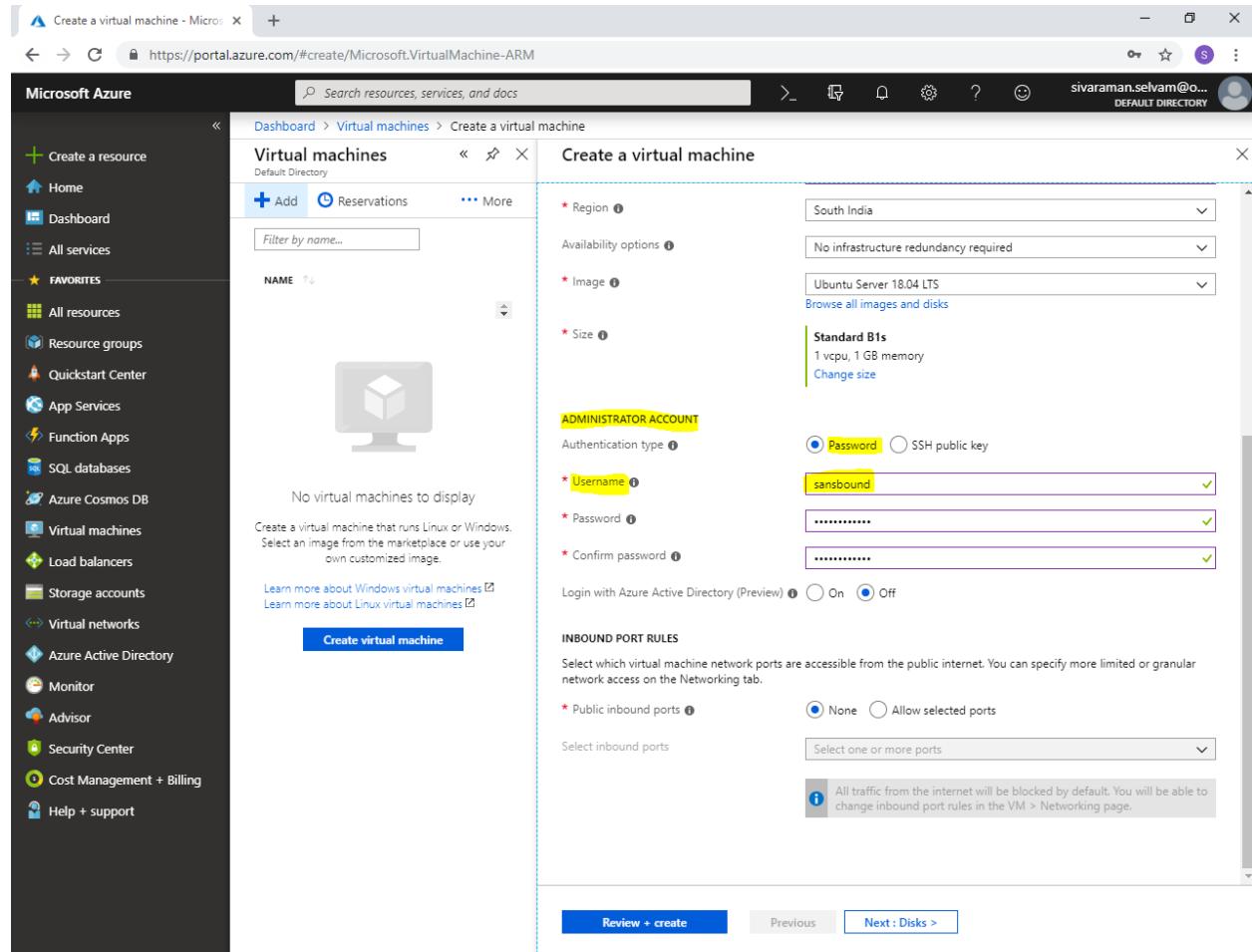
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar lists various services like Home, Dashboard, and Resource groups. The main area shows a summary of the creation process: "Create a virtual machine" under "Virtual machines". The "Basics" tab is active, showing fields for "Subscription" (set to "Free Trial"), "Resource group" ("SansboundAzureClass"), "Virtual machine name" ("Ubuntu-AzureVM"), "Region" ("South India"), "Image" ("Ubuntu Server 18.04 LTS"), and "Size" ("Standard B1s"). The "Administrator account" section indicates "SSH public key" is selected. At the bottom, there are "Review + create" and "Next: Disks >" buttons.

In “Administrator Account”

Set “Authentication type” as “Password”.

In “Username” type as “sansbound”.

In Password type the password for the Ubuntu server to access through SSH.



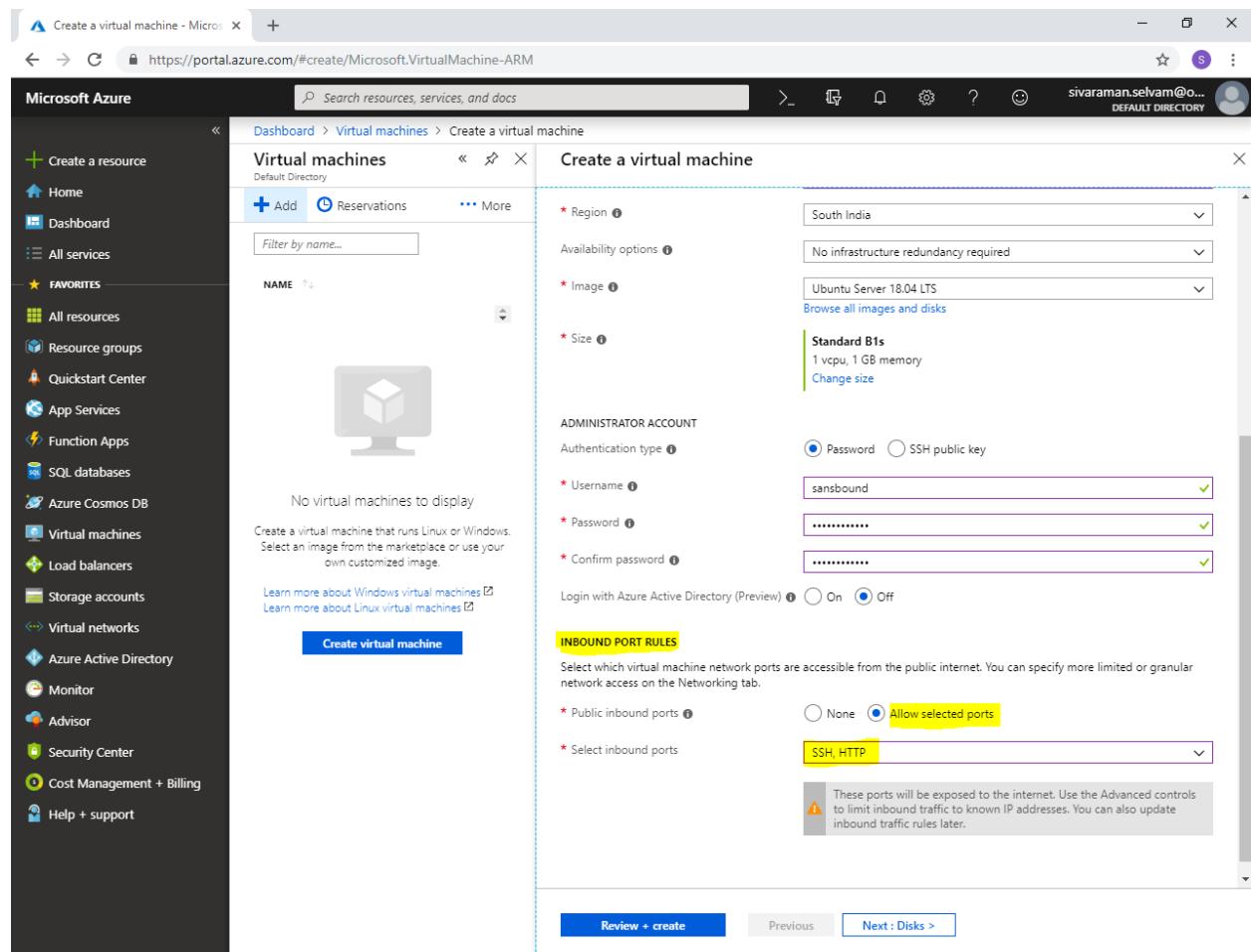
The screenshot shows the Azure portal interface for creating a new virtual machine. The left sidebar lists various services like Home, Dashboard, and Virtual machines. The main area shows a 'Virtual machines' list with one entry ('No virtual machines to display') and a 'Create a virtual machine' wizard. The 'Create a virtual machine' step is active, showing fields for Region (South India), Image (Ubuntu Server 18.04 LTS), and Size (Standard B1s). The 'ADMINISTRATOR ACCOUNT' section is highlighted with a yellow box, showing 'Authentication type' set to 'Password', 'Username' set to 'sansbound', and 'Password' and 'Confirm password' fields filled with '*****'. Other options like 'Login with Azure Active Directory (Preview)' and 'INBOUND PORT RULES' are also visible.

In “Inbound Port Rules”

Set “Public inbound ports” as “Allow selected ports”.

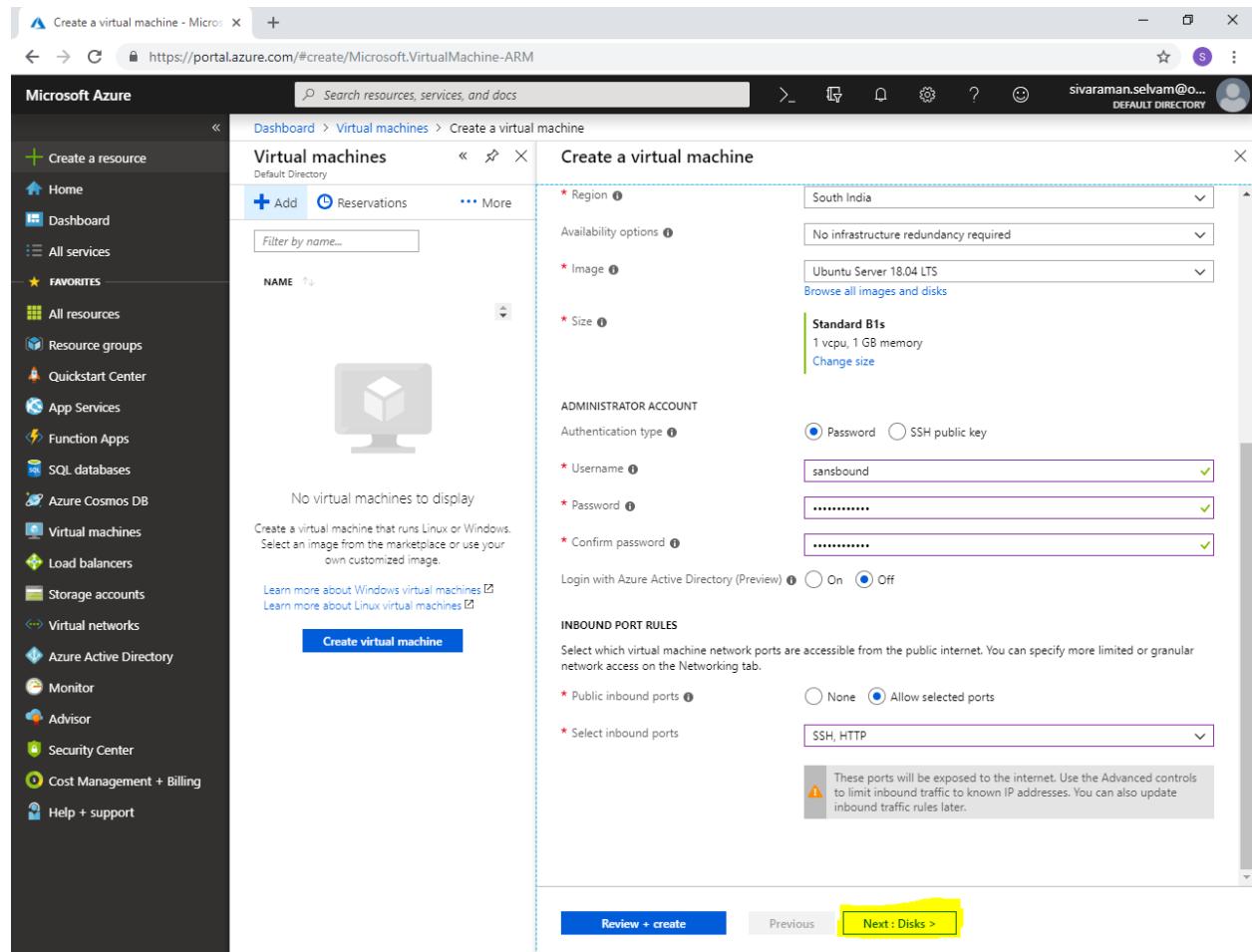
Select “Select inbound ports” as “SSH” and “HTTP” Ports.

Because I am going to install apache web server in Ubuntu and capture the Ubuntu VM as Image, then build a new VM with customized or captured image.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar lists various services like Home, Dashboard, and Virtual machines. The main area shows the 'Create a virtual machine' wizard, currently on the 'Virtual machines' step. The 'Create a virtual machine' form is displayed on the right, with the 'INBOUND PORT RULES' section highlighted. In this section, the 'Public inbound ports' dropdown is set to 'Allow selected ports', and the 'Select inbound ports' dropdown is set to 'SSH, HTTP'. A note below 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.'

Click “Next : Disks >”.



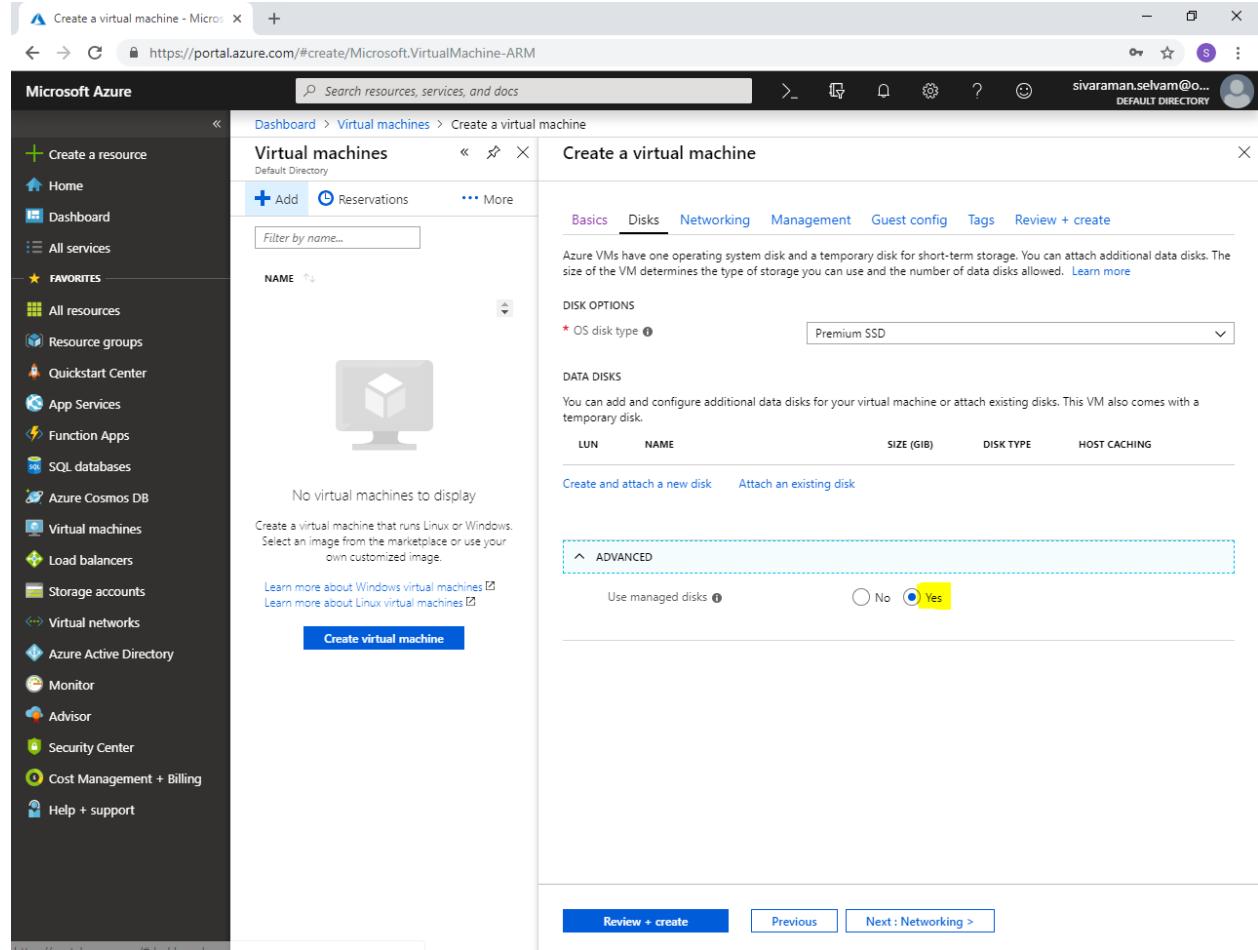
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar lists various services like Home, Dashboard, and Virtual machines. The main area shows a list of existing virtual machines and a 'Create a virtual machine' wizard. The current step is 'Create a virtual machine'. The configuration includes:

- Region:** South India
- Image:** Ubuntu Server 18.04 LTS
- Size:** Standard B1s (1 vcpu, 1 GB memory)
- Administrator Account:**
 - Authentication type: Password (selected)
 - Username: sansbound
 - Password: (redacted)
 - Confirm password: (redacted)
- Inbound Port Rules:**
 - Public inbound ports: Allow selected ports
 - Select inbound ports: SSH, HTTP
 - A note: "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."

At the bottom, there are 'Review + create' and 'Previous' buttons, and the 'Next : Disks >' button is highlighted with a yellow box.

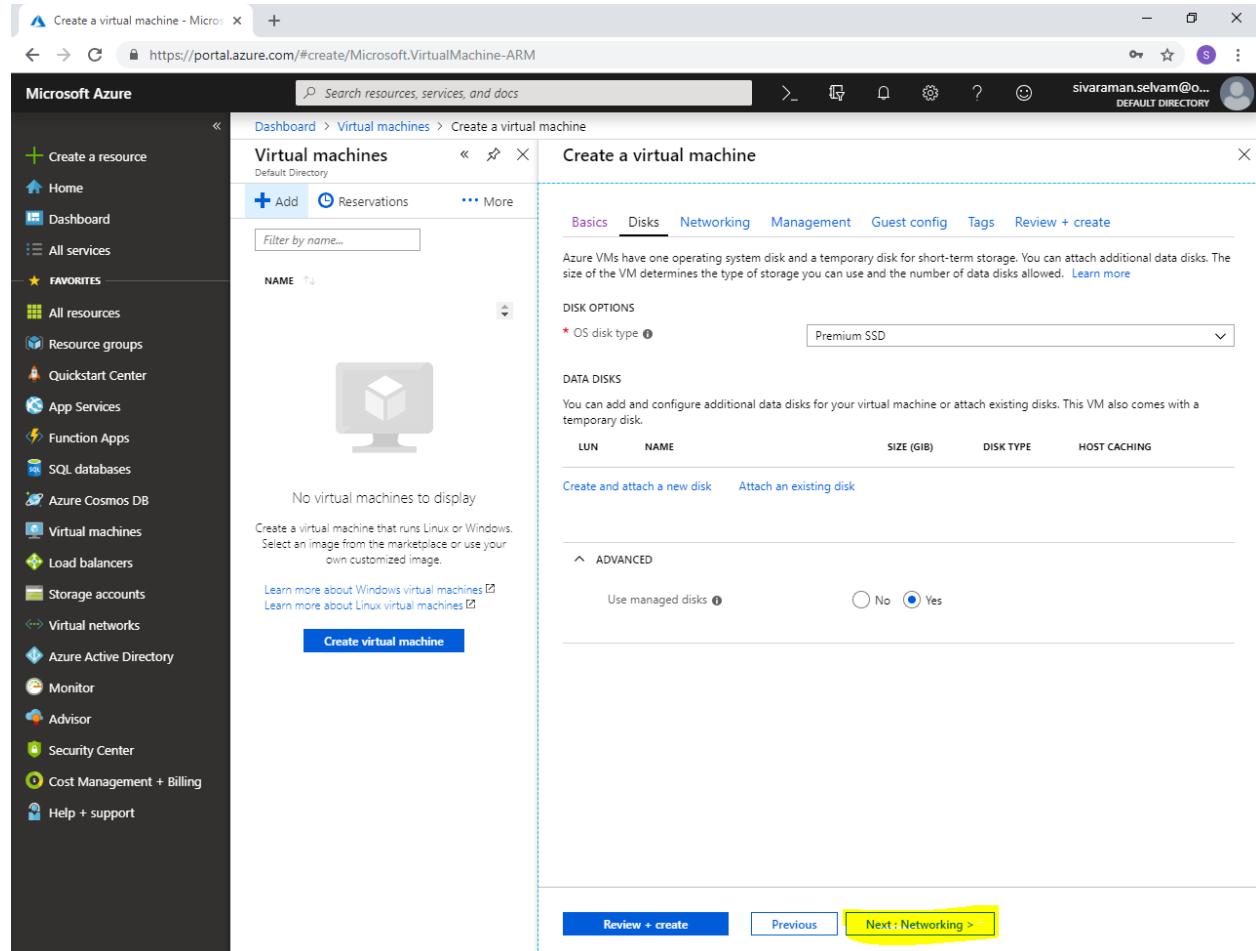
In “Disks”

Ensure that you have selected “Managed disks”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, Favorites, and many others. The main area is titled 'Virtual machines' and shows a 'Create a virtual machine' wizard. The 'Basics' tab is active, with a note about Azure VMs having an OS disk and a temporary disk. Under 'DISK OPTIONS', the 'OS disk type' is set to 'Premium SSD'. In the 'DATA DISKS' section, there's a note about adding additional data disks or attaching existing ones. A 'Create and attach a new disk' link is present. An 'ADVANCED' section is expanded, showing the 'Use managed disks' checkbox, which is checked ('Yes'). At the bottom, there are 'Review + create', 'Previous', and 'Next : Networking >' buttons.

Click “Next : Networking >”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, and Resource groups. The main area shows the 'Virtual machines' section with a search bar and a 'Create a virtual machine' button. The 'Create a virtual machine' wizard is open, with the 'Networking' tab highlighted by a yellow box. The 'Basics' tab is selected. Under 'DISK OPTIONS', 'OS disk type' is set to 'Premium SSD'. Under 'DATA DISKS', there's a table with columns LUN, NAME, SIZE (GiB), DISK TYPE, and HOST CACHING. The 'Create and attach a new disk' button is visible. At the bottom, there are 'Review + create', 'Previous', and 'Next : Networking >' buttons, with 'Next : Networking >' also highlighted by a yellow box.

In “Networking”

Ensure that “Virtual network” as “**SANS-VNET**”.

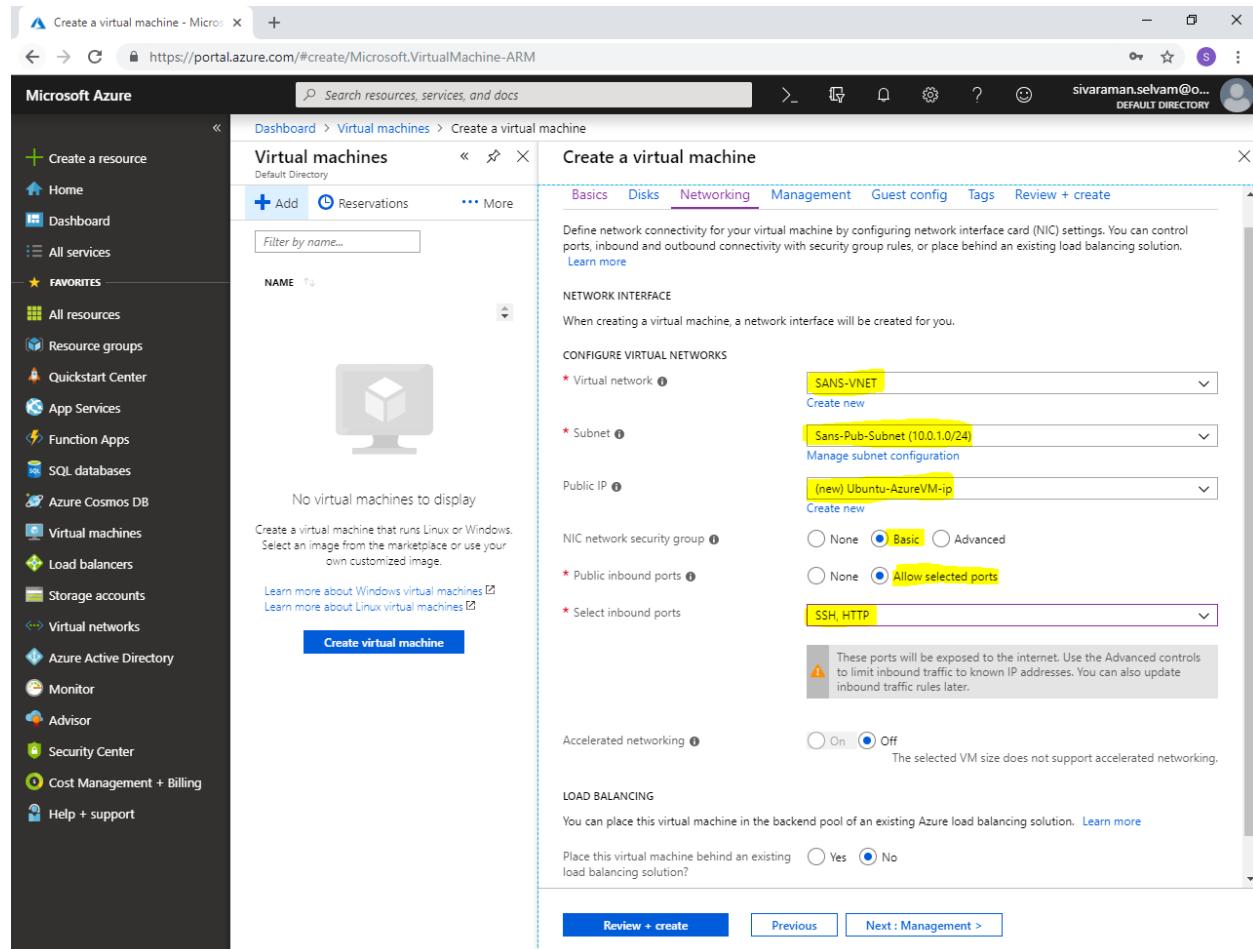
Ensure that “Subnet” as “**Sans-Pub-Subnet**” as **10.0.1.0/24**

Public IP for Ubuntu-AzureVM.

Ensure “**Network Security Group**” as “**Basic**” / “**Advanced**”.

In “**Public inbound ports**” as “**Allow selected ports**”.

Ensure “**Select inbound ports**” as “**SSH**” and “**HTTP**” are allowed.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar lists various Azure services. The main window is titled "Create a virtual machine" under the "Virtual machines" section. The "Networking" tab is active. Key configuration parameters highlighted in yellow are:

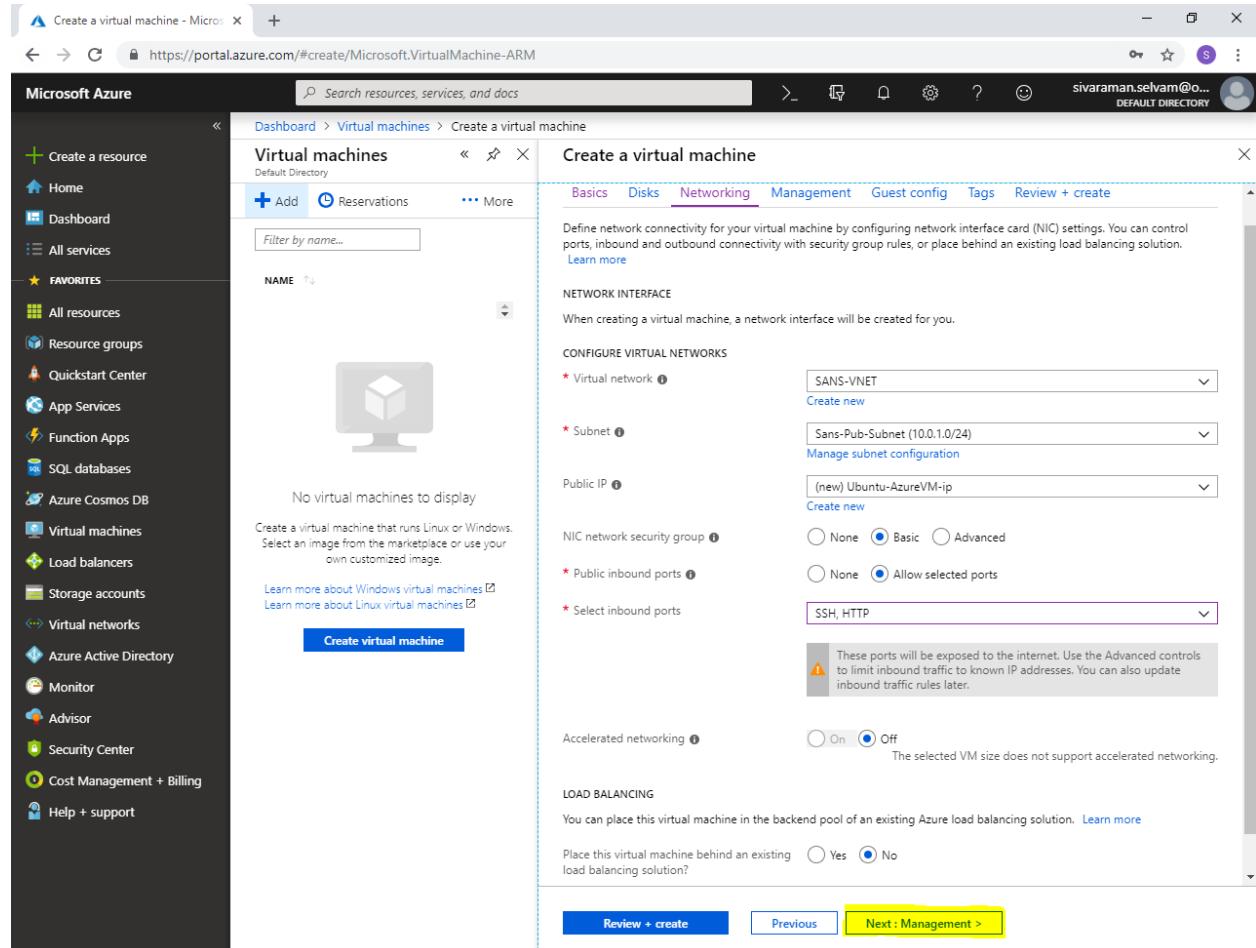
- Virtual network:** SANS-VNET
- Subnet:** Sans-Pub-Subnet (10.0.1.0/24)
- Public IP:** (new) Ubuntu-AzureVM-ip
- Public inbound ports:** SSH, HTTP

Other visible settings include:

- NIC network security group:** Basic (selected)
- Accelerated networking:** Off (selected)
- Load balancing:** No (selected)

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

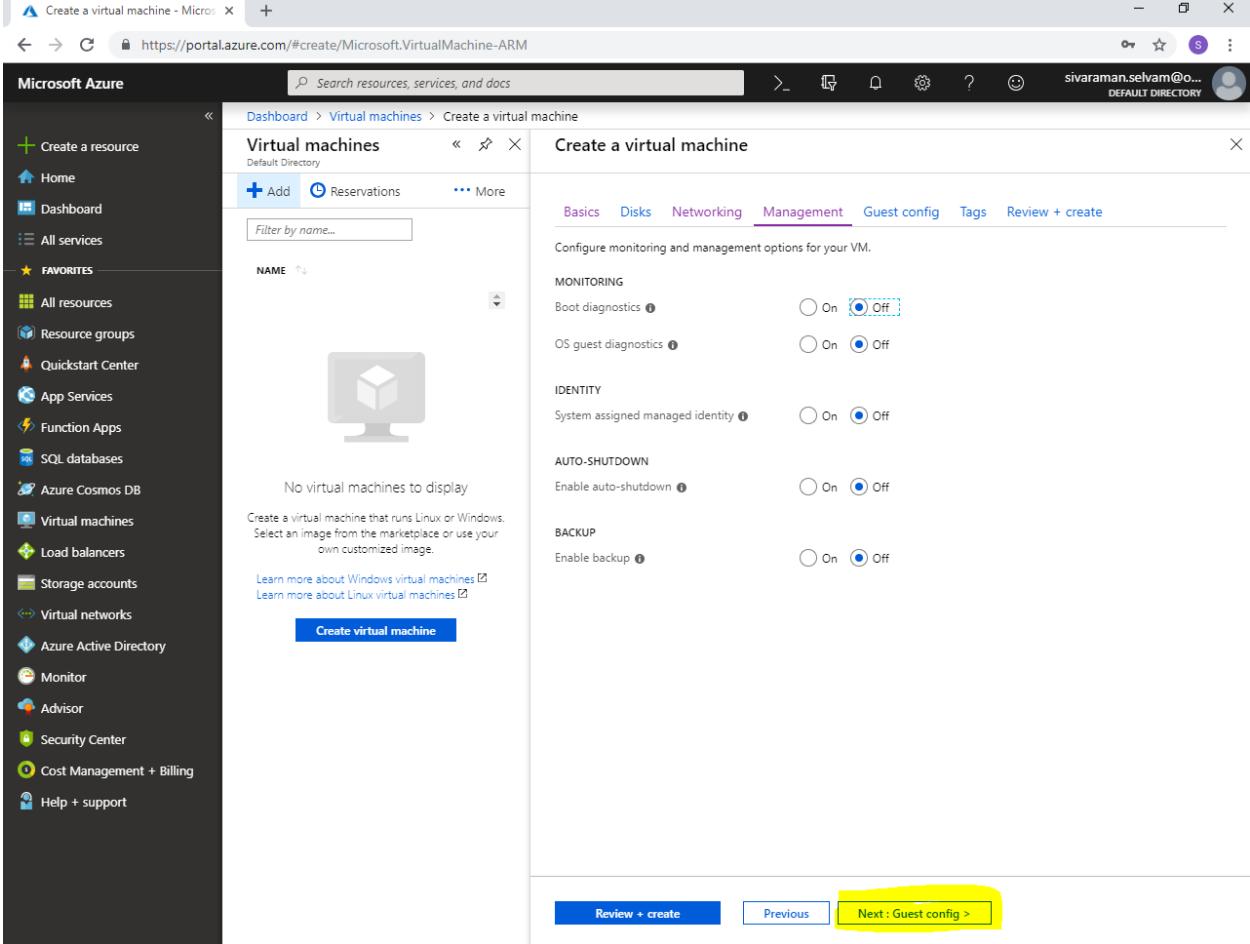
Click "Next : Management >".



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service links like Home, Dashboard, and Virtual machines. The main area shows a list of existing virtual machines with a 'No virtual machines to display' message. On the right, the 'Create a virtual machine' wizard is open, specifically on the 'Networking' tab. The 'Virtual network' dropdown is set to 'SANS-VNET'. Under 'Public IP', it shows '(new) Ubuntu-AzureVM-ip'. Under 'Public inbound ports', 'SSH, HTTP' is selected. At the bottom, there are buttons for 'Review + create', 'Previous', and 'Next : Management >'. The 'Next : Management >' button is highlighted with a yellow box.

In “Management”

Click “Next : Guest config >”.



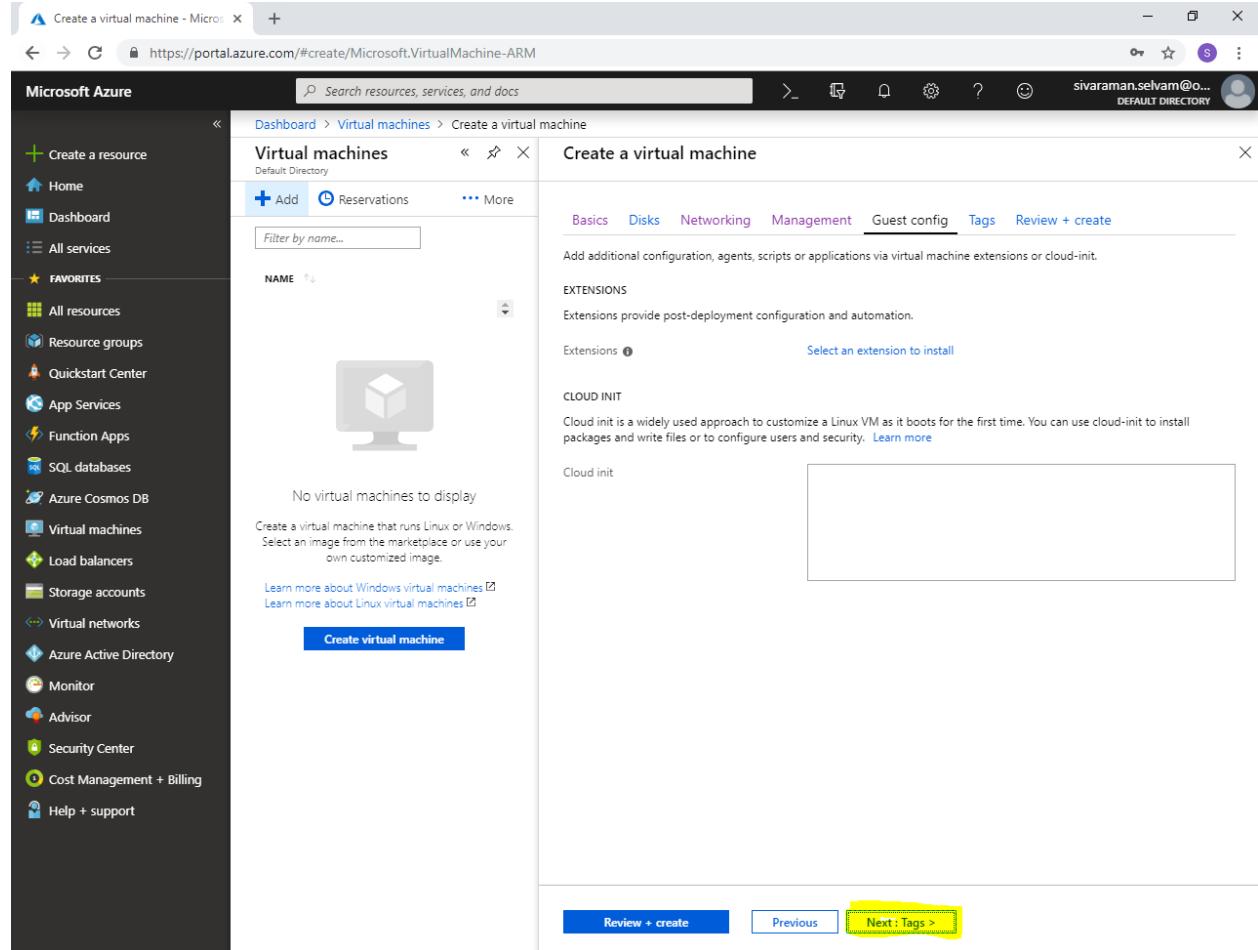
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, and Favorites. The main area is titled 'Virtual machines' and shows a 'Create a virtual machine' wizard. The current step is 'Guest config'. The configuration options include:

- MONITORING:** Boot diagnostics (On), OS guest diagnostics (Off)
- IDENTITY:** System assigned managed identity (Off)
- AUTO-SHUTDOWN:** Enable auto-shutdown (Off)
- BACKUP:** Enable backup (Off)

At the bottom, there are three buttons: 'Review + create' (blue), 'Previous' (light blue), and 'Next : Guest config >' (yellow, highlighted with a yellow box).

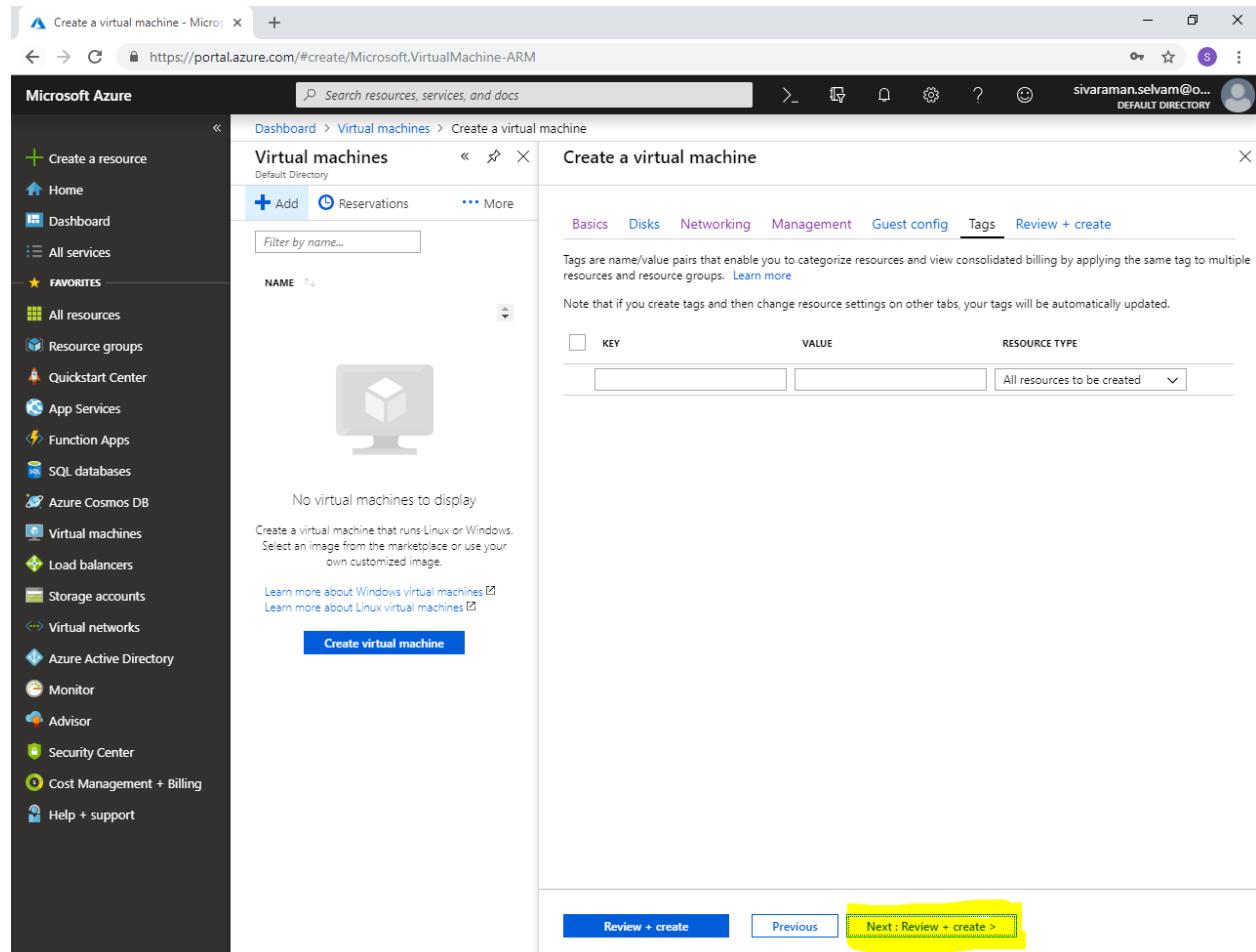
In “Guest config”.

Click “Next : Tags >”.



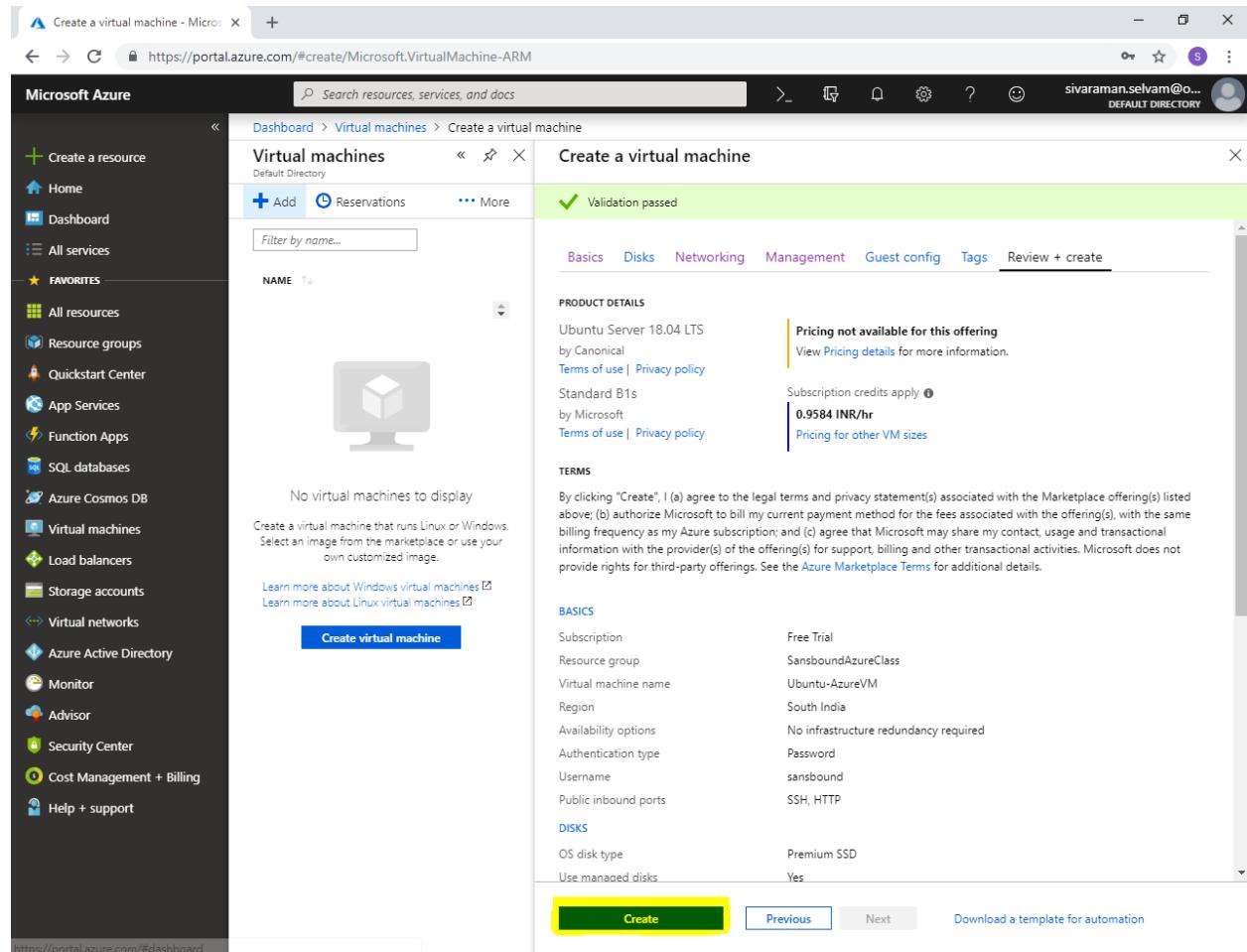
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, and Favorites. The main area is titled 'Virtual machines' and shows a 'Create a virtual machine' wizard. The 'Guest config' tab is currently selected. At the bottom of the wizard, there are three buttons: 'Review + create', 'Previous', and 'Next: Tags >'. The 'Next: Tags >' button is highlighted with a yellow box.

Click “Review + create”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service links like Home, Dashboard, All services, and Favorites. The main area is titled 'Create a virtual machine' under 'Virtual machines'. It includes tabs for Basics, Disks, Networking, Management, Guest config, Tags, and Review + create. A note about tags is present. Below the tabs, there's a section for creating tags with columns for KEY, VALUE, and RESOURCE TYPE. A large 'Create virtual machine' button is at the bottom. At the very bottom, there are 'Review + create', 'Previous', and 'Next: Review + create >' buttons, with 'Next: Review + create >' being highlighted by a yellow box.

Click “Create”.

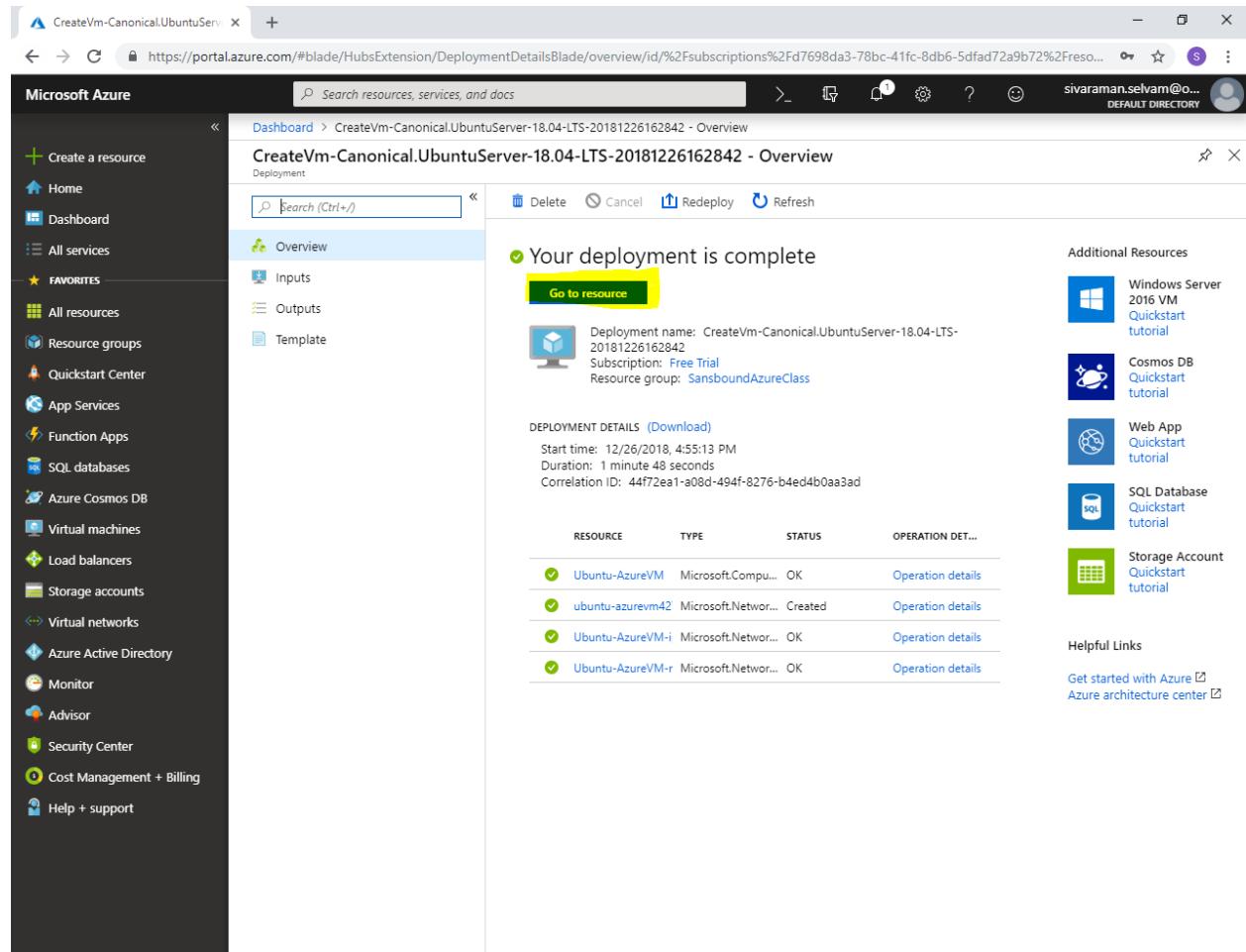


The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service links, and the main area is titled "Create a virtual machine". The "Basics" tab is active, displaying the following configuration details:

- Subscription:** SansboundAzureClass
- Resource group:** Ubuntu-AzureVM
- Virtual machine name:** South India
- Region:** No infrastructure redundancy required
- Availability options:** Password
- Authentication type:** sansbound
- Username:** SSH, HTTP
- OS disk type:** Premium SSD
- Use managed disks:** Yes

At the bottom of the screen, there is a large green "Create" button, which is highlighted with a yellow box. Other buttons include "Previous", "Next", and "Download a template for automation".

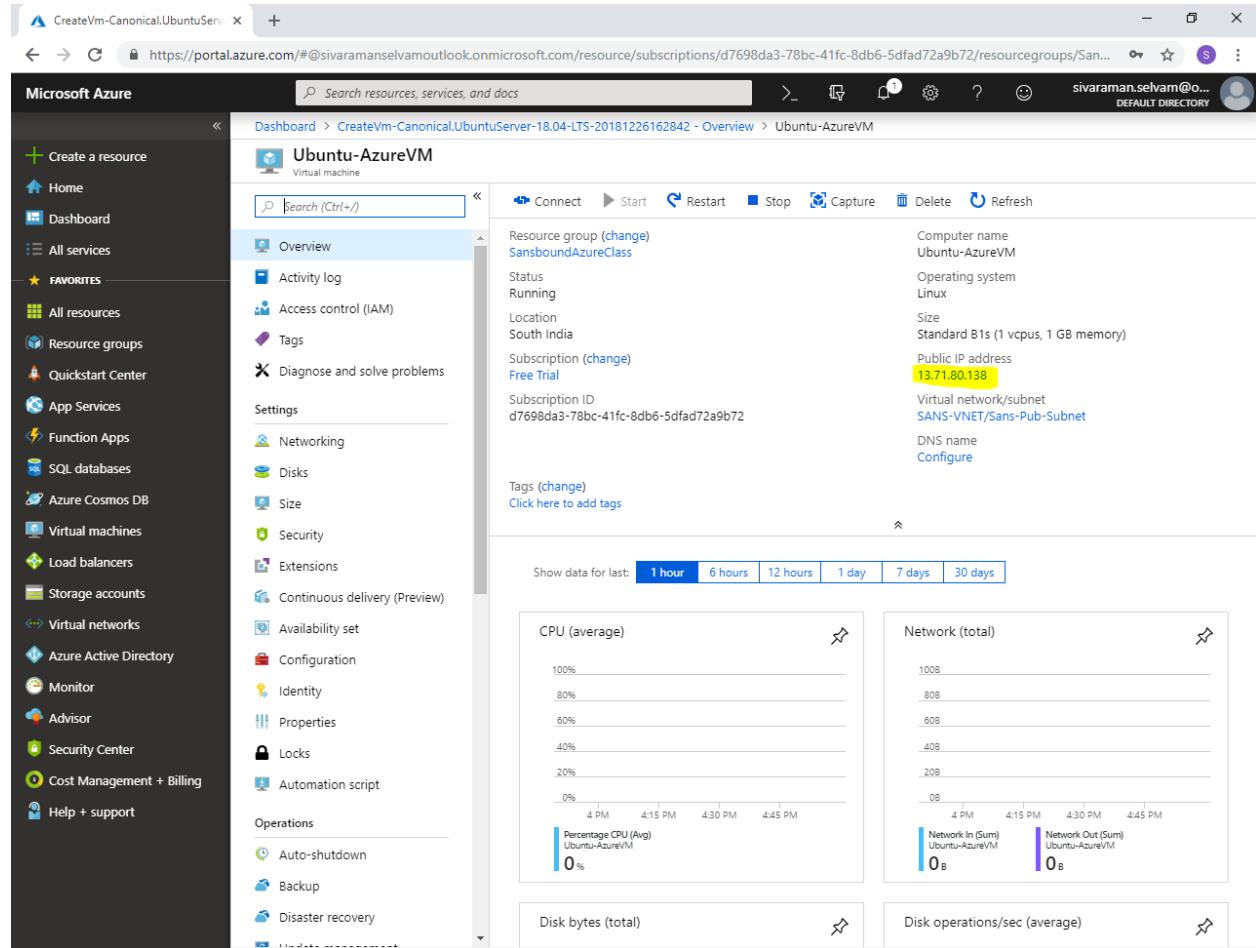
Click “Go to resource”.



The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with various service icons like Home, Dashboard, All services, and Favorites (which includes All resources, Resource groups, Quickstart Center, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support). The main content area is titled 'CreateVm-Canonical.UbuntuServer-18.04-LTS-20181226162842 - Overview'. It displays a message 'Your deployment is complete' with a green checkmark icon. Below this is a 'Go to resource' button, which is highlighted with a yellow box. To the right of the main message, there's a section for 'Additional Resources' with links to Windows Server 2016 VM, Cosmos DB, Web App, SQL Database, and Storage Account, each with a quickstart tutorial link. At the bottom, there's a 'DEPLOYMENT DETAILS' table with four rows:

RESOURCE	TYPE	STATUS	OPERATION DET...
Ubuntu-AzureVM	Microsoft.Compu...	OK	Operation details
ubuntu-azurevm42	Microsoft.Networ...	Created	Operation details
Ubuntu-AzureVM-i	Microsoft.Networ...	OK	Operation details
Ubuntu-AzureVM-r	Microsoft.Networ...	OK	Operation details

Kindly note the public address, we have required to access Ubuntu VM by using this IP only.



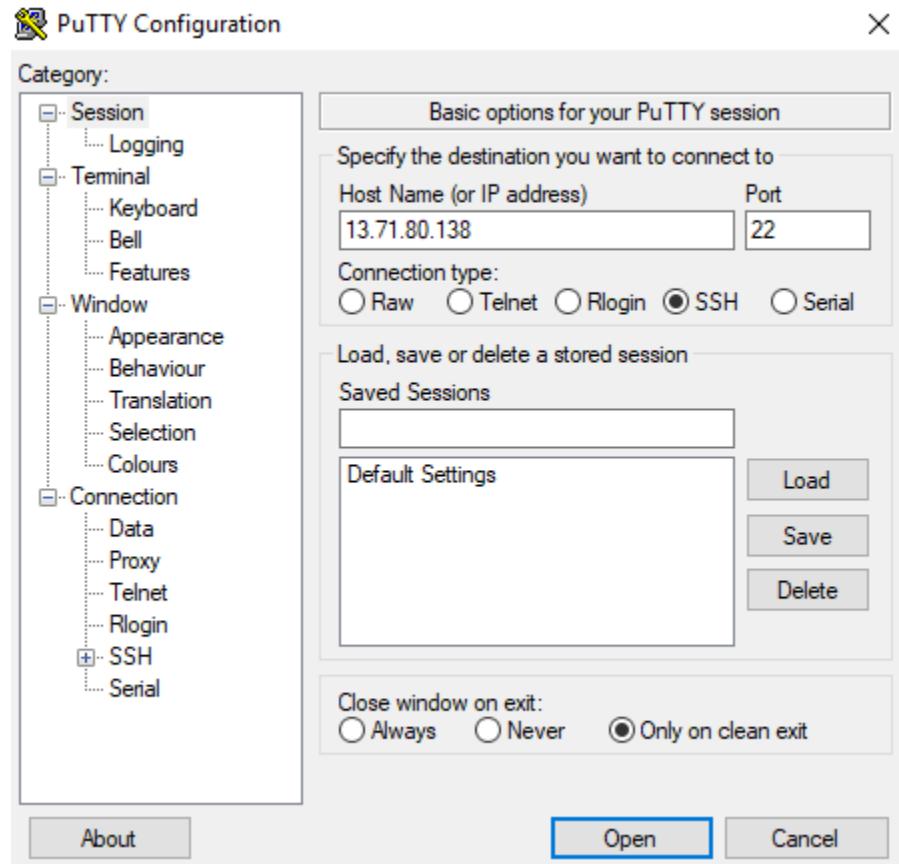
The screenshot shows the Microsoft Azure portal interface. The left sidebar is filled with various service icons under categories like Home, All services, Favorites, and more. The main content area is titled "Ubuntu-AzureVM" and shows the "Overview" tab selected. Key details visible include:

- Resource group:** SansboundAzureClass
- Status:** Running
- Location:** South India
- Subscription:** Free Trial
- Public IP address:** 13.71.80.138 (highlighted in yellow)
- Virtual network/subnet:** SANS-VNET/Sans-Pub-Subnet
- DNS name:** Configure

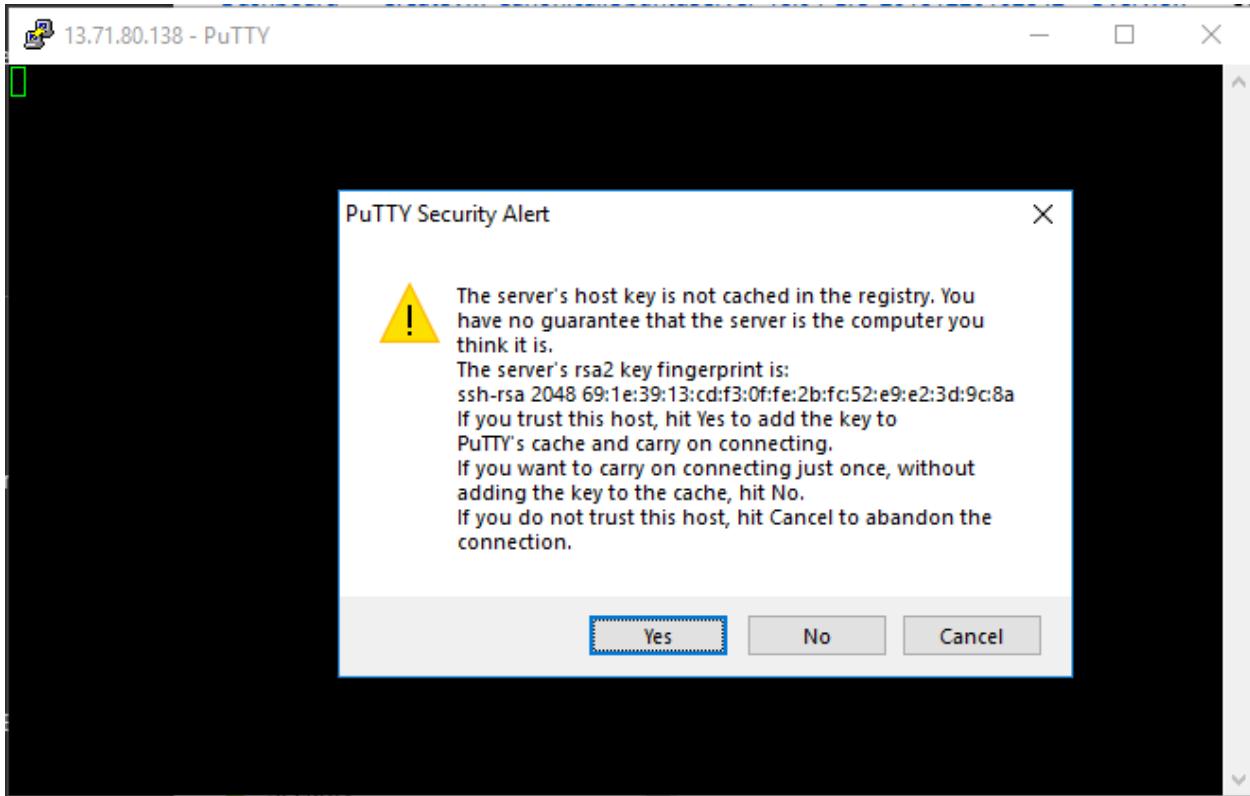
Below the main summary, there are four performance charts: CPU (average), Network (total), Disk bytes (total), and Disk operations/sec (average). The CPU chart shows 0% usage over the last hour. The Network chart shows 0B traffic. The Disk charts show 0B total bytes and 0 operations/sec.

Need to launch “Putty”.exe” from local machine and type the IP address of Ubuntu VM in Putty.

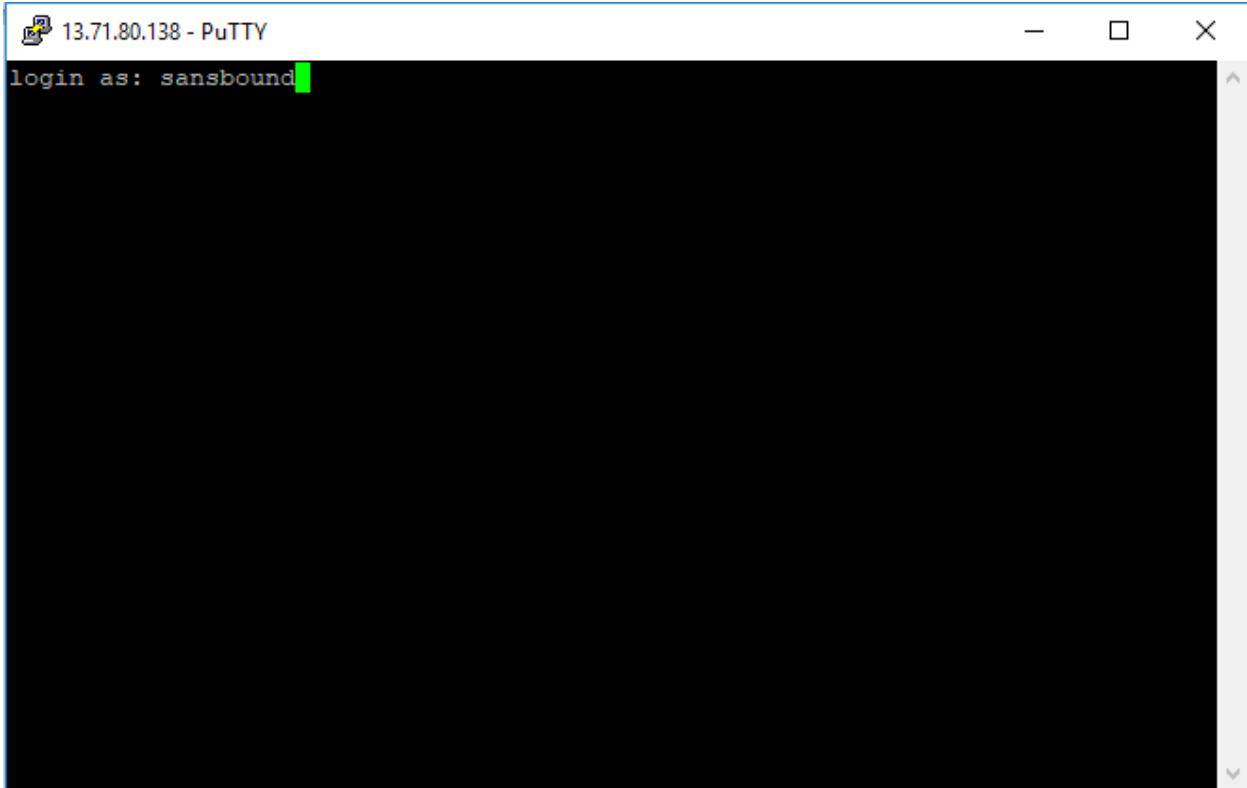
Click “Open” to connect Ubuntu server through SSH.



Click "Yes".

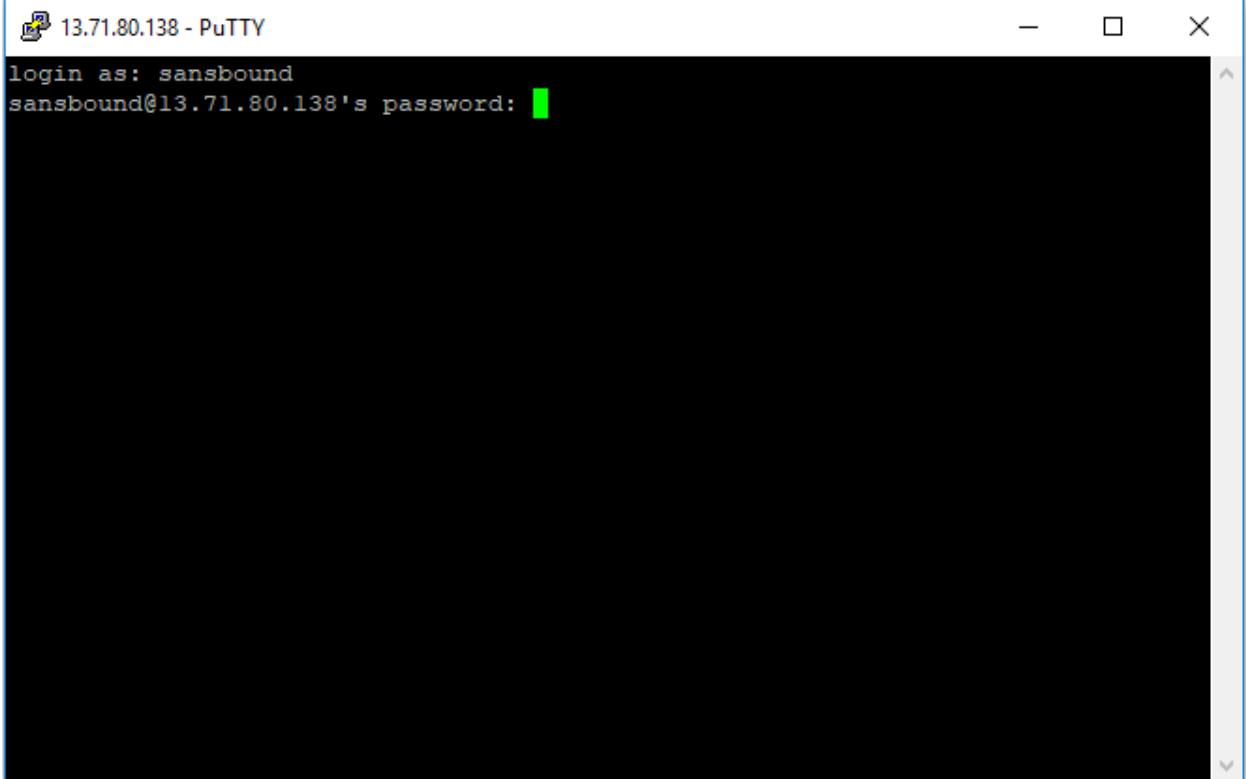


Type **username** of Ubuntu as “sansbound” and press “**Enter**”.



A screenshot of a PuTTY terminal window titled "13.71.80.138 - PuTTY". The window shows a black terminal screen with white text. At the top left, it says "login as: sansbound". A green cursor bar is visible at the end of the line. The window has standard operating system window controls (minimize, maximize, close) at the top right. A vertical scroll bar is on the right side of the window.

Type **Password** for the Ubuntu server and press "**Enter**"

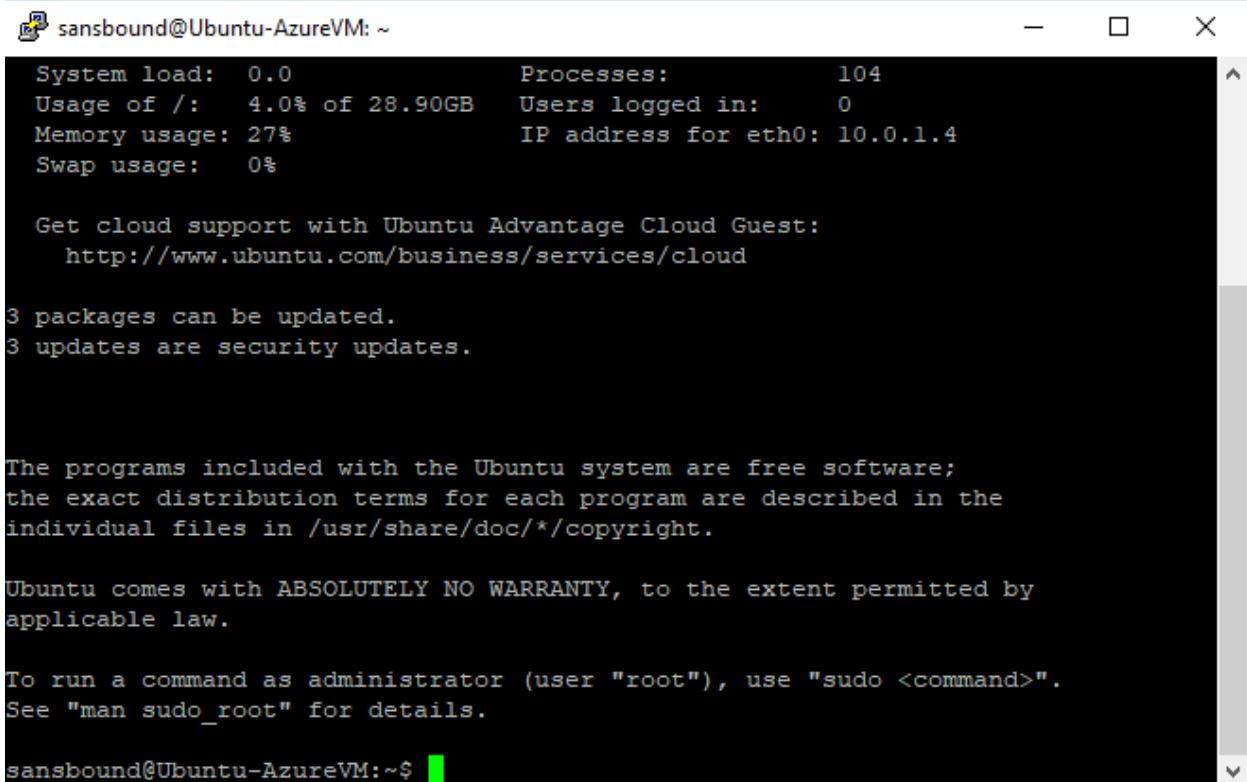


13.71.80.138 - PuTTY

```
login as: sansbound
sansbound@13.71.80.138's password: █
```

A screenshot of a PuTTY terminal window titled "13.71.80.138 - PuTTY". The window shows a login prompt: "login as: sansbound" followed by "sansbound@13.71.80.138's password:". A single green character, likely a password character, is visible in the password field. The window has standard minimize, maximize, and close buttons at the top right.

Now you have successfully logged into Ubuntu server.



```
sansbound@Ubuntu-AzureVM: ~
System load:  0.0          Processes:      104
Usage of /:   4.0% of 28.90GB  Users logged in:    0
Memory usage: 27%
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.

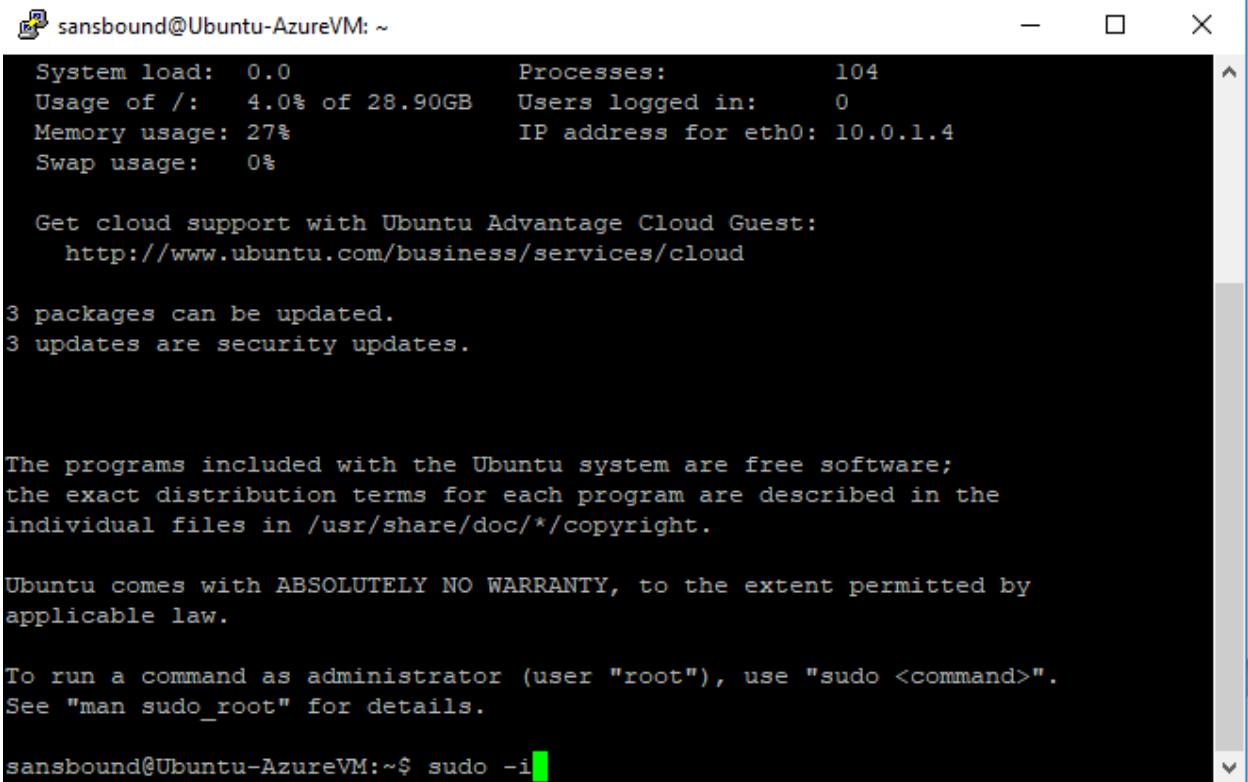
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sansbound@Ubuntu-AzureVM:~$
```

Now I have required to login as root user account.

Type “**sudo -i**” and press “**Enter**”.



```
sansbound@Ubuntu-AzureVM: ~
System load:  0.0          Processes:      104
Usage of /:   4.0% of 28.90GB  Users logged in:    0
Memory usage: 27%           IP address for eth0: 10.0.1.4
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@Ubuntu-AzureVM:~$ sudo -i
```

Now you have successfully logged as a root user.

```
root@Ubuntu-AzureVM: ~
Usage of /:   4.0% of 28.90GB  Users logged in:      0
Memory usage: 27%                  IP address for eth0: 10.0.1.4
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.

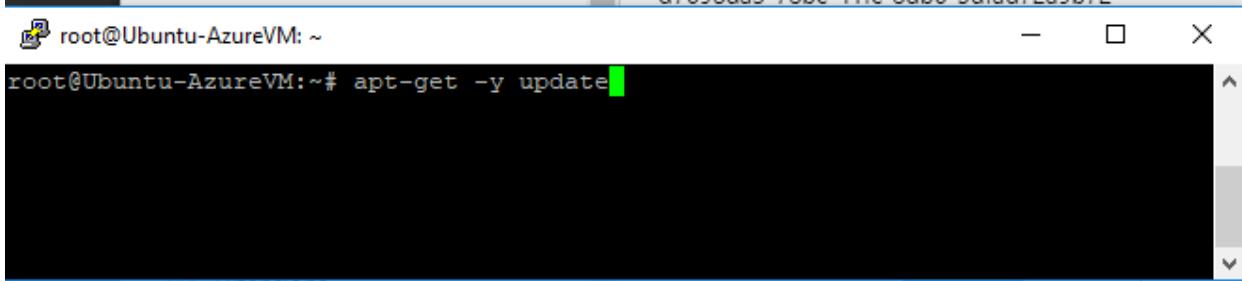
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sansbound@Ubuntu-AzureVM:~$ sudo -i
root@Ubuntu-AzureVM:~#
```

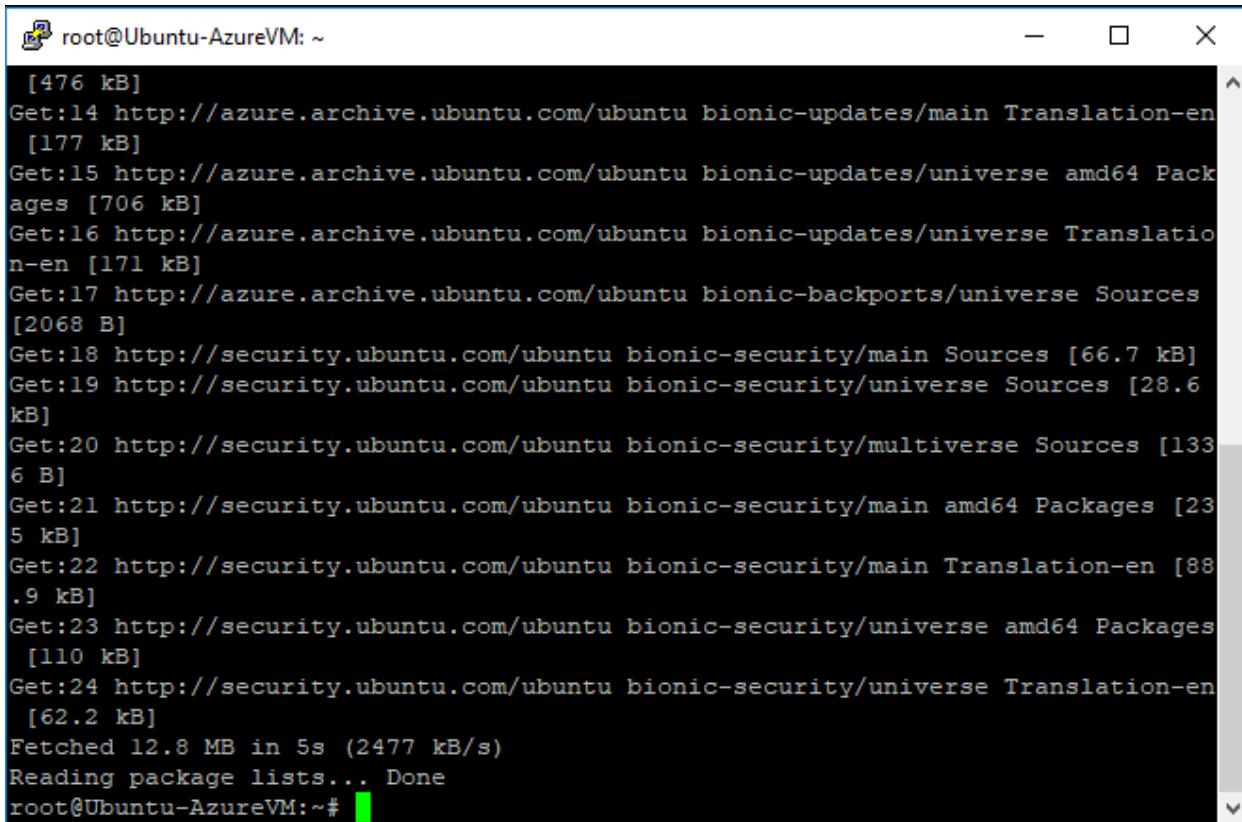
Now I have required to update packages.

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



```
root@Ubuntu-AzureVM:~# apt-get -y update
```

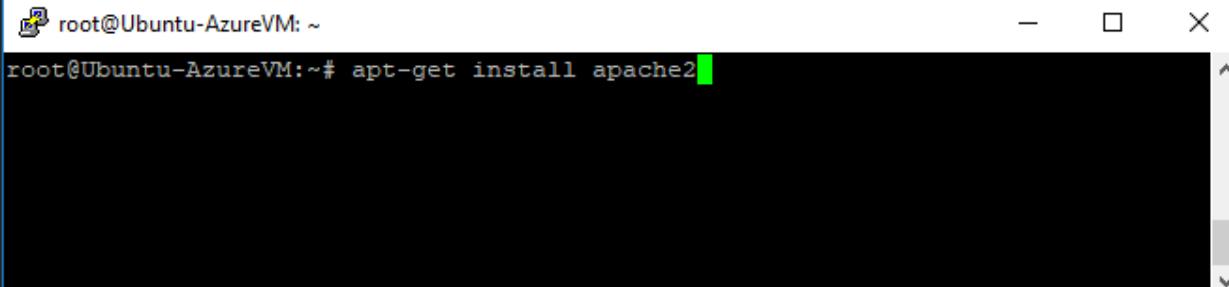
Packages are successfully updated.



```
[476 kB]
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/main Sources [66.7 kB]
Get:19 http://security.ubuntu.com/ubuntu bionic-security/universe Sources [28.6 kB]
Get:20 http://security.ubuntu.com/ubuntu bionic-security/multiverse Sources [133 6 B]
Get:21 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [23 5 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 5s (2477 kB/s)
Reading package lists... Done
root@Ubuntu-AzureVM:~#
```

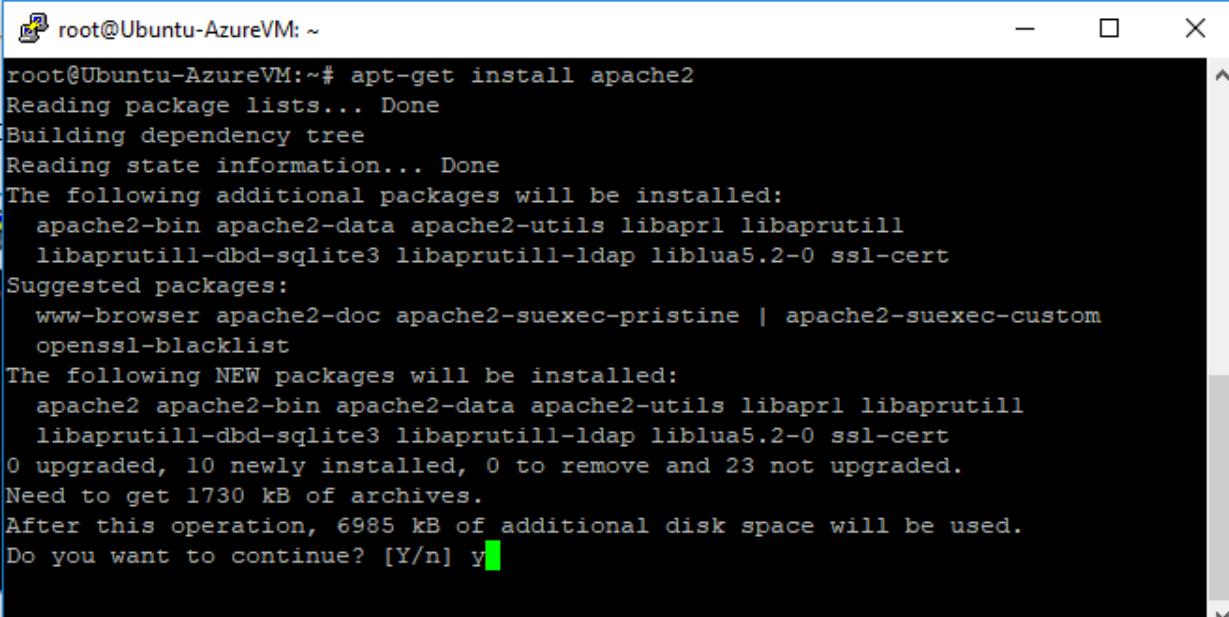
Now we have required installing Apache in Ubuntu VM.

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



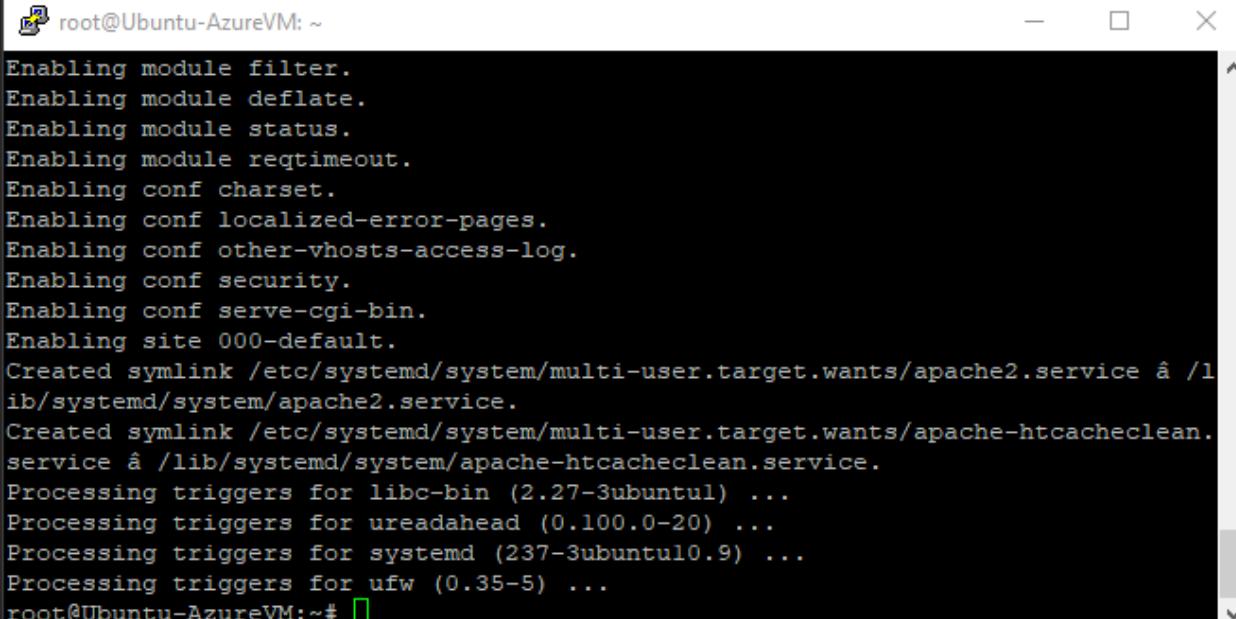
```
root@Ubuntu-AzureVM: ~# apt-get install apache2
```

Type “**y**” and press “**Enter**” to install the package.



```
root@Ubuntu-AzureVM: ~# 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
```

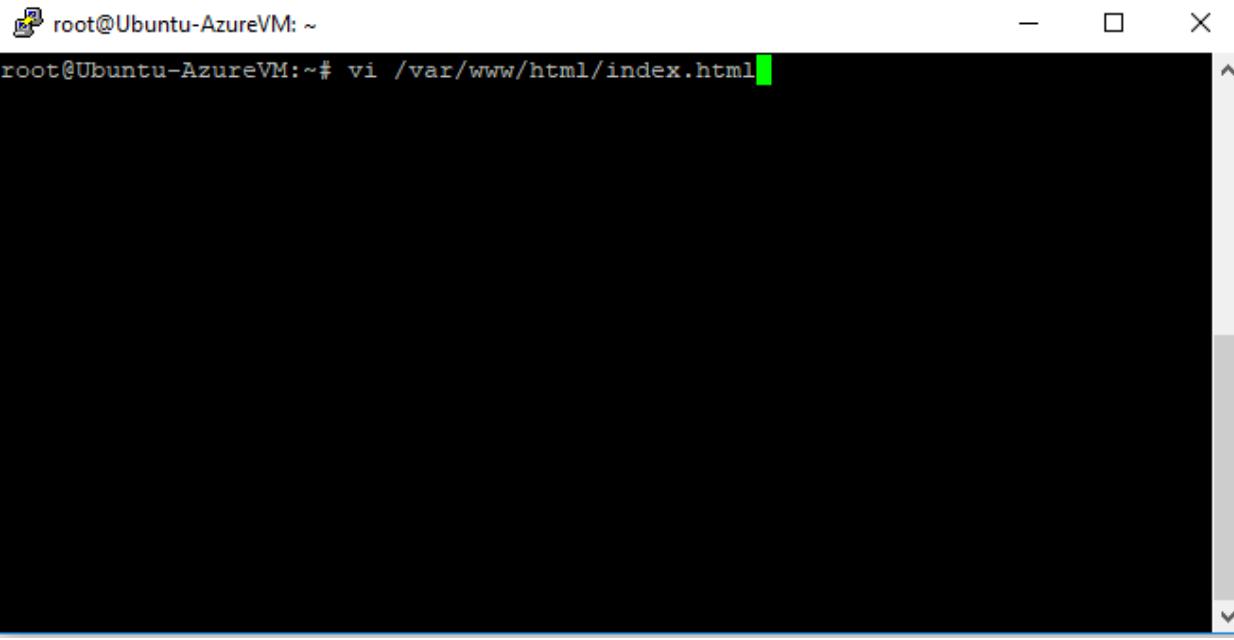
We have successfully installed Apache in Ubuntu.



```
root@Ubuntu-AzureVM: ~
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 → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /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@Ubuntu-AzureVM:~#
```

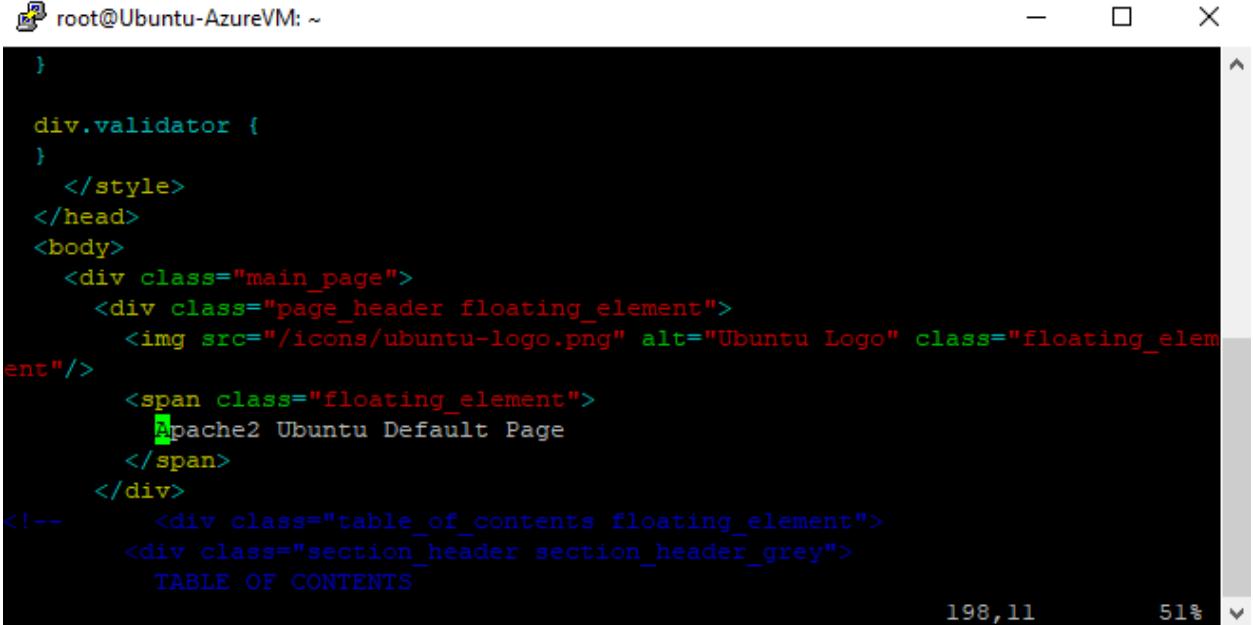
I have required customizing the default webpage.

Type “**vi /var/www/html/index.html**” and press “**Enter**”.



The screenshot shows a terminal window with a black background and white text. In the top left corner, there is a small icon of a computer monitor. The window title bar displays "root@Ubuntu-AzureVM: ~". The main area of the terminal shows the command "root@Ubuntu-AzureVM:~# vi /var/www/html/index.html" followed by a green cursor. The window has standard window controls (minimize, maximize, close) in the top right corner and a vertical scroll bar on the right side.

Go to **Line number “198”**, then we have required to delete existing content and replace it as our own wish.



```
root@Ubuntu-AzureVM: ~
}

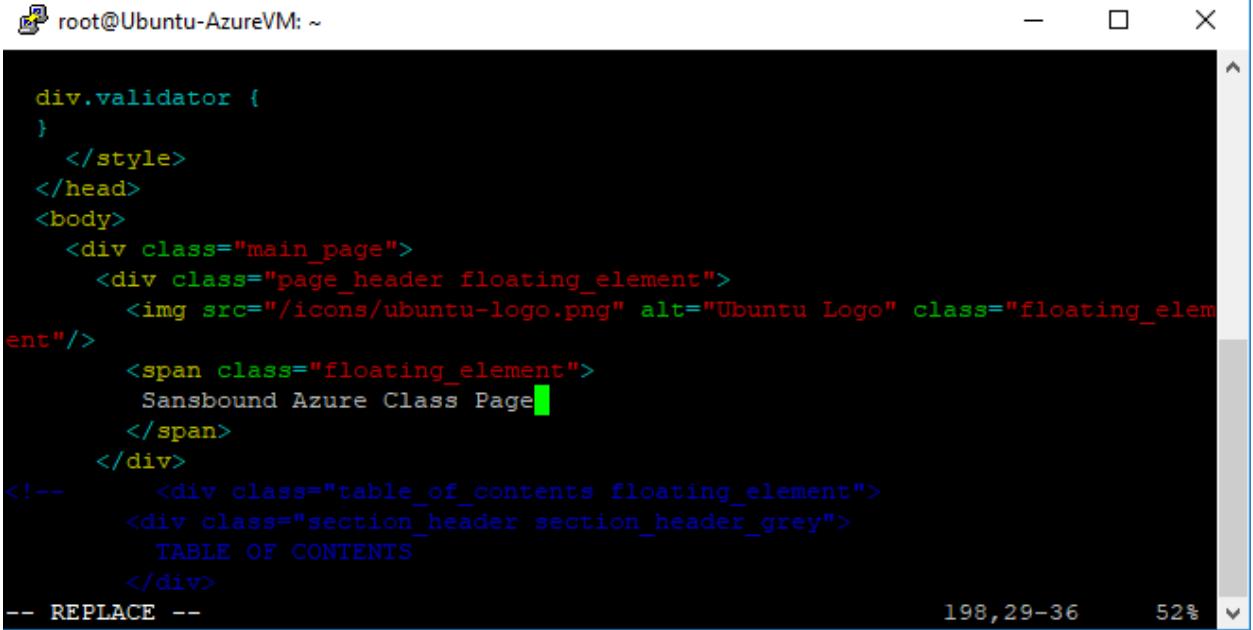
}
</style>
</head>
<body>
<div class="main_page">
<div class="page_header floating_element">

<span class="floating_element">
Apache2 Ubuntu Default Page
</span>
</div>
<!--
<div class="table_of_contents floating_element">
<div class="section_header section_header_grey">
TABLE OF CONTENTS
198,11      51% ▼
```

Delete the previous content

Then press “**Insert**” key

Type our content as “**Sansbound Azure Class Page**”.



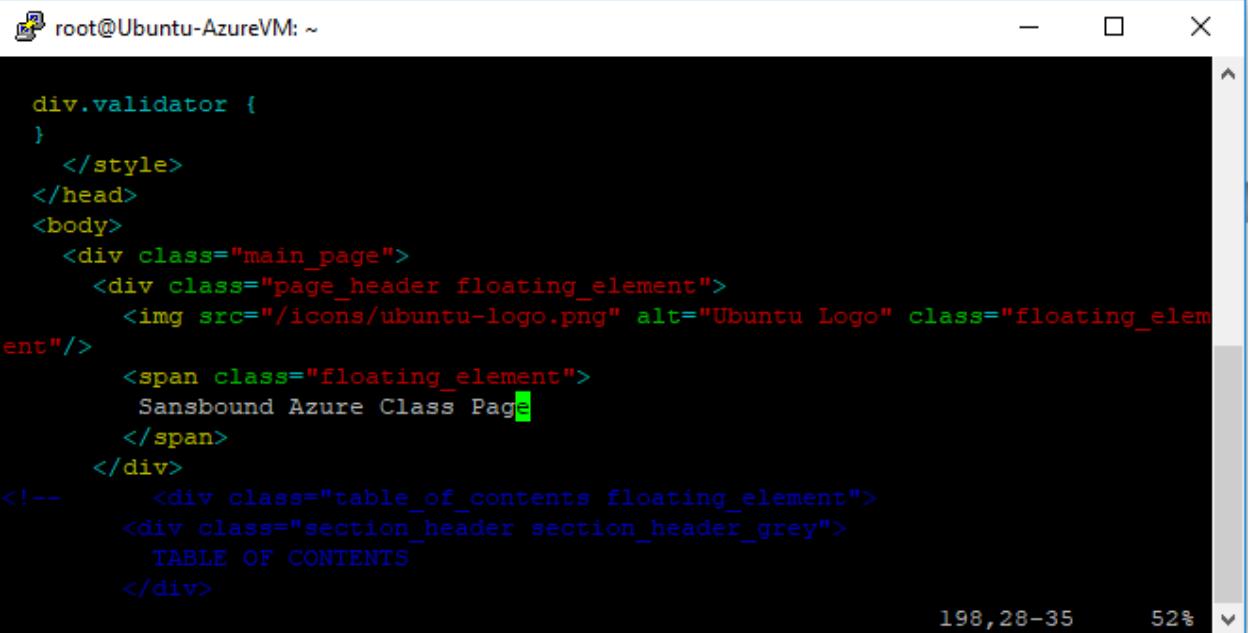
The screenshot shows a terminal window with the following content:

```
root@Ubuntu-AzureVM: ~

}
</style>
</head>
<body>
    <div class="main_page">
        <div class="page_header floating_element">
            
            <span class="floating_element">
                Sansbound Azure Class Page
            </span>
        </div>
<!--
    <div class="table_of_contents floating_element">
        <div class="section_header section_header_grey">
            TABLE OF CONTENTS
        </div>
-->
-- REPLACE --
```

The terminal window has a dark background. The code is color-coded: div, class, and id names are in blue, while other text is in white. A green cursor is visible at the end of the "Sansbound Azure Class Page" text. The status bar at the bottom right shows "198,29-36" and "52%".

Press “**Escape**” key

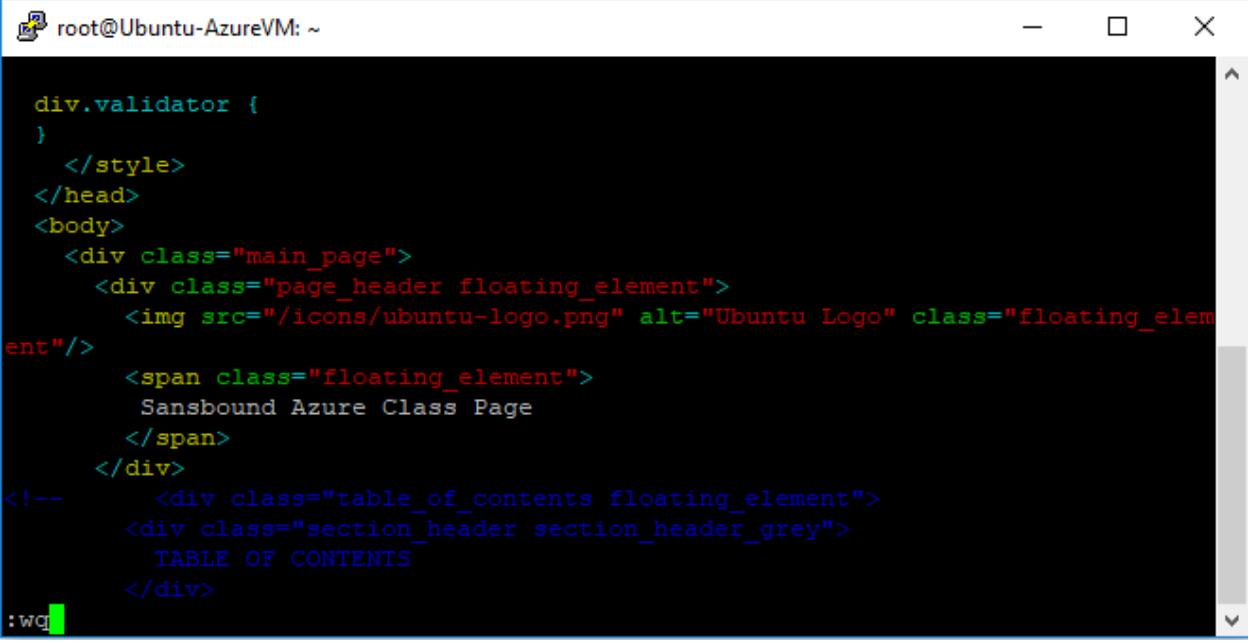


A screenshot of a terminal window titled "root@Ubuntu-AzureVM: ~". The window contains the following HTML code:

```
div.validator {  
}  
    </style>  
</head>  
<body>  
    <div class="main_page">  
        <div class="page_header floating_element">  
              
            <span class="floating_element">  
                Sansbound Azure Class Page  
            </span>  
        </div>  
    <!--  
        <div class="table_of_contents floating_element">  
            <div class="section_header section_header_grey">  
                TABLE OF CONTENTS  
            </div>  
    -->
```

The terminal window has a dark background and light-colored text. The status bar at the bottom right shows "198,28-35" and "52%".

Then type in bottom line “**:wq**” and press “**Enter**” to save the file.

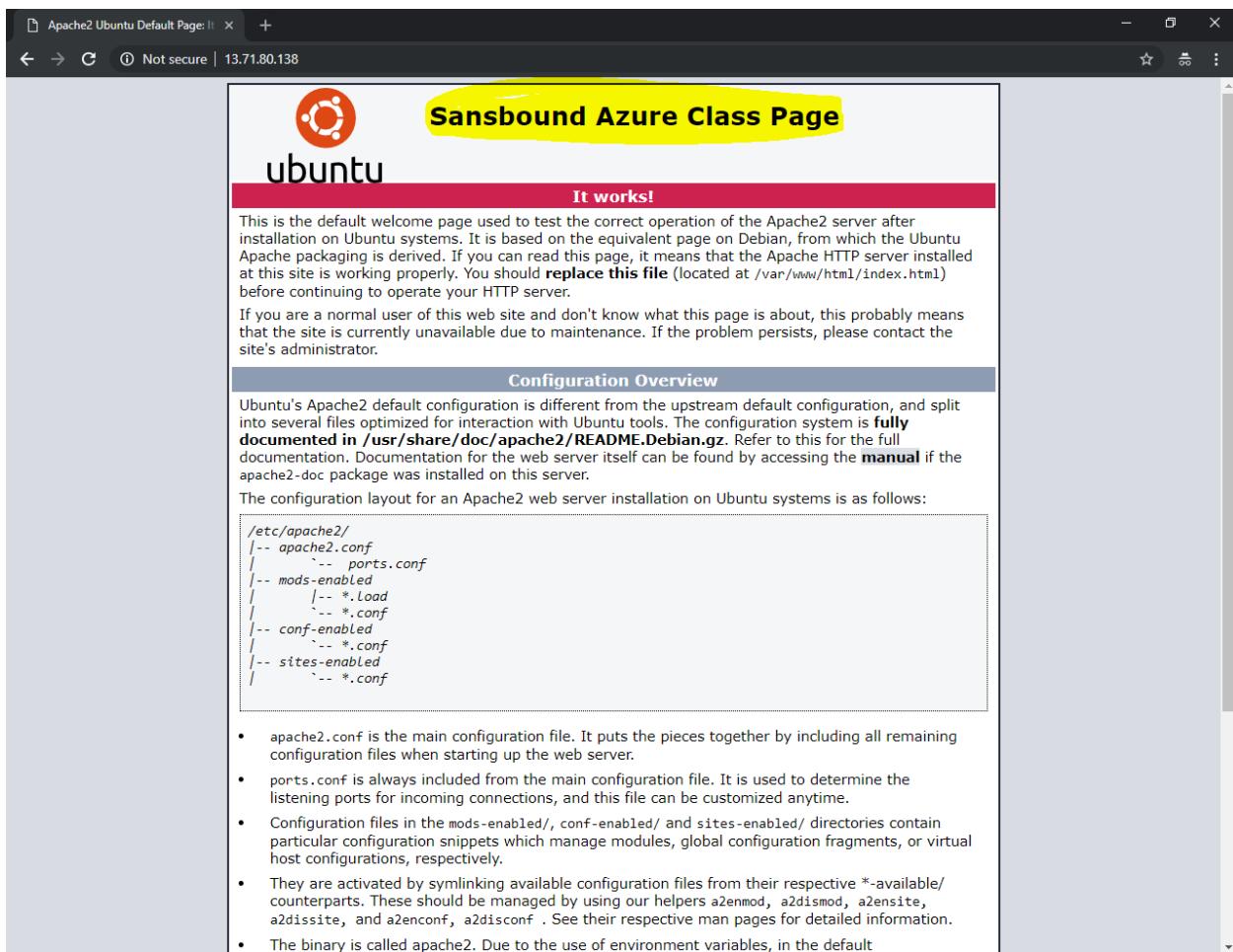


```
root@Ubuntu-AzureVM: ~
div.validator {
}
</style>
</head>
<body>
    <div class="main_page">
        <div class="page_header floating_element">
            
            <span class="floating_element">
                Sansbound Azure Class Page
            </span>
        </div>
<!--    <div class="table_of_contents floating_element">
        <div class="section_header section_header_grey">
            TABLE OF CONTENTS
        </div>
-->
```

:wq

Type public IP address of the Ubuntu in browser and then press “Enter”.

Now you have got the customized web page named as “**Sansbound Azure Class Page**”.



The screenshot shows a web browser window with the title "Apache2 Ubuntu Default Page: It". The URL bar indicates "Not secure | 13.71.80.138". The main content is a customized Apache2 default page titled "Sansbound Azure Class Page". The page includes the Ubuntu logo and a red banner with the word "ubuntu". A yellow button labeled "It works!" is highlighted with a yellow oval. The text on the page explains the default welcome page and provides a configuration overview with a code snippet:

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

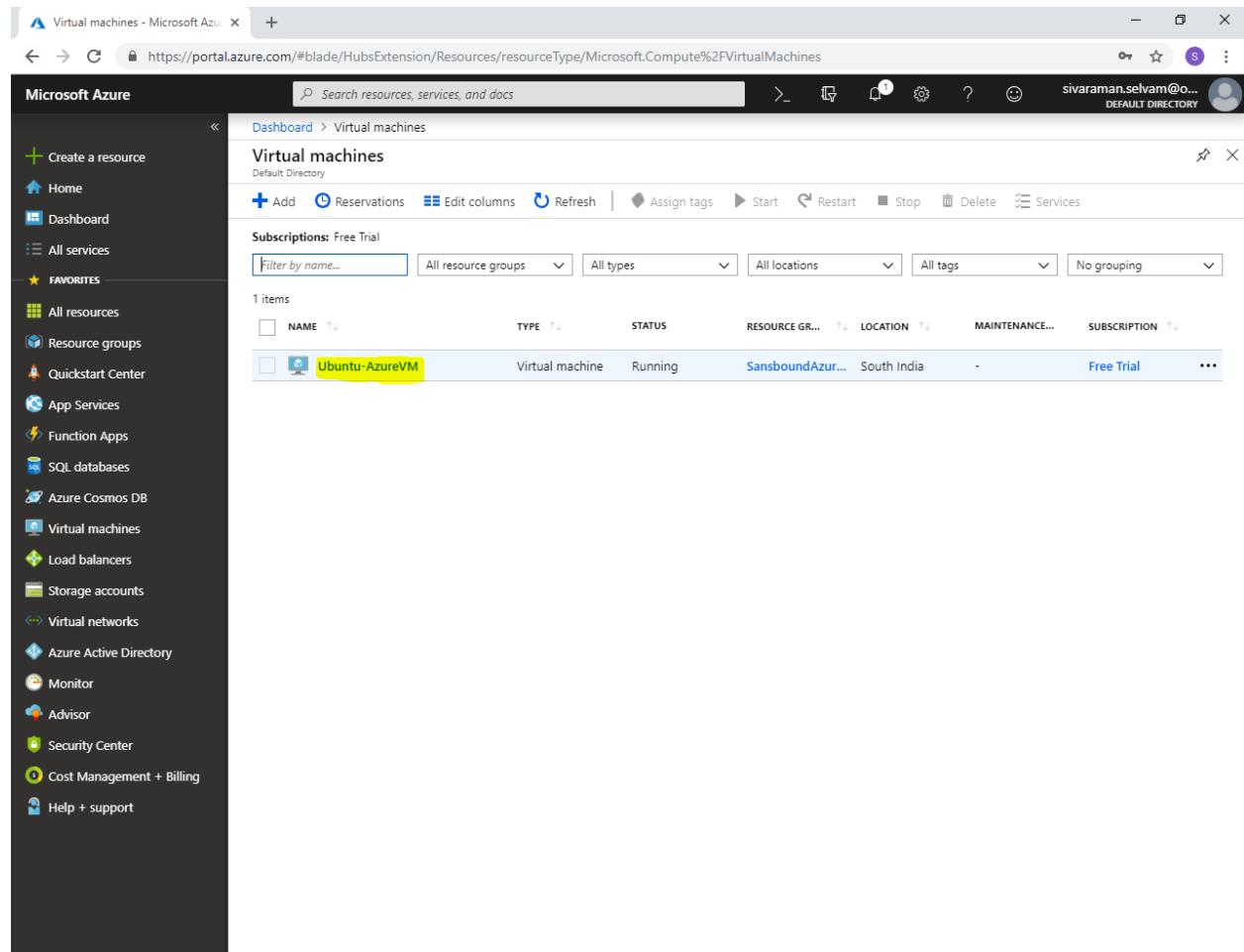
The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

- `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

Now we have required to “**Capture**” the existing Ubuntu Virtual machine.

In “**Virtual machines**”

Click “**Ubuntu-AzureVM**”.

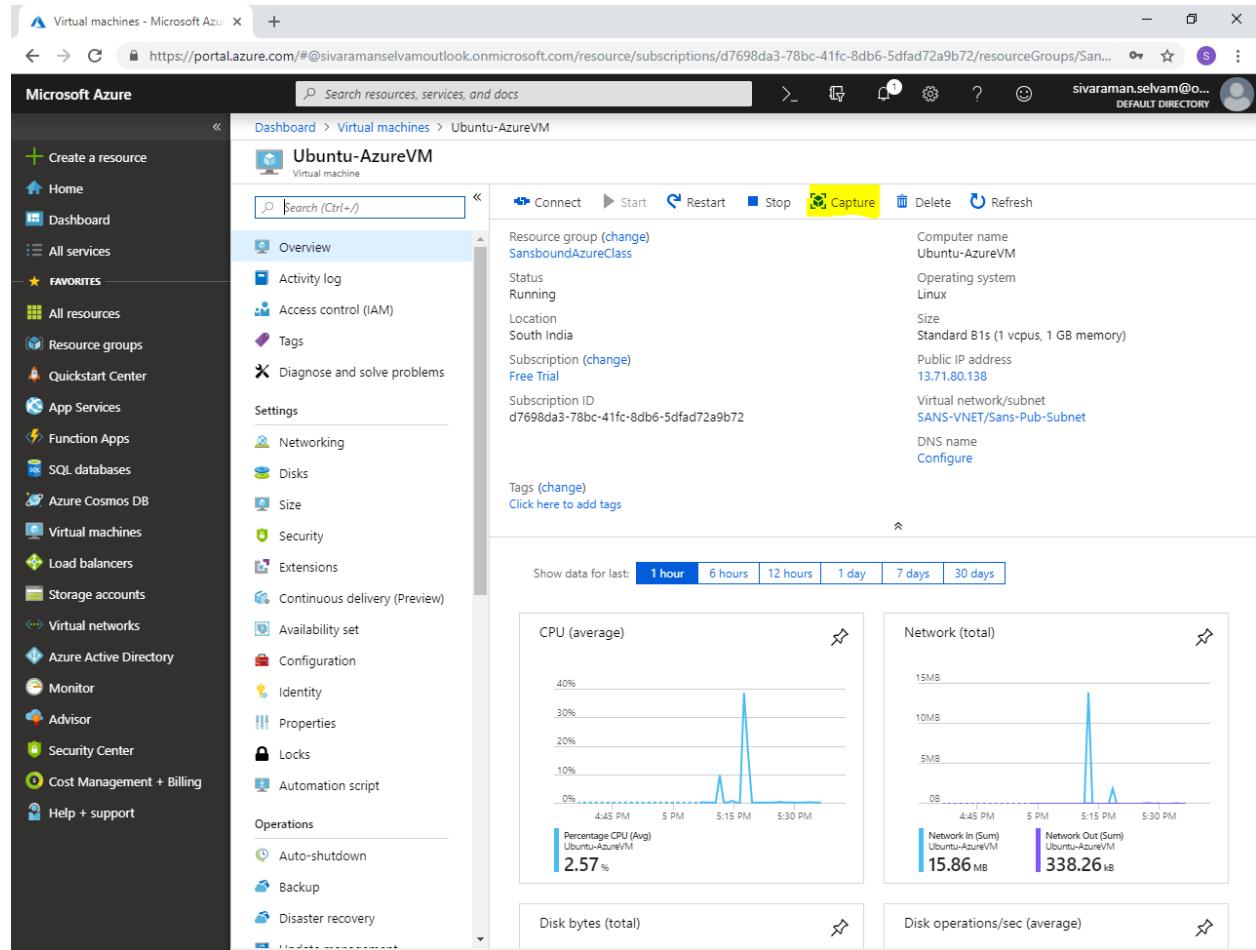


The screenshot shows the Microsoft Azure portal interface. The left sidebar navigation bar includes options like Home, Dashboard, All services, Favorites (with All resources selected), Resource groups, Quickstart Center, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines (selected), Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support. The main content area is titled "Virtual machines" under "Dashboard > Virtual machines". It displays a table with one item: "Ubuntu-AzureVM". The table columns are NAME, TYPE, STATUS, RESOURCE GRP..., LOCATION, MAINTENANCE..., and SUBSCRIPTION. The "Ubuntu-AzureVM" row is highlighted with a yellow background. The status is "Running", located is "South India", and the subscription is "Free Trial".

NAME	TYPE	STATUS	RESOURCE GRP...	LOCATION	MAINTENANCE...	SUBSCRIPTION
Ubuntu-AzureVM	Virtual machine	Running	SansboundAzur...	South India	-	Free Trial

In “Ubuntu-AzureVM” you are able see that “**Capture**” option is available to capture the Virtual Machine as “**Image**”. This feature is only available in Managed disks only.

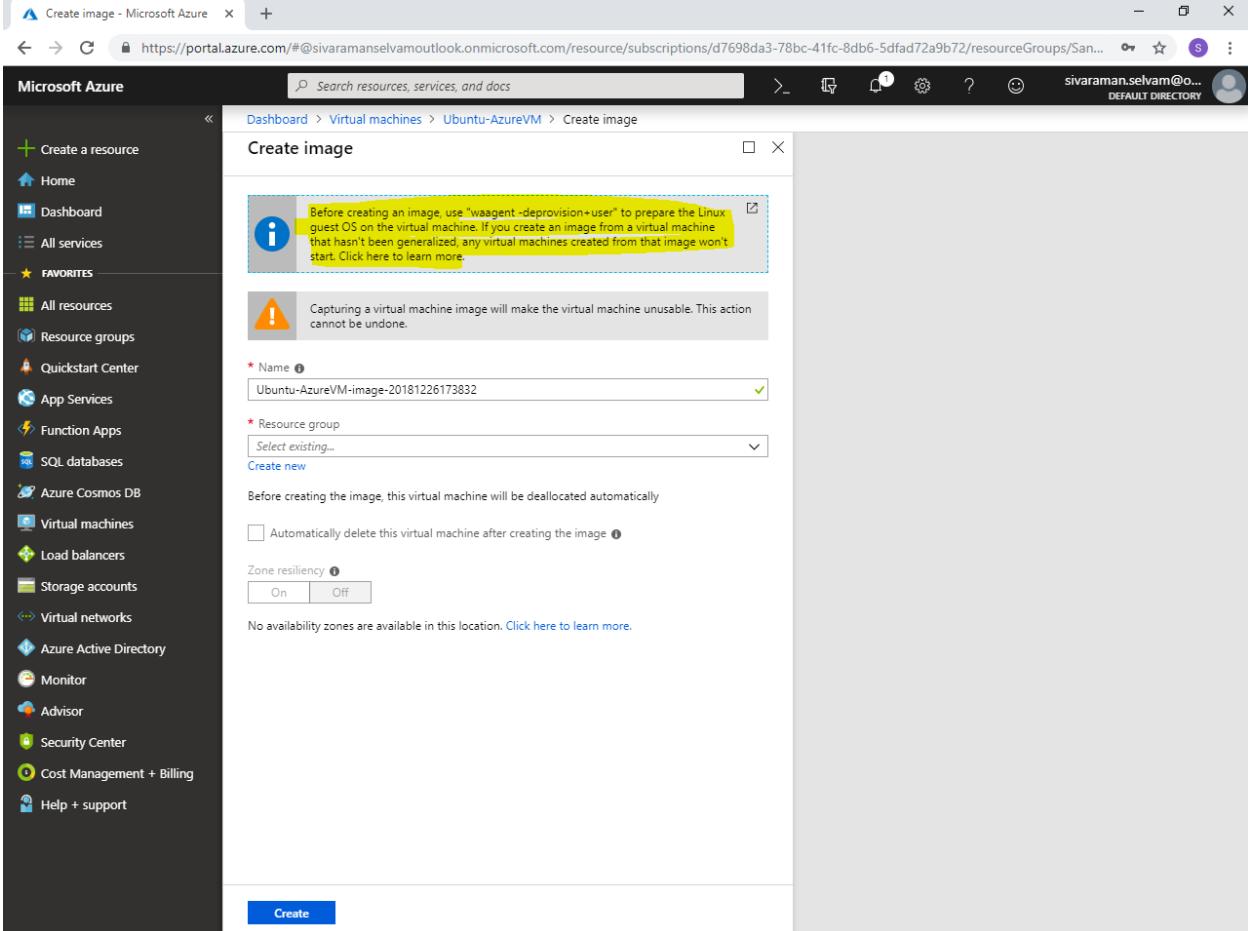
Click “**Capture**”.



The screenshot shows the Microsoft Azure portal interface for managing a virtual machine named "Ubuntu-AzureVM". The left sidebar contains a navigation menu with various services like Home, Dashboard, All services, and Favorites. Under Favorites, "Virtual machines" is selected. The main content area displays the "Ubuntu-AzureVM" details. At the top right, there are buttons for Connect, Start, Stop, Capture (which is highlighted in yellow), Delete, Refresh, and other account-related options. Below these buttons, detailed information about the VM is listed, including its resource group, status (Running), location (South India), subscription (Free Trial), and public IP address (13.71.80.138). On the left, a sidebar provides links to Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Networking, Disks, Size, Security, Extensions, Continuous delivery (Preview)), Availability set, Configuration, Identity, Properties, Locks, Automation script, and Operations (Auto-shutdown, Backup, Disaster recovery). At the bottom, four performance charts are shown: CPU (average), Network (total), Disk bytes (total), and Disk operations/sec (average). The CPU chart shows a peak at 5:15 PM. The Network chart shows a sharp spike in both Network In and Network Out at 5:15 PM. The Disk charts show total bytes and average disk operations per second over time.

While trying to create “Image” it shows a warning message to complete prerequisite to run below mentioned command in Ubuntu

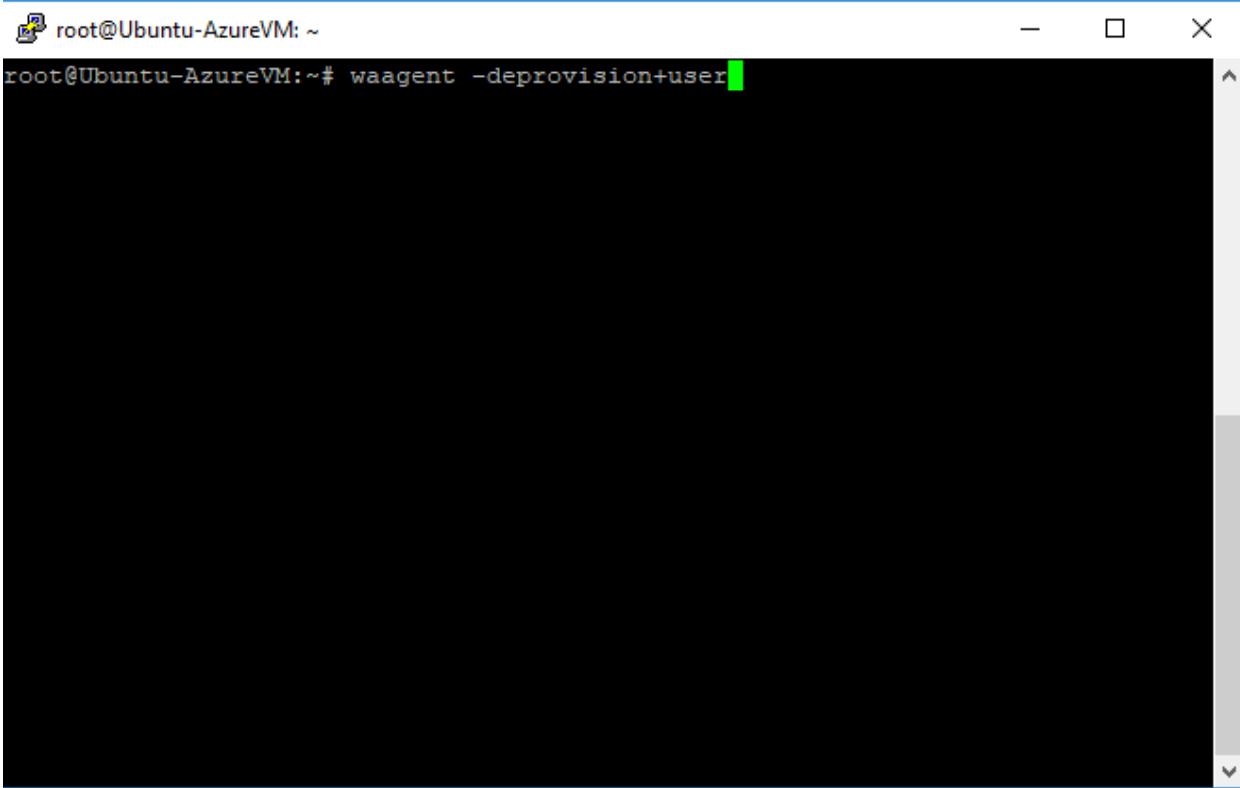
“waagent –deprovision+user”



The screenshot shows the Microsoft Azure portal interface for creating a virtual machine image. The left sidebar lists various services like Home, Dashboard, All services, and Favorites. The main area shows the 'Create image' dialog for an 'Ubuntu-AzureVM' virtual machine. A prominent yellow warning box at the top states: 'Before creating an image, use "waagent -deprovision+user" to prepare the Linux guest OS on the virtual machine. If you create an image from a virtual machine that hasn't been generalized, any virtual machines created from that image won't start. Click here to learn more.' Below this, a grey box contains a warning icon and the text: 'Capturing a virtual machine image will make the virtual machine unusable. This action cannot be undone.' The dialog form includes fields for 'Name' (set to 'Ubuntu-AzureVM-image-20181226173832') and 'Resource group' (set to 'Select existing...'). There are also checkboxes for 'Automatically delete this virtual machine after creating the image' and 'Zone resiliency' (with options 'On' or 'Off'). At the bottom is a large blue 'Create' button.

In Ubuntu machine,

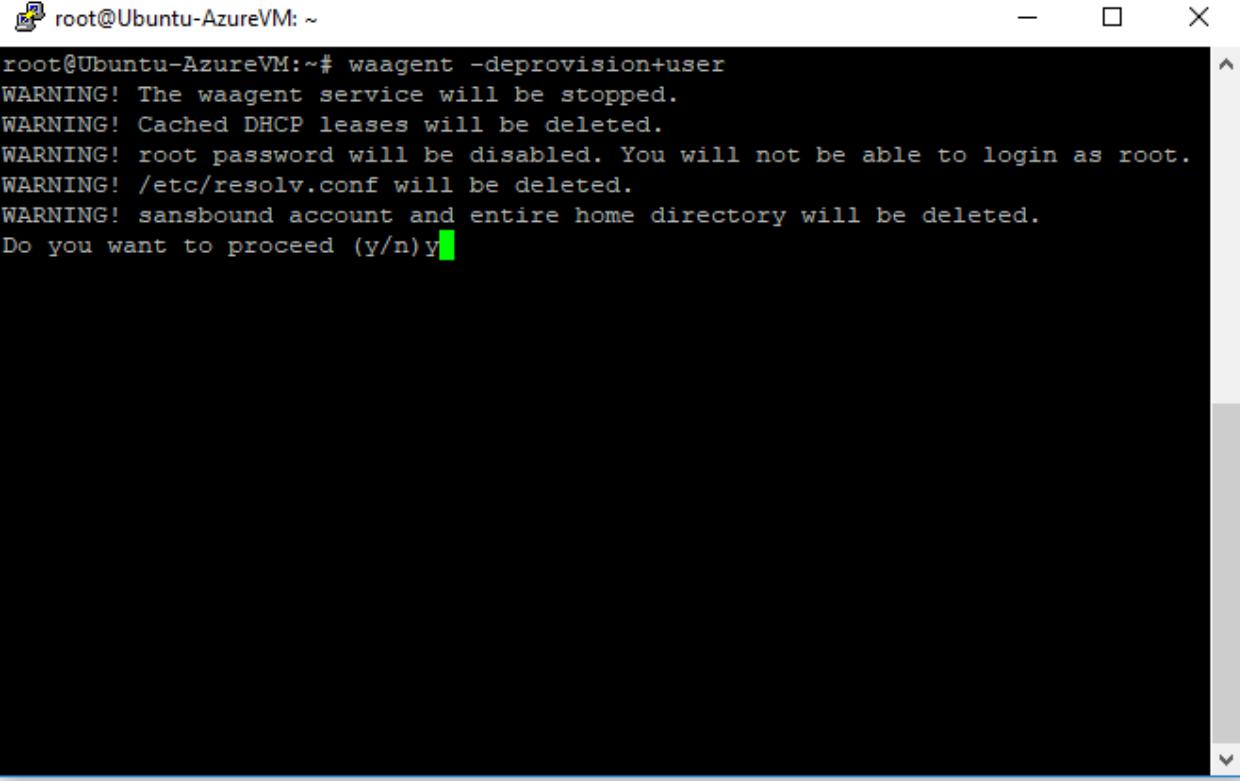
Type “**waagent –deprovision+user**” and press “**Enter**”.



A screenshot of a terminal window titled "root@Ubuntu-AzureVM: ~". The window contains the command "root@Ubuntu-AzureVM:~# waagent -deprovision+user" followed by a green cursor. The rest of the terminal window is black, indicating it is waiting for the command to complete.

Data in entire home directory will be deleted.

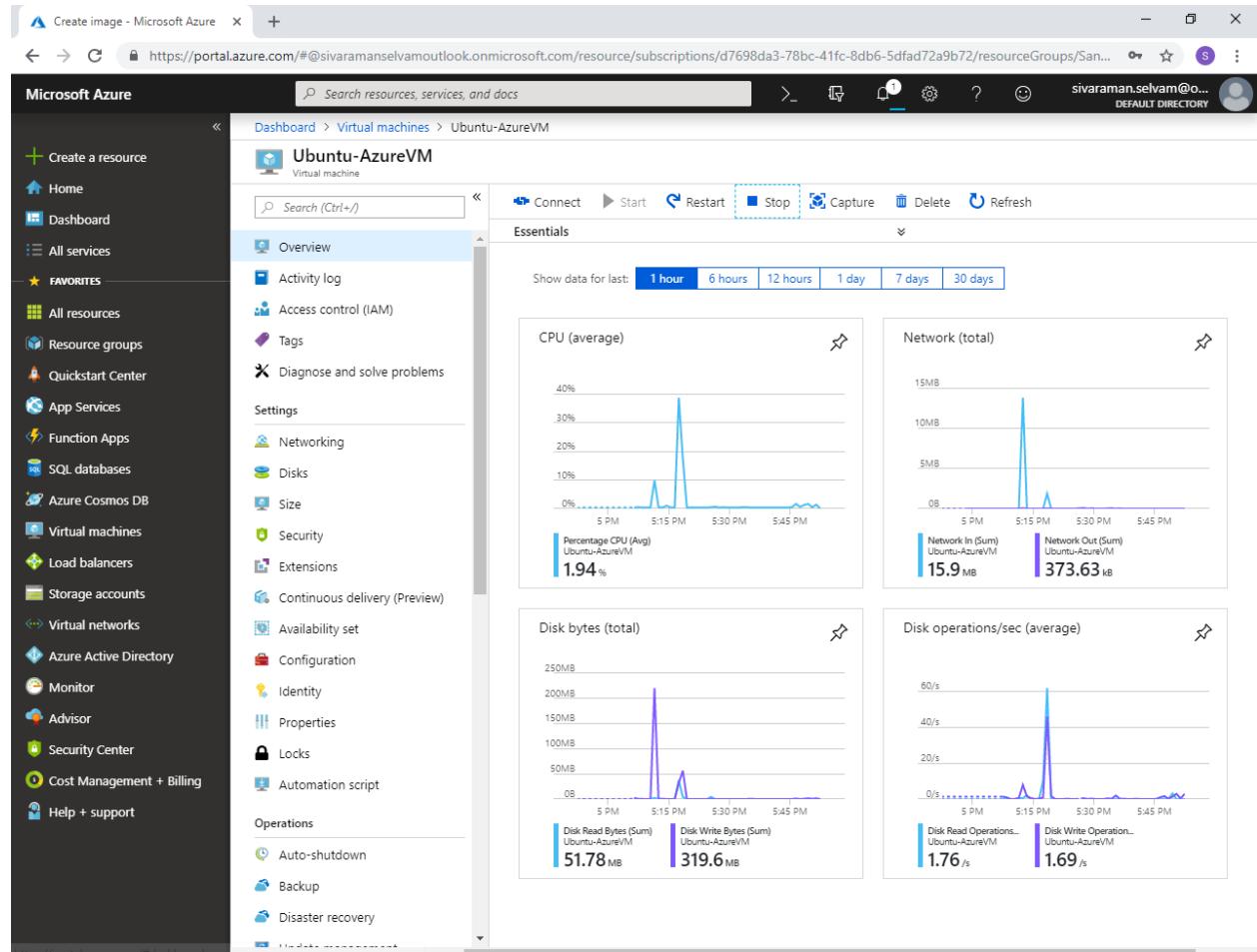
Press “**y**” and press “**Enter**” to delete the home directory data.



The screenshot shows a terminal window titled "root@Ubuntu-AzureVM: ~". The window contains the following text:

```
root@Ubuntu-AzureVM:~# waagent -deprovision+user
WARNING! The waagent service will be stopped.
WARNING! Cached DHCP leases will be deleted.
WARNING! root password will be disabled. You will not be able to login as root.
WARNING! /etc/resolv.conf will be deleted.
WARNING! sansbound account and entire home directory will be deleted.
Do you want to proceed (y/n)y
```

Select “Ubuntu-AzureVM” and click “Stop”.



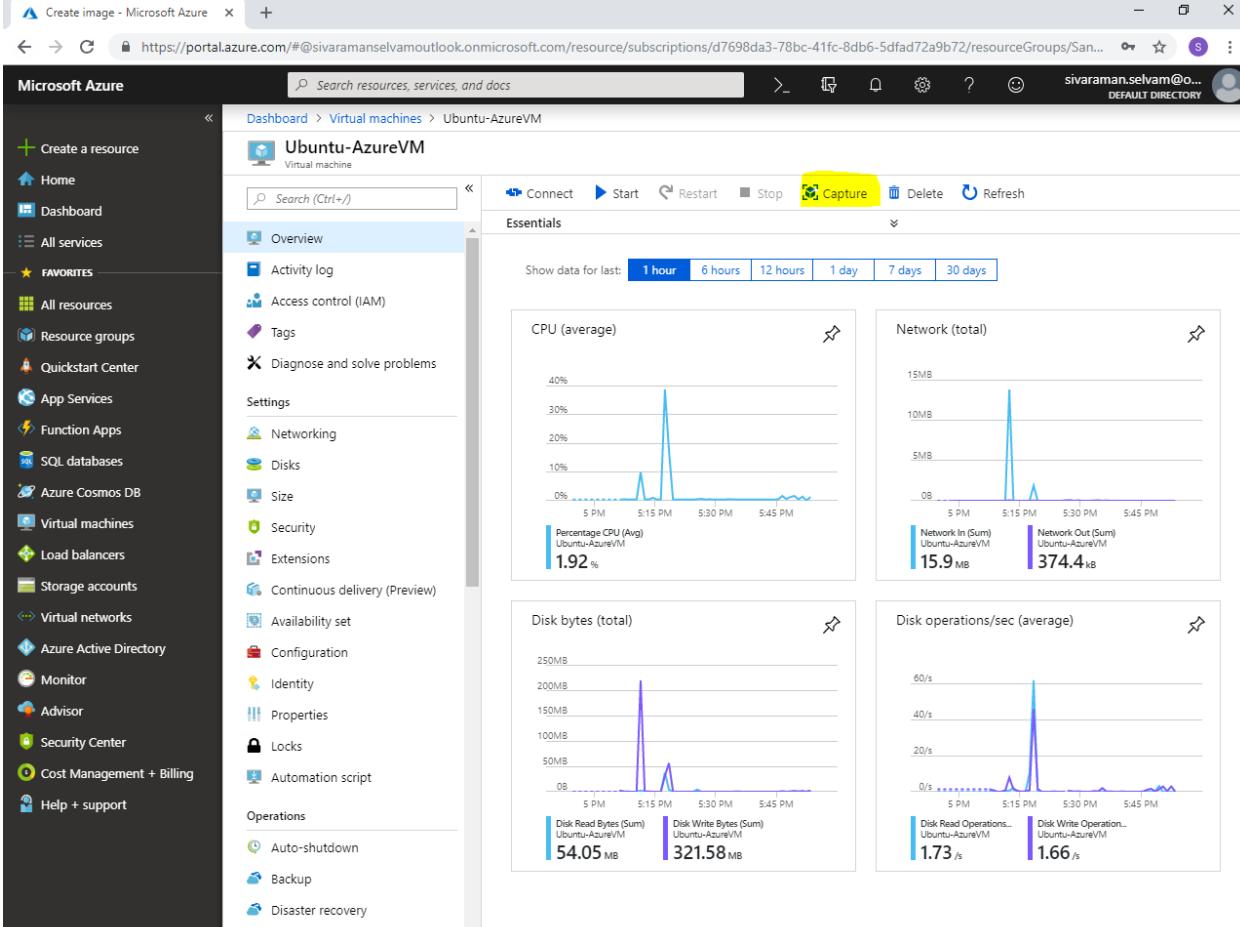
The screenshot shows the Microsoft Azure portal interface. On the left, the navigation menu is visible with various service icons. In the center, the 'Ubuntu-AzureVM' virtual machine details are displayed under the 'Virtual machines' section. The top navigation bar includes buttons for Create image, Home, Dashboard, and several others. The main area shows the 'Overview' tab selected, displaying four performance charts: CPU (average), Network (total), Disk bytes (total), and Disk operations/sec (average). Each chart includes specific data points for the Ubuntu-AzureVM instance.

Chart Type	Series	Value
CPU (average)	Percentage CPU (Avg) Ubuntu-AzureVM	1.94 %
	Network In (Sum) Ubuntu-AzureVM	15.9 MB
Network (total)	Network Out (Sum) Ubuntu-AzureVM	373.63 kB
	Disk Read Bytes (Sum) Ubuntu-AzureVM	51.78 MB
Disk bytes (total)	Disk Write Bytes (Sum) Ubuntu-AzureVM	319.6 MB
	Disk Read Operations.. Ubuntu-AzureVM	1.76 /s
Disk operations/sec (average)	Disk Write Operation.. Ubuntu-AzureVM	1.69 /s

In “Ubuntu-AzureVM”.

Ensure that “Ubuntu-AzureVM” is in stopped state.

Click “**Capture**” to capture the Virtual machine.

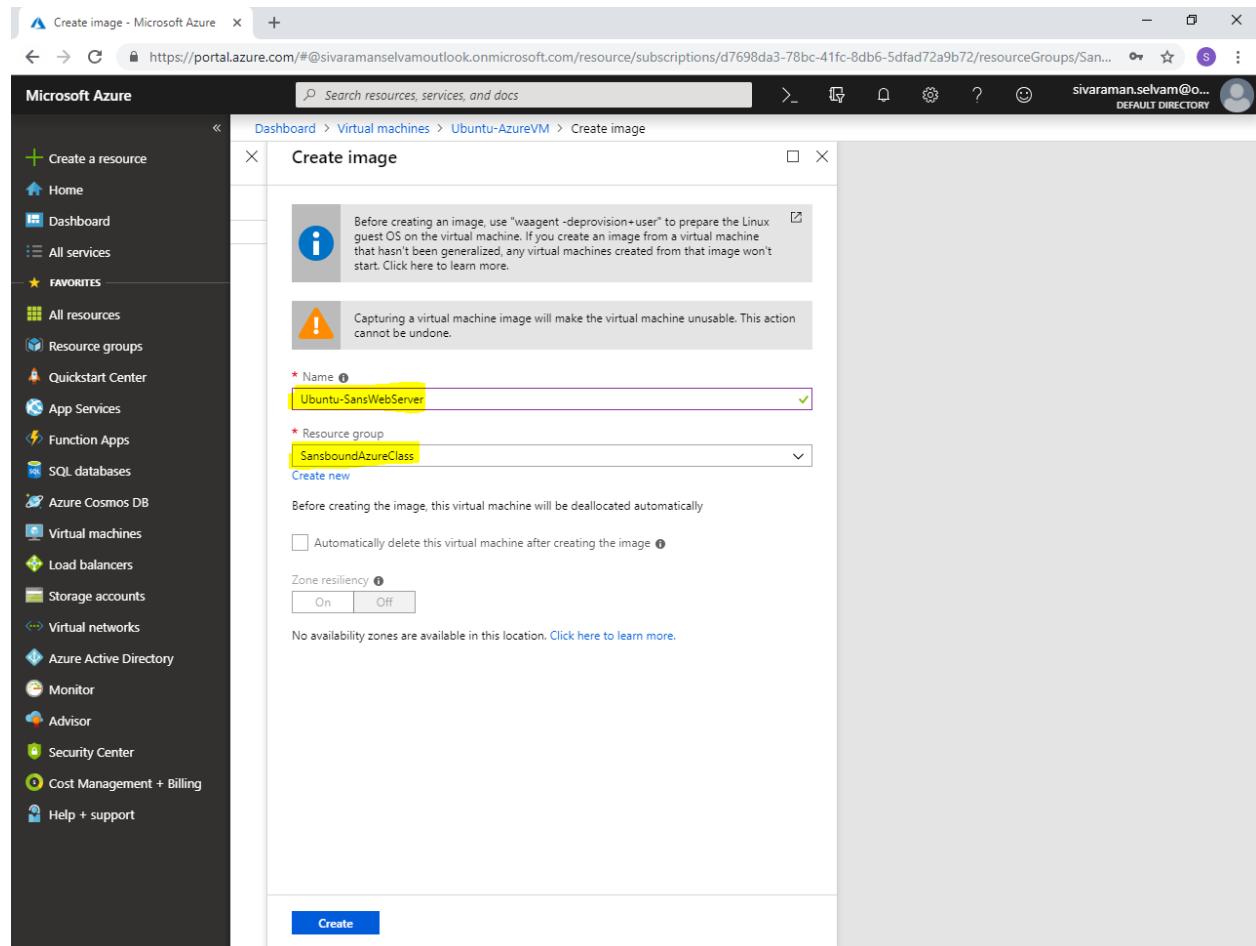


The screenshot shows the Microsoft Azure portal interface. On the left, the sidebar lists various services under 'All resources'. The main area displays the 'Ubuntu-AzureVM' virtual machine details. The 'Overview' tab is selected. At the top right, there are several buttons: 'Connect', 'Start', 'Restart', 'Stop', 'Capture' (which is highlighted with a yellow box), 'Delete', and 'Refresh'. Below these buttons, there's a dropdown menu for time intervals: '1 hour', '6 hours', '12 hours', '1 day', '7 days', and '30 days'. The '1 hour' option is selected. The page then displays four performance charts: 'CPU (average)', 'Network (total)', 'Disk bytes (total)', and 'Disk operations/sec (average)'. Each chart includes specific data points labeled at the bottom.

Chart Type	Series	Value
CPU (average)	Percentage CPU Avg	1.92 %
	Ubuntu-AzureVM	
Network (total)	Network In (Sum)	15.9 MB
	Ubuntu-AzureVM	
Disk bytes (total)	Disk Read Bytes (Sum)	54.05 MB
	Ubuntu-AzureVM	
Disk operations/sec (average)	Disk Read Operations..	1.73 /s
	Ubuntu-AzureVM	
	Disk Write Operation..	1.66 /s
	Ubuntu-AzureVM	

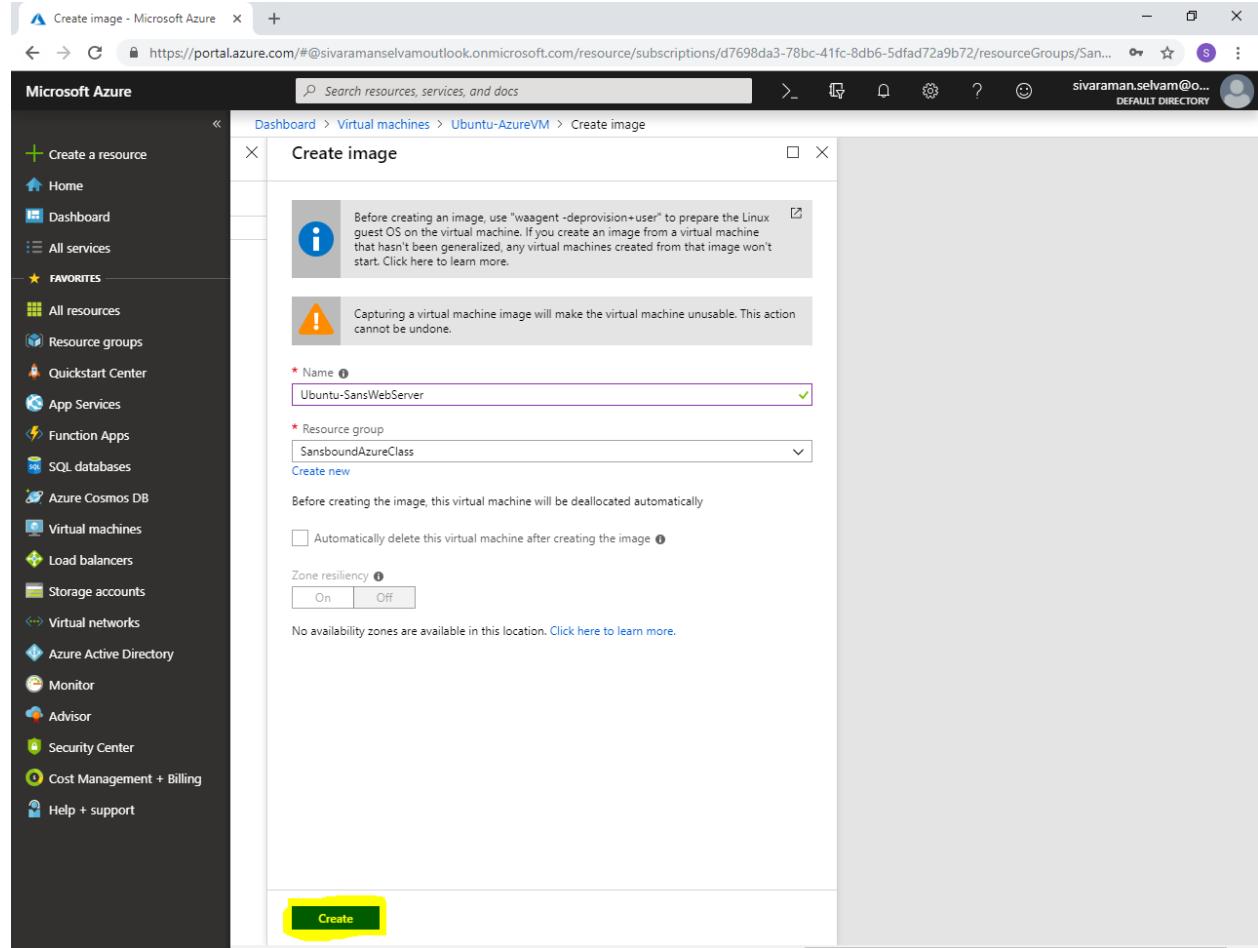
Type the **Image name** as “**Ubuntu-SansWebServer**”.

Select “**Resource group**” as “**SansboundAzureClass**”.



The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with various service icons like Home, Dashboard, All services, Favorites, and more. The main area shows a breadcrumb path: Dashboard > Virtual machines > Ubuntu-AzureVM > Create image. A modal window titled "Create image" is open. Inside, there are informational messages about preparing the Linux guest OS and capturing the virtual machine image. The "Name" field is highlighted with a yellow background and contains the text "Ubuntu-SansWebServer". The "Resource group" dropdown menu is open, showing "SansboundAzureClass" selected. Below these fields, there are options to automatically delete the VM after creation and to enable zone resiliency (with "On" and "Off" radio buttons). At the bottom of the modal is a blue "Create" button.

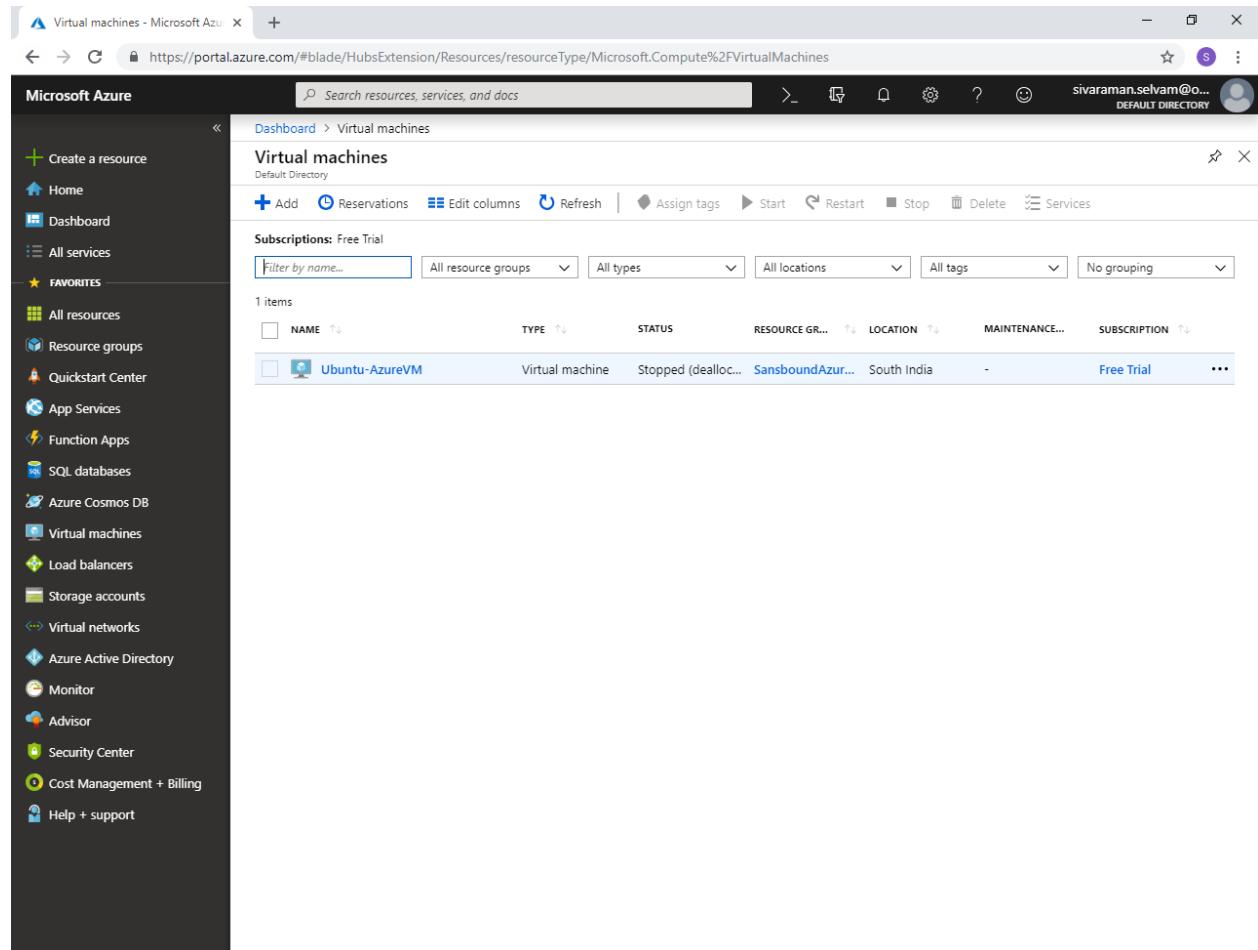
Click “Create”.



You will get a message once you have successfully captured the virtual machine.

Now, I have required to build a new virtual machine by using Captured image.

In “Virtual machines” click “**Add**” to create a new virtual machine.



The screenshot shows the Microsoft Azure portal interface. The left sidebar is the navigation menu with various service icons. The main content area is titled "Virtual machines" under the "Dashboard" section. At the top of the main area, there are several buttons: "+ Add", "Reservations", "Edit columns", "Refresh", "Assign tags", "Start", "Restart", "Stop", "Delete", and "Services". Below these buttons, there is a search bar labeled "Search resources, services, and docs" and a link to "Dashboard > Virtual machines". The table below lists one item:

	NAME	TYPE	STATUS	RESOURCE GR...	LOCATION	MAINTENANCE...	SUBSCRIPTION
<input type="checkbox"/>	Ubuntu-AzureVM	Virtual machine	Stopped (deallocat...)	SansboundAzur...	South India	-	Free Trial

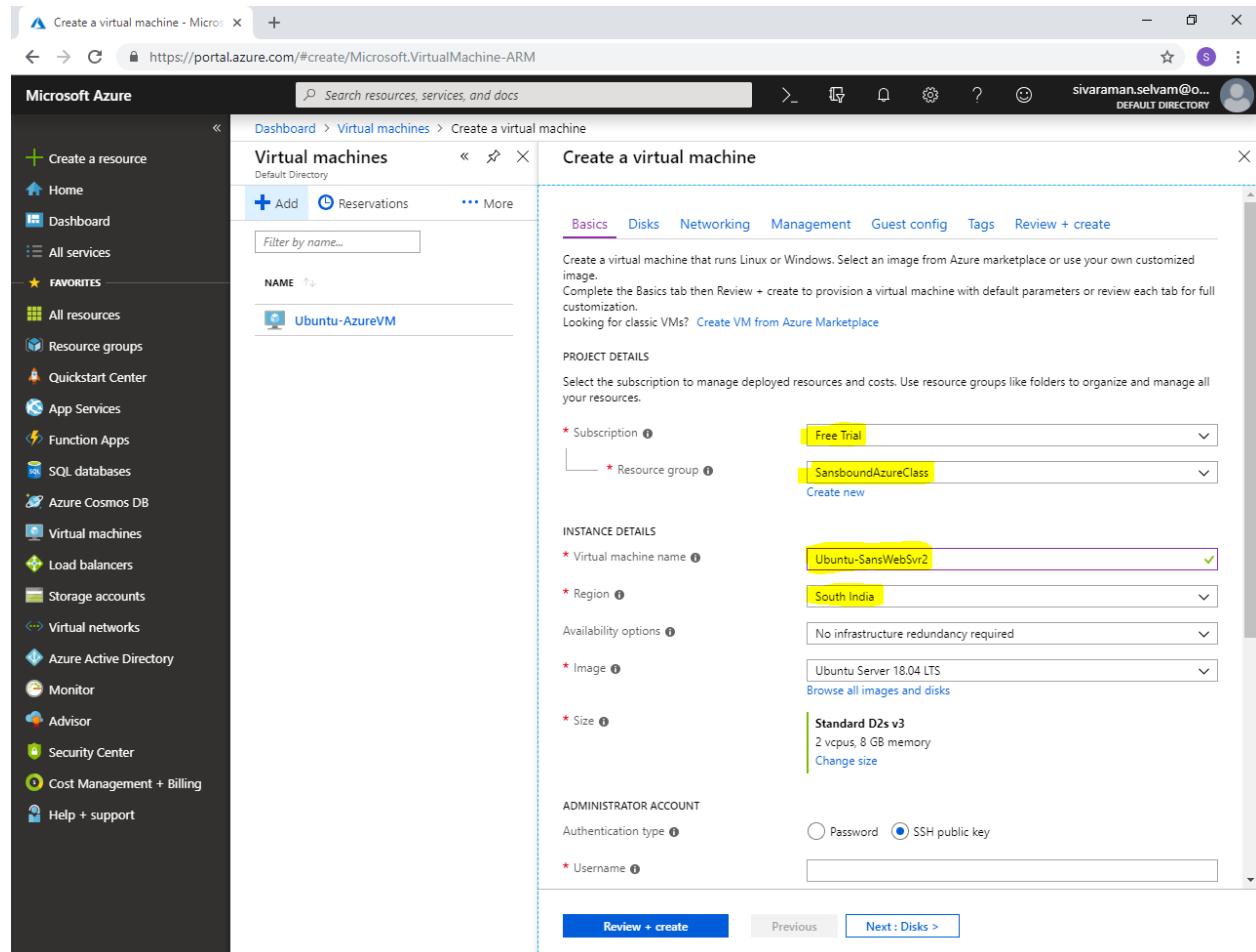
While creating Virtual machine,

Select “Subscription” as “Free Trial”.

Select “Resource group” as “SansboundAzureClass”.

In “Virtual machine name” type name as “Ubuntu-SansWebSvr2”.

Select “Region” as “South India”.

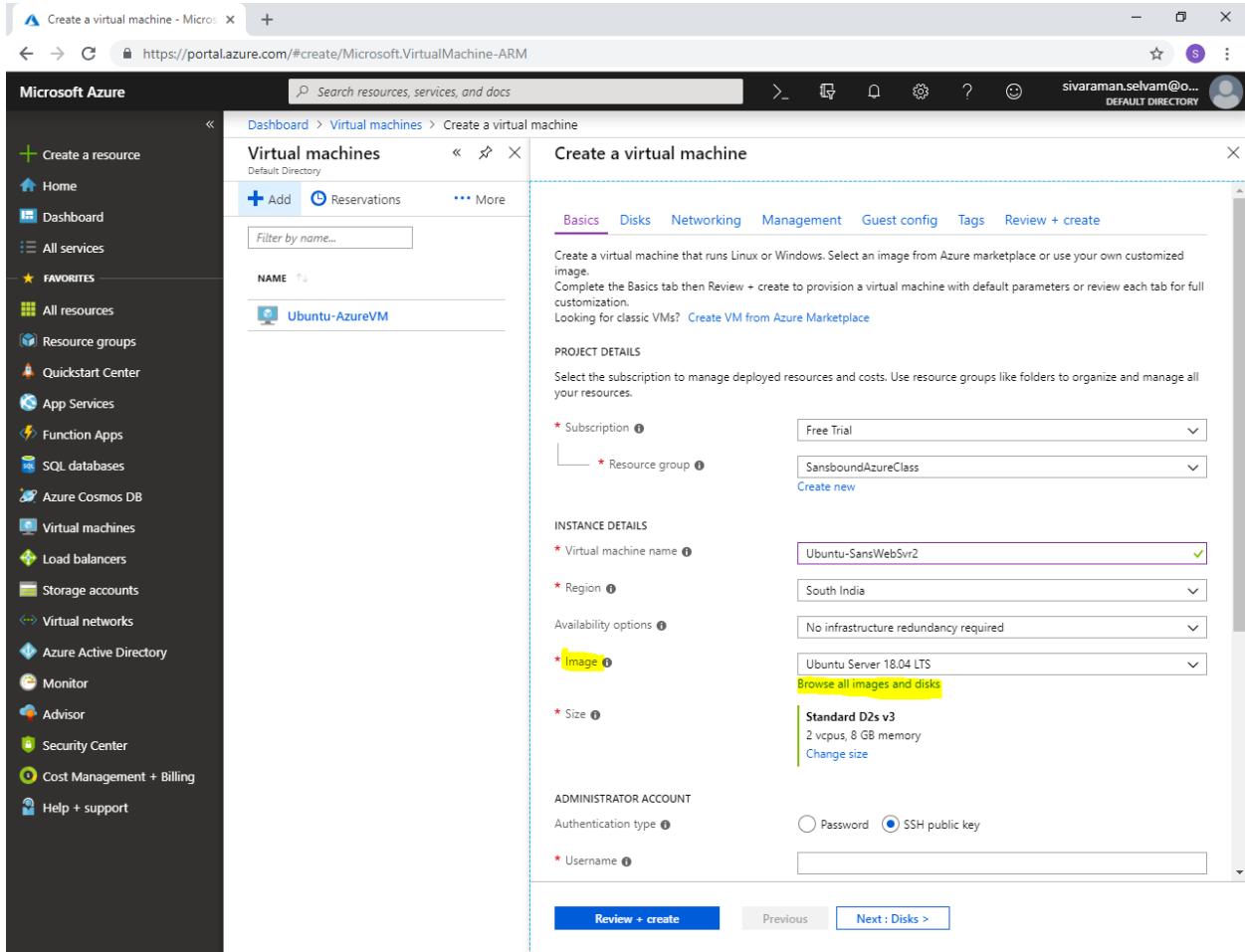


The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. On the left, the navigation menu is visible with various service icons. The main area is titled "Create a virtual machine" under the "Virtual machines" section. The "Basics" tab is selected, showing the configuration details:

- Subscription:** Free Trial (highlighted)
- Resource group:** SansboundAzureClass (highlighted)
- Virtual machine name:** Ubuntu-SansWebSvr2 (highlighted)
- Region:** South India (highlighted)
- Image:** Ubuntu Server 18.04 LTS (highlighted)
- Size:** Standard D2s v3 (highlighted)

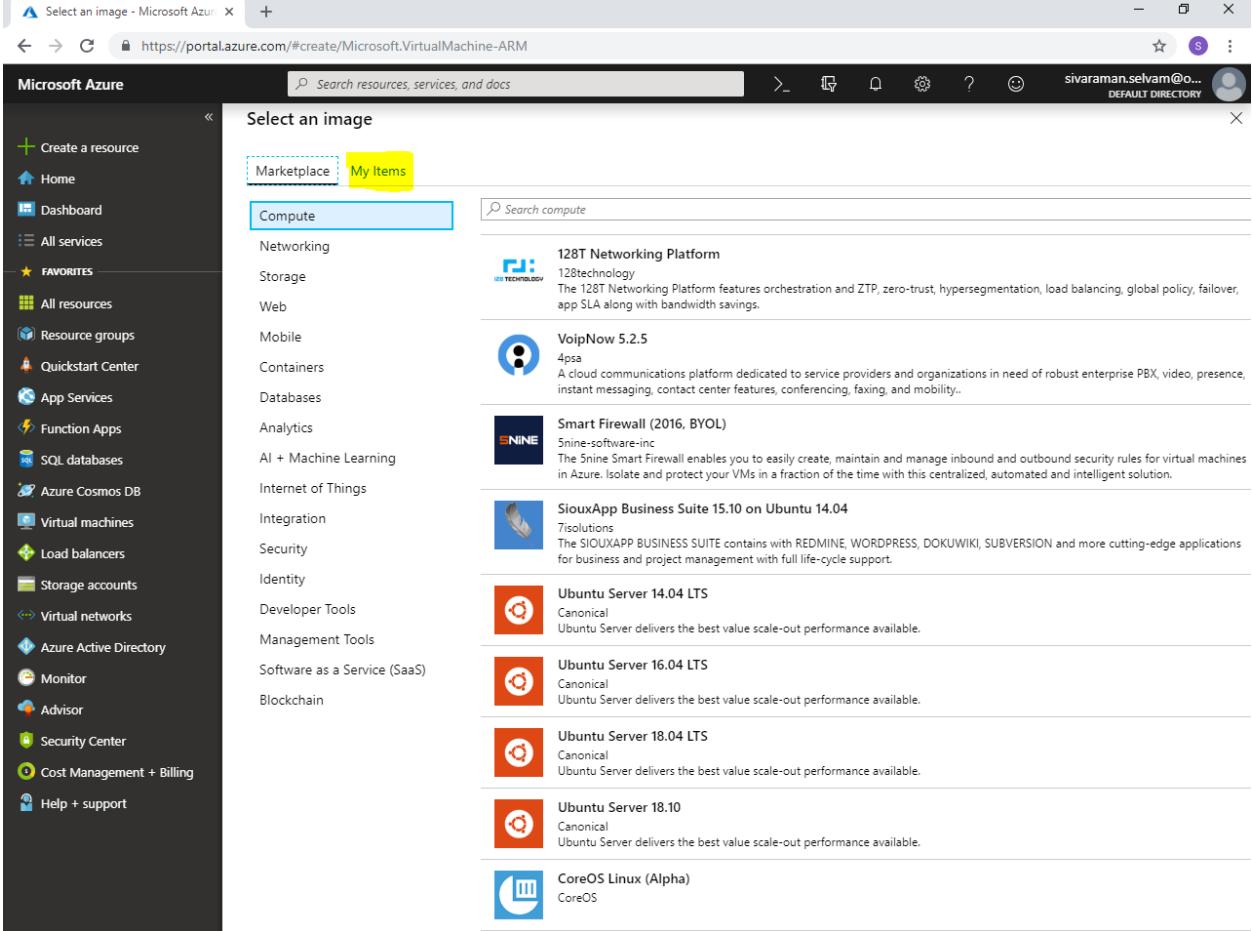
At the bottom of the screen, there are "Review + create", "Previous", and "Next : Disks >" buttons.

In “Image” you have required to select customized image which you have captured by using **Managed disks**. So click “**Browse all images and disks**”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. On the left, the navigation menu is visible with various service icons. The main area shows the 'Virtual machines' blade with a list of existing VMs, including 'Ubuntu-AzureVM'. The right side displays the 'Create a virtual machine' wizard. The 'Basics' tab is selected. In the 'INSTANCE DETAILS' section, under the 'Image' field, the 'Ubuntu Server 18.04 LTS' option is selected, and the link 'Browse all images and disks' is highlighted with a yellow box. Other fields in this section include 'Virtual machine name' (Ubuntu-SansWebSrv2), 'Region' (South India), and 'Size' (Standard D2s v3). Below this, the 'ADMINISTRATOR ACCOUNT' section shows 'Authentication type' set to 'SSH public key' and a 'Username' field.

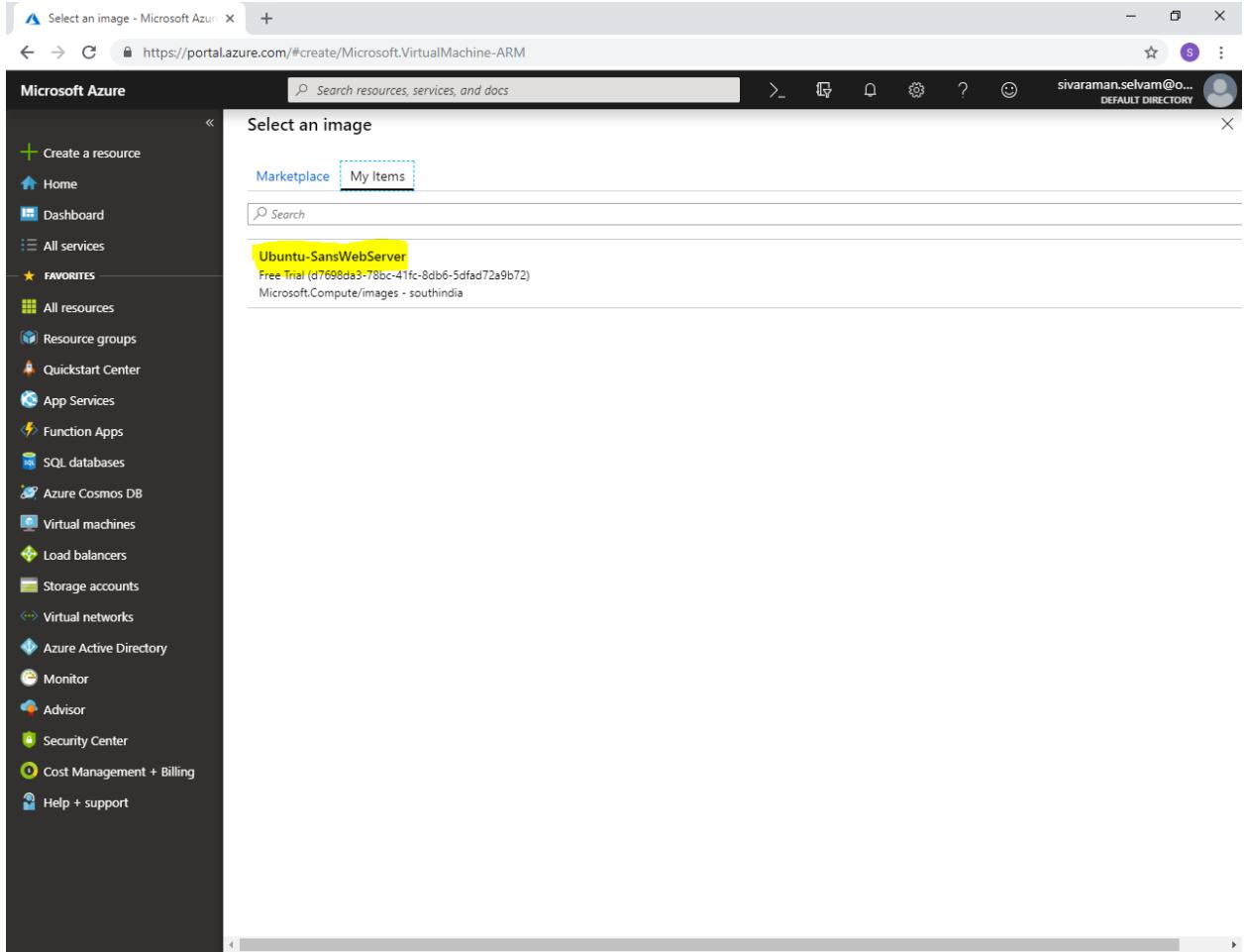
You need to click on “**My Items**” to view your own images.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains a navigation menu with various service icons and links. The main content area is titled "Select an image" and has tabs for "Marketplace" and "My Items". The "Marketplace" tab is active, and the "Compute" category is selected. A search bar labeled "Search compute" is present. Below the search bar, there is a list of compute images with their names, providers, and brief descriptions. The images listed are:

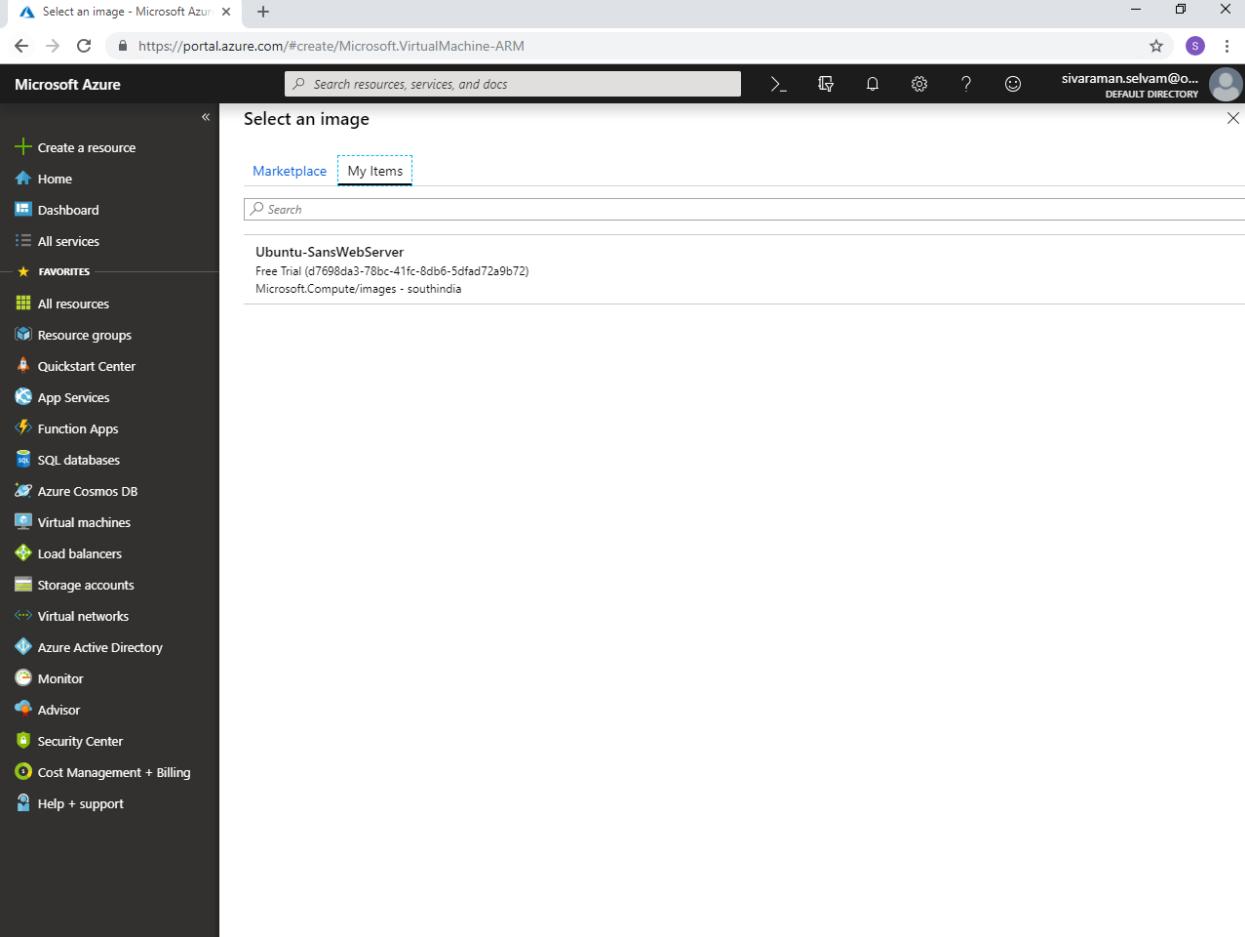
- 128T Networking Platform (128technology)
- VoipNow 5.2.5 (4psa)
- Smart Firewall (2016, BYOL) (5nine-software-inc)
- SiouxApp Business Suite 15.10 on Ubuntu 14.04 (7solutions)
- Ubuntu Server 14.04 LTS (Canonical)
- Ubuntu Server 16.04 LTS (Canonical)
- Ubuntu Server 18.04 LTS (Canonical)
- Ubuntu Server 18.10 (Canonical)
- CoreOS Linux (Alpha) (CoreOS)

Here you are able see the “Ubuntu-SansWebServer” image.



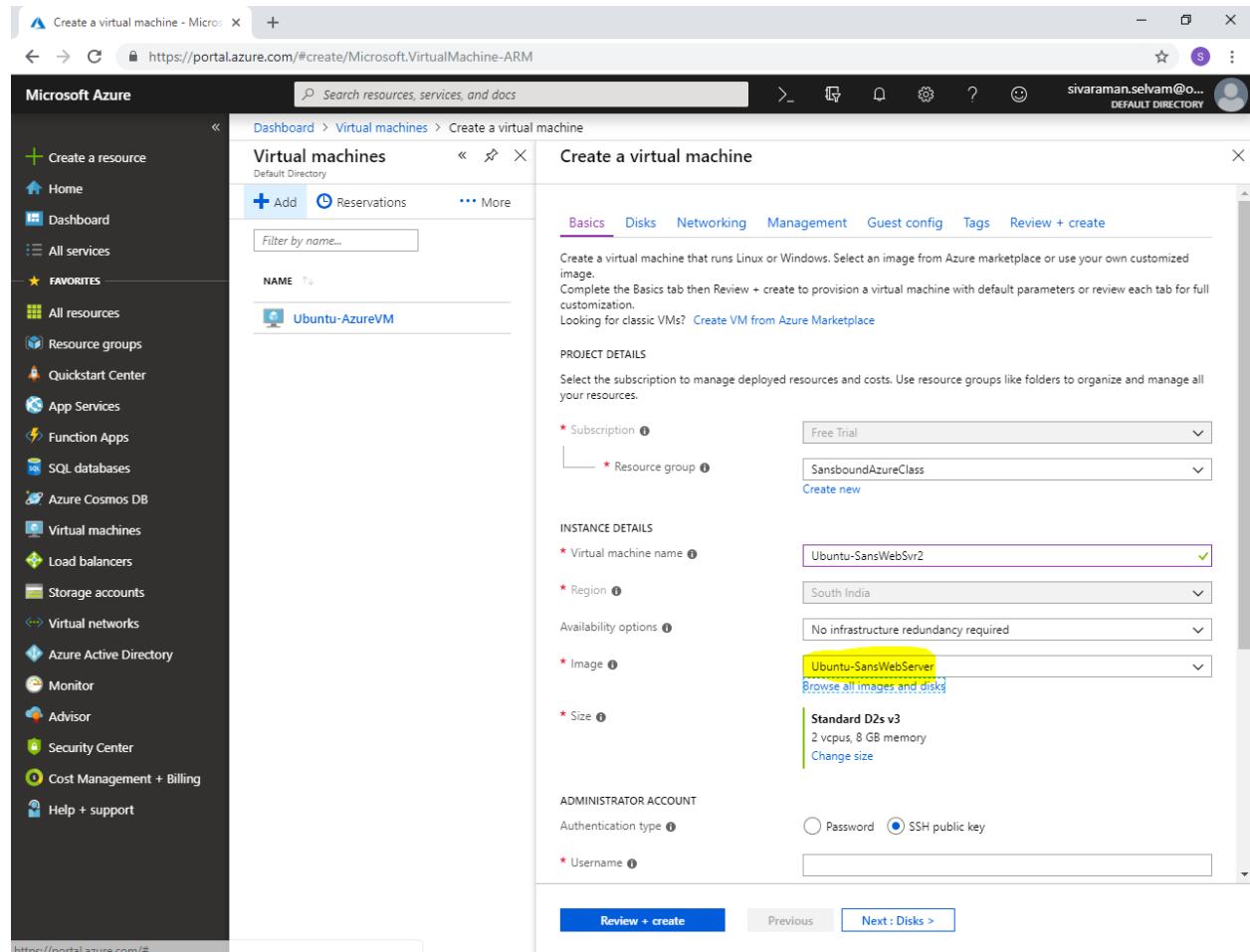
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains a list of services: Create a resource, Home, Dashboard, All services, Favorites (which includes All resources, Resource groups, Quickstart Center, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support). The main content area is titled "Select an image" and has two tabs: "Marketplace" (which is the active tab) and "My Items". A search bar is present above the list of images. The list shows one item: "Ubuntu-SansWebServer" (Free Trial (d7698da3-78bc-41fc-8db6-5dfad72a9b72)) from Microsoft.Compute/images - southindia. The "My Items" tab is also visible but not active.

Click the Image “Ubuntu-SansWebServer” to select.



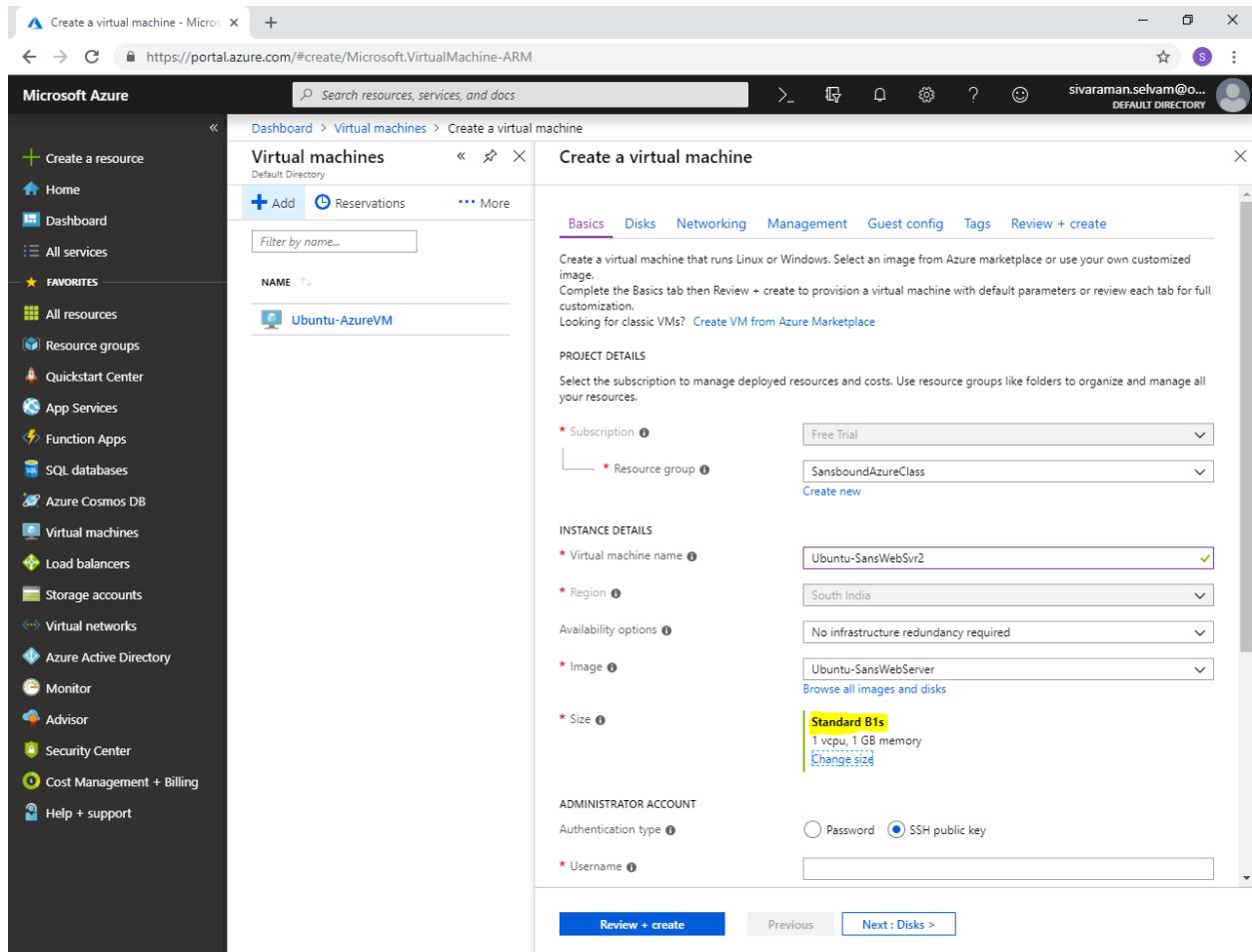
The screenshot shows the Microsoft Azure portal interface. On the left, there's a dark sidebar with various service icons and links like Home, Dashboard, All services, Favorites, and Resource groups. The main area is titled "Select an image". At the top of this area, there are two tabs: "Marketplace" and "My Items", with "My Items" being the active tab and highlighted with a dashed blue border. Below the tabs is a search bar with the placeholder "Search". Underneath the search bar, the list contains one item: "Ubuntu-SansWebServer". To the right of the item name is its identifier: "Free Trial (d7698da3-78bc-41fc-8db6-5dfad72a9b72)". Below that, it says "Microsoft.Compute/images - southindia". The entire "Select an image" dialog is set against the backdrop of the Azure portal's header and navigation bar.

In **"Image"** ensure that your customized / own image **"Ubuntu-SansWebServer"** has been selected.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar lists various services like Home, Dashboard, and Virtual machines. The main area shows the 'Create a virtual machine' wizard. The 'Virtual machines' section on the left has a 'NAME' field containing 'Ubuntu-AzureVM'. The 'Basics' tab is active, showing project details like 'Subscription' (Free Trial) and 'Resource group' (SansboundAzureClass). In the 'INSTANCE DETAILS' section, the 'Virtual machine name' is set to 'Ubuntu-SansWebSrv2', 'Region' is 'South India', and the 'Image' dropdown is set to 'Ubuntu-SansWebServer', which is highlighted with a yellow box. The 'Size' dropdown shows 'Standard D2s v3' with '2 vcpus, 8 GB memory'. The 'ADMINISTRATOR ACCOUNT' section uses 'SSH public key' authentication. At the bottom, there are 'Review + create', 'Previous', and 'Next : Disks >' buttons.

Change “VM Size” as “Standard B1s”



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, and Favorites. The main area shows the 'Virtual machines' blade with a search bar and a list of existing VMs, including 'Ubuntu-AzureVM'. The current step is 'Create a virtual machine' under the 'Basics' tab. In the 'INSTANCE DETAILS' section, the 'Virtual machine name' is set to 'Ubuntu-SansWebSrv2', 'Region' is 'South India', 'Image' is 'Ubuntu-SansWebServer', and the 'Size' is currently set to 'Standard B1s'. A tooltip for 'Standard B1s' provides details: '1 vcpu, 1 GB memory' and a 'Change size' link. Below the instance details, there's an 'ADMINISTRATOR ACCOUNT' section with options for 'Password' or 'SSH public key' and a 'Username' field.

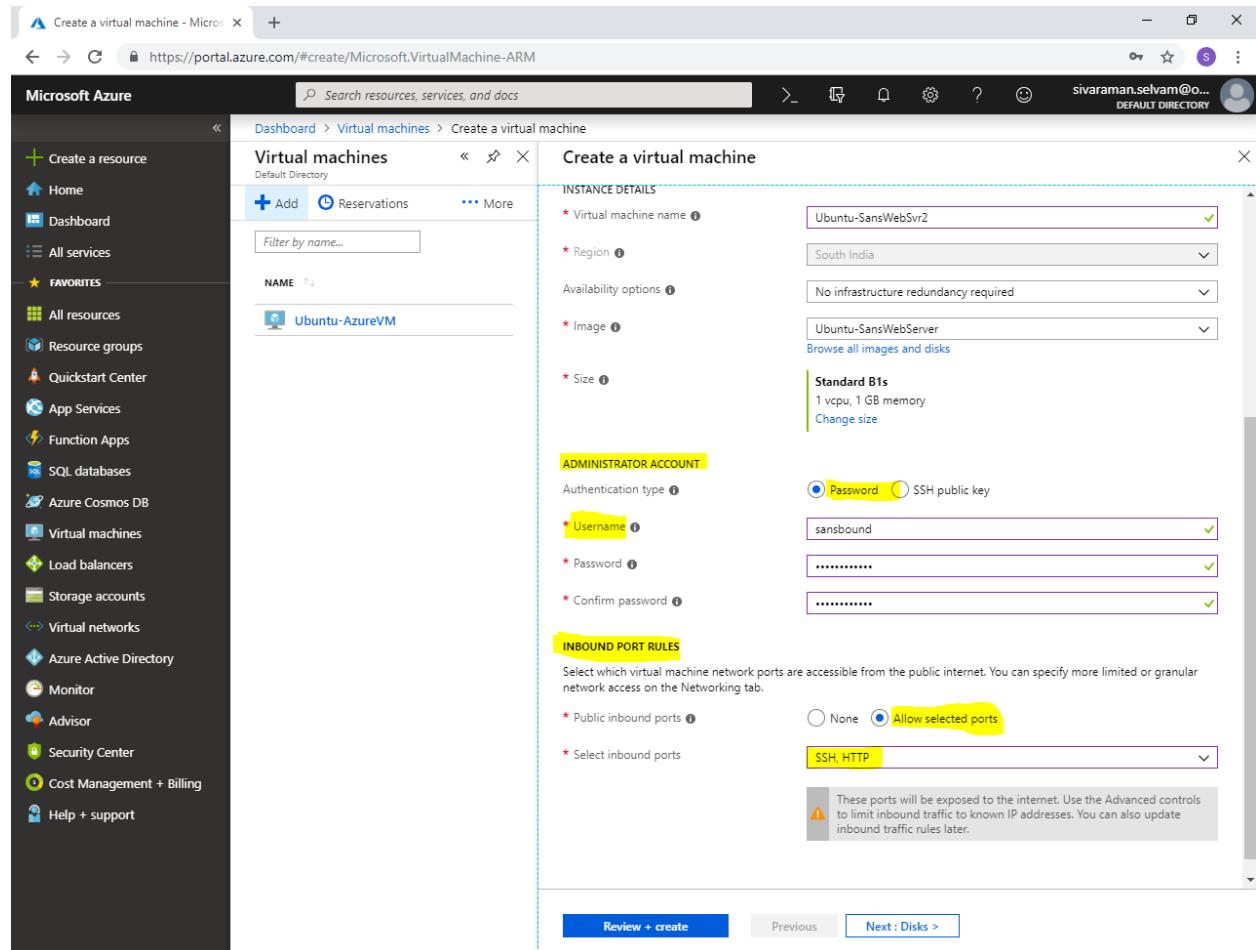
In “Administrator Account”

Set “Authentication type” as “Password”.

In “Inbound Port Rules”.

Public inbound ports as “Allow selected ports”.

In “Select inbound ports” need to check “SSH” and “HTTP”.

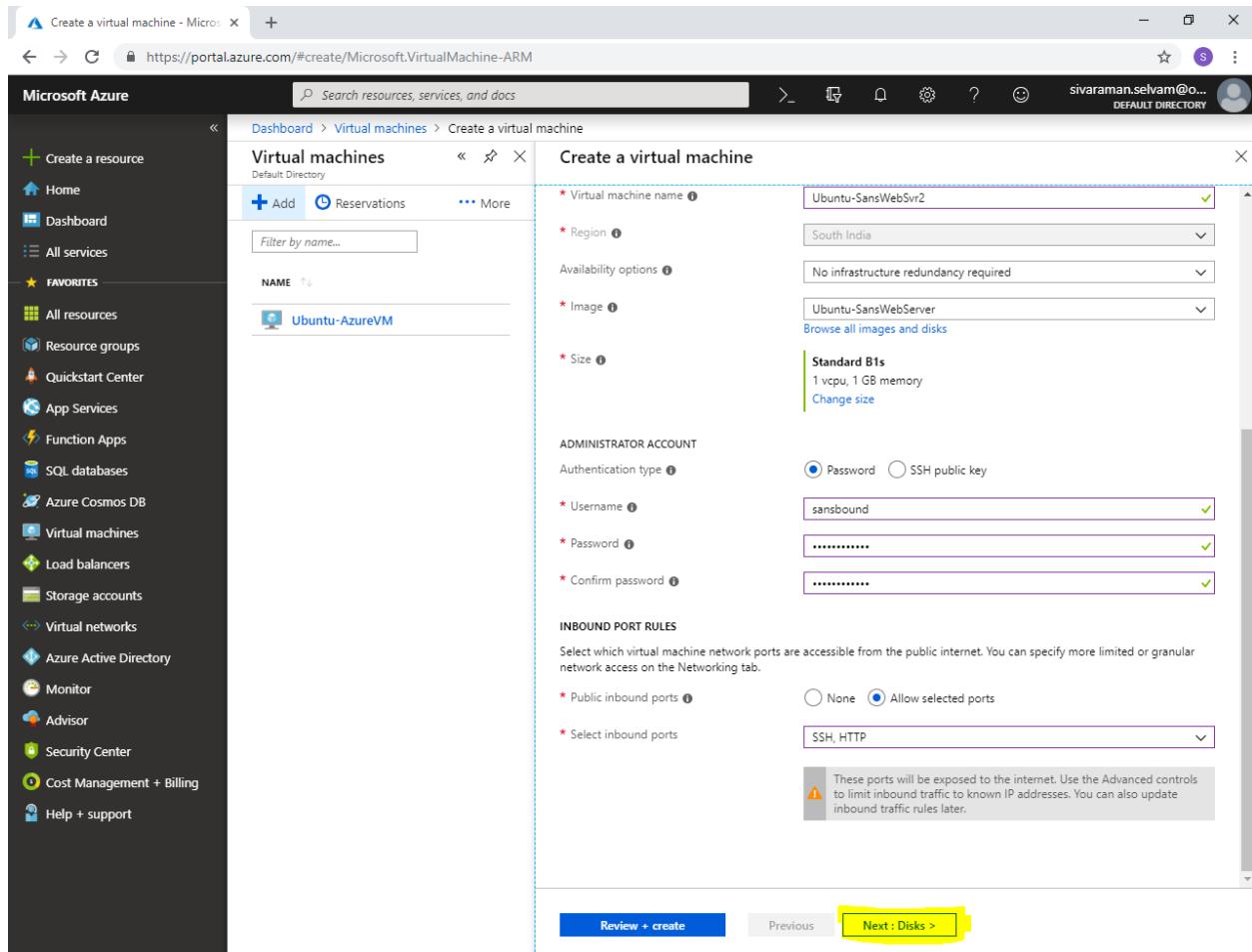


The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. On the left, the navigation menu is visible with various service icons. The main area displays the 'Virtual machines' blade under 'Default Directory'. A 'Create a virtual machine' wizard is open, showing the following configuration:

- INSTANCE DETAILS:**
 - Virtual machine name: Ubuntu-SansWebSrv2
 - Region: South India
 - Image: Ubuntu-SansWebServer (selected)
 - Size: Standard B1s (1 vcpu, 1 GB memory)
- ADMINISTRATOR ACCOUNT:**
 - Authentication type: Password (selected)
 - Username: sansbound
 - Password: (redacted)
 - Confirm password: (redacted)
- INBOUND PORT RULES:**
 - Public inbound ports: Allow selected ports (selected)
 - Select inbound ports: SSH, HTTP (selected)
 - A note below 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."

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

Click “**Next : Disks >**”.



Microsoft Azure

Create a virtual machine - Microsoft Azure

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

Microsoft Azure

Dashboard > Virtual machines > Create a virtual machine

Virtual machines Default Directory

Add Reservations More

Filter by name...

NAME Ubuntu-AzureVM

Virtual machine name: Ubuntu-SansWebSrv2

Region: South India

Availability options: No infrastructure redundancy required

Image: Ubuntu-SansWebServer

Size: Standard B1s
1 vcpu, 1 GB memory
Change size

ADMINISTRATOR ACCOUNT

Authentication type: Password (selected)

Username: sansbound

Password: *****

Confirm password: *****

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: Allow selected ports (selected)

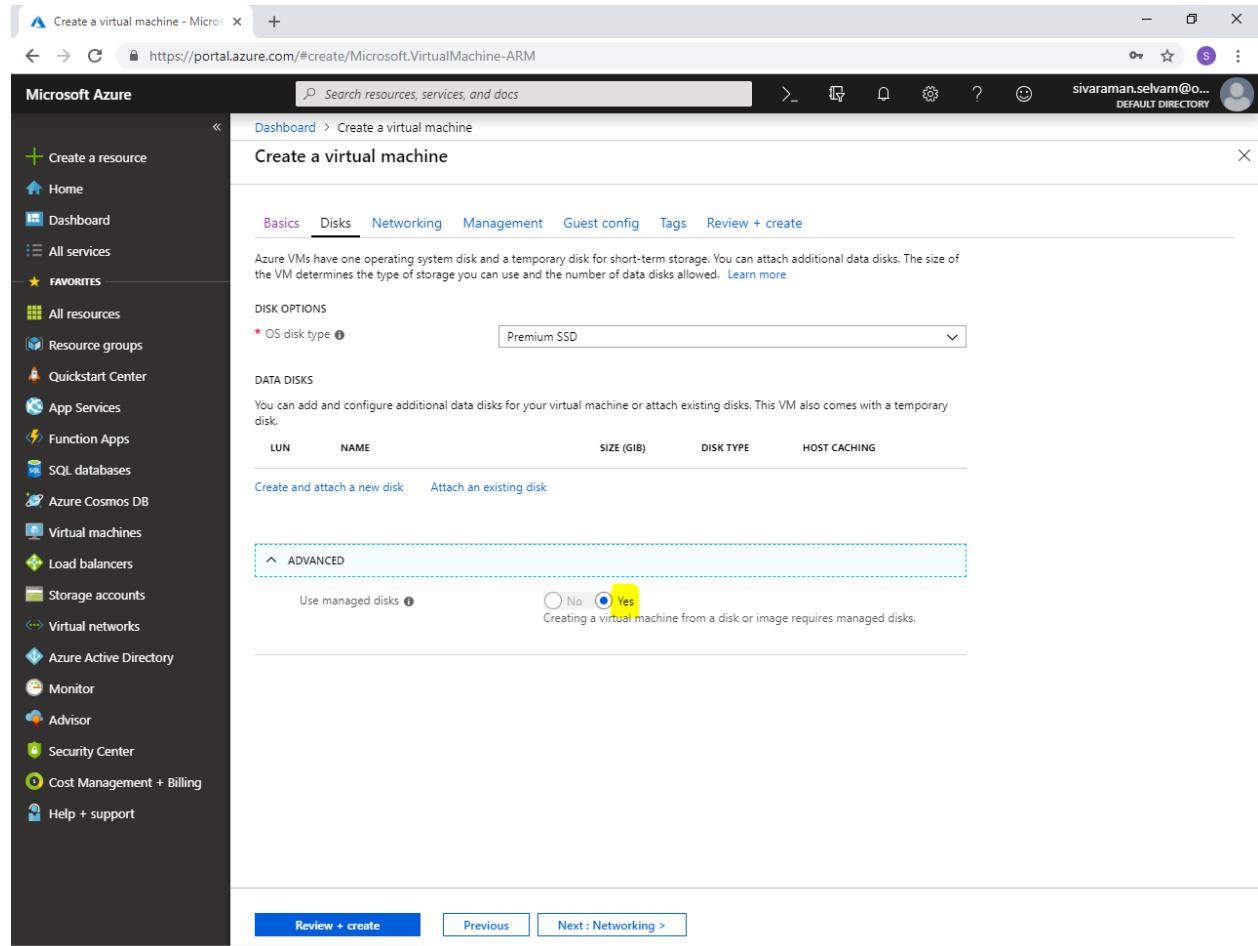
Select inbound ports: SSH, HTTP

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 >

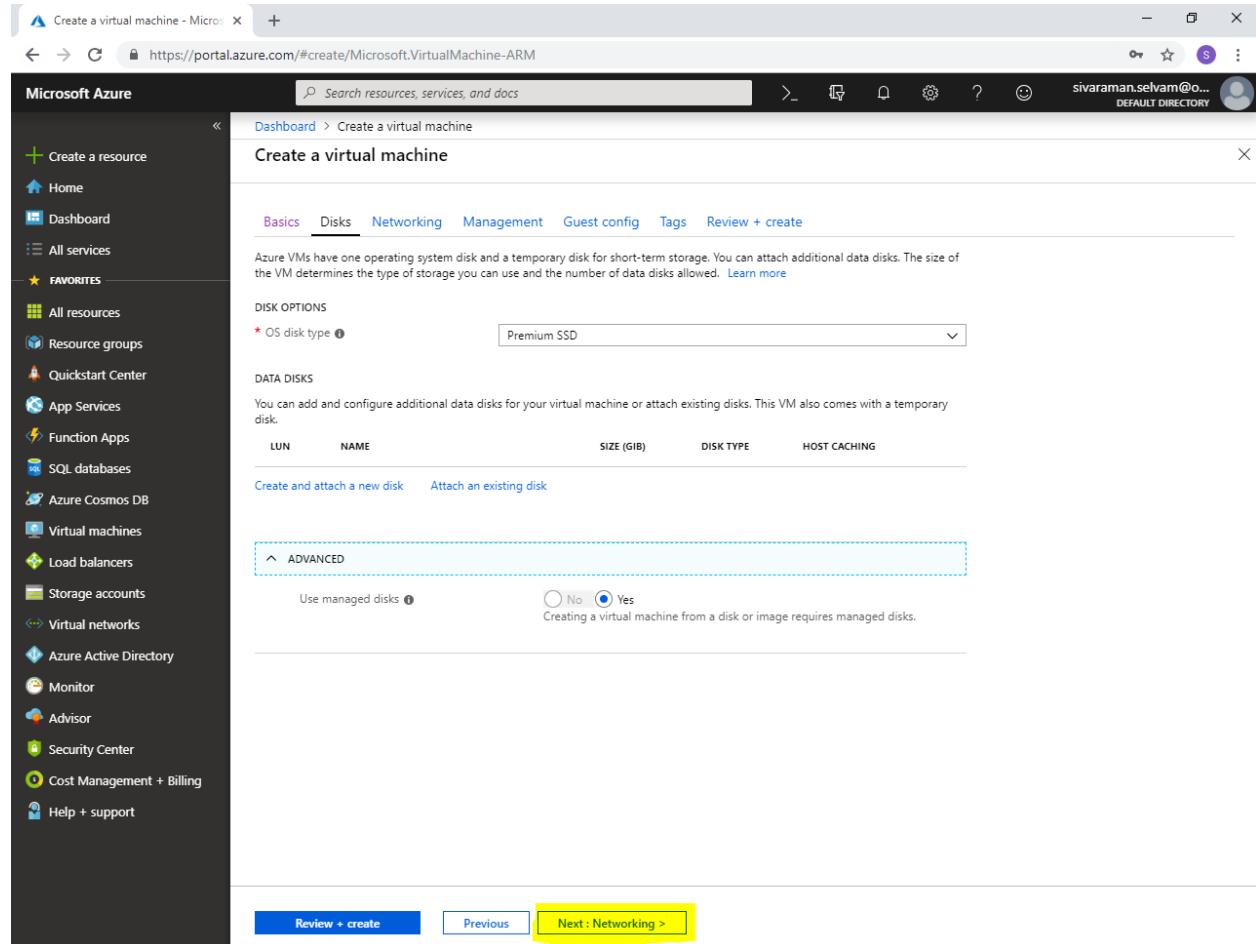
In “Disks”

In Advanced, you are able to see it have only “**managed disks**”. You would not be able to change the captured image disk as unmanaged disk.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains a navigation menu with various services like Home, Dashboard, All services, and Favorites. The main area is titled 'Create a virtual machine' and is currently on the 'Disks' tab. A sub-header states: 'Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed.' Below this, under 'DISK OPTIONS', the 'OS disk type' is set to 'Premium SSD'. Under 'DATA DISKS', there is a table with columns LUN, NAME, SIZE (GiB), DISK TYPE, and HOST CACHING. At the bottom of the 'Disks' section, there is an 'ADVANCED' button. The 'Use managed disks' checkbox is checked ('Yes'), and a note says: 'Creating a virtual machine from a disk or image requires managed disks.' At the bottom of the page, there are buttons for 'Review + create', 'Previous', and 'Next: Networking >'.

Click “Next : Networking >”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains a navigation menu with various services like Home, Dashboard, All services, and Favorites. The main content area is titled 'Create a virtual machine' and is currently on the 'Networking' tab. The 'Networking' tab is highlighted with a yellow box. Below it, there are sections for 'DISK OPTIONS' (OS disk type set to 'Premium SSD') and 'DATA DISKS'. At the bottom, there are buttons for 'Review + create', 'Previous', and 'Next: Networking >'.

In “Networking”

You have required to ensure the below mentioned options.

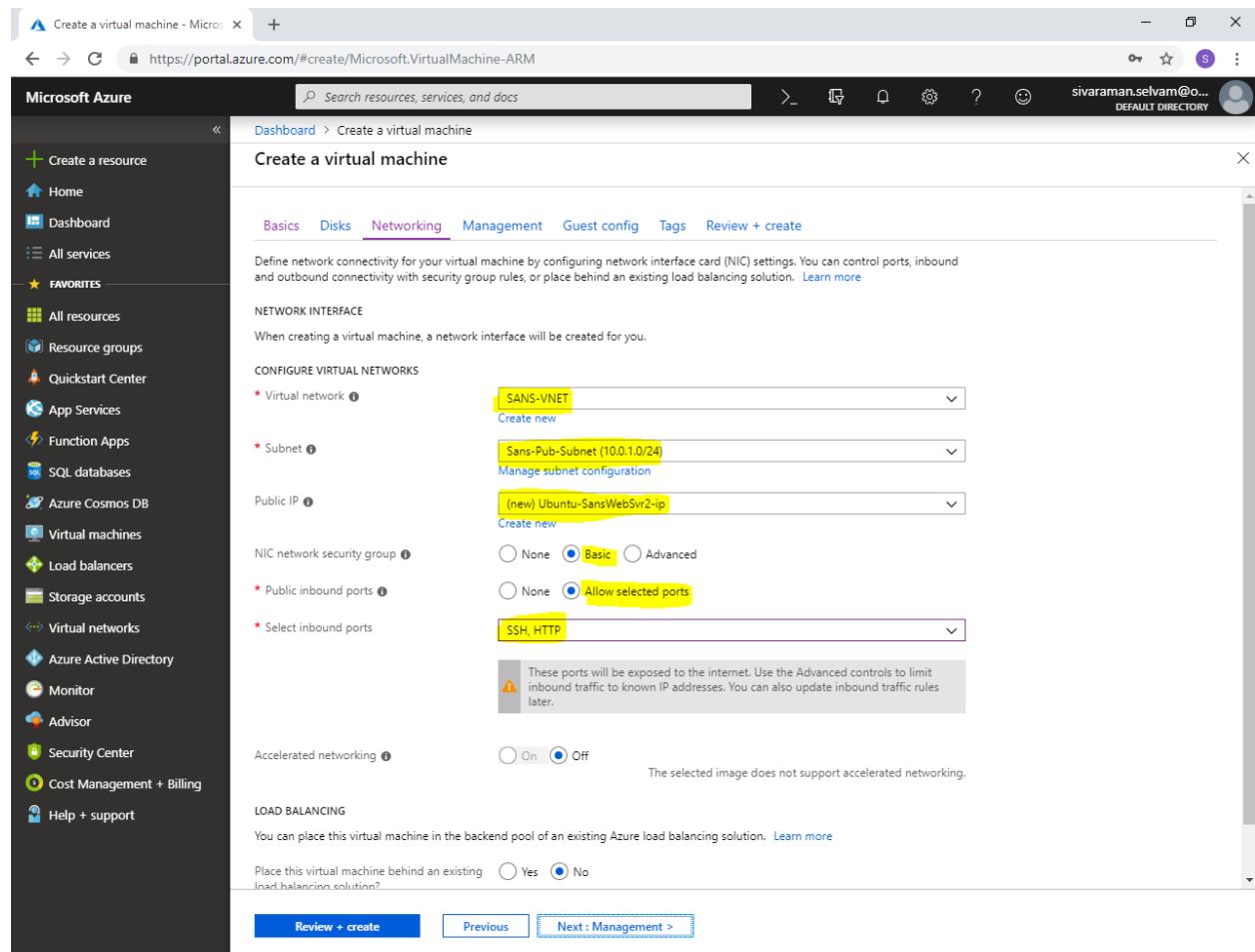
Ensure Virtual network as “**SANS-VNET**”.

Ensure Subnet as “**Sans-Pub-Subnet**”.

Public IP for Ubuntu-SansWebSvr2

Ensure NSG type as “**Basic**” and “**Public inbound ports**” as “**Allowed selected ports**”.

Ensure “**Select inbound ports**” as “**SSH**” and “**HTTP**”



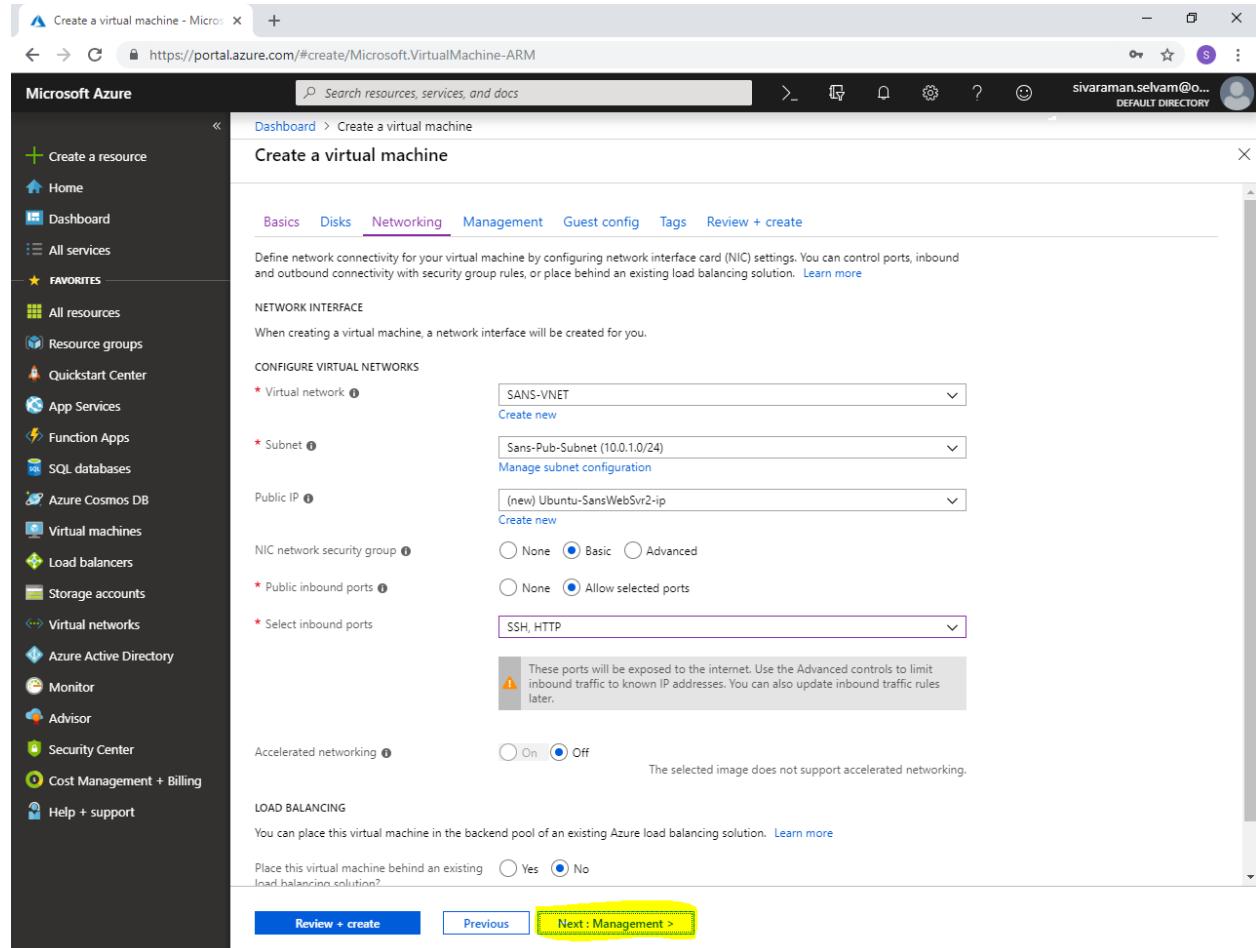
The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'Networking' tab is selected. The configuration is as follows:

- * Virtual network: SANS-VNET (highlighted)
- * Subnet: Sans-Pub-Subnet (10.0.1.0/24) (highlighted)
- Public IP: (new) Ubuntu-SansWebSvr2-ip (highlighted)
- NIC network security group: Basic (selected)
- * Public inbound ports: Allow selected ports (selected)
- * Select inbound ports: SSH, HTTP (highlighted)

A warning message at the bottom 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."

At the bottom, the 'Review + create' button is visible.

Click "Next : Management >".



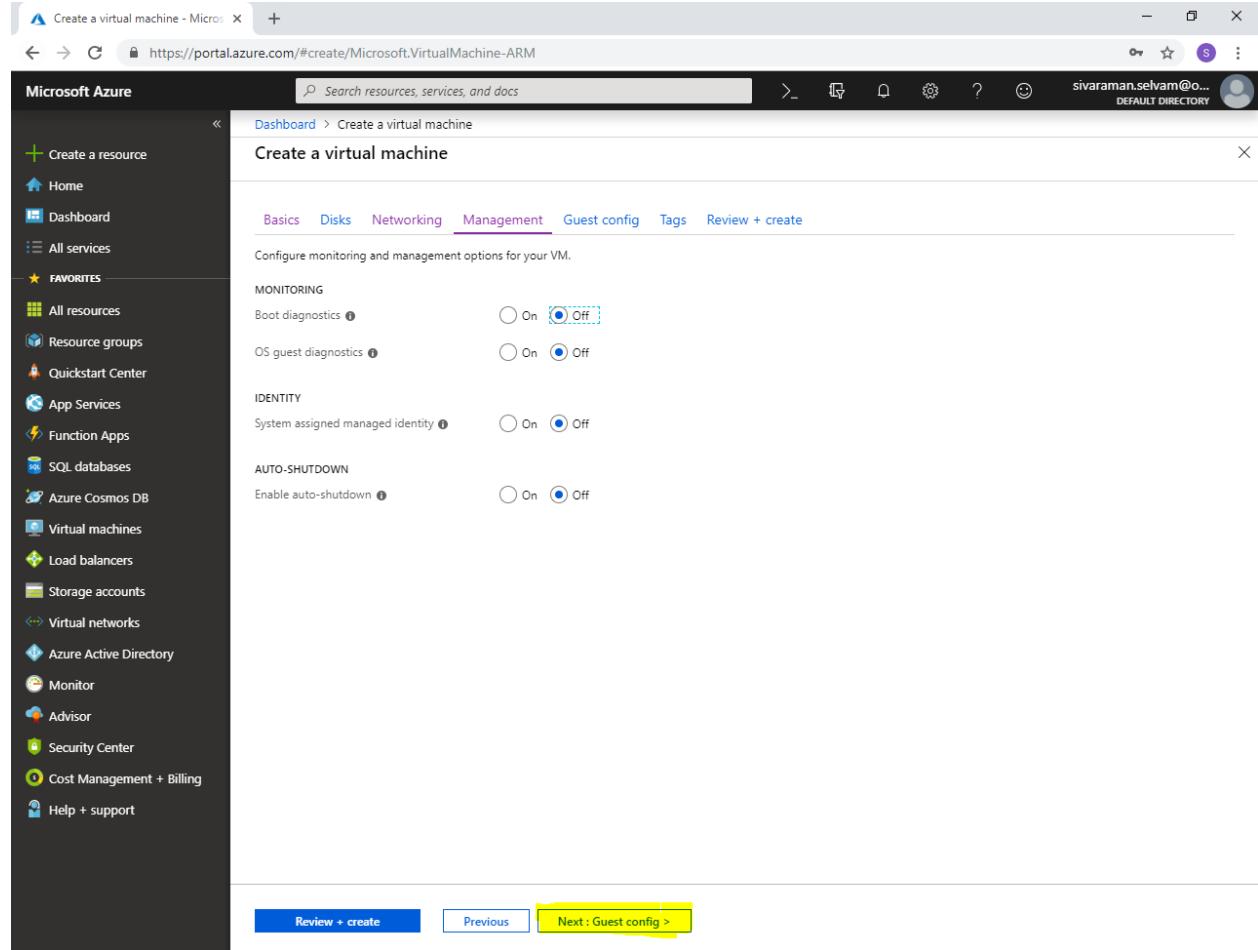
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains various service icons like Home, Dashboard, All services, and Favorites. The main area is titled 'Create a virtual machine' and is currently on the 'Networking' tab. The networking configuration includes:

- Virtual network:** SANS-VNET (selected)
- Subnet:** Sans-Pub-Subnet (10.0.1.0/24)
- Public IP:** (new) Ubuntu-SansWebSvr2-ip
- NIC network security group:** Basic (selected)
- Public inbound ports:** Allow selected ports (selected)
- Select inbound ports:** SSH, HTTP
- Accelerated networking:** Off (selected)

At the bottom of the wizard, there are three buttons: 'Review + create' (blue), 'Previous' (light blue), and 'Next : Management >' (yellow, with a yellow box around it). The URL in the browser bar is https://portal.azure.com/#create/Microsoft.VirtualMachine-ARM.

In “Management”

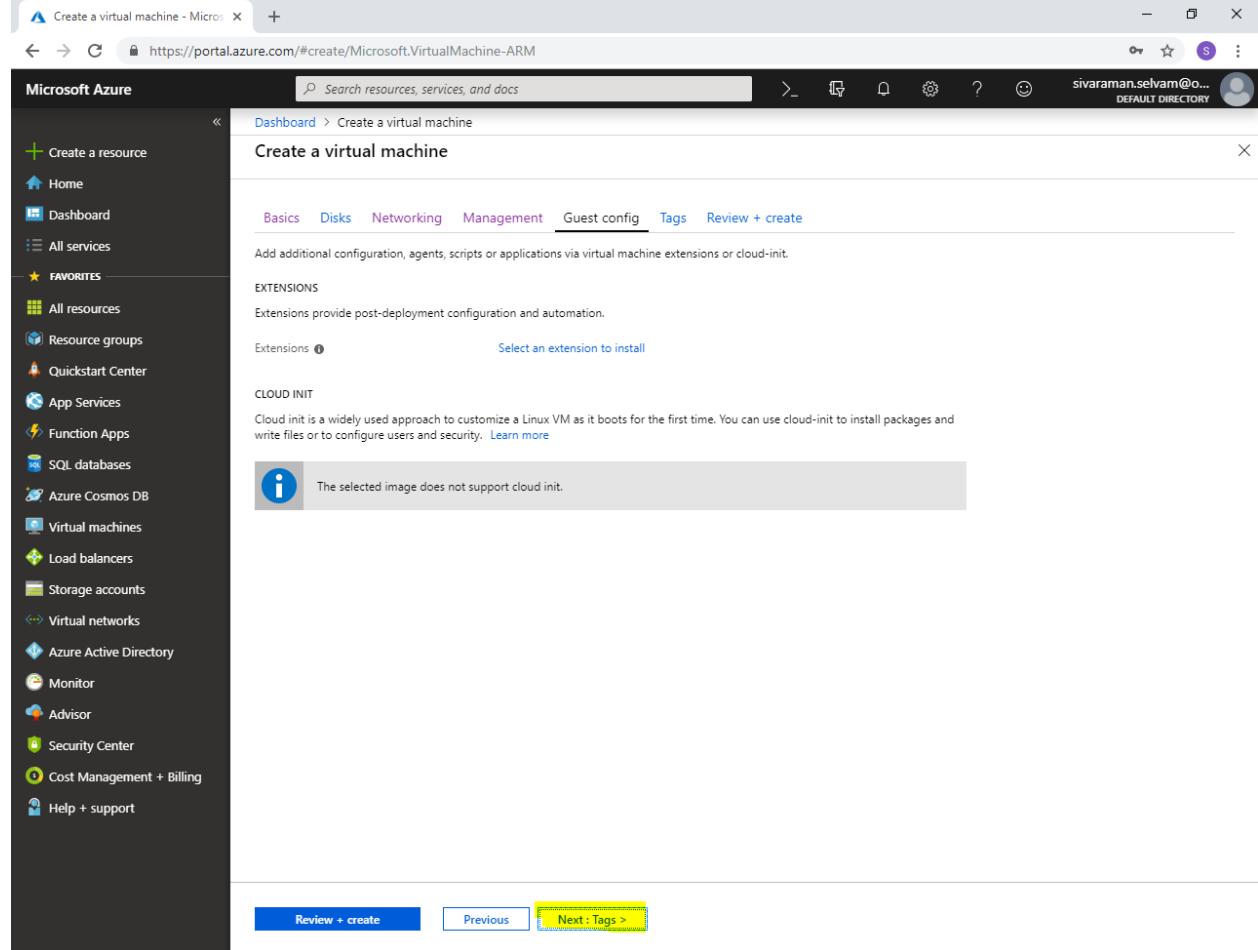
Click “**Next : Guest config >**”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains a navigation menu with various service icons. The main content area is titled "Create a virtual machine" and is currently on the "Guest config" tab. The "Management" section is visible, showing configuration options for monitoring, identity, and auto-shutdown. At the bottom of the page, there are three buttons: "Review + create" (blue), "Previous" (light blue), and "Next : Guest config >" (yellow, indicating it is the current step). The URL in the browser address bar is <https://portal.azure.com/#create/Microsoft.VirtualMachine-ARM>.

In “Guest Config”

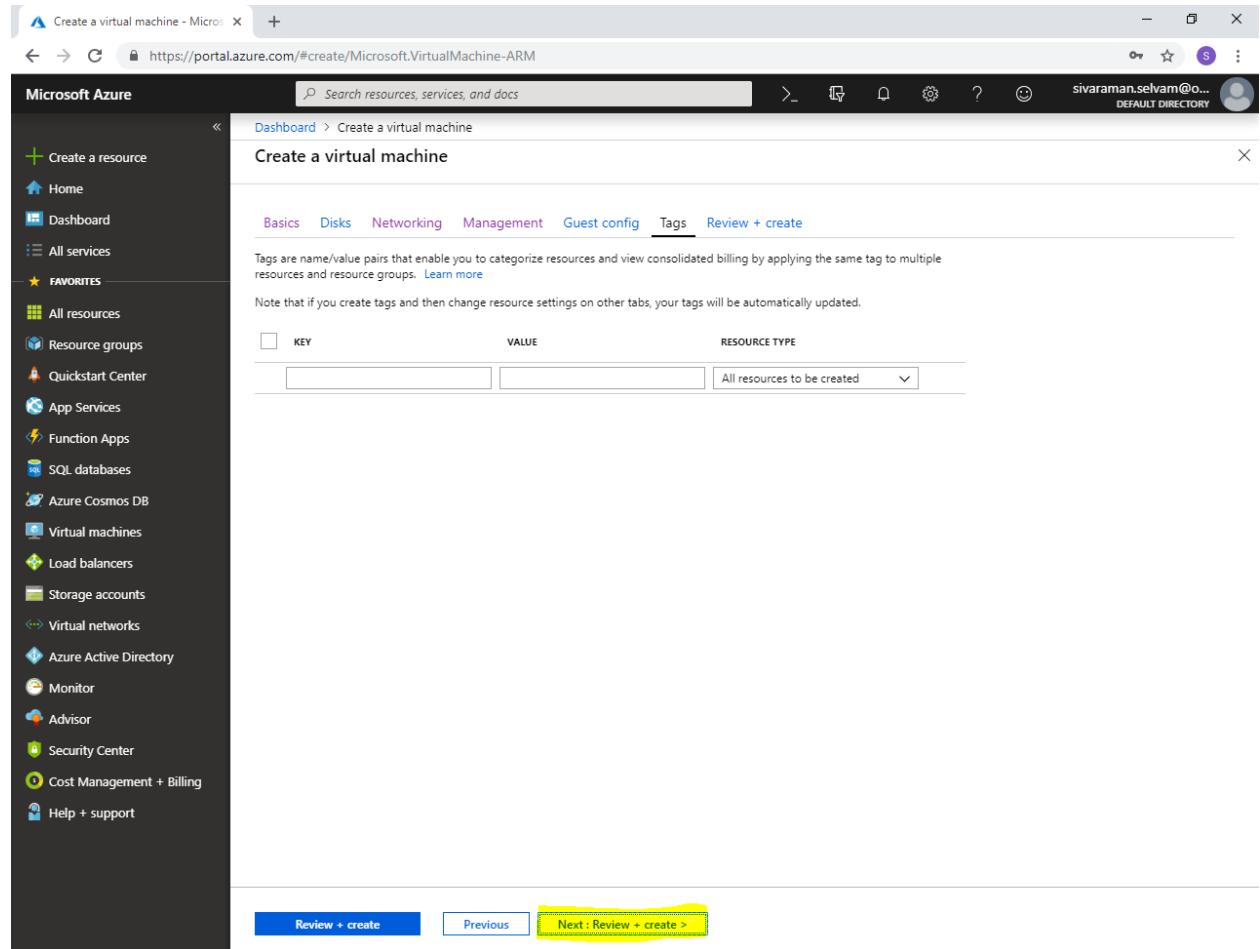
Click “**Next : Tags >**”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains a navigation menu with various service icons. The main content area is titled "Create a virtual machine" and is currently on the "Guest config" tab. Below the tabs, there is a note about adding configuration, agents, scripts, or applications via virtual machine extensions or cloud-init. Under "EXTENSIONS", it says "Extensions provide post-deployment configuration and automation." and "Extensions Select an extension to install". Under "CLOUD INIT", it says "Cloud init is a widely used approach to customize a Linux VM as it boots for the first time. You can use cloud-init to install packages and write files or to configure users and security." and "Learn more". A message box indicates "The selected image does not support cloud init." At the bottom, there are three buttons: "Review + create" (blue), "Previous" (disabled), and "Next : Tags >" (highlighted with a yellow box).

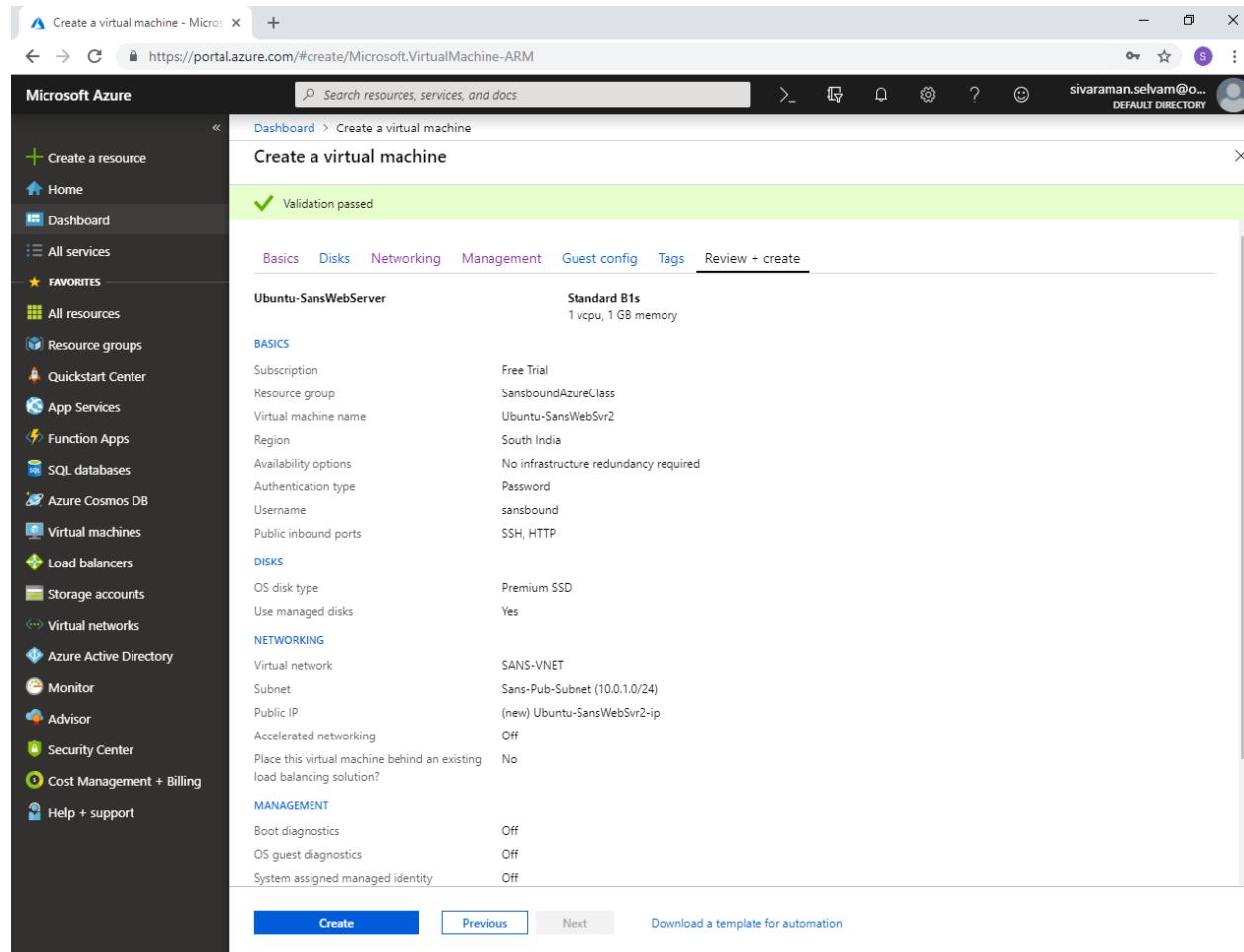
In “Tags”.

Click “Review + create”.



The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The left sidebar contains a navigation menu with various service icons. The main content area is titled "Create a virtual machine" and is currently on the "Tags" tab. A table allows users to define tags by key and value, with a dropdown for "RESOURCE TYPE". Below the table, a note states that tags will be automatically updated if resource settings change. At the bottom, there are three buttons: "Review + create" (highlighted in blue), "Previous", and "Next : Review + create >" (highlighted with a yellow box).

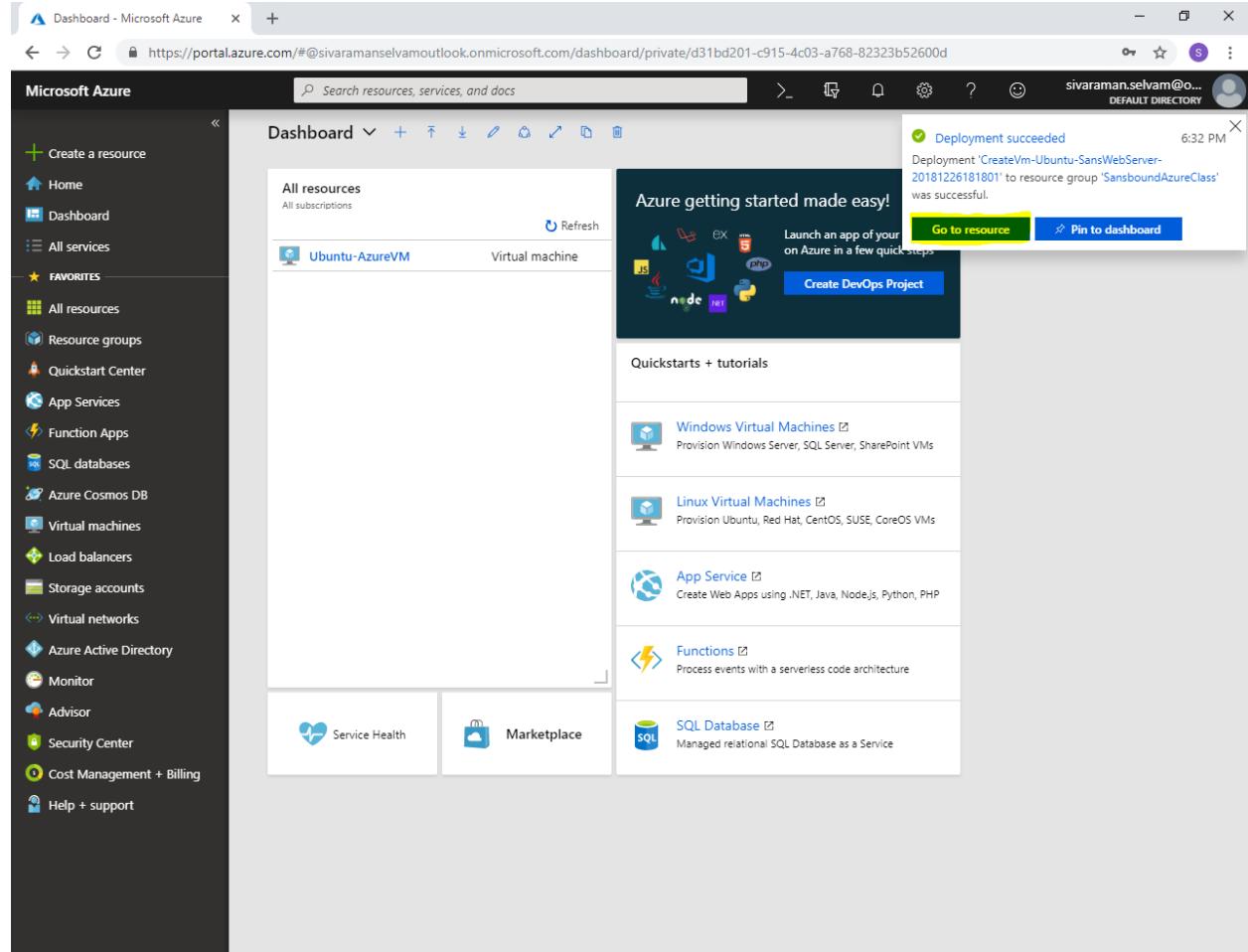
Click “Create”.



The screenshot shows the Microsoft Azure portal interface for creating a virtual machine. The left sidebar contains navigation links like Home, Dashboard, All services, Favorites, and various service icons. The main content area is titled "Create a virtual machine" and shows a green banner indicating "Validation passed". Below this, the "Review + create" tab is selected. The configuration details are listed in sections: Basics, Disks, Networking, Management, Guest config, and Tags. Under Basics, the VM is named "Ubuntu-SansWebServer" and is set to "Standard B1s" (1 vcpu, 1 GB memory). Other settings include Free Trial subscription, SansboundAzureClass resource group, Ubuntu-SansWebSvr2 virtual machine name, South India region, and no infrastructure redundancy required. Under Disks, Premium SSD is chosen. Under Networking, it's connected to SANS-VNET with a Subnet of Sans-Pub-Subnet (10.0.1.0/24) and a Public IP of (new) Ubuntu-SansWebSvr2-ip. Accelerated networking is off. Under Management, Boot diagnostics and OS guest diagnostics are off, and System assigned managed identity is also off. At the bottom, there are "Create" and "Previous" buttons, along with a link to "Download a template for automation".

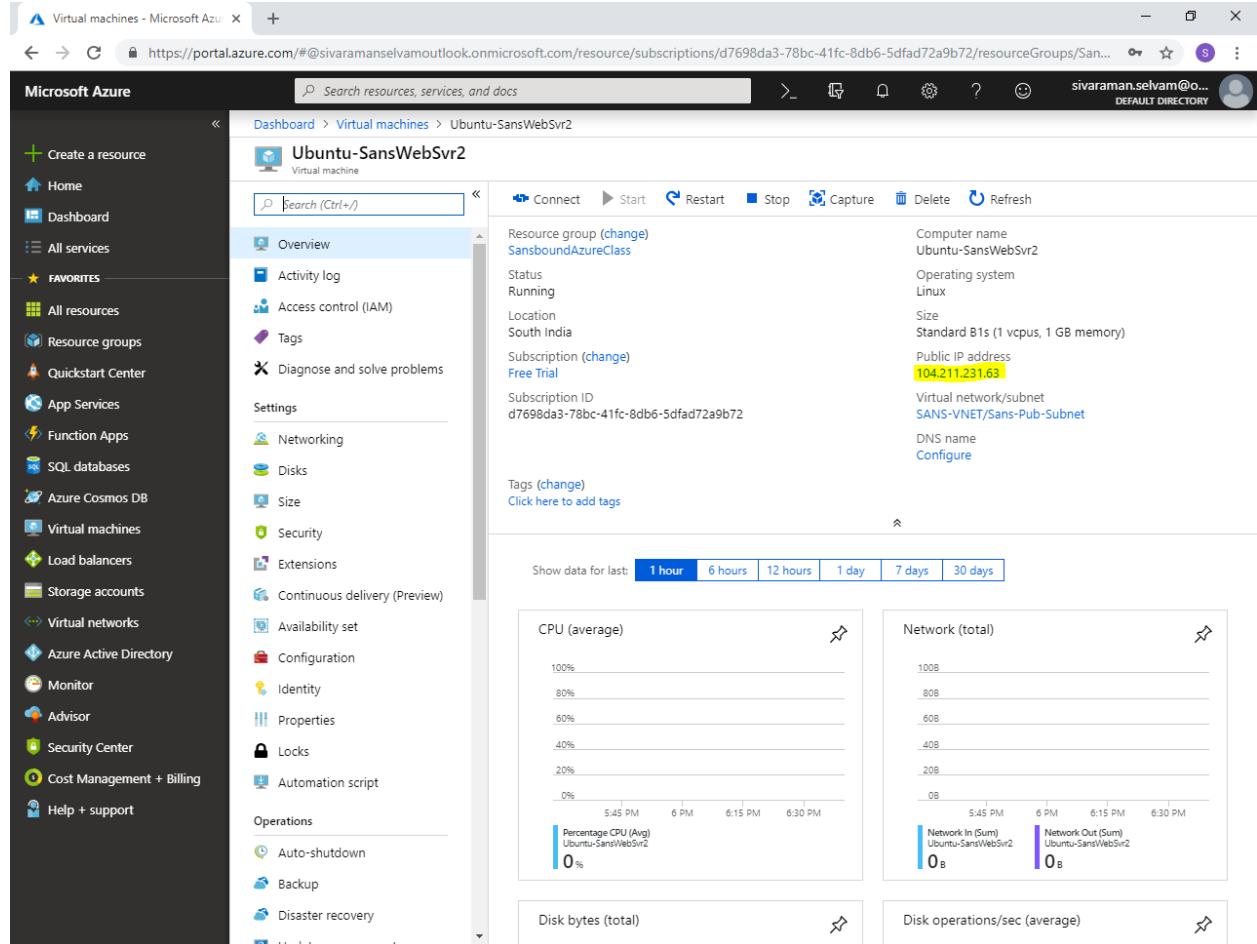
Your “Virtual machine” has been created successfully.

Click “Go to resource”.



The screenshot shows the Microsoft Azure dashboard. On the left, there's a sidebar with various service icons and links like Home, Dashboard, All services, Favorites, Resource groups, Quickstart Center, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support. The main area is titled "Dashboard" and shows "All resources" under "All subscriptions". A notification bar at the top right says "Deployment succeeded" with a timestamp of "6:32 PM". Below it, there's a section titled "Azure getting started made easy!" with a "Go to resource" button highlighted in yellow. The dashboard also features sections for "Quickstarts + tutorials" (Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, SQL Database) and links for "Service Health" and "Marketplace".

Kindly note the public IP address which you have got for “Ubuntu-SansWebSvr2” virtual machine.



The screenshot shows the Microsoft Azure portal interface for a virtual machine named "Ubuntu-SansWebSvr2".

Left Sidebar (Favorites):

- Create a resource
- Home
- Dashboard
- All services
- Favorites:**
 - All resources
 - Resource groups
 - Quickstart Center
 - App Services
 - Function Apps
 - SQL databases
 - Azure Cosmos DB
 - Virtual machines
 - Load balancers
 - Storage accounts
 - Virtual networks
 - Azure Active Directory
 - Monitor
 - Advisor
 - Security Center
 - Cost Management + Billing
 - Help + support

Top Bar:

- Virtual machines - Microsoft Azure
- https://portal.azure.com/#@sivaramselvamoutlook.onmicrosoft.com/resource/subscriptions/d7698da3-78bc-41fc-8db6-5dfad72a9b72/resourceGroups/San...
- sivaramselvam@o... DEFAULT DIRECTORY

Central Content Area:

Ubuntu-SansWebSvr2 Overview:

- Resource group (change): SansboundAzureClass
- Status: Running
- Location: South India
- Subscription (change): Free Trial
- Subscription ID: d7698da3-78bc-41fc-8db6-5dfad72a9b72
- Computer name: Ubuntu-SansWebSvr2
- Operating system: Linux
- Size: Standard B1s (1 vcpus, 1 GB memory)
- Public IP address: **104.211.231.69**
- Virtual network/subnet: SANS-VNET/Sans-Pub-Subnet
- DNS name: Configure

Tags (change): Click here to add tags

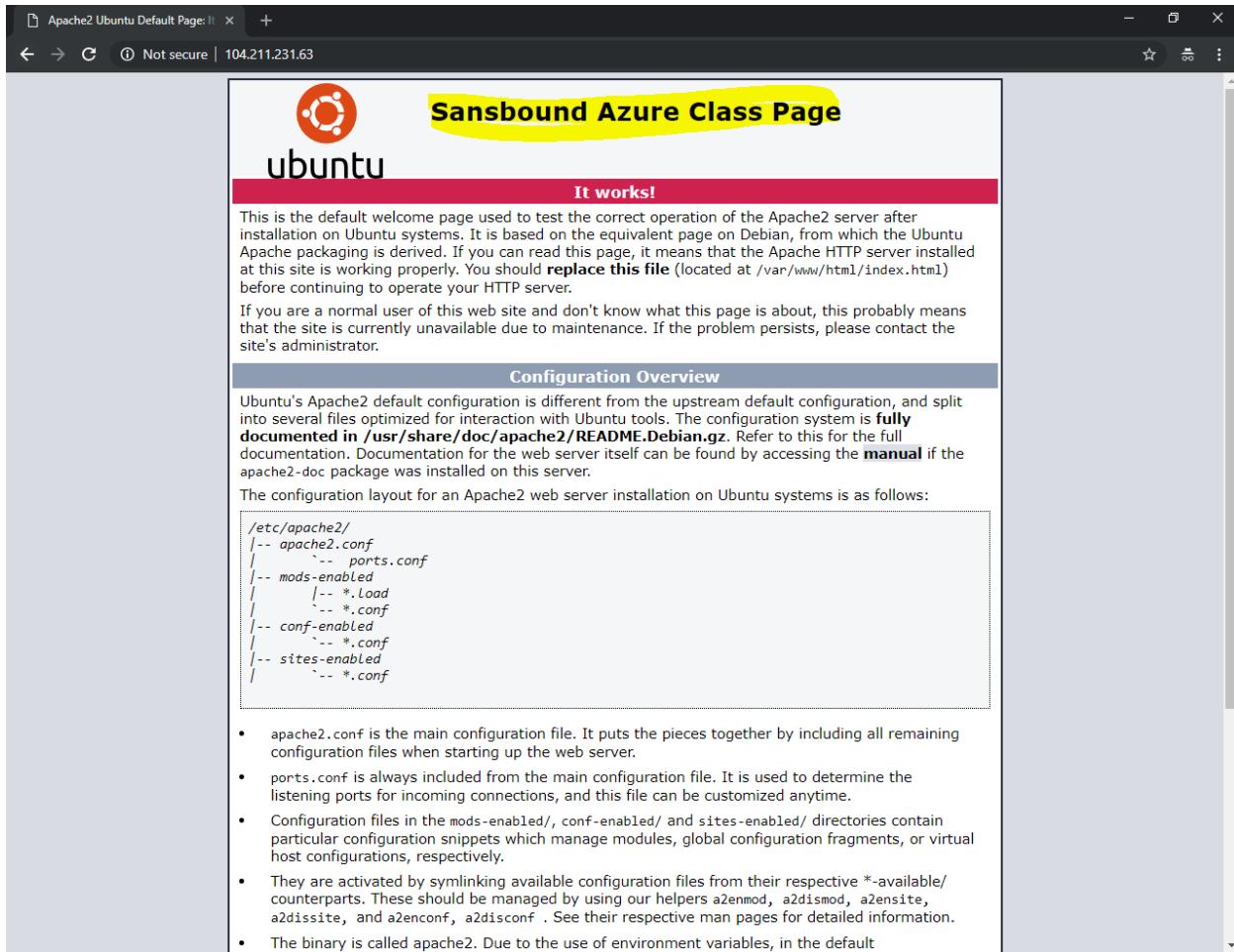
Show data for last: 1 hour, 6 hours, 12 hours, 1 day, 7 days, 30 days

Metrics:

- CPU (average): 0%
- Network (total): 0 B
- Disk bytes (total): 0 B
- Disk operations/sec (average): 0 B

Type public IP address in your local machine browser and then press “Enter”.

I have got the customized webpage from captured VM.



Apache2 Ubuntu Default Page: It x +

Not secure | 104.211.231.63

Sansbound Azure Class Page

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

We have successfully captured the virtual machine successfully as Image and built new Virtual machine by using captured image.

When you have deleted the “Resource group” once you have completed the learning purpose lab. Then Captured Image in Azure has been deleted automatically.