



Microsoft
Azure

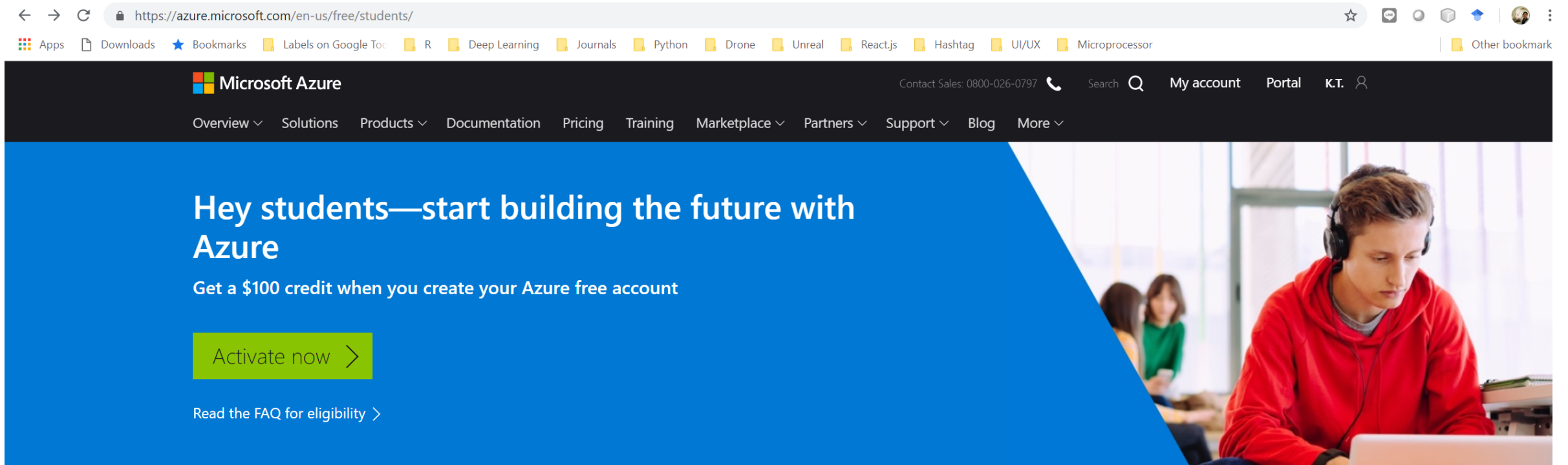


Create Your First Azure Cloud Server

Prof. Kuan-Ting Lai
2019/9/20

Microsoft Azure Student Account

- <https://azure.microsoft.com/en-us/free/students/>

A screenshot of the Microsoft Azure website's student account page. The browser's address bar shows the URL 'https://azure.microsoft.com/en-us/free/students/'. The page features a dark navigation bar with the Microsoft Azure logo, contact information, and a search bar. Below the navigation bar is a blue hero section with the headline 'Hey students—start building the future with Azure' and a sub-headline 'Get a \$100 credit when you create your Azure free account'. A prominent green button labeled 'Activate now >' is centered in the hero section. To the right of the text is a photograph of a young man in a red hoodie wearing headphones and working on a laptop. Below the hero section, three key benefits are listed: 'No credit card needed', '25+ free products', and '\$100 in free credit', each with a brief description and a 'Learn more >' link.

← → ↻ <https://azure.microsoft.com/en-us/free/students/> ☆

Apps Downloads ★ Bookmarks Labels on Google To R Deep Learning Journals Python Drone Unreal React.js Hashtag UI/UX Microprocessor | Other bookmark

Microsoft Azure Contact Sales: 0800-026-0797 Search My account Portal K.T.

Overview Solutions Products Documentation Pricing Training Marketplace Partners Support Blog More

Hey students—start building the future with Azure

Get a \$100 credit when you create your Azure free account

Activate now >

[Read the FAQ for eligibility >](#)

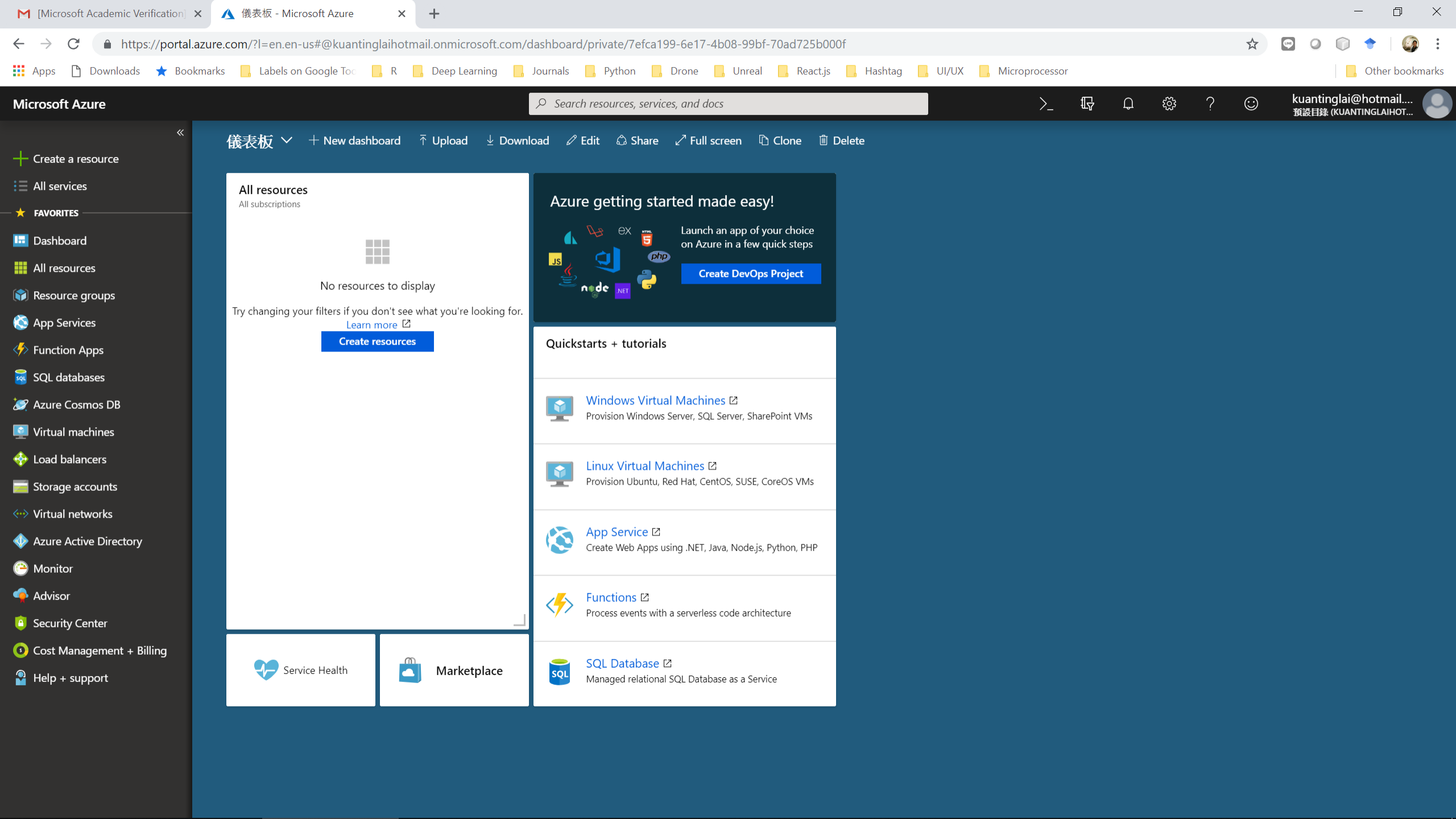
No credit card needed + **25+ free products** + **\$100 in free credit**

Simply verify your student status through your school email address, and you're ready to go.

Explore virtual machines, artificial intelligence (AI), databases, and more.

Use your credits with any Azure product to build a class project or a hackathon.

[Learn more >](#)



Create a Virtual Machine

Microsoft Azure

<<

+

Create a resource

☰

All services

★

FAVORITES

🏠

Dashboard

📊

All resources

📁

Resource groups

🌐

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

Home > Virtual machines

Virtual machines

預設目錄 (kuantinglaihotmail.onmicrosoft.com)

+

Add

🕒

Reservations

☰

Edit columns

🔄

Refresh

🏷️

Assign tags

▶

Start

↺

Restart

■

Stop

🗑️

Delete

☰

Services

Subscriptions: Azure for Students – Don't see a subscription? [Open Directory + Subscription settings](#)

Filter by name...

All resource groups

All types

All locations

All tags

No grouping

0 items

☐	NAME ↑↓	TYPE ↑↓	STATUS	RESOURCE GROUP ↑↓	LOCATION ↑↓	MAINTENANCE STATUS	SUBSCRIPTION ↑↓
--------------------------	---------	---------	--------	-------------------	-------------	--------------------	-----------------

No virtual machines to display

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

[Learn more about Windows virtual machines](#)

[Learn more about Linux virtual machines](#)

Create virtual machine

kuantinglai@hotmail....

預設目錄 (KUANTINGLAIHOT...

Microsoft Azure

Search resources, services, and docs

> ↵ 🔔 ⚙️ ? 😊

kuantinglai@hotmail...
預設目錄 (KUANTINGLAHOT...

<< Home > Virtual machines > Create a virtual machine

Create a virtual machine

Basics Disks Networking Management Guest config Tags Review + create

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

PROJECT DETAILS

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

* Subscription ⓘ

Azure for Students

* Resource group ⓘ

(New) FreeTest

[Create new](#)

INSTANCE DETAILS

* Virtual machine name ⓘ

Ubuntu1

* Region ⓘ

East US

Availability options ⓘ

No infrastructure redundancy required

* Image ⓘ

Ubuntu Server 18.04 LTS

[Browse all images and disks](#)

* Size ⓘ

Standard D2s v3

2 vcpus, 8 GB memory

[Change size](#)

ADMINISTRATOR ACCOUNT

Authentication type ⓘ

☒ Password ☐ SSH public key

Review + create

Previous

Next : Disks >

← Name Your Machine

Microsoft Azure

<<

Home > Virtual machines > Create a virtual machine

>_

kuantinglai@hotmail...
預設目錄 (KUANTINGLAHOT...

+ Create a resource

All services

FAVORITES

Dashboard

All resources

Resource groups

App Services

Function Apps

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Azure Active Directory

Monitor

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Cost Management + Billing

Help + support

Create a virtual machine

* Image ⓘ

Ubuntu Server 18.04 LTS

Browse all images and disks

* Size ⓘ

Standard D2s v3

2 vcpus, 8 GB memory

Change size

ADMINISTRATOR ACCOUNT

Authentication type ⓘ

☒ Password

☐ SSH public key

* Username ⓘ

kuanting

* Password ⓘ

.....

* Confirm password ⓘ

.....

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

INBOUND PORT RULES

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

* Public inbound ports ⓘ

☒ None ☐ Allow selected ports

Select inbound ports

Select one or more ports

ⓘ

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

Review + create

Previous

Next : Disks >

1. Use Password

2. Your Name

3. Your Password

Wait for 2 minutes...

Microsoft Azure

Create a resource

All services

FAVORITES

Dashboard

All resources

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Cost Management + Billing

Help + support

Home > CreateVm-Canonical.UbuntuServer-18.04-LTS-20181109184857 - Overview

CreateVm-Canonical.UbuntuServer-18.04-LTS-20181109184857 - Overview

Deployment

Search (Ctrl+J)

Overview

Outputs

Inputs

Template

Delete

Cancel

Redeploy

Refresh

... Your deployment is underway

Check the status of your deployment, manage resources, or troubleshoot deployment issues. Pin this page to your dashboard to easily find it next time.

Deployment name: CreateVm-Canonical.UbuntuServer-18.04-LTS-20181109184857

Subscription: [Azure for Students](#)

Resource group: [FreeTest](#)

DEPLOYMENT DETAILS [\(Download\)](#)

Start time: 11/9/2018, 6:54:43 PM

Duration: 2 minutes 27 seconds

Correlation ID: b5916683-0f80-4610-a764-9f99775ffe9f

RESOURCE	TYPE	STATUS	OPERATION DETAILS
Ubuntu1	Microsoft.Compute/virtualMachi...	Created	Operation details
ubuntu1808	Microsoft.Network/networkInter...	Created	Operation details
FreeTest-vnet	Microsoft.Network/virtualNetwo...	OK	Operation details
Ubuntu1-ip	Microsoft.Network/publicIpAddr...	OK	Operation details
Ubuntu1-nsg	Microsoft.Network/networkSecu...	OK	Operation details
reestdiag122	Microsoft.Storage/storageAccou...	OK	Operation details

Additional Resources

[Windows Server 2016 VM](#)
[Quickstart tutorial](#)

[Cosmos DB](#)
[Quickstart tutorial](#)

[Web App](#)
[Quickstart tutorial](#)

[SQL Database](#)
[Quickstart tutorial](#)

[Storage Account](#)
[Quickstart tutorial](#)

Helpful Links

[Get started with Azure](#)

[Azure architecture center](#)

Microsoft Azure

Home > CreateVm-Canonical.UbuntuServer-18.04-LTS-20181109184857 - Overview > Ubuntu1-ip

Ubuntu1-ip

Public IP address

Search (Ctrl+/)

Overview

Activity log

Access control (IAM)

Tags

Settings

Configuration

Properties

Locks

Automation script

Support + troubleshooting

New support request

Associate

Dissociate

Move

Delete

Essentials

Resource group (change)
FreeTest

Location
East US

Subscription name (change)
Azure for Students

Subscription ID
d4ad50ec-35f5-4e06-af78-119c95213cca

SKU
Basic

IP address
40.87.5.36

DNS name
-

Associated to
ubuntu1808

Virtual machine
Ubuntu1

Your IP Address

Open Port 22

Microsoft Azure

Search resources, services, and docs

kuantinglai@hotmail...
預設目錄 (KUANTINGLAHOT...

Create a resource

All services

FAVORITES

Dashboard

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Security Center

Cost Management + Billing

Help + support

Home > CreateVm-Canonical.UbuntuServer-18.04-LTS-20181109184857 - Overview > Ubuntu1-ip - Properties > ubuntu1808 - Network security group

Ubuntu1-nsg - Inbound security rules

Network security group

Search (Ctrl+/)

+ Add Default rules

PRIORITY	NAME	PORT	PROTOCOL
65000	AllowVnetInBound	Any	Any
65001	AllowAzureLoadBalancerInBound	Any	Any
65500	DenyAllInBound	Any	Any

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Inbound security rules

Outbound security rules

Network interfaces

Subnets

Properties

Locks

Automation script

Monitoring

Diagnostic settings

NSG flow logs

Support + troubleshooting

Effective security rules

New support request

Add inbound security rule

Ubuntu1-nsg

Basic

* Source ⓘ

Any

* Source port ranges ⓘ

*

* Destination ⓘ

Any

* Destination port ranges ⓘ

22

* Protocol

Any TCP UDP

* Action

Allow Deny

* Priority ⓘ

100

* Name

Port_SSH

Description

Add

Connect to Your Virtual Machine

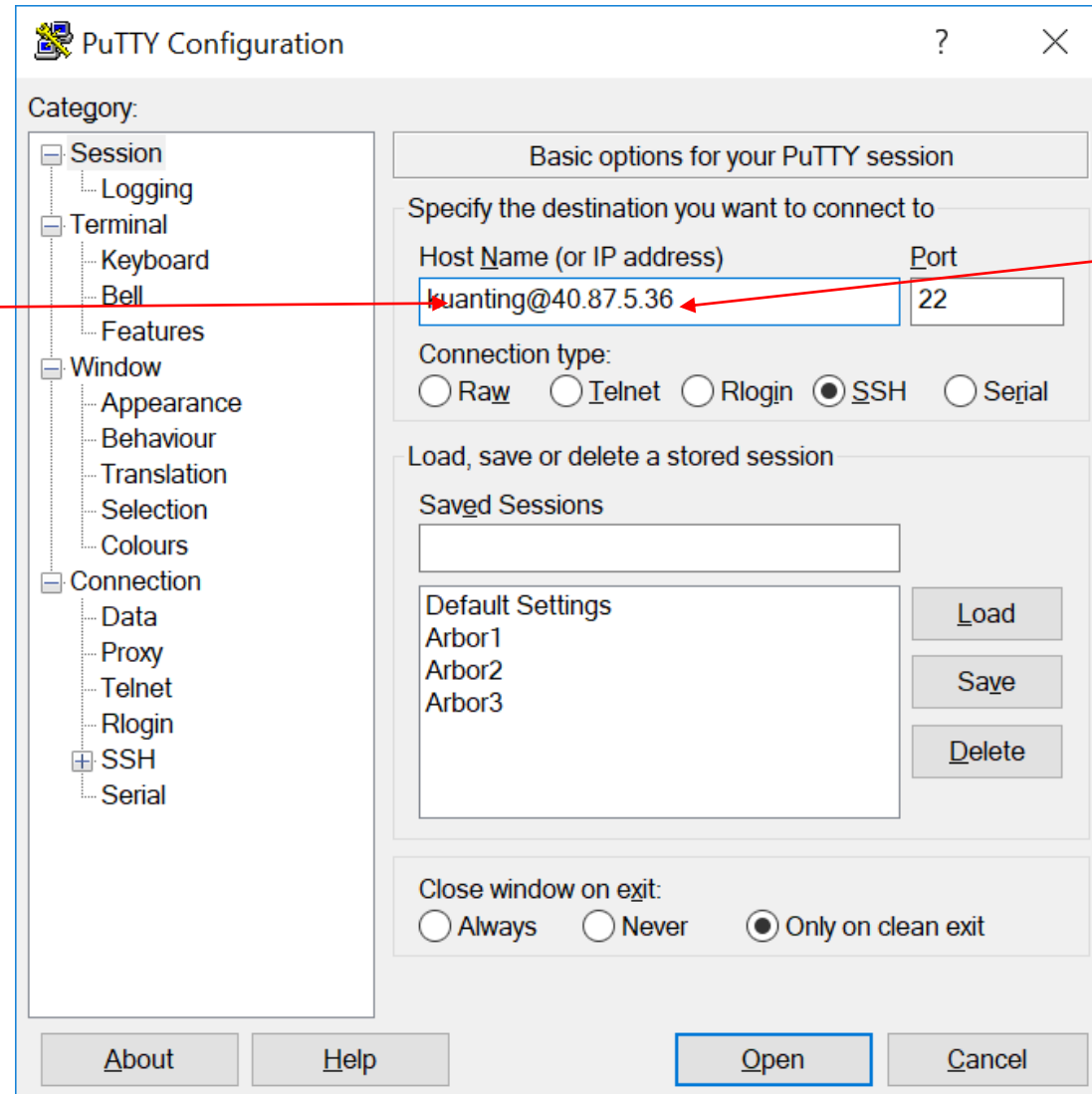
The screenshot displays the Microsoft Azure portal interface. On the left is a dark sidebar with navigation links: 'Create a resource', 'All services', 'FAVORITES', 'Dashboard', 'All resources', 'Resource groups', 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', 'Storage accounts', 'Virtual networks', 'Azure Active Directory', 'Monitor', 'Advisor', 'Security Center', 'Cost Management + Billing', and 'Help + support'. The main area shows the 'Virtual machines' page for the subscription 'Azure for Students'. It includes a search bar, a toolbar with actions like 'Add', 'Reservations', 'Edit columns', 'Refresh', 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', and 'Services', and filter controls. A table lists the virtual machines, with one item selected: 'Ubuntu1' (Virtual machine, Running, FreeTest, East US). A context menu is open over this item, showing the following options: 'Connect', 'Start', 'Restart', 'Stop', and 'Delete'.

NAME	TYPE	STATUS	RESOURCE GROUP	LOCATION	MAINTENANCE ...	SUBSCRIPTION
✓ Ubuntu1	Virtual machine	Running	FreeTest	East US	-	-

Use Putty to Connect to Your Cloud

- Download and install Putty (<https://www.putty.org/>)
- Other client software:
 - MobaXterm
 - TeraTerm
 - ...

Your Name



Your IP Address

Login Your Cloud Server!

```
kuanting@Ubuntu1: ~  
Using username "kuanting".  
kuanting@104.211.0.122's password:  
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-1030-azure x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
  
System information as of Fri Nov 16 15:34:05 UTC 2018  
  
System load:  1.36           Processes:            134  
Usage of /:   5.6% of 28.90GB Users logged in:      0  
Memory usage: 4%           IP address for eth0: 10.0.0.4  
Swap usage:   0%  
  
* Security certifications for Ubuntu!  
We now have FIPS, STIG, CC and a CIS Benchmark.  
  
- http://bit.ly/Security_Certification  
  
* Want to make a highly secure kiosk, smart display or touchscreen?  
Here's a step-by-step tutorial for a rainy weekend, or a startup.  
  
- https://bit.ly/secure-kiosk  
  
Get cloud support with Ubuntu Advantage Cloud Guest:  
http://www.ubuntu.com/business/services/cloud  
  
* Canonical Livepatch is available for installation.  
- Reduce system reboots and improve kernel security. Activate at:  
https://ubuntu.com/livepatch  
  
31 packages can be updated.  
19 updates are security updates.  
  
Last login: Tue Nov 13 09:21:22 2018 from 223.140.107.248  
kuanting@Ubuntu1:~$
```

Install node.js on Ubuntu



- `sudo apt-get install node.js`
- `sudo apt-get install npm`

```
linlun@Ubuntu1: ~  
System information as of Fri Sep 20 08:06:23 UTC 2019  
  
System load: 0.08      Processes:      119  
Usage of /:  5.9% of 28.90GB  Users logged in: 0  
Memory usage: 6%      IP address for eth0: 10.0.0.4  
Swap usage:  0%  
  
* Congrats to the Kubernetes community on 1.16 beta 1! Now available  
  in MicroK8s for evaluation and testing, with upgrades to RC and GA  
  
  snap info microk8s  
  
* Canonical Livepatch is available for installation.  
  - Reduce system reboots and improve kernel security. Activate at:  
    https://ubuntu.com/livepatch  
  
7 packages can be updated.  
0 updates are security updates.  
  
*** System restart required ***  
Last login: Fri Sep 20 07:35:44 2019 from 110.50.132.91  
linlun@Ubuntu1:~$ sudo apt-get install node
```

buffers

```
s/main.rs s/canvas.rs f/s/PanZoom.jsx config.json t//./3/t/c/s/PanZoom.jsx"
```

```

5 import React from 'react';
6
7 import PropTypes from 'prop-types';
8 import './PanZoom.scss';
9
10 const SCROLL_ZOOM_SENSITIVITY = 0.01;
11 const CLICK_THRESHOLD = 4;
12
13 const getMouseCoords = event => ({ x: event.clientX, y: event.clientY });
14
15 export default class PanZoom extends React.Component {
16   static propTypes = {
17     onClick: PropTypes.func.isRequired,
18   };
19
20   state = { x: 0, y: 0, scale: 1 };
21   stateBeforePan = this.state;
22   mouseBeforePan = { x: 0, y: 0 };
23
24   containerRef = React.createRef();
25   childRef = React.createRef();
26
27   componentDidMount() {
28     this.setState(({ scale }) => {
29       const container = this.containerRef.current;
30       return {
31         x: container.clientWidth / 2,
32         y: container.clientHeight / 2,
33         scale: this.adjustScale(scale),
34       };
35     });
36   }
37 }

```

```
32   onDragStart = ({ nativeEvent: event }) => {  
33     this.stateBeforePan = this.state;  
34     this.mouseBeforePan = getMouseCoords(event);  
35  
36     document.addEventListener('mousemove', this.onDragMove);  
37     document.addEventListener('mouseup', this.onDragStop);
```

```
frontend/src/PanZoom.jsx      RLS javascript.jsx utf-8[un
```

```

6 dmitmel@pelmeshkacomputer.local /Users/dmitmel/Projects/Rust/pla
5 .git canvas.rs 4.05 K use actix_web::*;
4 .vscode client.rs 5.22 K use failure::{Fail
3 frontend config.rs 750 B use log::*;
2 src macros.rs 456 B
1 target main.rs 2.01 K use crate::config::ServerConfig;
7 .gitattri~ server.rs 1.46 K use crate::State;

```

```

1 .gitignore
2 canvas.bin
3 Cargo.lock
4 Cargo.toml
5 conf~.json
6 LICENSE
7 README.md
8 rust~.toml
9
pub fn start(config: ServerConfig, state: State)
    let static_files_config = config.static_files;
    let http_server = server::new(move || {
        App::with_state(state.clone())
            .middleware(middleware::Logger::new(r#"%"a
            .resource("/api/canvas", |r| r.with(routes
            .resource("/api/connect", |r| r.with(route
            .handler(

```

```
32 use actix::actors::signal::{self, ProcessSignals, Signal, SignalType};
31 use actix::prelude::*;
30 use futures::Future;
29
28 use crate::client::Client;
27 use crate::config::CanvasConfig;
26 use crate::try_run;
25
24 pub type Coord = u16;
23
```

```
<Client>>,
```

```
CanvasConfig) -> Fallible<Self> {  
  save data from {:"??"}, config.save.path);  
}
```

```
openOptions::new()
```

```
canvas file")?;
```

```
    , config.width as use * config.height as use];  
    data).context("couldn't read canvas data");
```

```
file, data, listeners: HashSet::new()) }
```

```
x: Coord, y: Coord) -> Result<(), String> {
```

```

    { $val := ($max - $expr) * $max; $max = $max - $val }
    , $val := ($max - $expr) * $max; $max = $max - $val
} => {
    n Er      it!(n
    k ou      unds: the {} is {} but the {} is {}",
    l x name, $max, $val name, $val,

```

```

12         });
13     };
14 }
15 is_in_bounds!(x, "x", self.config.width, "width");
16 is_in_bounds!(y, "y", self.config.height, "height");
17
18 Ok()
19 }
20
21 fn cell_ref(&mut self, x: Coord, y: Coord) -> &mut Color {
22     &mut self.data[x as usize + y as usize * self.config.

```

Vim Simple Tutorial (www.openvim.com)

- Two modes: insert (i) and normal (Esc)
- Entering insert mode to edit
 - i
- Entering command line mode
 - “Esc” + “:”
- Saving & Exiting vim
 - Esc -> : -> wq
- Exiting vim without saving
 - Esc -> : -> q!

vi / vim graphical cheat sheet

Esc
normal
mode

~ toggle case	! external filter	@ play macro	# prev ident	\$ eol	% goto match	^ "soft" bol	& repeat :s	* next ident	(begin sentence	) end sentence	"soft" bol down	+ next line
\ goto mark	1	2	3	4	5	6	7	8	9	0 "hard" bol	- prev line	= auto ³ format
Q ex mode	W next WORD	E end WORD	R replace mode	T back 'till	Y yank line	U undo line	I insert at bol	O open above	P paste before	{ begin parag.	} end parag.	
q record macro	w next word	e end word	r replace char	t 'till	y yank ^{1,3}	u undo	i insert mode	o open below	p paste ¹ after	[misc	] misc	
A append at eol	S subst line	D delete to eol	F "back" find ch	G eof/ goto ln	H screen top	J join lines	K help	L screen bottom	: ex cmd line	" reg. ¹ spec	bol/ goto col	
a append	s subst char	d delete ^{1,3}	f find char	g extra ⁶ cmds	h ←	j ↓	k ↑	l →	: repeat t/T/f/F	' goto mk. bol	\ not used!	
Z quit ⁴	X back-space	C change to eol	V visual lines	B prev WORD	N prev (find)	M screen mid'l	< un-indent ³	> indent ³	? find (rev.)			
Z extra ⁵ cmds	X delete char	c change ^{1,3}	V visual mode	b prev word	n next (find)	m set mark	reverse t/T/f/F	repeat cmd	/ find			

- motion** moves the cursor, or defines the range for an operator
- command** direct action command, if **red**, it enters insert mode
- operator** requires a motion afterwards, operates between cursor & destination
- extra** special functions, requires extra input

q. commands with a dot need a char argument afterwards
bol = beginning of line, eol = end of line,
mk = mark, yank = copy

words: `quux(foo, bar, baz);`
WORDS: `quux(foo, bar, baz);`

Main command line commands ('ex'):

:w (save), :q (quit), :q! (quit w/o saving)
:e f (open file f),
:%s/x/y/g (replace 'x' by 'y' filewide),
:h (help in vim), :new (new file in vim),

Other important commands:

CTRL-R: redo (vim),
CTRL-F/-B: page up/down,
CTRL-E/-Y: scroll line up/down,
CTRL-V: block-visual mode (vim only)

Visual mode:

Move around and type operator to act on selected region (vim only)

Notes:

- (1) use "x before a yank/paste/del command to use that register ('clipboard') (x=a..z,*) (e.g.: "ay\$ to copy rest of line to reg 'a')
- (2) type in a number before any action to repeat it that number of times (e.g.: 2p, d2w, 5i, d4j)
- (3) duplicate operator to act on current line (dd = delete line, >> = indent line)
- (4) ZZ to save & quit, ZQ to quit w/o saving
- (5) zt: scroll cursor to top, zb: bottom, zz: center
- (6) gg: top of file (vim only), gf: open file under cursor (vim only)

TMUX

The image shows a VS Code editor window with a file named 'http_server.js'. The code is a simple Node.js HTTP server that listens on port 3000 and responds with 'Hi! I am [Your StudentID]' when accessed. The terminal at the bottom shows the command 'node http_server.js' being executed, which outputs 'Server is running...'. The status bar at the bottom indicates the file is 8 lines long and 177 characters, and the terminal shows the command prompt is ready for input.

Create http_server.js using VIM

- vim http_server.js

```
var http = require('http');

//create a server object:
http.createServer(function (req, res) {
  res.write('Hi! I am [Your StudentID]'); //write a response to the client
  res.end(); //end the response
}).listen(3000); //the server object listens on port 3000

console.log('Server is running...');
```

Running Your Server

- `sudo node http_server.js`

Running Your Server in Background

- `npm install forever -g`
- `forever start http_server.js`

Open Port 3000

Microsoft Azure

Create a resource

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Home > Virtual machines > Ubuntu1 - Networking

Virtual machines
預覽目錄 (kuantinglai@hotmail.onmicrosoft.c...

+ Add ⌚ Reservations ... More

Filter by name...

NAME ↑↓

Ubuntu1

Ubuntu1 - Networking
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Update management

Inventory

Attach network interface Detach network interface

Network Interface: **ubuntu1808** Effective security rules Topology
Virtual network/subnet: FreeTest-vnet/default Public IP: 40.87.5.36 Private IP: 10.0.0.4

APPLICATION SECURITY GROUPS ⓘ
Configure the application security groups

INBOUND PORT RULES ⓘ
Network security group **Ubuntu1-nsg** (attached to network interface: ubuntu1808)
Impacts 0 subnets, 1 network interfaces

PRIORITY	NAME	PORT
65000	AllowVnetInBound	Any
65001	AllowAzureLoadBalancerInBound	Any
65500	DenyAllInBound	Any

OUTBOUND PORT RULES ⓘ
Network security group **Ubuntu1-nsg** (attached to network interface: ubuntu1808)
Impacts 0 subnets, 1 network interfaces

PRIORITY	NAME	PORT
65000	AllowVnetOutBound	Any
65001	AllowInternetOutBound	Any
65500	DenyAllOutBound	Any

Add inbound security rule
Ubuntu1-nsg

Basic

* Source ⓘ
Any

* Source port ranges ⓘ
*

* Destination ⓘ
Any

* Destination port ranges ⓘ
3000 ✓

* Protocol
Any TCP UDP

* Action
Allow Deny

* Priority ⓘ
100

* Name
Port_3000 ✓

Description

Add

Hello Server!

