

클라우드 컴퓨팅 실습 1

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Section 1

클라우드 컴퓨팅 기초

클라우드 컴퓨팅 기초

What is Cloud Computing?

→ 원격지의 컴퓨팅 리소스(CPU, memory, disk, network)를 대여하여 사용하는 것

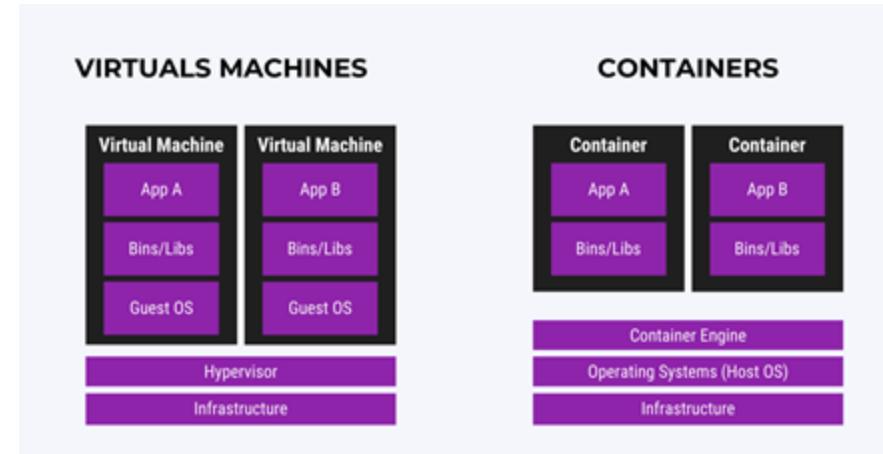
특징

- Pay-as-you-go
 - 사용한 만큼 지불, 초기 투자 비용 없음
- Scalable
 - 필요한 만큼 리소스를 증가/감소시킬 수 있음, auto-scaling
- Responsibility
 - 서비스 제공자가 관리 책임

클라우드 컴퓨팅 기초

Virtualization and Cloud Computing

- 가상화 기술(VM, Container)을 사용하여 클라우드 컴퓨팅 서비스 구축에 활용
 - VM: 하이퍼바이저 위에 독립된 Guest OS를 사용하여 높은 격리 수준 보장
 - Container: 컨테이너 엔진을 사용하고 Host OS 커널을 공유하여 경량화 및 빠른 배포 가능

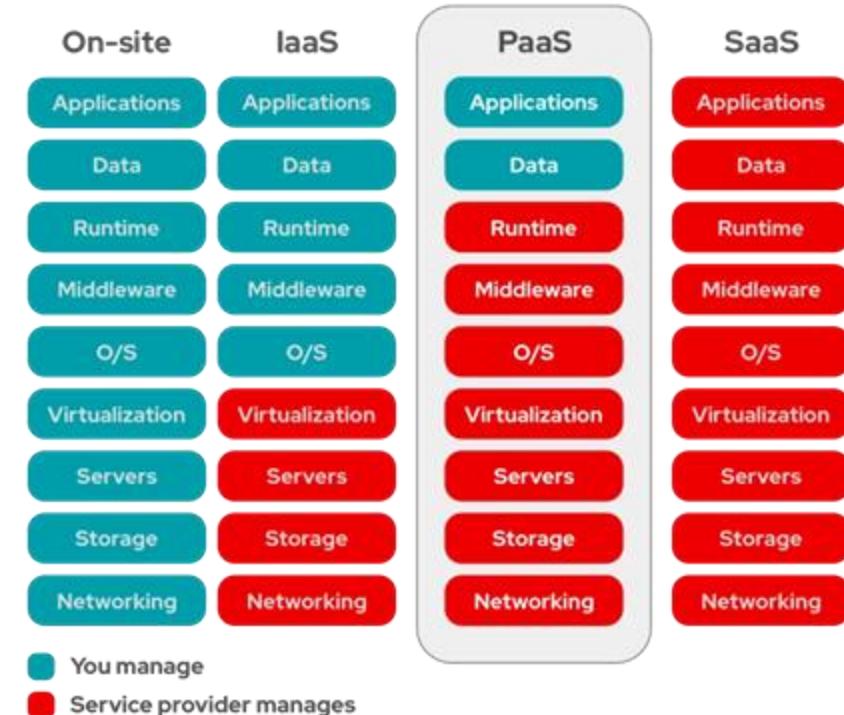


클라우드 컴퓨팅 기초

X as a Service (XaaS)

→ 서비스 제공자의 관리 범위

- Infrastructure-as-a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)



Service Level Agreement (SLA)

→ 제공하는 서비스에 대해 무엇을 보장하는지 명시

- 무엇을 보장할까?
- 성능 수준?
- 보상?

클라우드 컴퓨팅 기초

Service Level Agreement (SLA)

The screenshot shows a web browser displaying the 'General Service Level Agreement' document from Tencent Cloud. The page has a header with navigation links like 'Documentation', 'Promotions', 'Products', 'Solutions', 'Pricing', 'Partner Network', 'Marketplace', and 'Explore More'. A search bar and user profile icons are also present. The main content area has a breadcrumb trail: Documentation > Terms and Policies > Legal > General Service Level Agreement. The document title is 'General Service Level Agreement' with a 'Download PDF' button. It includes sections like '1. INTRODUCTION', '2. SERVICE LEVELS AND SERVICE CREDITS', and '3. COMPENSATION'. The text is in English and discusses service levels, credits, and compensation based on specific service agreements.

General Service Level Agreement

Last updated: 2023-04-01 15:14:44

1. INTRODUCTION

1.1 This General Service Level Agreement, including the relevant Service specific Service Level Agreements, (collectively, "SLA") is incorporated into, and forms part of, the Tencent Cloud [Terms of Service](#) or the relevant Cloud Master Services Agreement, as applicable, entered into between Tencent and you ("Agreement"). This SLA applies separately to each Account using the Services.

1.2 Capitalized terms used but not defined in the SLA will have the meaning given to them in the Agreement.

1.3 Tencent may amend the SLA in accordance with the Agreement.

1.4 If there are any discrepancies between this General Service Level Agreement and the relevant Service specific Service Level Agreement(s), the relevant Service specific Service Level Agreement(s) shall apply.

1.5 In this General Service Level Agreement:

- [a] "[Billing Cycle](#)" means a monthly billing cycle for the Fees during the Term;
- [b] "[Compensation](#)" means the compensation as set out in the relevant Service specific Service Level Agreement, and;
- [c] "[Service Levels](#)" means the service standard or service availability set out in the relevant Service specific Service Level Agreement;

2. SERVICE LEVELS AND SERVICE CREDITS

Without limitation stated in a relevant Service specific Service Level Agreement:

2.1 Tencent will use reasonable efforts to make Service available in accordance with the Service specific Service Level Agreement. If Tencent Cloud fails to meet a Service Level during the relevant calendar month (an "Incident"), then (subject to the terms and conditions of the Agreement and the relevant Service specific Service Level Agreement) you are eligible to receive Compensation.

2.2 All Service Levels will be calculated on a per account, per-complete calendar month basis. Service Levels will not be calculated, and no Compensation will be due, for any incomplete calendar month (a. if you do not purchase a particular Service for a complete calendar month, no Compensation is applicable in relation to that Service for that non-complete calendar month).

2.3 Compensation is calculated as a percentage of the total Fees paid by you to Tencent in respect of the relevant Service provided under the Agreement during the relevant calendar month in which the Service Level was calculated.

2.4 Any Compensation provided to you:

- [a] will only be applied against future payments of Fees due from your account to Tencent for the relevant Service that is subject of the relevant Incident;
- [b] unless otherwise expressly set out in the Agreement, will be your sole and exclusive remedy for;

2.5 Tencent's failure to meet the applicable Service Level, and

Service Level Agreement (SLA)

- Service Level Agreements ▲
 - Security ▼
 - Big Data ▼
 - Face Recognition ▼
 - AI and Machine Learning ▼
 - Enterprise Applications ▼
 - Office Collaboration ▼
 - Industry Applications ▼
 - Developer Services ▼
- Computing ▼
- Container and Middleware ▼
- Storage ▼
- Database ▼
- Networking ▼
- CDN and Communication ▼
- Media Services ▼

클라우드 컴퓨팅 기초

Service Level Agreement (SLA)

1. Terms and Definitions

2. Service Availability

3. Service Compensation

4. Release of Liabilities

5. Miscellaneous

The screenshot shows the Tencent Cloud Documentation interface. The top navigation bar includes links for Promotions, Products, Solutions, Pricing, Partner Network, Marketplace, Explore More, and a search bar. Below the navigation is a breadcrumb trail: Documentation > Terms and Policies > Legal > Service Level Agreements > Computing > CVM Service Level Agreement. To the right of the breadcrumb trail are links for "Download PDF" and "Last updated: 2020-11-01 11:08:23". On the left, a sidebar titled "Documentation" lists various legal documents under "Terms and Policies", such as Terms of Service, Privacy Policy, Data Processing and Security Agreement, Customer Security Assessment Policy and Guidelines, Acceptable Use Policy, Copyright Policy, Notification Policy, Service Specific Terms, General Service Level Agreement, and Service Level Agreements. Under "Computing", there are links for CVM Service Level Agreement, CVM Service Compensations, and CVM Compute and Monitoring. The main content area is titled "CVM Service Level Agreement" and discusses the terms and conditions for using the service, including compensation plans and release of liabilities.

Service Level Agreement (SLA)

2.2 Service Availability

(1) The Single Instance Service Availability of the Service provided by Tencent Cloud will be **no less than 99.975%**. You are entitled to the compensation as set forth in Section 3 below if the Service Availability fails to meet the aforementioned standard, other than in any circumstance as provided for in the release of liabilities provisions below. Assuming that a Service Month has thirty (30) days, the total available time of a Single Instance in such month shall be 30 (days) × 24 (hours) × 60 (minutes) × 99.975% = 43189.2 minutes; that is, the Service Downtime of the instance in such month will be $43200 - 43189.2 = 10.8$ minutes.

(2) The Service Availability Across Availability Zones in A Single Region of the Service provided by Tencent Cloud will be **no less than 99.995%**. You are entitled to the compensation as set forth in Section 3 below if the Service Availability fails to meet the aforementioned standard, other than in any circumstance as provided for in the release of liabilities provisions below. Assuming that a Service Month has thirty (30) days, the total available time of a Single Instance in such month shall be 30 (days) × 24 (hours) × 60 (minutes) × 99.995% = 43197.84 minutes; that is, the Service Downtime Across Availability Zones in A Single Region in such month will be $43200 - 43197.84 = 2.16$ minutes.

Section 2

실습

실습

Login 설명

The screenshot shows the Tencent Cloud login interface. It features a "Log in with email" form with fields for Email and Password, and a "Log in" button. Below this, there is an "or" separator and a "Log in as CAM user" button, which is highlighted with a large red arrow pointing to it. At the bottom of the form are links for "Sign up" and "Forgot password". To the right of the login form, there is an advertisement for "Elasticsearch Service Limited-time free trial" with a "Free Trial" button.

Tencent Cloud | Log in

Intl-English ▾

Log in with email

Email

Password

Log in

or

Log in as CAM user

Log in with Google

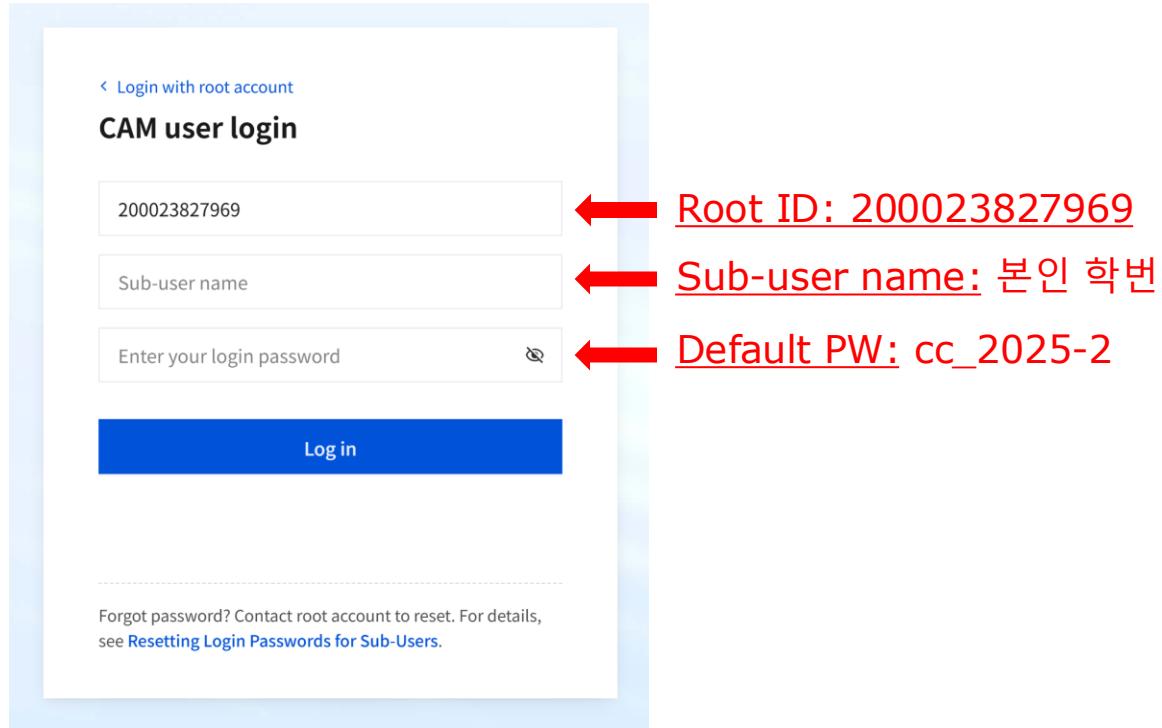
Elasticsearch Service Limited-time free trial

Preferred Solutions for Log and Search Scenarios. First month free. New customers' discounts start at 55% off. \$440 voucher is up for grabs!

Free Trial

실습

Login 설명



Login 설명

Reset password

You may be asked to reset your password due to password expiration or other reasons.

..... Default PW: cc_2025-2

New Password

Confirm Password

Confirm

< Login with root account

MediaLink Webinars

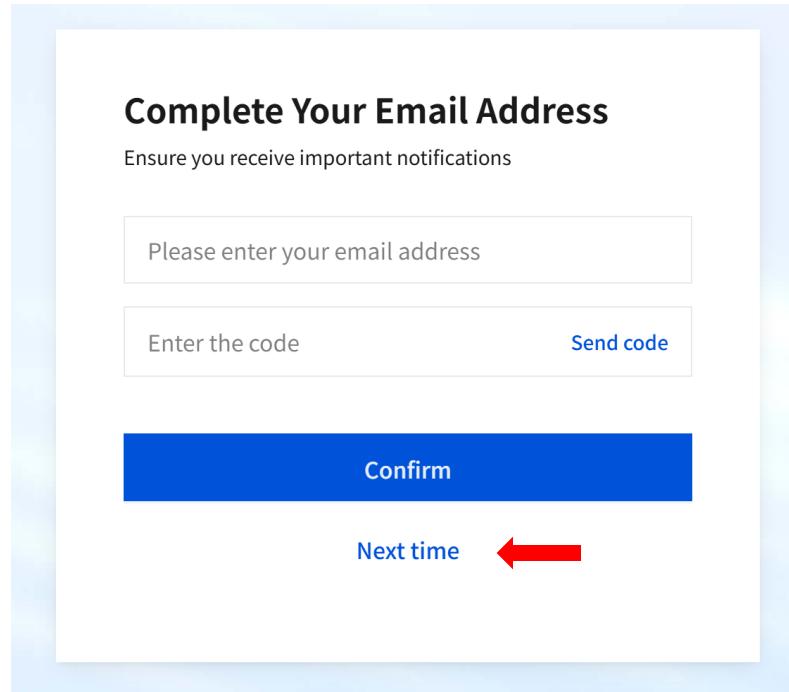
Join our webinar series, exploring topics from global chat connectivity, real-time communication, immersive gaming experiences, AI-powered media processing, to captivating live streaming!

Learn more



실습

Login 설명



실습

Tencent Cloud VM 생성

- 로그인 후 콘솔 창으로 이동 (우상단 “Console” 버튼)

The screenshot shows the Tencent Cloud console interface. At the top left is the "Tencent Cloud" logo and a search bar. The top right features links for "Tools", "Ticket", "Billing Center", and language selection ("English"). A user profile icon is also present.

The main area includes:

- Hello, test**: Greeting and account ID (Account Id: 200044362727) with a "Verified" badge and a "View" link.
- Recently Visited**: Links to various services: Tencent Cloud Observability Platform, Cloud Virtual Machine, Virtual Private Cloud, Billing Center, Account Center, Cloud Block Storage, Tag, and Cloud Access Management.
- Currently in Use**: A message stating "You are not authorized to view this content" and instructions for sub-users or collaborators with specific roles to contact the developer for authorization.
- All Products**: A section listing products: Security Center (0), Alarms (0), Pending Tickets (0), Expenses (Outstanding Balance: \$ -), Orders, Transactions, Bill Details, Cost Analysis, Product Documentation, and links to various cloud services.

Tencent Cloud VM 생성

- CVM Instance List(상단 “Products”에서 Cloud Virtual Machine 찾기)

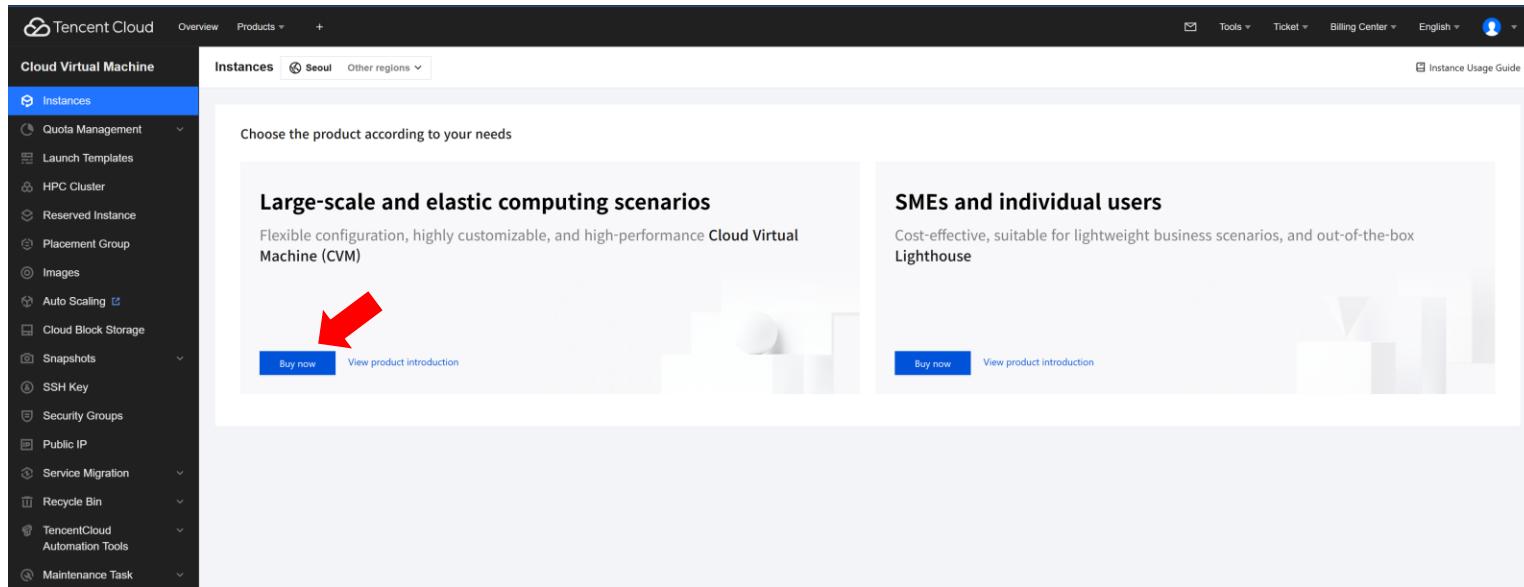
The screenshot shows the Tencent Cloud Instances management interface. On the left, a sidebar menu lists various cloud services under "Cloud Virtual Machine". The "Instances" option is selected and highlighted in blue. The main content area displays a table of instances. One instance is listed:

ID/Name	Status	Mo...	Availab...	Instanc...	Operat...	Instance configuration	Network	Primary IPv4	Instance billing mode	Network billi...	Tag (key:value)	Operation
ins-buildit [New] cc25_2025000000	Running	Seoul Zone 2	Standard S5	2-core 2GB 5Mbps System disk:Balanced SSD	2025-2-CC	Public: 101.33.68.56 Private: 10.0.2.13	Pay-as-you-go Created at 2025-09-30 15:5...	Bill by traffic	2		Log in More	

Total items: 1

Tencent Cloud VM 생성

- CVM Instance 생성(상단 “Products”에서 Cloud Virtual Machine 찾기)



실습

Tencent Cloud VM 생성

Cloud Virtual Machine (CVM)

[Product Documentation](#) [Prices](#) [Console](#)

Custom configuration

1 Select basic configurations

Purchase Recommendation

We recommend you to purchase the latest generation of cost-effective and high-performance CVM SA9 from Tencent Cloud.

2 Configure network and host

3 Confirm configuration

Basic configurations

Billing mode



Region

China

Asia Pacific and Middle East

Europe and America

Seoul

Tokyo

Singapore

Bangkok

Jakarta

Saudi Arabia

(New)

(New)

Availability zone

Random



Recommended Availability Zone

Seoul Zone 1 Recommend

Seoul Zone 2

Cloud products in different availability zones within the same region can communicate over the private network. A random selection has been made for you to Seoul Zone 2.

실습

Tencent Cloud VM 생성

- Instance configurations

Instance configurations

Instance Filter All CPU cores All MEMs Fuzzy search specification name, such as S5.SM/

Architecture All Architectures X86 computing Heterogeneous Computing Bare Metal Instance

Instance family All Instance Families Standard MEM-optimized Compute Be Fast

Model All models Standard SA5 Standard S8 Standard SA4 Standard S6 Standard S5 Show all ▾

Selected model Selected model S5.MEDIUM2 (Standard S5, 2C2G) Seoul Zone 2 is automatically selected. If you need more quotas, apply in the [console](#). [Pricing of random AZ](#)

Hide sold-out products

Instance	Specifications	vCPU	MEM	CPU Clock Spee...	Processor	Private net...	Packets in/o...	Reference fee
<input checked="" type="radio"/> Standard S5 <small>Adequate Inventory</small>	S5.MEDIUM2	2Core	2GiB	2.5GHz/3.1GHz	Intel Xeon Cascade Lake 8255C...	1.5Gbps	300k PPS	0.03USD/hour
<input type="radio"/> Standard S5 <small>Adequate Inventory</small>	S5.MEDIUM4	2Core	4GiB	2.5GHz/3.1GHz	Intel Xeon Cascade Lake 8255C...	1.5Gbps	300k PPS	0.06USD/hour
<input type="radio"/> Standard S5 <small>Adequate Inventory</small>	S5.MEDIUM8	2Core	8GiB	2.5GHz/3.1GHz	Intel Xeon Cascade Lake 8255C...	1.5Gbps	300k PPS	0.12USD/hour

Tencent Cloud VM 생성

- Image

The screenshot shows the 'Image' selection step in the Tencent Cloud VM creation process. At the top, there are three tabs: 'Public image' (selected), 'Custom image', and 'Shared image'. Below the tabs, there are several image options:

- TencentOS (Recommended)
- OpenCloudOS
- CentOS
- Windows
- Ubuntu (highlighted with a blue border)
- Debian
- A placeholder box with a downward arrow icon.

Below the image list, a dropdown menu is open, showing 'Ubuntu Server 24.04 LTS 64bit' with a small thumbnail icon. At the bottom left, there is an 'Instructions' button with the following text:

- Operating system change is supported after purchase. You can [reinstall the system](#) in the console according to workload needs.
- Switching between Linux and Windows is not supported in this region.

Tencent Cloud VM 생성

- Custom Image

The screenshot shows a user interface for creating a custom image. At the top, there are three tabs: 'Image' (disabled), 'Public image' (disabled), and 'Custom image' (selected, indicated by a blue underline). Below the tabs is a dropdown menu labeled 'Select an image' with a downward arrow icon. To the right of the dropdown is a button labeled 'Create custom image' with a circular arrow icon. Underneath the dropdown, there is a section titled 'Instructions' enclosed in a box. It contains two bullet points:

- The operating system can be changed after the purchase. You can go to the console to [Reinstall system](#).
- Switching between Linux and Windows is not supported in this region.

Tencent Cloud VM 생성

- Custom Image

The screenshot shows the Tencent Cloud VM Images interface. On the left, there is a sidebar with various cloud services: Instances, Quota Management, Launch Templates, HPC Cluster, Reserved Instance, Placement Group, Images (which is selected), Auto Scaling, Cloud Block Storage, Snapshots, SSH Key, Security Groups, Public IP, Service Migration, Recycle Bin, TencentCloud Automation Tools, and Maintenance Task. The main area has tabs for Images (Seoul 0), Custom image (selected), Public image, and Shared image. Below the tabs are buttons for Create Custom Image, Import image, Shared image, Replicate Image, and Export image. A search bar and a table listing images. The table has columns: ID/name, Status, Type, Hard Disk, Tag (key:value), Image Family, Operating system, Associated snapshot, Architecture, Creation Time, and Operation. One row is shown: img-mvcd1w0r (Normal, Custom image, System disk 50GiB, 2 tags, Ubuntu Server 24.04 LTS 64bit, 1 snapshot(s), x86_64, 2025-09-30 16:04:18). The operation column shows options: Create instance, Shared image, Cross-region replication, and More. At the bottom, it says Total items: 1 and has a page navigation section.

ID/name	Status	Type	Hard Disk	Tag (key:value)	Image Family	Operating system	Associated snapshot	Architecture	Creation Time	Operation
img-mvcd1w0r cc25_202500000_image	Normal	Custom image	System disk 50GiB	2	-	Ubuntu Server 24.04 LTS 64bit	1 snapshot(s)	x86_64	2025-09-30 16:04:18	Create instance Shared image Cross-region replication More

Tencent Cloud VM 생성

- Storage (IOPS, bandwidth, model)

Storage

Usage	Model	Capacity	Quantity	Total performance	Release upon instance creation	
System disk	Balanced SSD	<div style="display: flex; align-items: center; justify-content: space-around;">-50+</div> GiB	1	Basic performance: IOPS: 2550, bandwidth: 110 MiB/s		
Data disk	Enhanced SSD	<div style="display: flex; align-items: center; justify-content: space-around;">-50+</div> GiB	1	Basic performance: IOPS: 4300, bandwidth: 145 MiB/s	<input checked="" type="checkbox"/>	Create a disk via snapshot Delete
+ Add data disk You can add 19 more data disk(s).						

Data Backup Discount Configure backup points Up to 90% off for a limited time

Automatically manage data backups to address risks such as virus infection and accidental data deletion. (The number of backup points is equal to that of backup days.)

Tencent Cloud VM 생성

- Cloud Disk

The screenshot shows the Tencent Cloud Cloud Disk management interface. On the left, there is a sidebar with navigation links for Instances, Launch Templates, HPC Cluster, Reserved Instance, Placement Group, Images, Auto Scaling, Cloud Block Storage (which is selected), Snapshots, SSH Key, Security Groups, Public IP, Service Migration, Recycle Bin, TencentCloud Automation Tools, and Maintenance Task. The main area displays a table of Cloud Disk resources. The table has columns for ID/Name, Status, AZ, Attribute, Type, Capacity, Associate Instance, Backups, Total Snapshot..., Billing Mode, and Operation. There are five entries in the table:

ID/Name	Status	AZ	Attribute	Type	Capacity	Associate Instance	Backups	Total Snapshot...	Billing Mode	Operation
disk-iuin72y9 cc25_2025000000_SYSTEM_DISK	In use	Seoul Zone 2	System Disk	Balanced SSD	50GiB	ins-bu8rdlx cc25_2025000000	No backup	5.94 GiB	Pay-as-You-Go Creation Time: 2025-09-30 14:54:40	Renew Enable Backup Create Snapshot More
disk-n3pxmh3x worker3_SYSTEM_DISK	In use	Seoul Zone 1	System Disk	Balanced SSD	50GiB	ins-cv6arez5 worker3	No backup	No snapshot created.	Pay-as-You-Go Creation Time: 2025-01-15 22:28:46	Renew Enable Backup Create Snapshot More
disk-oe2is2v worker2_SYSTEM_DISK	In use	Seoul Zone 1	System Disk	Balanced SSD	50GiB	ins-etcg7nrl worker2	No backup	No snapshot created.	Pay-as-You-Go Creation Time: 2025-01-15 22:27:12	Renew Enable Backup Create Snapshot More
disk-re3zh8ep worker1_SYSTEM_DISK	In use	Seoul Zone 1	System Disk	Balanced SSD	50GiB	ins-mqhw0hox worker1	No backup	No snapshot created.	Pay-as-You-Go Creation Time: 2025-01-15 22:09:49	Renew Enable Backup Create Snapshot More
disk-3m26res7 Master_SYSTEM_DISK	In use	Seoul Zone 1	System Disk	Balanced SSD	50GiB	ins-oxbd63qy Master	No backup	No snapshot created.	Pay-as-You-Go Creation Time: 2025-01-15 22:04:33	Renew Enable Backup Create Snapshot More

At the bottom of the table, it says "Total items: 5". To the right of the table, there are buttons for "20 / page" and a page navigation bar with buttons for 1 and 1 / 1 page.

실습

Tencent Cloud VM 생성

- Snapshot list

The screenshot shows the Tencent Cloud Snapshot List interface. On the left, there is a sidebar with various navigation options: Instances, Launch Templates, HPC Cluster, Reserved Instance, Placement Group, Images, Auto Scaling, Cloud Block Storage, Snapshots, Snapshot Overview, Snapshot List (which is selected), Scheduled Snapshot Policy, SSH Key, Security Groups, Public IP, Service Migration, Recycle Bin, TencentCloud Automation Tools, and Maintenance Task. The main area is titled "Snapshot List" and shows a table of snapshots. The table has columns for ID/Name, Status, Disk Attribute, Storage Type, Associate Disk, Attach Disk to Instance, Associate Image, Created At, Retention Period, Snapshot Sharin..., and Operation. There are 5 items listed:

ID/Name	Status	Disk Attribute	Storage Type	Associate Disk	Attach Disk to Instance	Associate Image	Created At	Retention Period	Snapshot Sharin...	Operation
snap-8ngBr5d8 cc25_2025000000_j...	Normal	System Disk 50GiB	Standard snapshot	disk-iuin72y9 cc25_2025000000_SYS...	ins-bu8rdlx cc25_2025000000	img-mvcd1w0r cc25_2025000000_image	2025-09-30 15:04:25	Permanent Retention	0/50	Roll Back Delete View Snapshot Chain More
snap-ze8hrmy [REDACTED]	Normal	System Disk 50GiB	Standard snapshot	disk-lkv0zmqn①	-	img-ru4x1ujd [REDACTED]	2025-05-03 20:31:05	Permanent Retention	0/50	Roll Back Delete View Snapshot Chain More
snap-f79Hfaq [REDACTED]	Normal	Data Disk 150GiB	Standard snapshot	disk-5d72pjn9①	-	-	2023-07-31 16:22:28	Permanent Retention	0/50	Roll Back Delete View Snapshot Chain More
snap-i591m7dw [REDACTED]	Normal	System Disk 50GiB	Standard snapshot	disk-csub7d3p①	-	-	2023-07-31 16:22:13	Permanent Retention	0/50	Roll Back Delete View Snapshot Chain More
snap-ez288sn4 [REDACTED]	Normal	Data Disk 70GiB	Standard snapshot	disk-kzz02guv①	-	-	2023-07-05 16:57:26	Permanent Retention	0/50	Roll Back Delete View Snapshot Chain More

Total items: 5

Tencent Cloud VM 생성

- Network and bandwidth

Network and bandwidth

Network Available IPs in the subnet: 253

You can only select a subnet in (Seoul Zone 2), where your instance is located.
If the existing VPCs/subnets do not meet your requirements, [create a VPC](#) or [a subnet](#) in the console. You can also change the VPC and subnet later.

Manually assign IP Assign Independent Public IP

Public IP

Line type **BGP**

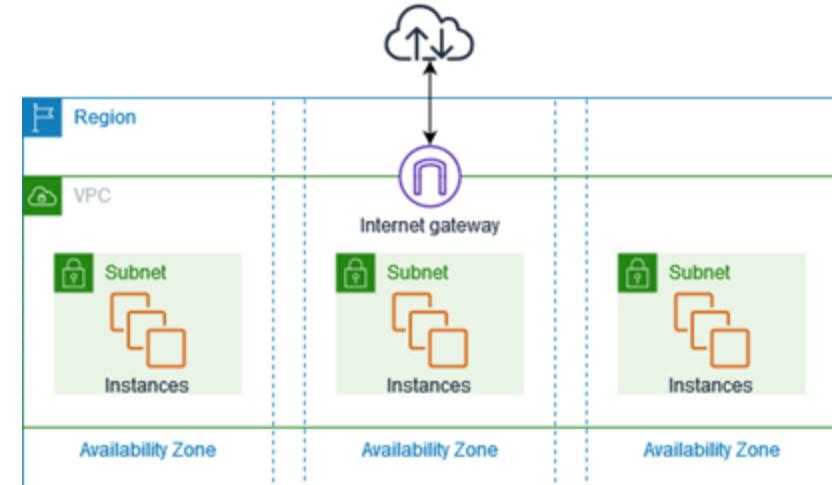
Bandwidth billing mode By hourly bandwidth Bill by traffic Bandwidth package

Note: The traffic fee is settled on an hourly basis. When the account balance is not enough, the data transfer service will be suspended two hours later. Tencent Cloud provides a 2-Gbps capacity for DDoS mitigation by default.

Bandwidth cap 5 Mbps

Tencent Cloud VM 생성

- What is VPC?
 - VPC는 자체 데이터 센터에서 운영하는 기존 네트워크와 유사한 가상 네트워크
 - VPC를 생성한 후 서브넷을 추가할 수 있음
 - 서브넷은 VPC의 IP 주소 범위



Tencent Cloud VM 생성

- Virtual Private Cloud (VPC)

Virtual Private Cloud Seoul 1

The intra-region cross-AZ traffic service will be officially commercialized at 00:00:00 on October 8, 2023 (UTC+8). For details, see the [Announcement](#). The following time-limited free quota is provided:
 • For intra-region cross-AZ traffic, a free traffic quota of 1000 TB is provided for each account in each month from the billing date to 00:00:00 on May 11, 2026. Free traffic of 0 bit has been used this month.

[Back to Old version](#) [Help of Virtual Private Cloud](#)

Create											
ID/Name	IPv4 CIDR Block	Subnet	Route table	NAT gateway	VPN gateway	CVM	Direct connect gat...	Default VPC	Creation time	Tags	Operation
vpc-co002ozq 2025-2-CC	10.0.0.0/12	2	1	0	0	1	0	No	Sep 25, 2025 19:55:31 (UTC+09:00)	1	Delete More

Total items: 1

20 / page 1 / 1 page

Subnet Seoul 20 2025-2-CC(10.0.0.0/12)

Please enter the Subnet

Create											
ID/Name	Network	CIDR	Availability zone	Associated route table	CVM	Available IPs	Default subnet	Creation time	Tags	Operation	
subnet-rwus4sex 2025-2-CC-zone1	vpc-co002ozq 2025-2-CC	10.0.1.0/24	Seoul Zone 1	rtb-2v7q2ob3 -	0	253	No	Sep 25, 2025 19:55:32 (UTC+09:00)		Delete More	
subnet-e3o50sh7 2025-2-CC-zone2	vpc-co002ozq 2025-2-CC	10.0.2.0/24	Seoul Zone 2	rtb-2v7q2ob3 -	1	252	No	Sep 25, 2025 19:55:32 (UTC+09:00)		Delete More	

Total items: 2

20 / page 1 / 1 page

Tencent Cloud VM 생성

- Security group

| Security group

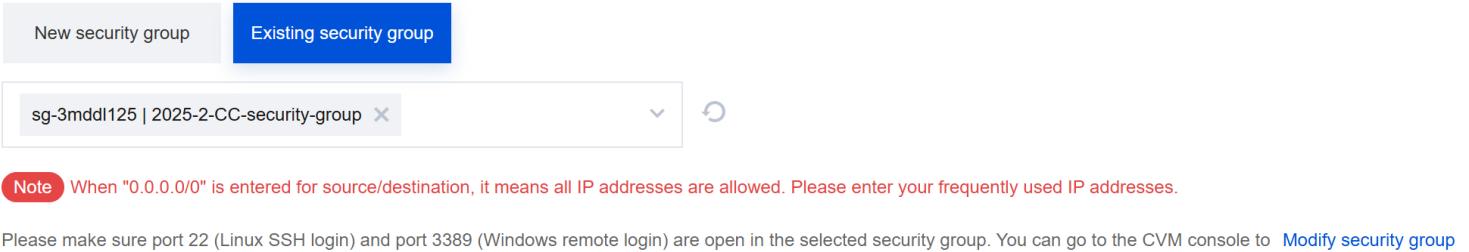
Security group

New security group Existing security group

sg-3mddl125 | 2025-2-CC-security-group X ▼ ↻

Note When "0.0.0.0/0" is entered for source/destination, it means all IP addresses are allowed. Please enter your frequently used IP addresses.

Please make sure port 22 (Linux SSH login) and port 3389 (Windows remote login) are open in the selected security group. You can go to the CVM console to [Modify security group](#)



실습

Tencent Cloud VM 생성

- Security group

Inbound rules	Outbound rules		
Source	Protocol port	Policy	Remark
0.0.0.0/0	ICMP	Allow	Allow ping command
::/0	ICMPv6	Allow	Allow ping command
0.0.0.0/0	TCP-22	Allow	Allow Linux SSH login
::/0	TCP-22	Allow	Allow Linux SSH login
0.0.0.0/0	TCP-3389	Allow	Allow Windows remote login
::/0	TCP-3389	Allow	Allow Windows remote login
10.0.0.0/8	ALL	Allow	Allow access via a private network (VPC)
172.16.0.0/12	ALL	Allow	Allow access via a private network (VPC)
192.168.0.0/16	ALL	Allow	Allow access via a private network (VPC)
0.0.0.0/0	TCP-80	Allow	Allow web service ports
::/0	TCP-80	Allow	Allow web service ports
0.0.0.0/0	TCP-443	Allow	Allow web service ports
::/0	TCP-443	Allow	Allow web service ports
0.0.0.0/0	ALL	Reject	-

실습

Tencent Cloud VM 생성

- Security group

Inbound rules	Outbound rules		
Target	Protocol:port	Policy	Remark
0.0.0.0/0	ALL	Allow	-
::/0	ALL	Allow	-
0.0.0.0/0	ALL	Reject	-

실습

Tencent Cloud VM 생성

- Tags / Login methods

Other settings

Tags ⓘ

lecture	cc_2025-2	Delete
cc_2025-2_student	test	학번

+ Add

Paste

Instance name: cc25_2025000000 ← cc25_{학번}

Supports batch sequential naming or pattern string-based naming. Up to 128 characters. 113 more characters are allowed.

Login methods:

- Set password (blue button)
- SSH key pair
- Reset password after creation

Login name	ubuntu
Password	Enter the login password
Confirm password	Enter the login password

Note: Keep your password safe. Reset the password in the CVM console if necessary. Note that if you choose "Custom Password", the instance cannot be saved as a launch template.

실습

Tencent Cloud VM 생성

- Confirm configuration

Cloud Virtual Machine (CVM)

Custom configuration

3 Confirm configuration

Basic and Instance configurations

CVM billing mode	Pay-as-you-go	Region	Seoul	Availability Zone	Seoul Zone 2
Instance	S5.MEDIUM2 (Standard S5, 2C2G)	Image	Public Image Ubuntu img-nmyldhb Ubuntu Server 24.04 LTS 64bit 20GB	System disk	Balanced SSD 50 GiB
Data disk	Not set				

Network and security group

Network	vpc-co002ozq 2025-2-CC 10.0.0/12	Subnet	subnet-e3o505h7 2025-2-CC-zone2 10.0.2.0/24	Private IP	Not assigned
Public IP	Purchase	Bandwidth billing mode	Bill by traffic 5Mbps	Line type	BGP
Security group	sg-3mdd1l25 2025-2-CC-security-group				

Other settings

Set password	(dropdown menu)
--------------	-----------------

Save as template Generate API Explorer best practice scripts

Protocol I have read and agree to "Tencent Cloud Service Terms"

Selected S5.MEDIUM2 (Standard S5, 2C2G) Quantity - 1 + Configuration fee \$0.04 Public traffic fees \$0.12/GB Back Enable

실습

Tencent Cloud VM 생성

- CVM instance

ins-bu8rdlxt (cc25_2025000000)

cc25_2025000000 Running

The initial login name is ubuntu. If you select "Random password" when purchasing the instance, check the password in Message Center. You can reset the password if you forget it.

Log In Shutdown Restart Reset password Terminate/Return More actions Collapse

Instance ID	ins-bu8rdlxt	Instance configuration	Standard S5 - 2C 2G Adjust model and specs
Availability zone	Seoul Zone 2	Operating system	Ubuntu Server 24.04 LTS 64bit Reinstall system
IP	101.33.68.56 (Public) 10.0.2.13 (Private)	Creation time	2025-09-30 15:55:05
Instance billing mode	Pay-as-you-go		
Bandwidth billing mode	Bill by traffic Modify billing mode		

Basic information ENI Public IP Monitoring Security groups Operation logs Run commands Uploading a file

Instance information

Name	cc25_2025000000	Project	Default Project
Instance ID	ins-bu8rdlxt	Tags	cc_2025-2_stude... lecturecc_2025-2
UUID	12df1797-7064-43ed-bc1b-9a28024aefaf	Key	None
Instance specification	Standard S5 S5.MEDIUM2	Placement group	None
Instance termination protection	Disabled	Region	Seoul
Role	None	Availability zone	Seoul Zone 2

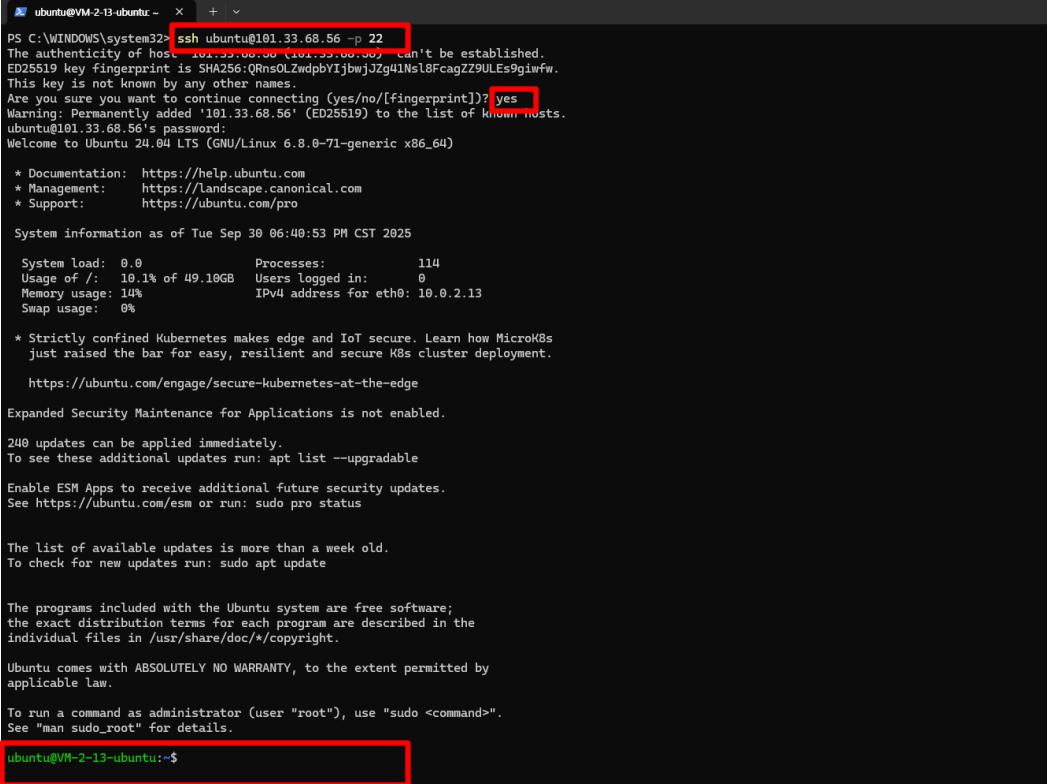
Architecture

```
graph TD; Root((ins-bu8rdlxt)) --- SG[1 security group]; Root --- ENI[0 ENIs]
```

Northeast Asia(Seoul)/Seoul Zone 2 / subnet-e30505h7

Tencent Cloud VM 생성

- ssh connection
 - ssh ubuntu@{public_IP} -p 22



A screenshot of a Windows terminal window titled "ubuntu@VM-2-13-ubuntu ~". The command "ssh ubuntu@101.33.68.56 -p 22" is entered at the prompt. The response shows the host key fingerprint and asks if the user wants to continue connecting (yes/no). The user types "yes". It then prompts for the password, which is entered. The terminal then displays system information for Ubuntu 24.04 LTS, including system load, memory usage, swap usage, and network information. It also provides links for documentation, management, and support. A note about MicroK8s is shown, followed by a link to secure Kubernetes at the edge. It then discusses expanded security maintenance and ESM apps. A note about available updates is present, along with instructions to check for new updates. Finally, it states that the programs are free software and that Ubuntu comes with no warranty.

```
PS C:\WINDOWS\system32> ssh ubuntu@101.33.68.56 -p 22
The authenticity of host '101.33.68.56 (101.33.68.56)' can't be established.
ED25519 key fingerprint is SHA256:QRns0LZwdwpY1jbwJZg41Ns18FcagZ29ULe59giwf8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '101.33.68.56' (ED25519) to the list of known hosts.
ubuntu@101.33.68.56's password:
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-71-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information as of Tue Sep 30 06:40:53 PM CST 2025

System load: 0.0          Processes:           114
Usage of /: 10.1% of 49.10GB  Users logged in:      0
Memory usage: 14%          IPv4 address for eth0: 10.0.2.13
Swap usage:  0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.
  https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

240 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

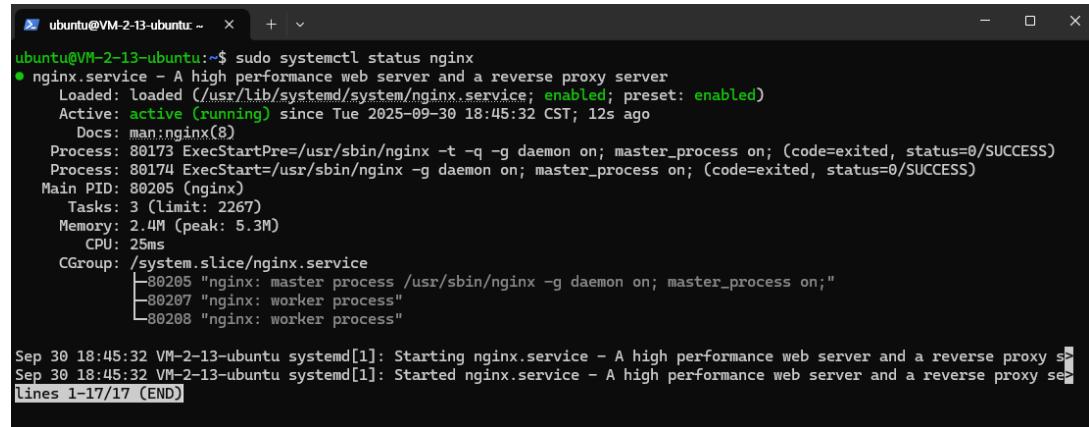
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

ubuntu@VM-2-13-ubuntu:~$
```

Tencent Cloud VM 생성

- Install nginx
 - sudo apt update
 - sudo apt install nginx
 - sudo systemctl status nginx

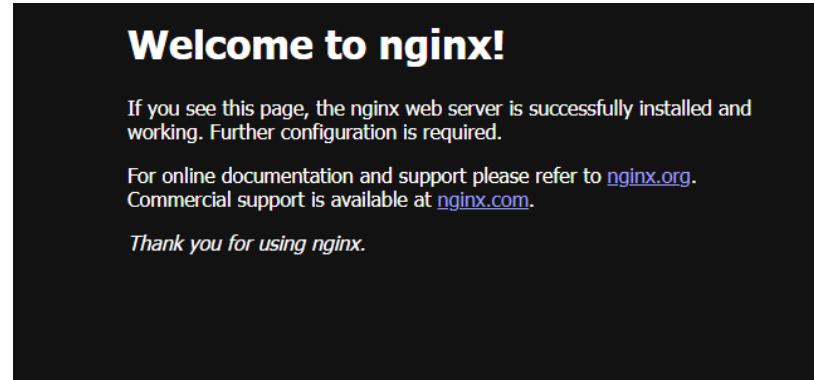


```
ubuntu@VM-2-13-ubuntu:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
  Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
  Active: active (running) since Tue 2025-09-30 18:45:32 CST; 12s ago
    Docs: man:nginx(8)
   Process: 80173 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Process: 80174 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
 Main PID: 80205 (nginx)
   Tasks: 3 (limit: 2267)
  Memory: 2.4M (peak: 5.3M)
    CPU: 25ms
   CGroup: /system.slice/nginx.service
           ├─80205 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
           ├─80207 "nginx: worker process"
           └─80208 "nginx: worker process"

Sep 30 18:45:32 VM-2-13-ubuntu systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy se
Sep 30 18:45:32 VM-2-13-ubuntu systemd[1]: Started nginx.service - A high performance web server and a reverse proxy se
lines 1-17/17 (END)
```

Tencent Cloud VM 생성

- Access the Nginx server via http
 - `http://{public_ip}`



클라우드 서비스 사용 관련 공지

Custom Image 만드는 방법

ins-bu8rdlxt (cc25_2025000000)

cc25_2025000000 Running

The initial login name is ubuntu. If you select "Random password" when purchasing the instance, check the password in [Message Center](#). You can [reset the password](#) if you forget it.

Instance ID	ins-bu8rdlxt	Instance configuration	Standard S5 - 2C 2G Adjust model and specs
Availability zone	Seoul Zone 2	Operating system	Ubuntu Server 24.04 LTS 64bit Reinstall system
IP	101.33.68.56 (Public) 10.0.2.13 (Private)	Creation time	2025-09-30 15:55:05
Instance billing mode	Pay-as-you-go		
Bandwidth billing mode	Bill by traffic Modify billing mode		

More actions ▾ [Collapse ▲](#)

- [Purchase similar](#)
- [Instance status](#)
- [Instance settings](#)
- [Image/Operating System](#)
- [Password/Key](#)
- [Resource adjustment](#)
- [IP/ENI](#)
- [Security groups](#)
- [OPS and Check](#)

[Reinstall system](#)

[Create custom image](#)

[Operating System Conversion](#)

클라우드 서비스 사용 관련 공지

Custom Image 만드는 방법

Create custom image Operation Guide

When a custom image is created, a related snapshot is created automatically. To delete this snapshot, you need to delete the associated image first. Retaining the image incurs a [snapshot fee](#). Make sure your account balance is sufficient. For details, see [FAQ about Snapshot Commercialization](#).

You can create an image of this instance without shutting it down. It takes about 10 minutes or more to create an image, depending on the disk size.

To create a custom image for a Linux instance, please make sure that there are no data disk configurations under `/etc/fstab`. Otherwise the instances created using this image cannot be started up normally. If there're attached data disks, please comment out or delete the custom configurations of data disks in `/etc/fstab`.

You've selected 1 instance. [Collapse](#)

ID/name	Instance type	Instance configurations
ins-bu8rdixt cc25_2025000000	Standard S5	2-core 2GB 5Mbps System disk: Balanced SSD Networkvpc-c002ozq

Image name * cc25_{학번}_image
Up to 60 characters, including [a-z], [A-Z], [0-9] and [-, _]

Tag (optional) {학번}

+ Add Description
0 / 256
You can enter 256 more characters.

클라우드 서비스 사용 관련 공지

Custom Image 만드는 방법

The screenshot shows a cloud service management console with a sidebar containing various service icons. The 'Images' icon is selected, indicating the current view. The main area displays a table of images, with one entry ('img-mvcd1w0r..._image') showing a status of 'Creating'. A modal dialog box is overlaid on the page, displaying an error message: 'You do not have permission to operate Cloud Virtual Machine-Describe all image families.' Below this, there's a section titled 'How to obtain permission?' with instructions: 'Please send the following information to the root account or a sub-user with permission-granting capability in CAM, to add the corresponding permission for you in Cloud Access Management:' followed by a detailed error log. At the bottom of the dialog is an 'OK' button.

You do not have permission to operate Cloud Virtual Machine-Describe all image families.

How to obtain permission?

Please send the following information to the root account or a sub-user with permission-granting capability in CAM, to add the corresponding permission for you in Cloud Access Management:

User (uin: 200044362727) is not authorized to perform operation (cvmDescribeImageFamilies) resource ([?](#)) has no permission [request id: 8326ca01-c891-42e1-a22e-7d1c1328e61d]

Creating Permissions Policy as Prompted [?](#)

OK

클라우드 서비스 사용 관련 공지

Custom Image 만드는 방법

The screenshot shows the 'Custom image' section of the Tencent Cloud console. On the left, a sidebar lists various services: Cloud Virtual Machine, Instances, Quota Management, Launch Templates, HPC Cluster, Reserved Instance, Placement Group, Images (which is selected and highlighted in blue), Auto Scaling, Cloud Block Storage, Snapshots, SSH Key, Security Groups, Public IP, Service Migration, Recycle Bin, TencentCloud Automation Tools, and Maintenance Task.

The main area displays a table of custom images. The table has columns for ID/name, Status, Type, Hard Disk, Tag (key:value), Image Family, Operating system, Associated snapshot, Architecture, Creation Time, and Operation. One row is visible in the table:

ID/name	Status	Type	Hard Disk	Tag (key:value)	Image Family	Operating system	Associated snapshot	Architecture	Creation Time	Operation
img-mvcd1w0r cc25_2025000000_image	Normal	Custom image	System disk 50GiB	2	-	Ubuntu Server 24.04 LTS 64bit	1 snapshot(s)	x86_64	2025-09-30 16:04:18	Create instance Shared image Cross-region replication More

Below the table, it says 'Total items: 1'. At the bottom right, there are pagination controls: '20 / page', '1 / 1 page', and navigation arrows.

클라우드 서비스 사용 관련 공지

Custom Image 만드는 방법

The screenshot shows a user interface for managing cloud images. At the top, there are three tabs: "Image", "Public image", and "Custom image". The "Custom image" tab is currently selected, indicated by a blue underline. Below the tabs is a dropdown menu with the placeholder text "Select an image". To the right of the dropdown is a "Create custom image" button with a circular arrow icon. At the bottom left, there is a "Instructions" button. To its right, two bullet points provide information: "The operating system can be changed after the purchase. You can go to the console to [Reinstall system](#). " and "Switching between Linux and Windows is not supported in this region."

Image Public image **Custom image** Shared image

Select an image

Create custom image

Instructions

- The operating system can be changed after the purchase. You can go to the console to [Reinstall system](#).
- Switching between Linux and Windows is not supported in this region.

Section 3

“클라우드 서비스 사용 관련 공지”

클라우드 서비스 사용 관련 공지

이용 가이드라인

- 생성 가능 리소스 종류
 - CVM
 - Custom image
- 인스턴스 terminate는 불가 (권한 없음)
- 인스턴스 사용하지 않을때 shutdown
- 인스턴스 S5.MEDIUM2 타입으로만 생성할 것 (품절시 메일 보내주시기 바랍니다)
- 인스턴스 terminate/삭제 기준 (조교)
 - CVM instance 이름 형식에 준수하지 않을 경우 (형식: cc25_학번)
 - 태그 없이 인스턴스, custom image 생성하는 경우 ('lecture', 'cc_2025-2_student' tags)
 - S5.MEDIUM2 아닌 다른 타입의 인스턴스를 생성하는 경우
 - 매일 저녁 8:30-9:00에 모든 인스턴스 삭제 → custom image으로 저장하시길 (최대 1개)
 - 8:30 이전에 작업을 종료 (custom image로 저장), 9:00 이후 작업 재개 (CVM 재생성)

The End