

Virtual Machine Azure Deep Dive

To create a virtual machine in Azure, we must set up its environment per the diagram below.



Now we create the virtual machine.

Step1:

Go to the azure cloud dashboard.

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

Step2:

Create a Resource Group.

Click on the Resource Groups option.

The screenshot shows the Microsoft Azure portal interface for managing Resource Groups. The URL is portal.azure.com/#browse/resourcegroups. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for subhambh14@gmail.com. Below the header, the title is "Resource groups". A toolbar provides options like "Create", "Manage view", "Refresh", "Export to CSV", "Open query", and "Assign tags". Filter and sorting tools are available at the top. The main content area displays two resource groups:

Name	Subscription	Location
NetworkWatcherRG	Azure for Students	East US
RG-1	Azure for Students	East US

Pagination controls show "Page 1 of 1". A "Give feedback" link is located in the bottom right corner.

Click on the +Create option, to create a new Resource Group.

The screenshot shows the Microsoft Azure portal interface for creating a new Resource Group. The URL is portal.azure.com/#create/Microsoft.ResourceGroup. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for subhambh14@gmail.com. Below the header, the title is "Create a resource group". A navigation breadcrumb shows "Home > Resource groups >". The main content area has tabs for "Basics", "Tags", and "Review + create". The "Basics" tab is selected. The "Project details" section shows a "Subscription" dropdown set to "Azure for Students" and a "Resource group" input field containing "RS-1". The "Resource details" section shows a "Region" dropdown set to "(US) East US". Navigation buttons at the bottom include "Review + create", "< Previous", and "Next : Tags >".

Give the name for the Resource group, select the region and hit 'Review+create'.

Continue and create the RS-1;

Step3:

Create a vnet and a subnet. Search for vnet and click on the virtual network. Similarly, click on the +Create a new vnet.

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

Subscription * Azure for Students

Resource group * RG-1

Virtual network name * vmac-1

Basics Security IP addresses Tags Review + create

Previous Next Review + create Give feedback

Click on Next and go to the IP addresses Tab.

Add IPv4 address space | /16 Delete address space

Subnets	IP address range	Size	NAT gateway
default	10.0.0.0 - 10.0.0.255	/24 (256 addresses)	-

Basics Security IP addresses Tags Review + create

virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. [Learn more](#)

Previous Next Review + create Give feedback

Delete the default subnet and create a new new one.

The screenshot shows the Azure portal interface for creating a virtual network. On the left, the 'IP addresses' tab is selected under the 'Create virtual network' wizard. A subnet named 'subnet-1' is being added with the address space '10.0.0.0/16'. On the right, the 'Add a subnet' dialog is open, showing configuration options for IPv4 and IPv6. The IPv4 section includes fields for 'Subnet purpose' (set to 'Default'), 'Name' (set to 'subnet-1'), 'IPv4 address range' (set to '10.0.0.0/16'), 'Starting address' (set to '10.0.1.0'), 'Size' (set to '/24 (256 addresses)'), and 'Subnet address range' (set to '10.0.1.0 - 10.0.1.255'). The IPv6 section has a note stating 'This virtual network has no IPv6 address ranges.'

The screenshot shows the 'Review + create' step of the virtual network creation wizard. The 'Review + create' tab is selected. It displays basic information: Subscription (Azure for Students), Resource Group (RS-1), Name (vnet-1), and Region (East US). Under the 'Security' section, it shows Azure Bastion, Azure Firewall, and Azure DDoS Network Protection all set to 'Disabled'. At the bottom, there are 'Previous', 'Next', and 'Create' buttons, along with a 'Give feedback' link.

After completing the process click on 'Review+create' and Create.

vnet-1 Virtual network

Essentials

Resource group (RG-1) : Address space 10.0.0.0/16
Location (East US) : DNS servers Azure provided DNS service
Subscription (Azure for Students) : Flow timeout Configure
Subscription ID ca5224c7-5754-4288-91aa-9ba029f2951e : BGP community string Configure
Virtual network ID b0795437-e256-491f-8a6d-765a77c42329

Tags (edit) : Add tags

Capabilities (5)

- DDoS protection**: Not configured
- Azure Firewall**: Not configured
- Peerings**: Not configured

Step4:

Search for virtual machines and create a virtual machine in the same Resource Group.

Virtual machines

Showing 0 to 0 of 0 records.

Create

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.

Create

Learn more about Windows virtual machines

Click on the +create button and complete the process by filling in the necessary details.

We shall create 2 virtual machines to test its usage with both Windows and Ubuntu.

Subscription * Resource group * Create new

Virtual machine name * Region * Availability options Security type Configure security features

Image * See all images | Configure VM generation

< Previous | Next : Disks > | Review + create | Give feedback

Validation passed

Price
1 X Standard DS1 v2 by Microsoft Subscription credits apply 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

< Previous | Next > | Create | Download a template for automation | Give feedback

After completing all the steps, review for any changes.

Click on Create.

Creation and deployment for VM-1 is completed.

CreateVm-MicrosoftWindowsServer.WindowsServer-201-20240701110127 | Overview

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsS... Start time: 7/1/2024, 11:04:31 AM

Subscription: Azure for Students Correlation ID: 147088de-63b1-4e12-bb6c-25k

Resource group: RS-1

Deployment details

Next steps

Setup auto-shutdown Recommended

Monitor VM health, performance and network dependencies Recommended

Run a script inside the virtual machine Recommended

[Go to resource](#) [Create another VM](#)

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After creating Go to resource and click on Connect.

vmac-1 Virtual machine

Connect Start Restart Stop Hibernate Capture Delete Refresh Open in mobile Feedback CLI / PS

Overview

Essentials

Resource group (move) : RS-1	Operating system : Windows (Windows Server 2016 Datacenter)
Status : Running	Size : Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location : Central US	Public IP address : 52.173.249.124
Subscription (move) : Azure for Students	Virtual network/subnet : vmac-1-vnet/default
Subscription ID : ca5224c7-5754-4288-91aa-9ba029f2951e	DNS name : Not configured
	Health state : -
	Time created : 7/1/2024, 5:34 AM UTC

Tags ([edit](#)) : [Add tags](#)

Properties **Monitoring** **Capabilities (8)** **Recommendations** **Tutorials**

Virtual machine

Computer name	vmac-1
Operating system	Windows (Windows Server 2016 Datacenter)
VM generation	V2

Networking

Public IP address	52.173.249.124 (Network interface vmac-1790)
Public IP address (IPv6)	-
Private IP address	10.0.0.4

It will open a dashboard. Click on download RDP file. Open the RDP file and fill in the details.

Give the password and it will open a system that is present in the remote server.

vmac-1 | Connect

Virtual machine

Admin username: Subham

Port (change): 3389 | Check access

Just-in-time policy: Unsupported by plan

Most common

Native RDP

Connect via native RDP without any additional software needed. Recommended for testing only.

Public IP address (52.173.249.124)

Select Download RDP file

Open server manager. Go to the local server option and make the web server option on with the necessary installation.

Now hit the ip in the local system. It will open a page that is hosted remotely.

Not secure 52.173.249.124

Windows Server

Internet Information Services

Welcome Bienvenue Tervetuloa

ようこそ Benvenuto 歓迎

Bienvenido Hoş geldiniz ברוכים הבאים

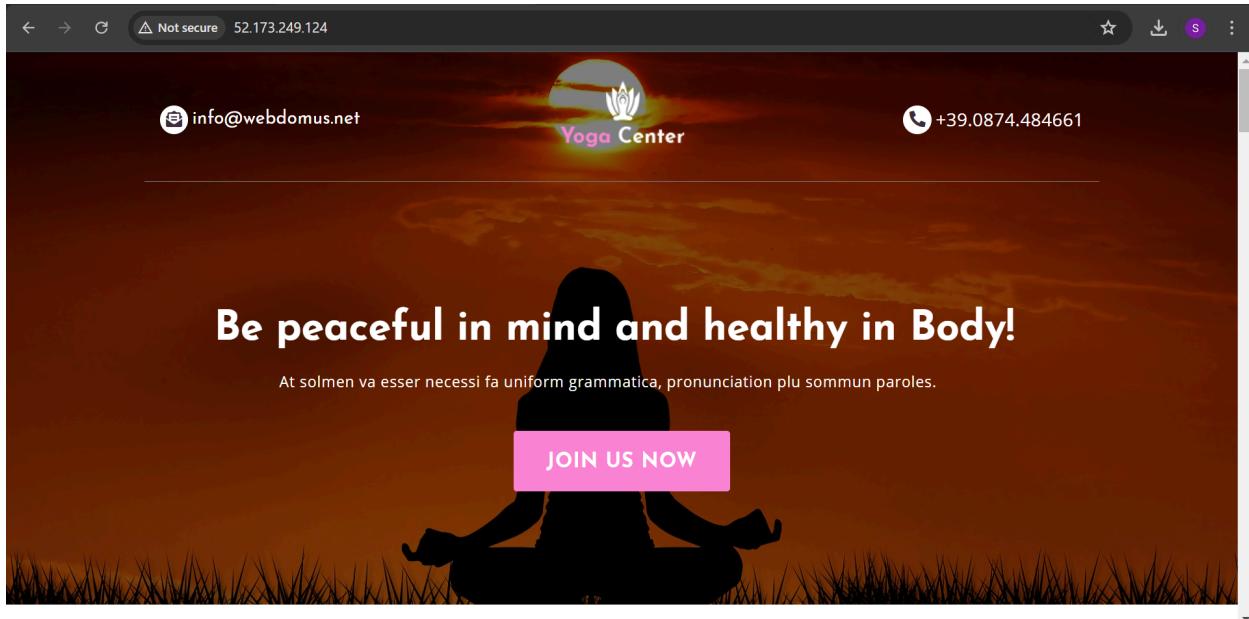
Bem-vindo

Vitejte Καλώς ορίστε Välkommen 환영합니다

Welkom

مرحبا 欢迎

Now download a simple website from [free-css](#) and place it in the www folder available in the remote system. For example, It is replaced with a yoga landing page.



Ubuntu Setup:

Now we create a virtual machine with the image as an ubuntu server. The same steps are repeated as earlier.

Validation passed

Price

1 X Standard DS1 v2
by Microsoft

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Subscription credits apply ⓘ

6.0732 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

< Previous | Next > **Create**

Download a template for automation ⓘ Give feedback

<https://portal.azure.com/#>

Deployment

Your deployment is complete

Deployment name: CreateVm-canonical.0001-com-ubuntu-server-f... Start time: 7/1/2024, 11:37:42 AM
Subscription: [Azure for Students](#) Correlation ID: 0f17891e-fa30-4ca3-b3a2-b495

Resource group: RS-1

Deployment details

Next steps

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

Go to resource **Create another VM**

Give feedback

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Essentials

- Resource group (move) : RS-1
- Status : Running
- Location : Central US
- Subscription (move) : Azure for Students
- Subscription ID : ca5224c7-5754-4288-91aa-9ba029f2951e
- Tags (edit) : Add tags
- Operating system : Linux (Ubuntu 20.04)
- Size : Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address : 13.89.47.155
- Virtual network/subnet : vmac-1-vnet/default
- DNS name : Not configured
- Health state : -
- Time created : 7/1/2024, 6:07 AM UTC

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine		Networking	
Computer name	vmac-2	Public IP address	13.89.47.155 (Network interface vmac-2626)
Operating system	Linux (Ubuntu 20.04)	Public IP address (IPv6)	-
VM generation	V2	Private IP address	10.0.0.5

Connecting using
Public IP address | 13.89.47.155

Recommended	Most common
SSH using Azure CLI	Native SSH
Quickly connect in browser. Supports Microsoft Entra ID authentication. Private key not required. Public IP address (13.89.47.155)	No additional software needed. Private key required for connection. Best for those with existing SSH tools. Public IP address (13.89.47.155)
Select	Select

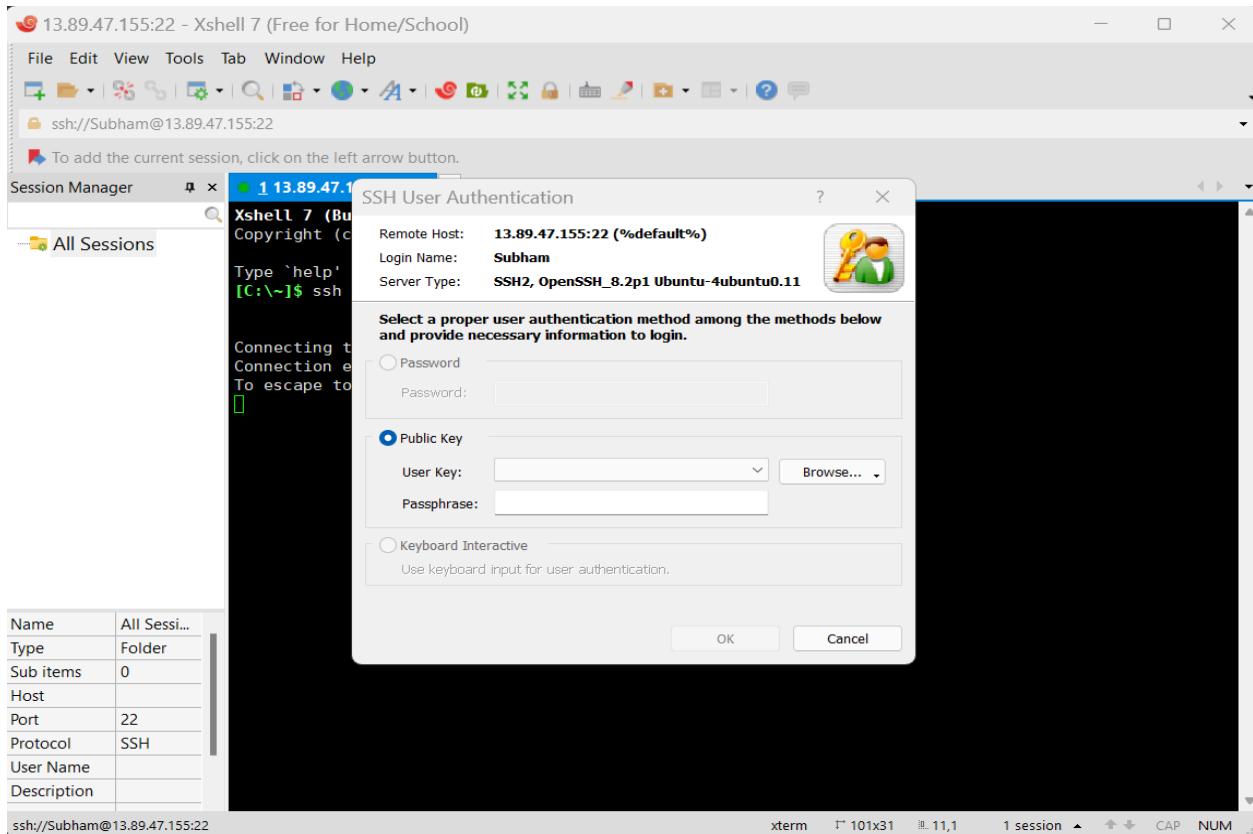
Now we select Native SSH.

The screenshot shows the Microsoft Azure portal interface. On the left, the navigation bar includes 'Home', 'CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240701113255 | Overview', and 'vmac-2'. The main content area displays a 'Connect' blade for 'vmac-2'. It shows the connection method as 'Connecting using Public IP address | 13.89.47.155'. Below this, there are two sections: 'Recommended' and 'Most common'. Under 'Recommended', there is an option for 'SSH using Azure CLI'. Under 'Most common', there is an option for 'Native SSH'. Both options show the same details: 'Admin username' is 'Subham', 'Port (change)' is '22', and 'Just-in-time policy' is 'Unsupported by plan'. To the right, the 'Native SSH' configuration pane is open, titled 'Native SSH' with the sub-section 'Configure prerequisites for Native SSH'. It lists 'Activity needs to configure some features in order to connect to the VM.' and 'Port 22 access' (status: 'Validating access to port 22 on the virtual machine'). It also shows the 'Public IP address: 13.89.47.155' (status: 'A public IP address is required to connect via this connection method'). Step 2, 'Open a local shell (on Windows)', is listed with instructions to open Terminal (Windows 11), PowerShell (Windows 10 or less), or a shell of your choice. Step 3, 'Copy and execute SSH command', provides the command: ssh -i ~/.ssh/id_rsa.pem Subham@13.89.47.155.

Open and paste the given URL in 'SSH to VM' field in Xshell with the downloaded private key.

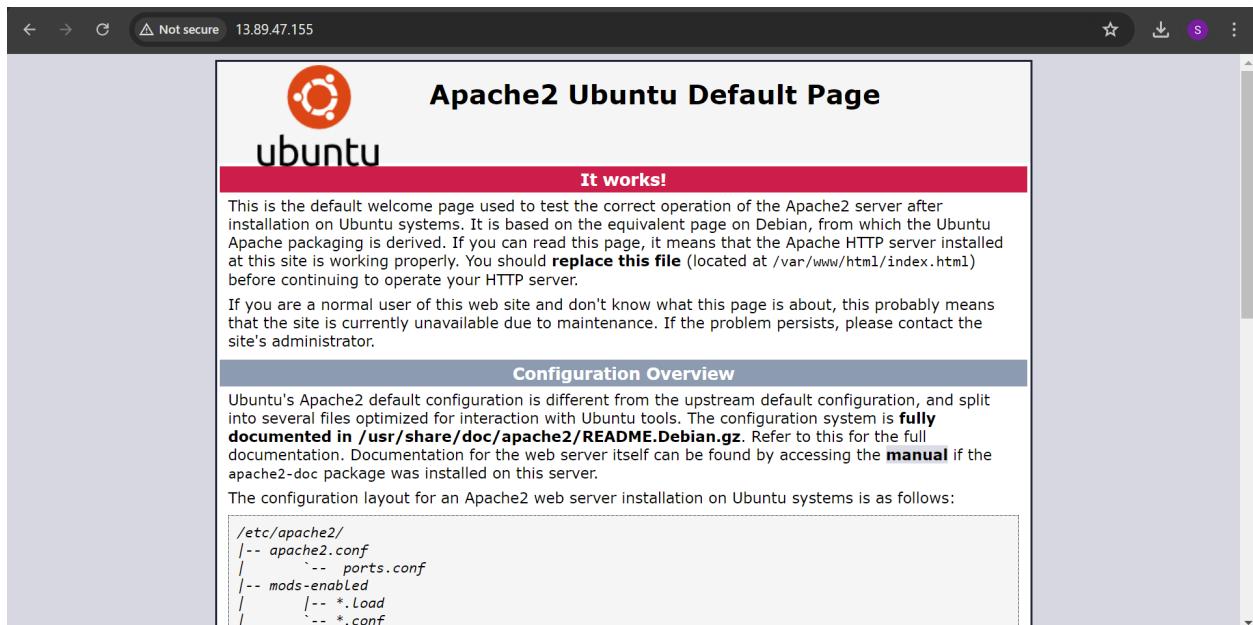
The screenshot shows the Xshell 7 application window. The title bar reads 'Xshell 7 (Free for Home/School)'. The menu bar includes 'File', 'Edit', 'View', 'Tools', 'Tab', 'Window', and 'Help'. The toolbar contains various icons for file operations like Open, Save, Copy, Paste, and others. The session manager on the left shows '1 Local Shell' and 'All Sessions'. The main terminal window displays the Xshell 7 build information: 'Xshell 7 (Build 0164)', 'Copyright (c) 2020 NetSarang Computer, Inc. All rights reserved.', and a prompt: '[C:\~]\$ ssh -i ~/.ssh/id_rsa.pem Subham@13.89.47.155'. A status bar at the bottom shows 'Not connected.' and other terminal settings like '101x31', '5,53', '1 session', and keyboard mapping ('CAP NUM').

Name	All Sessi...
Type	Folder
Sub items	0
Host	
Port	22
Protocol	SSH
User Name	Subham
Description	



Browse the key and select OK. Now we are in the Ubuntu system. Update it and install apache2.

Hit the ip in the local system and we see an Apache page.



```
13.89.47.155:22 - root@vmac-2: /var/www/html - Xshell 7 (Free for Home/School)
File Edit View Tools Tab Window Help
+ ssh://Subham@13.89.47.155:22
To add the current session, click on the left arrow button.

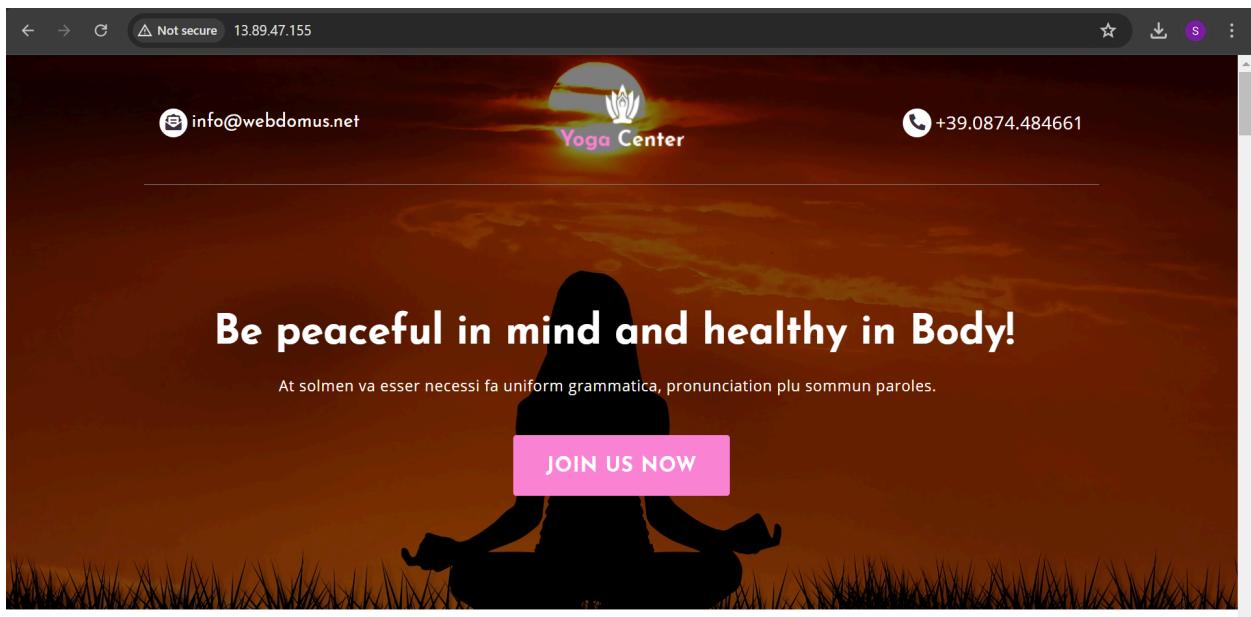
Session Manager  x  13.89.47.155:22 + 
All Sessions

infating: yoga/font/RobotoSlab-Bold.ttf
infating: yoga/font/RobotoSlab-Bold.woff
infating: yoga/font/RobotoSlab-Bold.woff2
infating: yoga/font/RobotoSlab-Regular.eot
infating: yoga/font/RobotoSlab-Regular.ttf
infating: yoga/font/RobotoSlab-Regular.woff
infating: yoga/font/RobotoSlab-Regular.woff2
infating: yoga/font/web-font.css
creating: yoga/img/
infating: yoga/img/advanced-yoga-poses.jpg
infating: yoga/img/advantages-of-yoga-mobile.jpg
infating: yoga/img/advantages-of-yoga.jpg
infating: yoga/img/eric-yoga.jpg
infating: yoga/img/eric_yogaret.jpg
infating: yoga/img/favicon.jpg
infating: yoga/img/flower.png
infating: yoga/img/iyengar-yoga.jpg
infating: yoga/img/json-response.jpg
infating: yoga/img/kundalini-yoga.jpg
infating: yoga/img/lance-begrol.jpg
infating: yoga/img/logo.png
infating: yoga/img/logo.png
infating: yoga/img/mind-soul.png
infating: yoga/img/the-best-class-yoga.jpg
infating: yoga/img/yoga-header.jpg
infating: yoga/index.html
root@vmac-2:/silicon# ls
yoga yoga.zip
root@vmac-2:/silicon# cd yoga
root@vmac-2:/silicon/yoga# ls
bootstrap css font img index.html
root@vmac-2:/silicon/yoga# cp -r * /var/www/html
root@vmac-2:/silicon/yoga# cd ~
root@vmac-2:# /var/www/html
bash: /var/www/html: Is a directory
root@vmac-2:# /var/www/html/
bash: /var/www/html/: Is a directory
root@vmac-2:# cd /var/www/html/
root@vmac-2:/var/www/html# ls
bootstrap css font img index.html
root@vmac-2:/var/www/html# 

Name All Sess...
Type Folder
Sub items 0
Host
Port 22
Protocol SSH
User Name
Description

ssh://Subham@13.89.47.155:22
SSH2 xterm I1 187x41 # 41,28 1 session ▾
```

Download a similar website and copy its content to /var/www/html. We see the same downloaded website.



After completing all this testing, deleting all the instances and resources is important.

Resource groups

Default Directory

RS-1 Resource group

Overview

Essentials

Resources Recommendations

Name	Type	Location
mykey	SSH key	Central US
vmac-1	Virtual machine	Central US
vmac-1-ip	Public IP address	Central US
vmac-1-nsg	Network security group	Central US
vmac-1-vnet	Virtual network	Central US
vmac-1790	Network Interface	Central US
vmac-1_OsDisk_1	Disk	Central US

< Previous Page 1 of 1 Next >

Give feedback

Delete a resource group

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted

Dependent resources to be deleted (13)

All dependent resources, including hidden types, are shown

Name	Resource type
mykey	SSH key
vmac-1	Virtual machine
vmac-1-ip	Public IP address
vmac-1-nsg	Network security group
vmac-1-vnet	Virtual network
umar-1790	Network interface

Apply force delete for selected Virtual machines and Virtual machine scale sets

Enter resource group name to confirm deletion *

RS-1

Delete Cancel

Click on delete and it is done.