

# Lab6. Implementing CLB & Auto Scaling

## 1. 목적

- 이번 Lab에서는 Tencent Cloud에서 제공하는 Cloud Load Balancer를 통해 부하분산에 대해 실습한다. CLB는 Back-end에 여러 Web Server들을 운영하는 경우 부하분산 뿐만 아니라 서비스의 연속성을 늘려주는 역할도 수행한다. 또한 이번 Lab을 통해 Tencent Cloud에서 제공하는 Auto Scaling도 구현한다. Auto Scaling 서비스는 서비스에 필요한 인스턴스 수를 탄력적으로 유지할 뿐만 아니라 사용자 요청에 대해 서비스 지연 현상을 예방할 수 있는 서비스이다.

## 2. 사전 준비물

- Tencent Cloud Account

## 3. 목차

- Task1. CLB를 위해 두 번째 Web Server 생성하기
- Task2. Cloud Load Balancer Instance 생성하기
- Task3. Cloud Load Balancer 설정하기
- Task4. Cloud Load Balancer 동작 확인하기
- Task5. Auto Scaling을 구성하기 전 사전 준비하기
- Task6. Launch Configuration 구성하기
- Task7. Scaling Group 설정하기
- Task8. Scaling Policy 생성하기
- Task9. Auto Scaling 테스트하기

## Task1. CLB를 위해 2번째 Web Server 생성하기

1. 웹 서버를 생성하기 위해 페이지 상단의 메뉴 중 **[Products] > [Compute] > [Cloud Virtual Machine]**을 클릭 한다.

The screenshot shows the Tencent Cloud Products page. The 'Compute' category is highlighted with a red box. Under 'Compute', the 'Cloud Virtual Machine' option is selected and highlighted with a blue box. Other options in the 'Compute' section include Auto Scaling, Batch Compute, Container Services, Tencent Kubernetes Engine, Tencent Container Registry, Serverless, Serverless Cloud Function, Middleware, Cloud Kafka, and API Gateway. The rest of the page displays various other cloud services like Basic Storage Service, CDN & Acceleration, Networking, Relational Database, Data Processing, Video Service, Media Processing Service, Telecommunication, and NoSQL Database.

2. **[Cloud Virtual Machine] Dashboard** 페이지이다. 이미 앞의 Lab에서 생성한 CVM 인스턴스가 있으면 모두 삭제한다. 아래의 그림은 한 개의 인스턴스도 없으면 보이는 화면이다.

The screenshot shows the Cloud Virtual Machine Instances dashboard. On the left, there is a sidebar with navigation links: Instances (highlighted), Reserved Instance, Placement Group, Images, Auto Scaling, Cloud Block Storage, Snapshots, SSH Key, Security Groups, Public IP, Service Migration, and Recycle Bin. The main content area has a heading 'Choose the product according to your needs'. It features two sections: 'Large-scale and Elastic Computing Scenarios' (Cloud Virtual Machine, Rich specs, highly customizable) and 'SMEs and individual users' (TencentCloud Lighthouse, Cost-efficient, lightweight, OOTB). Each section includes a 'Buy Now' button and a 'View product introduction' link. At the top right, there are buttons for 'Seoul' and 'Other regions'.

3. 하지만, 좌측 메뉴의 [Images]에 가보면 이미 생성한 CVM 이미지는 있어야 한다. 확인해 보자.

The screenshot shows the 'Custom Image' tab selected in the 'Images' section of the Tencent Cloud console. A note at the top discusses the discontinuation of Microsoft Windows Server 2008 R2 support. Below the note is a table listing a single custom image:

ID/Name	Status	Type	Capacity	Tag (key:value)	Operating System	Encryption	Creation Time	Operation
img-58ouvzlp lab5-webserver00- golden-img	Normal	Custom Image	50GB		Ubuntu Server 22.04 LTS 64bit	No	2023-01-31 13:23:19	<a href="#">Create an Instance</a> <a href="#">Share</a> <a href="#">More</a>

4. 이미 생성된 Image를 가지고 2개의 웹서버 인스턴스를 생성할 것이다. 목록에서 생성된 이미지를 선택하고 상단 메뉴의 [Create an Instance] 버튼을 클릭한다.

The screenshot shows the 'Create an Instance' button highlighted with a red box. The table below it lists the selected custom image.

ID/Name	Status	Type	Capacity	Tag (key:value)	Operating System	Encryption
img-58ouvzlp lab5-webserver00- golden-img	Normal	Custom Image	50GB		Ubuntu Server 22.04 LTS 64bit	No

5. [Create an Instance] 창이다. Image 이름을 확인하고 [OK]를 클릭한다.

The screenshot shows a confirmation dialog titled 'Create an Instance'. It displays the selected image information and asks if the user wants to proceed. The 'OK' button is highlighted with a red box.

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

ID/Name	Type	Capacity	Operating System
img-58ouvzlp lab5-webserver00- golden-img	Custom Image	50GB	Ubuntu Server 22.04 LTS 64bit

Are you sure you want to create an instance with the selected image?

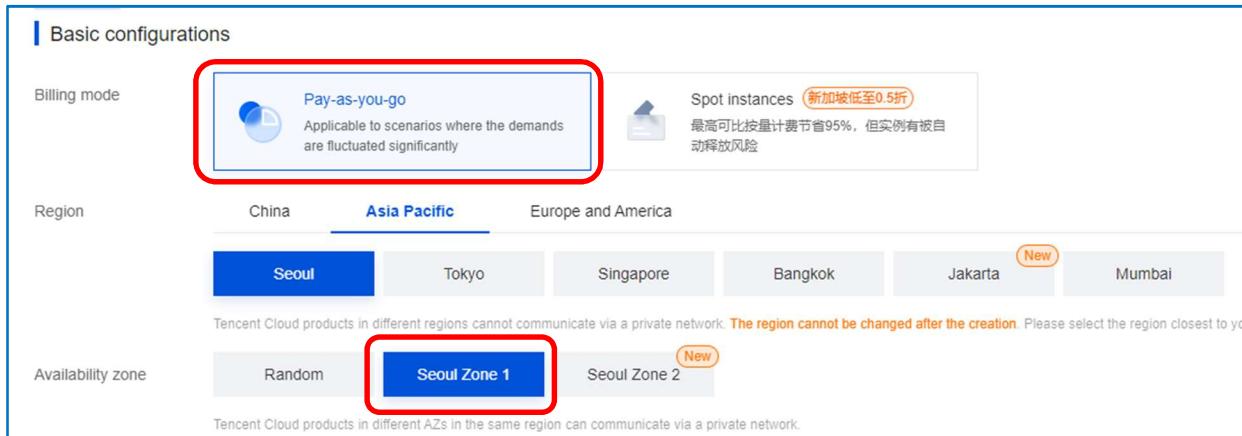
[OK](#) [Cancel](#)

6. CVM 생성 페이지이다. 1단계에서는 다음과 같이 설정한다.

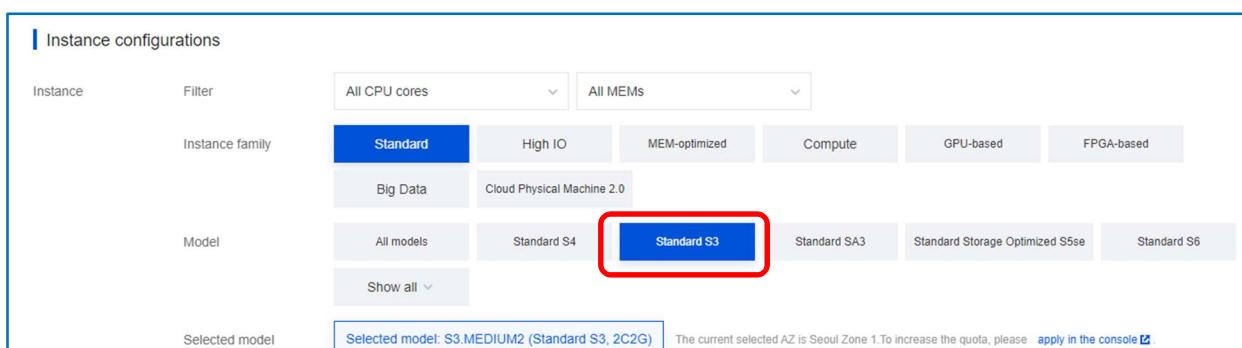
① [Billing Mode] : Pay as you go

② [Region] : Seoul

③ [Availability Zone] : Seoul Zone 1



④ [Instance] : Standard | Standard S3 | S3.MEDIUM2 | 2core | 2GB | 0.04 USD/hr



Instance	Specifications	vCPU	MEM	Processor	Private network bandwidth	Reference fee
Standard S3	S3.MEDIUM2	2Core	2GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.04USD/hour
Standard S3	S3.MEDIUM4	2Core	4GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.08USD/hour
Standard S3	S3.MEDIUM8	2Core	8GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.12USD/hour
Standard S3	S3.LARGE4	4Core	4GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.12USD/hour
Standard S3	S3.LARGE8	4Core	8GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.16USD/hour
Standard S3	S3.LARGE16	4Core	16GB	Intel Xeon Skylake 6133(2.5GH...	1.5Gbps	0.23USD/hour

⑤ [Image] : Custom image | lab5-webserverXX-golden-img(여기서 XX는 계정번호를 의미)

⑥ [System disk] : Premium Cloud Storage 50GB

The screenshot shows the 'Create Instance' interface. The 'Image' tab is selected, displaying a dropdown menu with 'lab5-webserver00-golden-img' highlighted by a red box. Below it, a note states: 'Note that instances purchased in this region cannot switch between Linux and Windows'. The 'Storage' tab is also visible, showing a table with columns: Usage, Model, Capacity, Quantity, and 数据备份点 (Data Backup Point). A system disk of 50 GB is selected. At the bottom, there's a link to 'Add data disk'.

⑦ [Next: Configure network and host] 파란색 버튼을 클릭한다.

This screenshot shows the summary step of the instance creation process. It displays the selected instance type as 'S3.MEDIUM2 (Standard S3, 2C2G)', the quantity as '1', and the costs: Configuration fee '0.05usd/hour' and Bandwidth fee '0.00usd/GB'. A large blue button labeled 'Next: Configure network and host' is highlighted with a red box.

7. 2단계에서는 다음과 같이 설정한다.

① [Network] : lab5-vpcXX(여기서 XX는 계정번호를 의미) | 10.0.0.0/16, lab5-vpcXX-seoul-1(여기서 XX는 계정번호를 의미) | 10.0.1.0/24

② [Public network IP] : Get a free public IP

③ [Bandwidth] : 100 Mbps

This screenshot shows the 'Network and bandwidth' configuration section. It includes fields for selecting the VPC ('vpc-3t9qeqro | lab5-vpc00 | 10.0.0.0/16') and subnet ('subnet-0pxlsnq5 | lab5-vpc00-seoul-1 | 10.0.1.0/24'), both highlighted with a red box. There's a note about creating a VPC or subnet if needed. Below that, a checkbox 'Get a free public IP' is checked. Under 'Bandwidth billing mode', the 'By traffic' option is selected. At the bottom, a bandwidth slider is set to '100 Mbps', with other options like '1Mbps', '10Mbps', and '20Mbps' available.

④ [Security Groups] : Existing Security Groups | lab5-sgXX(여기서 XX는 계정번호를 의미)

The screenshot shows the AWS Security Groups console. At the top, there are tabs for 'New security group' and 'Existing security group'. The 'Existing security group' tab is selected, and a search bar contains the text 'sg-04cdunjnd | lab5-sg00'. Below the search bar, there is a link 'View security group rules ^'. Underneath, there are two tabs: 'Inbound rules' (which is selected) and 'Outbound rules'. A table lists three inbound rules:

Source	Protocol + Port	Policy	Notes
0.0.0.0/0	ICMP	Allow	Ping service open.
::/0	ICMPV6	Allow	Ping service open.
0.0.0.0/0	TCP:80	Allow	Web service HTTP(80) open.

⑤ [Tag] : Nothing

⑥ [Instance Name] : lab6-webserverXX-seoul(여기서 XX는 계정번호를 의미)

⑦ [Login Methods] : Set Password

⑧ [Username] : ubuntu

⑨ [Password] : P@\$\$W0rd1234

⑩ [Confirm Password] : P@\$\$W0rd1234

⑪ [Security Reinforcement] : Enable for Free

⑫ [Cloud Monitoring] : Enable for Free

The screenshot shows the AWS Launch Wizard configuration screen for a new instance. The 'Set password' section is highlighted with a large red circle. It includes fields for 'Login name' (ubuntu), 'Password' (a masked input field), and 'Confirm password' (another masked input field). A note below says 'Keep your password safe. Reset the password in the CVM console if necessary.' To the right of the password fields, a tooltip provides password requirements:

- 8-30 characters (12 and more characters recommended)
- 不能包含空格
- It should not start with "/".
- Includes at least three types
- Lowercase letters a-z
- Uppercase letters A-Z
- Number 0-9
- (`~!@#\$%^&\*+=\_{};:<>,?/

Below the password section, there are other configuration options:

- Termination protection:** Prevent instances from being accidentally terminated in the console (unchecked).
- Security services:** Enable for free (checked).
- Cloud Monitor:** Enable for free (checked).
- Scheduled termination:** Enable scheduled termination (unchecked).

## 8. Advanced Settings 단계에서 다음과 같이 값을 설정한다.

① [Hostname] : lab6-webserverXX-seoul(여기서 XX는 계정번호를 의미)

② [Project] : DEFAULT PROJECT

Advanced settings (hostname, CVM role, placement group, custom data) ☰

Hostname	lab6-webserver00-seoul	Supports batch sequential naming or pattern string-based naming 2-60 characters, including uppercase and lowercase letters, numbers, hyphens "-" and dots ". ". It supports the {R:number} consecutively, and cannot be placed at the beginning or end of the hostname. A number-only password is not allowed
Project	DEFAULT PROJECT	

③ [Next: Confirm configuration] 파란색 버튼을 클릭한다.

Selected S3.MEDIUM2 (Standard S3, 2C2G)	Configuration fee 0.05USD/hour	Bandwidth fee 0.12USD/GB	Back	Next: Confirm configuration
Quantity - 1 +				

## 9. 마지막 3 단계에서 각각의 설정된 값을 확인한다. 반드시 Image는 미리 생성된 이미지이어야 한다.

Selected configurations

Basic and instance configurations		Edit	
CVM billing mode	Pay-as-you-go	Region Seoul	Availability zone Seoul Zone 1
Instance	S3.MEDIUM2 (Standard S3, 2C2G)	Image Custom image   Ubuntu   img-58ouuvzlp   64-bit   lab6-webserver00-golden-img   50GB	System disk Premium cloud disk   50 GB
Data disk	Not set		
Network and security group		Edit	
Network	vpc-3t9qeqro   lab5-vpc00   10.0.0.0/16	Subnet subnet-0pxlsnq5   lab5-vpc00-seoul-1   10.0.1.0/24	Public network Purchase IP
Network billing mode	By traffic   100Mbps	Security group sg-04cdujnd   lab5-sg00	

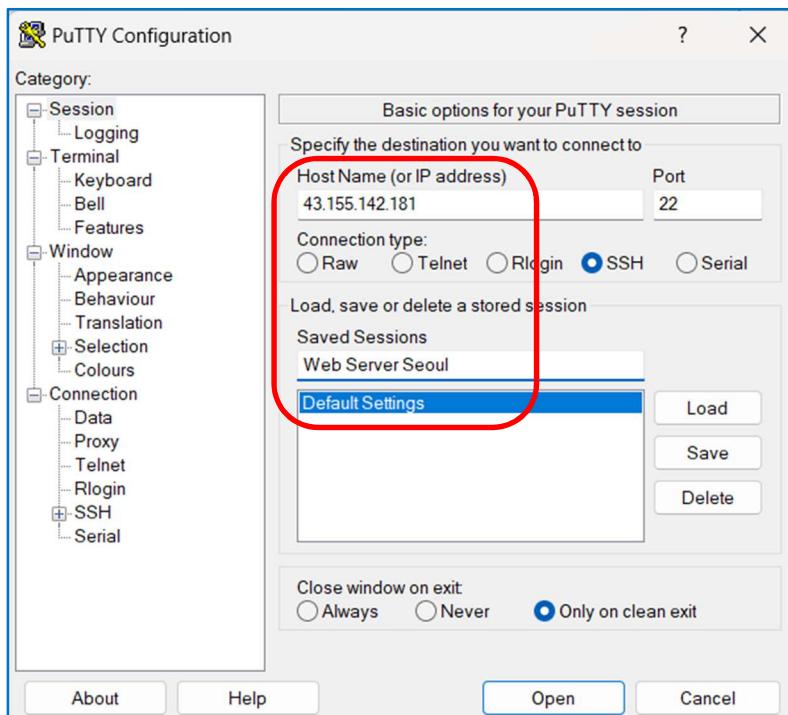
## 10. [I have read and agree to "Tencent Cloud Service Terms"]를 체크하고 [Enable]버튼을 클릭한다.

Selected S3.MEDIUM2 (Standard S3, 2C2G)	Configuration fee 0.05USD/hour	Bandwidth fee 0.12USD/GB	Back	Enable
Quantity - 1 +				

11. 방금 생성한 **lab6-webserverXX-seoul**(여기서 XX는 계정번호를 의미) 인스턴스에 EIP를 설정한다.

The screenshot shows the AWS Instances page for Seoul 1 region. A single instance named "ins-08ycrgtz" is listed. The instance is running in Seoul Zone 1, Standard S3. It has 2-core 2GB 100Mbps, System disk:Premium Cloud Disk, and Network:lab5-vpc00. The Public IP is 43.155.142.181 (EIP) and the Private IP is 10.0.1.16 (Private). The Primary IPv4 field is highlighted with a red box. The instance was created at 2023-02-01 12:56:19. The billing information shows Pay-as-you-go and Bill by traffic. The project is set to Default Project. The status is Running.

12. 방금 생성한 **lab6-webserverXX-seoul**(여기서 XX는 계정번호를 의미)에 접속해 보자. 공인 IP를 이용하여 PuTTY 툴을 다음과 같이 설정하고 접속한다. Session의 이름은 Web Server Seoul로 설정하였다.



13. [login as : ] : ubuntu, [ubuntu...'s password : ] : P@\$\$W0rd1234로 연결하였다.

```
ubuntu@lab6-webserver00-seoul: ~
login as: ubuntu
ubuntu@43.155.142.181's password:
Welcome to Ubuntu 22.04 LTS (GNU/Linux 5.15.0-56-generic x86_64)

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

 System information as of Wed Feb 1 12:02:55 PM CST 2023

 System load: 0.0029296875 Processes: 110
 Usage of /: 7.3% of 49.10GB Users logged in: 0
 Memory usage: 13% IPv4 address for eth0: 10.0.1.16
 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
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your
Internet connection or proxy settings

Last login: Wed Feb 1 11:59:54 2023 from 182.208.131.42
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@lab6-webserver00-seoul:~$
```

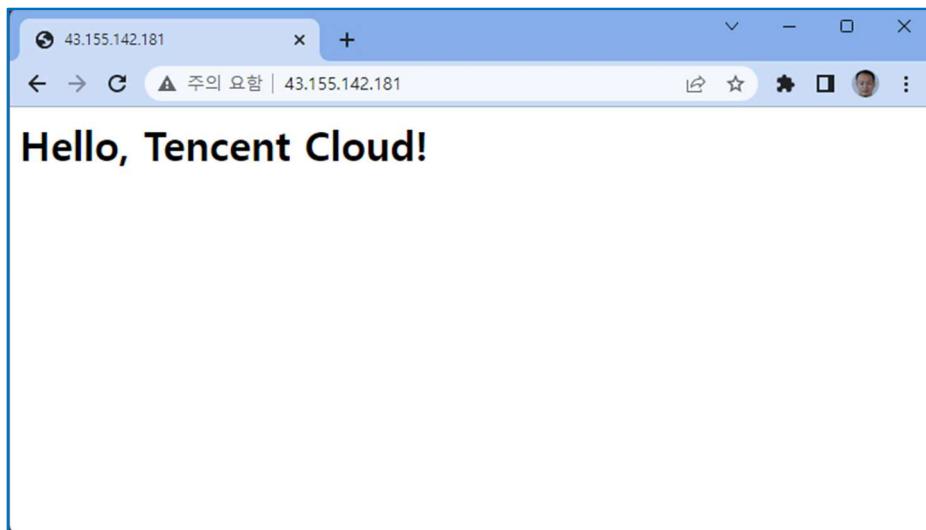
14. Ubuntu에 Apache Web Server가 제대로 설치되었는지 확인하자.

\$ sudo systemctl status apache2

```
ubuntu@lab6-webserver00-seoul: ~
ubuntu@lab6-webserver00-seoul:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor prese>
  Active: active (running) since Wed 2023-02-01 11:57:10 CST; 10min ago
    Docs: https://httpd.apache.org/docs/2.4/
 Main PID: 981 (apache2)
   Tasks: 55 (limit: 2237)
  Memory: 9.9M
     CPU: 84ms
    CGroup: /system.slice/apache2.service
            └─981 /usr/sbin/apache2 -k start
              ├─1008 /usr/sbin/apache2 -k start
              └─1009 /usr/sbin/apache2 -k start

Feb 01 11:57:09 lab6-webserver00-seoul systemd[1]: Starting The Apache HTTP Ser>
Feb 01 11:57:10 lab6-webserver00-seoul systemd[1]: Started The Apache HTTP Serv>
lines 1-15/15 (END)
```

15. 마지막으로 공인 IP로 웹 브라우저에서 접속해 보자.



16. **Seoul Web Server** 가 성공적으로 **Web Service** 를 수행하는 것을 확인하고, 같은 **Image** 로 **Pusan Web Server** 를 생성한다. **Seoul Web Server** 생성과 동일하게 진행하고, 다만 다음과 같은 설정만 다르게 지정한다.

- ① [Availability zone] : [Seoul Zone 2]
- ② [Instance family] : [Standard]
- ③ [Model] : Standard S5 | S5.MEDIUM2, 2Core, 2GB, 0.03 USD/hour
- ④ [Network] : lab5-vpcXX(여기서 XX 는 계정번호를 의미) | 10.0.0.0/16, lab5-vpcXX-seoul-2(여기서 XX 는 계정번호를 의미) | 10.0.2.0/24
- ⑤ [Instance name] : lab6-webserverXX-pusan(여기서 XX 는 계정번호를 의미)
- ⑥ [Hostname] : lab6-webserverXX-seoul(여기서 XX 는 계정번호를 의미)

A screenshot of the Tencent Cloud instance configuration page. The 'Selected configurations' section is expanded, showing the following details:

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	Custom image   Ubuntu   img-58ouuvzlp   64-bit   lab5-webserver00-golden-img   50GB	System disk	Premium cloud disk   50 GB
Data disk	Not set				

Network and security group					
Network	vpc-3t9qeqro   lab5-vpc00   10.0.0.0/16	Subnet	subnet-q1h5iwzd   lab5-vpc00-seoul-2   10.0.2.0/24	Public network IP	Purchase
Network billing mode	By traffic   100Mbps	Security group	sg-04cdujnd   lab5-sg00		

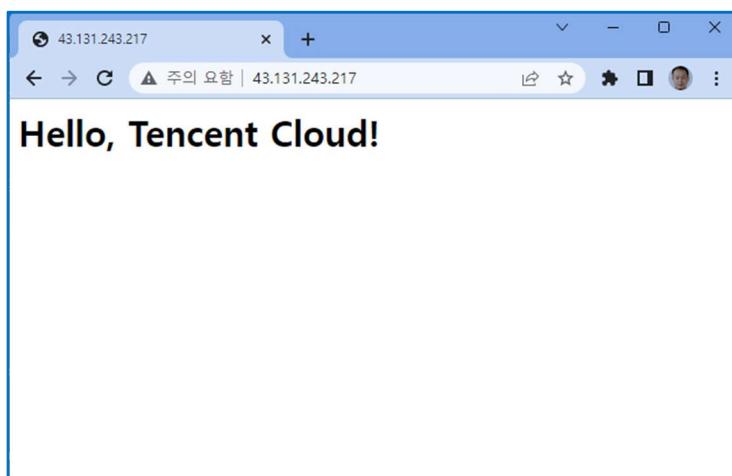
Other settings	
Set password	(dropdown menu)

17. 아래의 그림과 같이 2 개의 CVM Web Server 가 생성되었다. 방금 생성한 Pusan Web Server 도 EIP 를 설정한다.

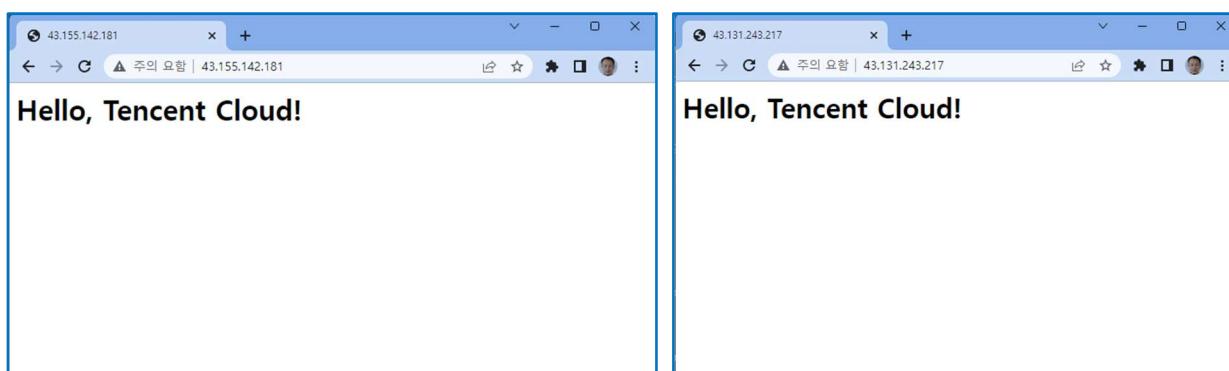
The screenshot shows the 'Instances' page in the Tencent Cloud console. It lists two instances under the 'Project:DEFAULT PROJECT' filter. Both instances are labeled as 'Running' and have been created within the last few hours. A red box highlights the first instance, which has an EIP assigned (43.131.243.217). The second instance does not have an EIP assigned yet.

ID/Name	Status	Available	Instance Type	Instance Configuration	Primary IPv4	Instance Billing	Network Billing	Project	Operation
ins-chw6m6p New lab6-webserver00-pusan	Running	Seoul Zone 2	Standard S5	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.131.243.217 (EIP) 10.0.2.11 (Private)	Pay-as-you-go Created at 2023-02-01 13:24:03	Bill by traffic	Default Project	<a href="#">Log In</a> More
ins-08ycrgtz lab6-webserver00-seoul	Running	Seoul Zone 1	Standard S3	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.155.142.181 (EIP) 10.0.1.16 (Private)	Pay-as-you-go Created at 2023-02-01 12:56:19	Bill by traffic	Default Project	<a href="#">Log In</a> More

18. 방금 생성한 Pusan Web Server 도 공인 IP 를 통해 웹 브라우저로 접근해 본다.



19. 따라서 지금 Tencent Cloud 에는 Seoul Web Server 와 Pusan Web Server 가 작동될 것이다.



## Task2. Cloud Load Balancer Instance 생성하기

- 페이지 상단 메뉴에서 [Products] > [Networking] > [Cloud Load Balancer] 메뉴를 클릭한다.

The screenshot shows the Tencent Cloud product catalog under the 'Cloud' tab. The 'Networking' category is highlighted with a red box and a cursor icon pointing to the 'Cloud Load Balancer' option. Other categories like Compute, Storage, and Relational Database are also visible but not selected.

- [Cloud Load Balancer] 페이지이다. CLB를 생성하기 위해 먼저 Instance Management 옆의 Region이 Seoul임을 확인한다. 그리고 [Create] 파란색 버튼을 클릭하여 CLB Instance를 생성한다.

The screenshot shows the 'Instance management' section of the Cloud Load Balancer page. A red box highlights the 'Create' button, which is blue and stands out from the other white buttons. The page includes a sidebar with various management options like Overview, CLB Instance List, and Custom Configuration. A message at the top provides information about the architecture upgrade and new unit prices. The main table area is currently empty, showing 'No data yet'.

3. [Cloud Load Balancer] 페이지이다. [Select Configuration] 섹션에서 각 항목에 다음과 같이 설정한다.

- ① [Billing Mode] : Pay-as-You-Go
- ② [Region] : Seoul
- ③ [Network Type] : Public Network
- ④ [Network] : lab5-vpcXX(여기서 XX는 계정번호를 의미)
- ⑤ [Network Billing Mode] : By Traffic
- ⑥ [Bandwidth Cap] : 100 Mbps

**Select Configuration**

Billing Mode **Pay-as-You-Go**

Region **Seoul**

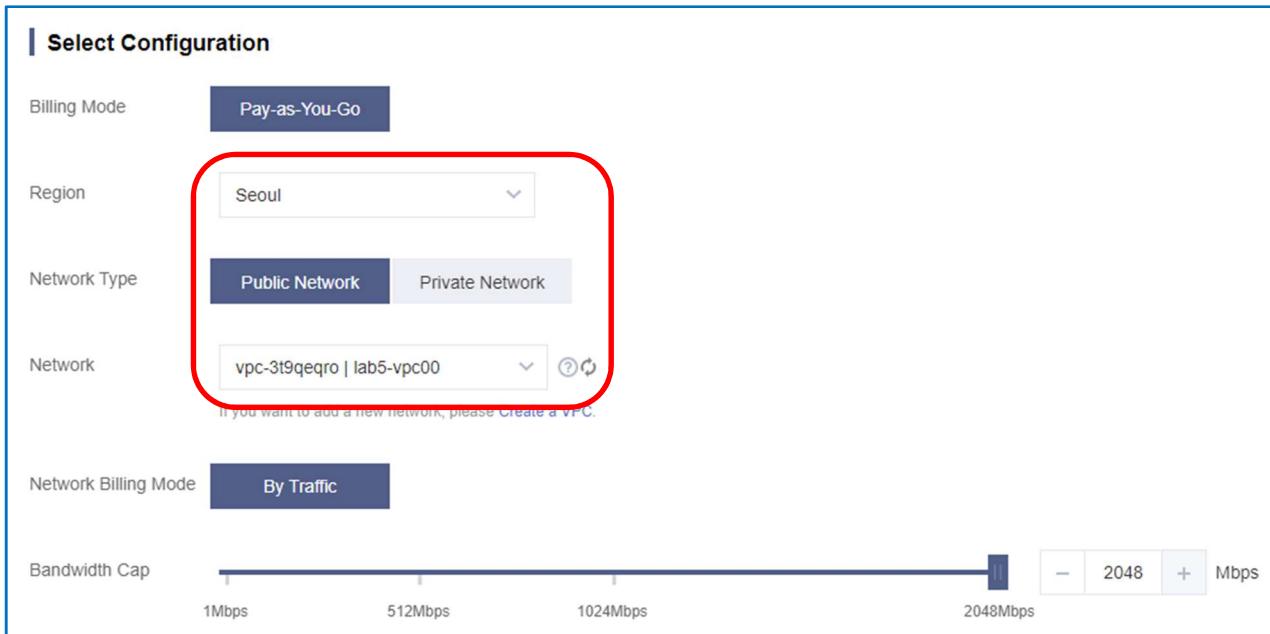
Network Type **Public Network** Private Network

Network **vpc-3t9qeqro | lab5-vpc00** ⓘ ⓘ

If you want to add a new network, please [Create a VPC](#).

Network Billing Mode **By Traffic**

Bandwidth Cap **2048 Mbps**



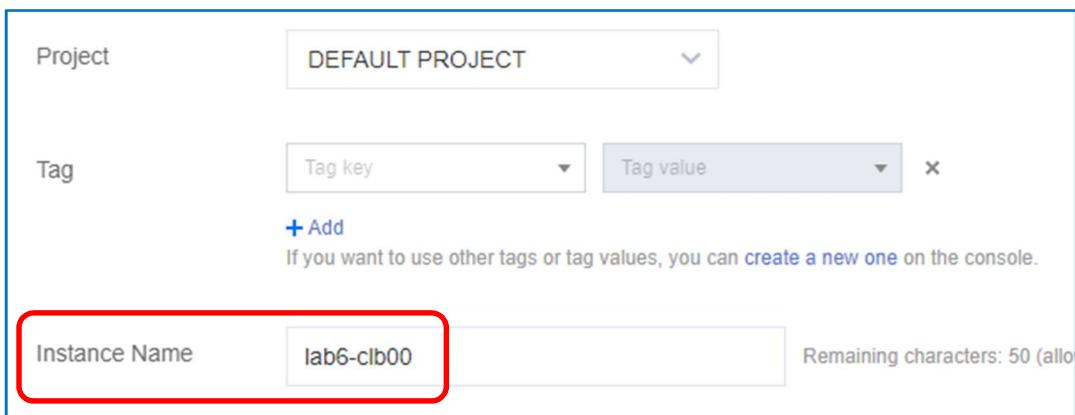
- ⑦ [Project] : DEFAULT PROJECT
- ⑧ [Tag] : Nothing
- ⑨ [Instance Name] : lab2-clbXX(여기서 XX는 계정번호를 의미)

Project **DEFAULT PROJECT**

Tag **Tag key** **Tag value** ×

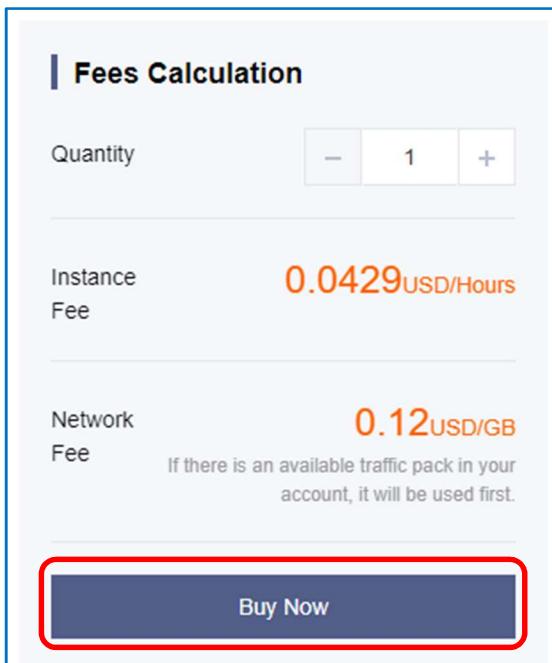
+ Add  
If you want to use other tags or tag values, you can create a new one on the console.

Instance Name **lab6-clb00** Remaining characters: 50 (allo)

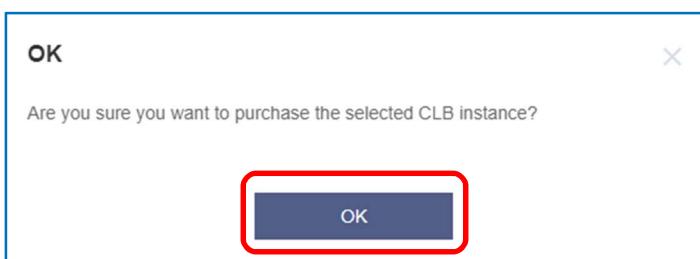


4. 페이지 오른쪽에 보면 [Fees Calculation] 창이 보인다. 다음과 같은 항목을 확인한다.

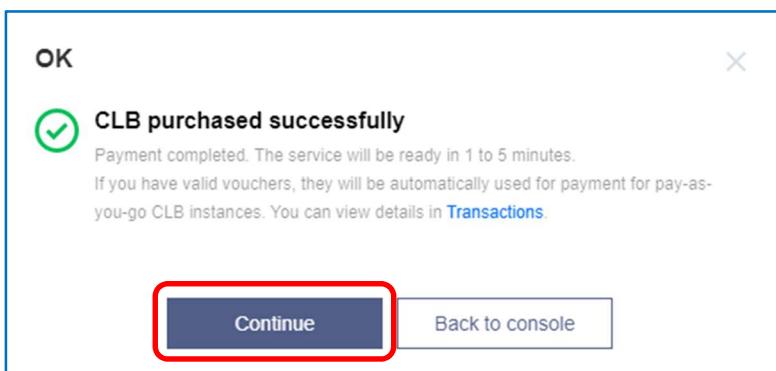
- ① [Quantity] : 1
- ② [Instance Fee] : 0.0429USD/Hours
- ③ [Network Fee] : 0.12USD/GB
- ④ [Buy Now] 주황색 버튼을 클릭한다.



5. [OK]창에서 [OK] 버튼을 클릭하여 창을 닫는다.



6. 성공적으로 CLB가 구매되었다는 메시지창이 나타난다. [Continue] 버튼을 클릭한다.



7. 잠시 뒤, [Cloud Load Balancer] 페이지의 [CLB Instance List]에 보면 방금 생성한 CLB가 목록에 있음을 확인할 수 있다.

The screenshot shows the 'Instance management' section of the Cloud Load Balancer interface. A red box highlights the first row in the table, which represents the newly created CLB instance. The table columns include ID/Name, Monitor status, Status, VIP, Availability Zone, Network type, Network, Health Status, Billing mode, Tag, and Operation. The highlighted row shows the following details:

ID/Name	Monitor status	Status	VIP	Availability Zone	Network type	Network	Health Status	Billing mode	Tag	Operation
lb-nadlyiqb lab6-clb00	Normal	Normal	150.109.250.76	Seoul Zone 1	Public Network	vpc-3t9qeqro lab5-vpc00 (10.0.0.0/16)	Health check not enabled	Pay-as-you-go - Traffic	Configure listener More	Created at 2023-02-01 12:47

## Task3. Cloud Load Balancer 설정하기

- [CLB Instance List]에서 방금 생성한 **CLB Instance**를 클릭하여 해당 **CLB**의 정보를 확인한다. 아래 그림과 같이 특별히 [VIP] 정보를 확인한다. 이 VIP 정보는 **Seoul Web Server**와 **Pusan Web Server**를 대표하는 CLB Virtual IP 주소다.

The screenshot shows the 'Basic information' tab of a CLB instance named 'lab6-clb00'. The 'VIP' field is highlighted with a red box, showing the value '150.109.250.76'. Other fields include Name (lab6-clb00), ID (lb-nadlyiqb), Status (Normal), Instance type (Public network), Region (Seoul), Availability zone (Seoul Zone 1), Network (lab5-vpc00(10.0.0.0/16 | vpc-3t9qeqro)), Support obtaining client IP (Supported), Project (DEFAULT PROJECT), and Tag (empty). The 'Instance Deletion Protection' section indicates it is 'Not enabled' with a link to enable it.

- CLB 정보 페이지의 상단 메뉴 중 [Listener Management]를 클릭한다. 아직 **HTTP/HTTPS Listener**가 생성되어 있지 않은 것을 알 수 있다. 새 Listener를 생성하기 위해, [HTTP/HTTPS Listener] 섹션에서 [Create] 파란색 버튼을 클릭한다.

The screenshot shows the 'Listener management' tab of the CLB instance. A red box highlights the 'HTTP/HTTPS listener' section, which shows 'Configured' status and a 'Create' button. Below this, there is a note: 'You've not created any listeners. Create now' and a link to 'Create now'. The TCP/UDP/TCP SSL/QUIC listener section is also shown with a 'Create' button and a similar note.

3. [CreateListener] 창이 나타나면 다음과 같이 각 값을 설정한 후, [Submit] 파란색 버튼을 클릭한다.

① [Name] : lab2-http-listener-XX(여기서 XX는 제정번호를 의미)

② [Listen Protocol Ports] : HTTP | 80

CreateListener

Name: lab6-http-listener-00

Listen Protocol Ports: HTTP : 80

Close Submit

4. [HTTP/HTTPS Listener] 섹션에 방금 생성한 Listener가 등록되었음을 확인할 수 있다. Listener 이름 앞에 있는 [+] 기호를 클릭해보자.

HTTP/HTTPS listener(Configured1)

Create

+ lab6-http-listener-00(HTTP:80) + 🔍

Click the left node to view details

5. 다음 단계는 이 Listener가 80번 포트로 수신했을 때 Forwarding 할 수 있도록 Rule을 설정하는 것이다. Forwarding rule을 설정하려면 [Create Now] 링크를 클릭한다.

HTTP/HTTPS listener(Configured1)

Create

- lab6-http-listener-00(HTTP:80) + 🔍

You've not created a forwarding rule. Click [Create now](#)

**Listener details**

**Basic**

information Listener name: lab6-http-listener-00

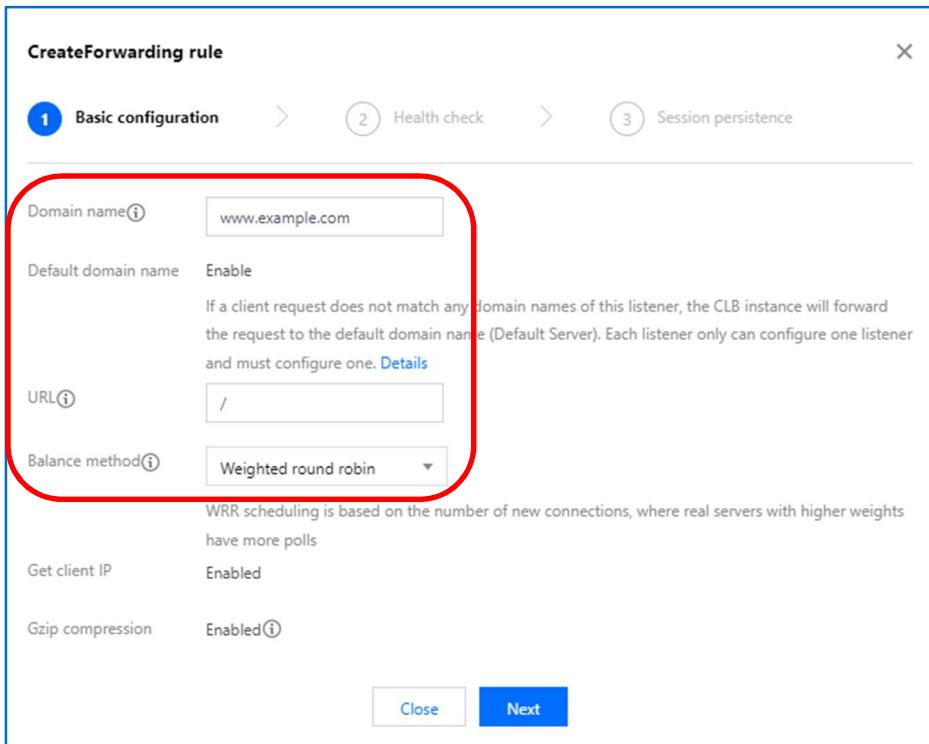
Listener ID: lbl-gsrlc0y9

Protocol+port: HTTP:80

Creation time: 2023-02-01 13:33:10

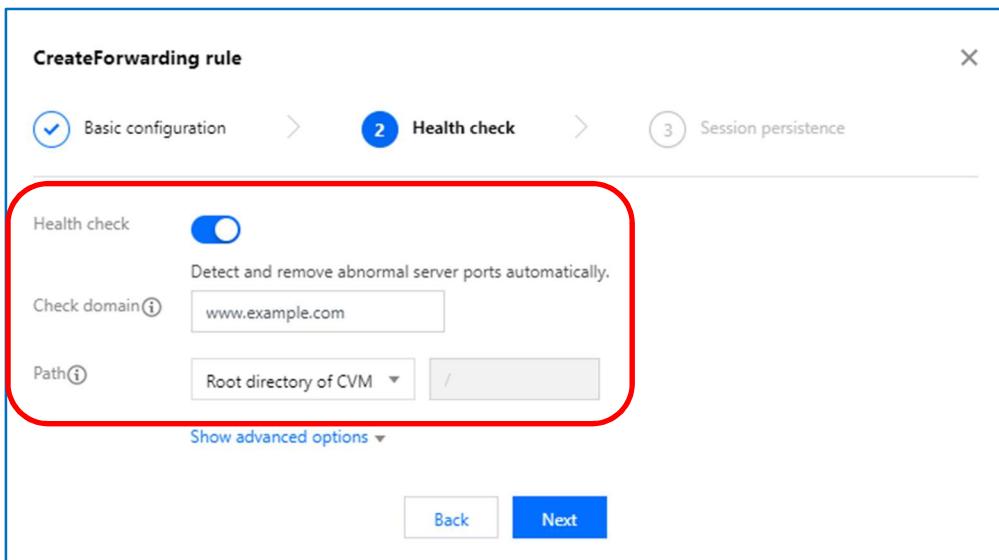
6. 3단계로 **Forwarding Rule**을 생성한다. 먼저 1단계 **Basic configuration** 단계이다. 다음의 각 값을 입력한 후, **[Next]** 파란색 버튼을 클릭하자.

- ① **[Domain Name]** : **www.example.com**
- ② **[URL]** : **/**
- ③ **[Balanced Method]** : **Weighted round robin**

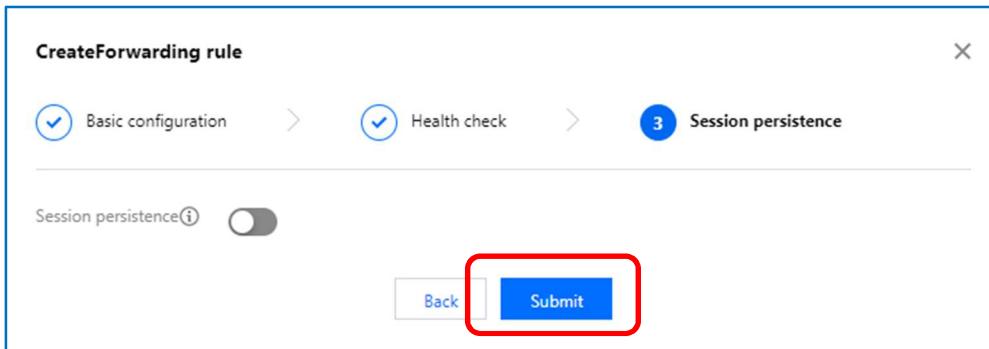


7. 다음 단계는 **[Health check]** 단계이다. 다음의 각 값을 설정한 다음, **[Next]** 파란색 버튼을 클릭한다.

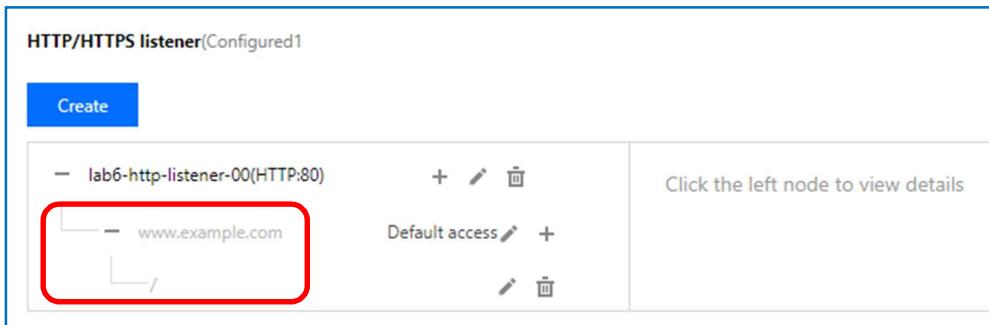
- ① **[Check Domain]** : **www.example.com**
- ② **[Path]** : **Root Directory of CVM | /**



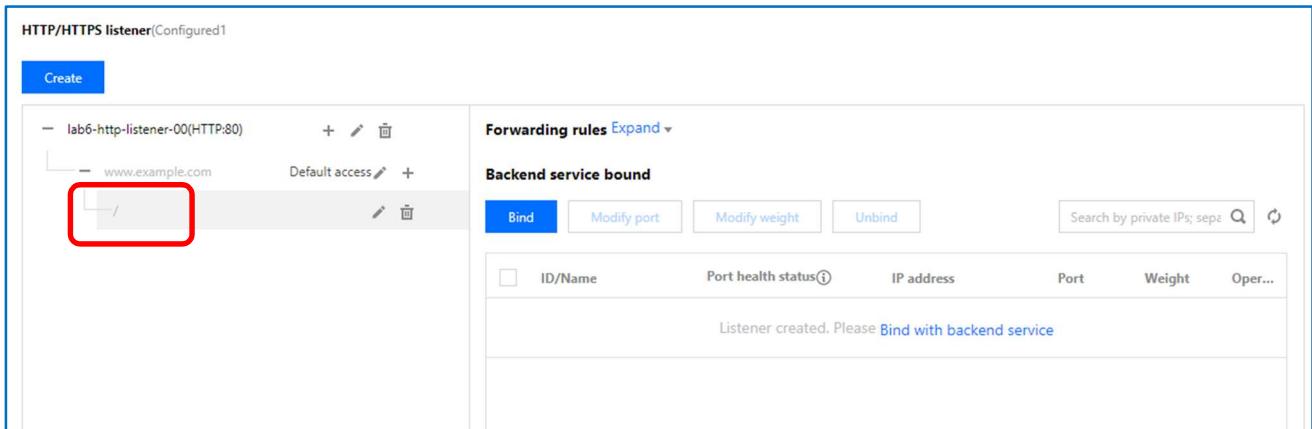
8. 3번째 [Session persistence] 단계이다. [Submit] 파란색 버튼을 클릭하여 설정을 마친다.



9. [HTTP/HTTPS Listener] 섹션에 Forwarding Rule이 생성된 것을 확인할 수 있다.



10. Listener가 받은 요청을 Forwarding Rule을 통해 Web Server에서 전달하려면 Forwarding Rule과 Web Server를 Binding 해야 한다. Binding을 설정하기 위해 www.example.com 밑에 /를 마우스로 클릭한다.



11. 그리고 우측에 나타나는 [Forwarding Rules]의 [Bound Real Server] 섹션의 [Bind] 파란색 버튼을 클릭한다.

The screenshot shows the 'HTTP/HTTPS listener' configuration interface. On the left, there's a tree view with 'lab6-http-listener-00(HTTP:80)' expanded, showing 'www.example.com' and a '/' node. To the right, the 'Forwarding rules' section is displayed with a sub-section titled 'Backend service bound'. A prominent blue 'Bind' button is highlighted with a red box. Below it are buttons for 'Modify port', 'Modify weight', and 'Unbind'. A search bar at the top right says 'Search by private IPs; sepa' with a magnifying glass icon. A message at the bottom of the table area says 'Listener created. Please Bind with backend service'.

12. [Bind with backend service] 창에서, 다음과 같이 각 값을 설정한 후, [Confirm] 파란색 버튼을 클릭한다.

- ① [Network] : lab5-vpcXX(여기서 XX는 계정번호를 의미)
- ② [Select an instance] : CVM | lab6-webserverXX-seoul(여기서 XX는 계정번호를 의미), lab6-webserverXX-pusan(여기서 XX는 계정번호를 의미)
- ③ [Selected] :
  - i. [Port] : 80
  - ii. [Weight] : 10

The screenshot shows the 'Bind with backend service' dialog. On the left, a 'Network' dropdown is set to 'lab5-vpc00 (vpc-3t9qeqro)'. Below it, a 'Select an instance' section has a 'CVM' tab selected, highlighted with a red box. Underneath are dropdowns for 'IP address' and 'Search by IP address, and separate' (with a magnifying glass icon). A list of instances is shown with checkboxes:

- ins-chvw6m6p (lab6-webserver00-pusan)  
43.131.243.217(Public)/10.0.2.11(Private)
- ins-08ycrgtz (lab6-webserver00-seoul)  
43.155.142.181(Public)/10.0.1.16(Private)

A red box highlights the list of selected instances. On the right, a 'Selected (2)' table lists the selected instances with their details:

Instance ID/Name	Port	Weight	Actions
ins-chvw6m6p (lab6-webserver00-pusan) 43.131.243.217(Public)/10.0.2.11(Private)	80	10	Add port Delete
ins-08ycrgtz (lab6-webserver00-seoul) 43.155.142.181(Public)/10.0.1.16(Private)	80	10	Add port Delete

A red box highlights this table. At the bottom, there are 'Confirm' and 'Cancel' buttons.

### 13. Forwarding Rule와 Web Server 2대의 Binding 작업이 끝났다.

The screenshot shows the Azure portal interface for managing an HTTP/HTTPS listener. On the left, there's a tree view with 'lab6-http-listener-00(HTTP:80)' expanded, showing 'www.example.com' under it. On the right, the 'Forwarding rules' section is expanded, showing a table titled 'Backend service bound'. The table lists two backend services:

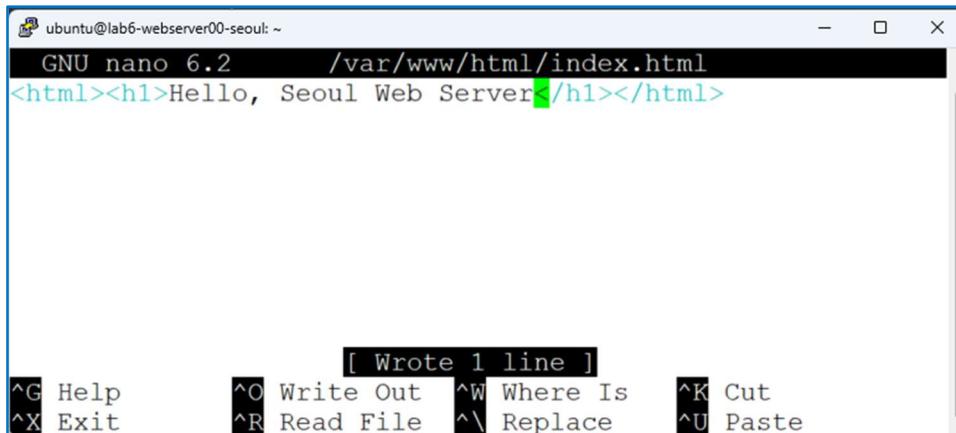
ID/Name	Port health status	IP address	Port	Weight	Oper...
ins-08ycrgtz lab6-webserver00-seoul	Probing	43.155.142.181 (public) 10.0.1.16(Private)	80	10	<a href="#">Unbind</a>
ins-chw6m6p lab6-webserver00-pusan	Probing	43.131.243.217 (public) 10.0.2.11(Private)	80	10	<a href="#">Unbind</a>

## Task4. Cloud Load Balancer 동작 확인하기

1. 지금까지 생성한 **Web Server**는 2대이다. 각 **Web Server**는 동일한 페이지를 Rendering 하기 때문에 어느 CLB를 통해 접근했는지 웹페이지상으로는 알 수 없다. 그래서 각 **Web Server**의 **index.html**을 수정해서 **CLB**를 통해 접근한 페이지를 확인하도록 하자.
2. 먼저 **lab6-webserverXX-seoul**(여기서 XX는 계정번호를 의미)의 홈페이지는 다음과 같이 수정한다.

- ① **Putty** 편집기를 이용해서 Web Server Seoul 인스턴스에 접근한 후, 다음과 같이 **index.html**을 수정한다.

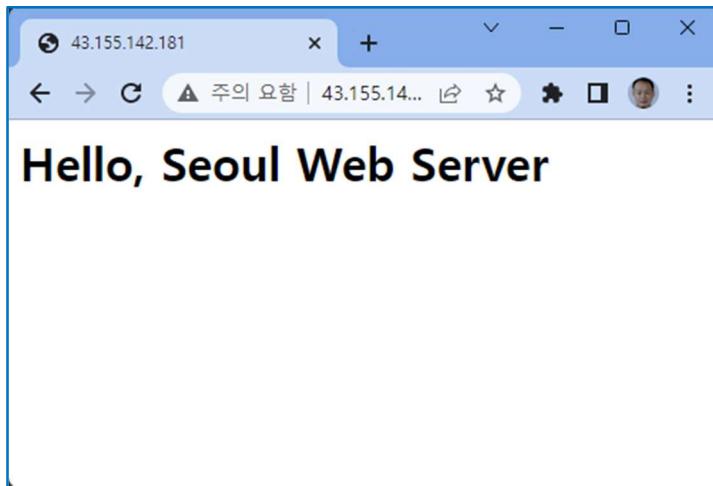
```
$ sudo nano /var/www/html/index.html
```



```
ubuntu@lab6-webserver00-seoul: ~
GNU nano 6.2      /var/www/html/index.html
<html><h1>Hello, Seoul Web Server</h1></html>

[ Wrote 1 line ]
^G Help      ^O Write Out   ^W Where Is   ^K Cut
^X Exit     ^R Read File   ^\ Replace    ^U Paste
```

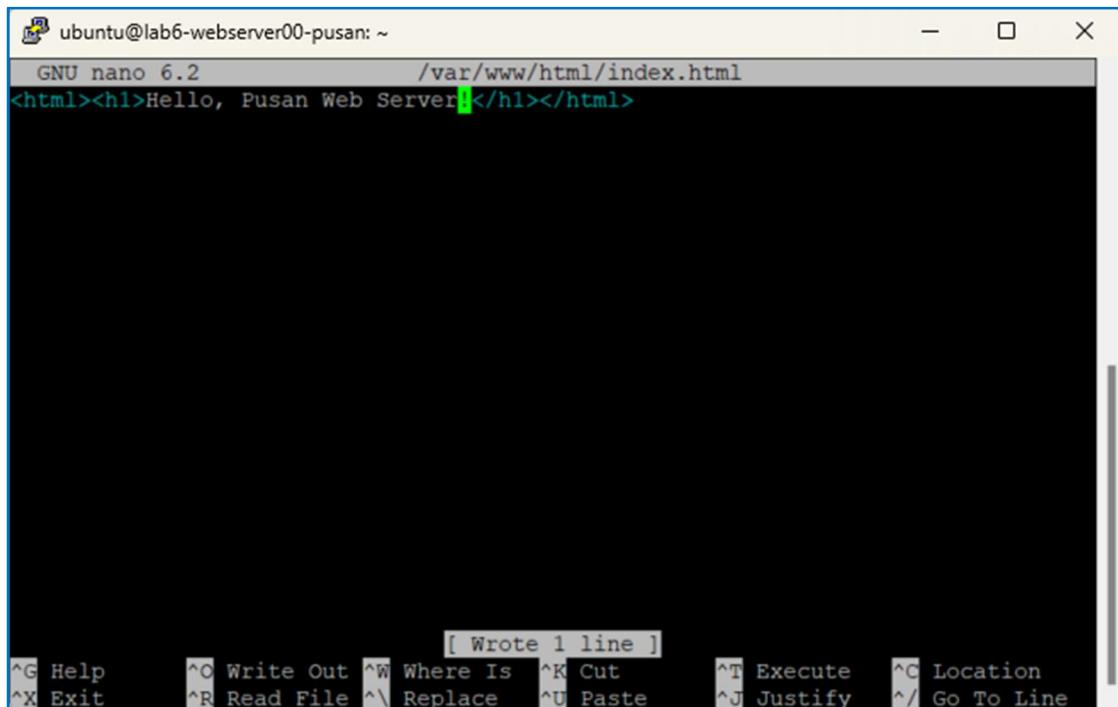
- ② 브라우저를 열어서 Web Server Seoul을 확인한다.



3. 이번에는 **lab6-webserverXX-pusan**(여기서 XX는 계정번호를 의미)을 동일하게 Putty로 연결한다.

① **index.html**을 수정한다.

```
$ sudo nano /var/www/html/index.html
```

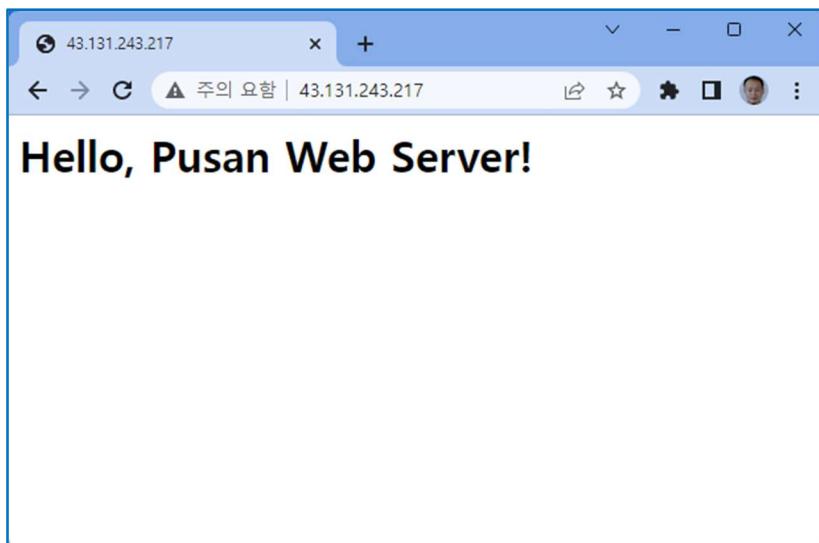


The screenshot shows a terminal window titled "ubuntu@lab6-webserver00-pusan: ~". It displays the command "GNU nano 6.2 /var/www/html/index.html" at the top. The file content is shown as follows:

```
<html><h1>Hello, Pusan Web Server!</h1></html>
```

At the bottom of the terminal, there is a menu bar with various keyboard shortcuts and a status message "[ Wrote 1 line ]".

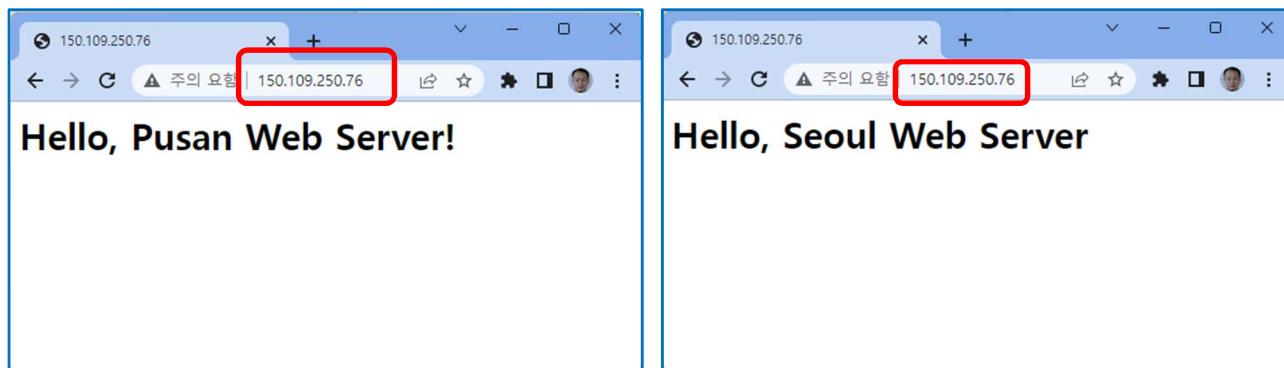
② 브라우저를 열고 변경된 웹페이지를 확인한다.



4. [Cloud Load Balancer] 페이지로 이동하여, [CLB Instance List] 페이지의 목록에 있는 CLB의 VIP 주소를 확인한다.

ID/Name	Status	VIP	Availability Zone	Network	Health Status
lab6-nadlyjqb lab6-clb00	Normal	150.109.250.76	Seoul Zone 1	vpc-3t9qeqro lab5-vpc00 (10.0.0.0/16)	Normal

5. 웹 브라우저를 띄우고 이 주소로 접속해서 HTTP 요청을 보낸다. **lab6-webserverXX-seoul**(여기서 XX는 계정 번호를 의미)과 **lab6-webserverXX-pusan**(여기서 XX는 계정 번호를 의미) 2개의 Web Server가 번갈아서 웹 페이지를 보여준다.



## Task5. Auto Scaling을 구성하기 전 사전 준비하기

- 앞에서 **Cloud Load Balancer**에서 사용한 **Image**를 확인하기 위해 **[Cloud Virtual Machine]** 페이지의 좌측 메뉴에서 **[Images]**를 클릭한다.

The screenshot shows the 'Cloud Virtual Machine' interface with the 'Images' section selected. The 'Custom Image' tab is active. A note at the top discusses discontinued support for Windows Server 2008 R2 and upcoming changes regarding image pricing. Below the note, a table lists a single custom image entry:

ID/Name	Status	Type	Capacity	Tag (key:value)	Operating System
img-58ouvzlp lab5-webserver00-golden-img	Normal	Custom Image	50GB		Ubuntu Server 22.04 LTS 64bit

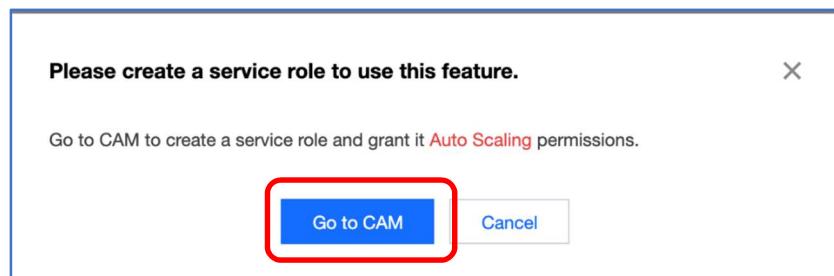
- 이미 생성한 **Image**는 **Ubuntu Server 22.04 LTS 64bit**에 **Apache Web Server**가 설치된 이미지이다.

## Task6. Launch Configuration 설정하기

- 먼저 **Auto Scaling**을 구성하기 위해 페이지 상단 메뉴에서 **[Products] > [Compute] > [Auto Scaling]** 메뉴를 클릭한다.

The screenshot shows the Tencent Cloud Products page. On the left, under the Compute category, the 'Auto Scaling' service is highlighted with a red box and a cursor icon pointing at it. The main grid lists various cloud services: Basic Storage Service, CDN & Acceleration, Networking, Relational Database, Cloud Object Storage, CDN, Cloud Load Balancer, TencentDB for MySQL, Container Services, Data Processing Analysis, Video Service, NAT Gateway, Enterprise Distributed DBMS, Tencent Kubernetes Engine, Cloud File Storage, Enterprise Content Delivery, Virtual Private Cloud, TencentDB for MariaDB, Tencent Container Registry, Cloud Block Storage, Global Application Acceleration, Direct Connect, TencentDB for SQL Server, Cloud Infinite, Tencent Real-Time Communication, Cloud Streaming Services, Peering Connection, Tencent Distributed SQL, and Video on Demand. A search bar at the top is empty.

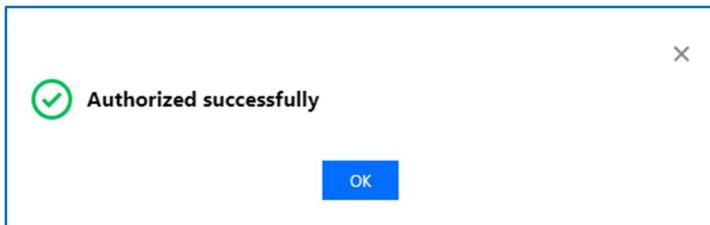
- Auto Scaling을 위한 CAM 권한이 요구된다. 다음과 같은 메시지창이 나타나면 **[Go to CAM]** 파란색 버튼을 클릭한다.



- [Cloud Access Management]**의 **[Roles]** 페이지로 이동한다. 해당 권한을 확인하고, **[Grant]** 파란색 버튼을 클릭한다.

The screenshot shows the Tencent Cloud Cloud Access Management Role Management page. The left sidebar has 'Cloud Access Management' selected. Under 'Roles', the 'Roles' option is also selected. The main content area is titled 'Role Management' and shows 'Role Name: AS\_QCSRole', 'Role Type: Service Role', and 'Description: Current role is a Auto Scaling service role, which will access your other cloud service resources within the permissions of the associated policies.' It also lists 'Authorized Policies: Preset policy QcloudAccessForASRole'. At the bottom are two buttons: a blue 'Grant' button with a red box around it, and a white 'Cancel' button.

4. 권한이 성공적으로 할당되었다.



5. [Scaling group] 페이지로 이동되었다. 먼저 좌측 메뉴에서 [Launch Configuration] 메뉴를 클릭한다.

A screenshot of the Tencent Cloud Auto Scaling service interface. The left sidebar has "Auto Scaling" selected, and under it, "Scaling group" is highlighted with a red box. Below that, "Launch Configuration" is also highlighted with a red box. The main content area shows a table with columns: ID/Name, Status, Current/Desired, and Min/Max Capacity. A "Create" button is visible at the top of the table area. The top navigation bar shows "Tencent Cloud" and "Scaling group" along with dropdown menus for "All Projects" and "Seoul".

6. [Launch Configuration] 페이지이다. 인스턴스를 필요한 순간에 생성하게 하려면, 어떤 스펙으로 인스턴스를 생성할 것인지를 미리 결정해야 한다. 그래서 [Launch Configuration]을 통해 생성할 인스턴스의 스펙을 결정한다. 생성하기 위해 [Create] 파란색 버튼을 클릭한다.

A screenshot of the "Launch configuration" page. The top navigation bar shows "All projects" and "Seoul". A blue banner at the top states: "① Launch Configuration now supports multiple models, allowing you to choose multiple similar models to improve your business availability." Below this, a "Create" button is highlighted with a red box. The main content area is a table with columns: ID/Name, Validity, Bound scaling group, Instance configuration, Instance billing mode, Bandwidth/network billing mode, System disk/Data disk, Image, Last modified time, and a "L" column. The table currently displays "No data yet". At the bottom left is a message "Total items: 0". At the bottom right are pagination controls showing "20 / page" and navigation arrows.

7. [Create launch configuration] 페이지이다. CVM을 생성하는 것처럼 모두 3단계에 걸쳐 생성된다. 먼저 1단계로 **Select model** 단계이다. 다음의 각 값을 입력하고 **[Next:Complete Configuration]** 버튼을 클릭한다.

- ① [Launch configuration name] : webserver-launch-config-XX(여기서 XX는 계정번호를 의미)
- ② [Billing Mode] : Pay as you go
- ③ [Region] : Seoul
- ④ [Availability Zone] : Seoul Zone 1

Create launch configuration

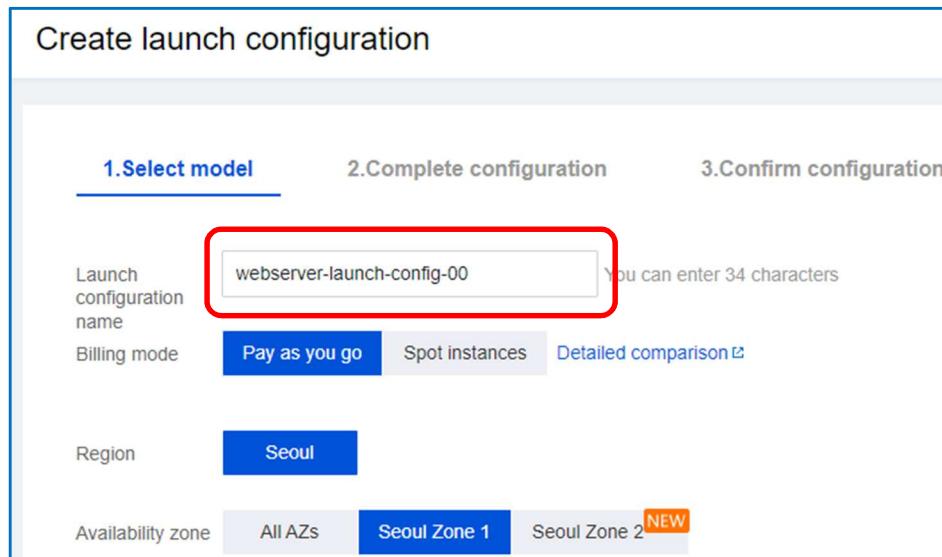
1.Select model      2.Complete configuration      3.Confirm configuration

Launch configuration name:  You can enter 34 characters

Billing mode:

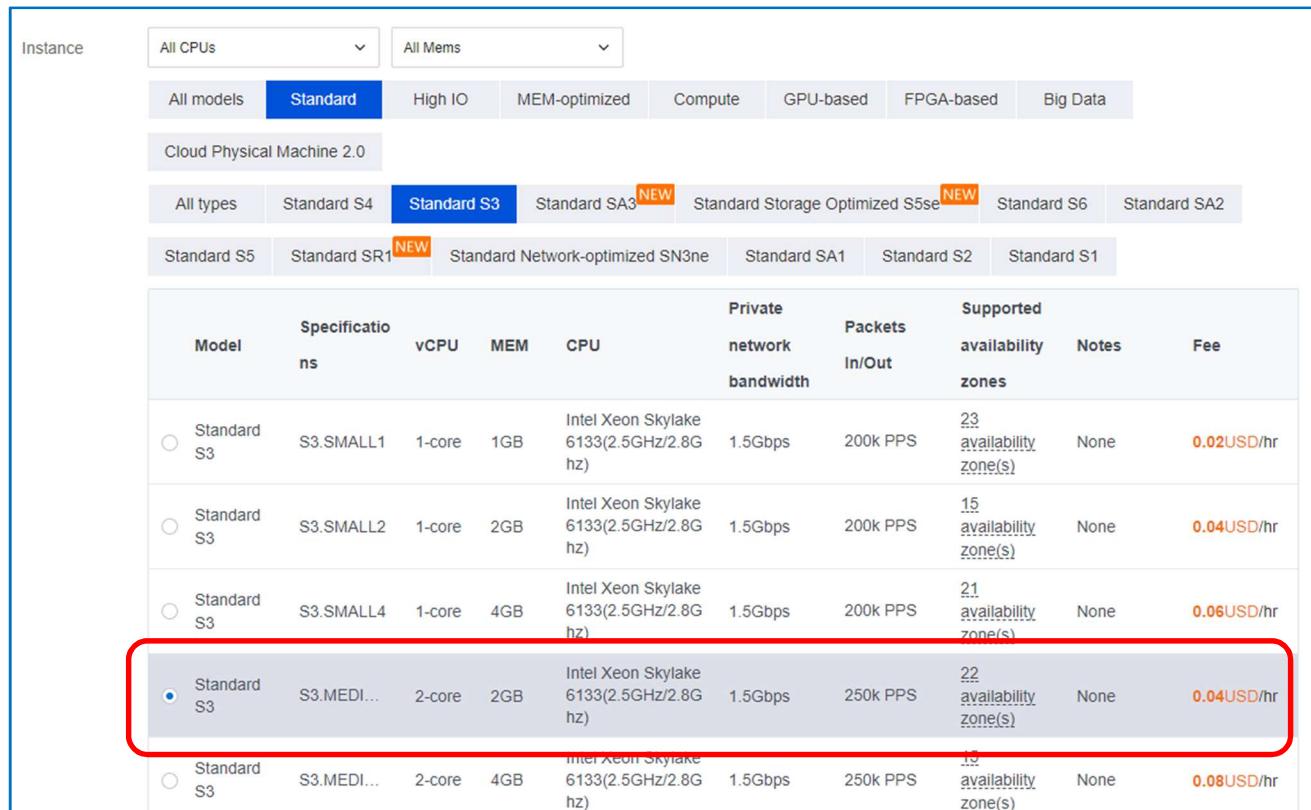
Region:

Availability zone:



- ⑤ [Instance] : Standard | Standard S3 | S3.MEDIUM | 2-core | 2GB | 0.04USD/hr

Instance	All CPUs	All Mems	Cloud Physical Machine 2.0						
	All models	Standard	High IO	MEM-optimized	Compute	GPU-based	FPGA-based	Big Data	
	All types	Standard S4	Standard S3	Standard SA3 NEW	Standard Storage Optimized S5se NEW	Standard S6	Standard SA2		
	Standard S5	Standard SR1 NEW	Standard Network-optimized SN3ne	Standard SA1	Standard S2	Standard S1			
Model	Specifications	vCPU	MEM	CPU	Private network bandwidth	Packets In/Out	Supported availability zones	Notes	Fee
<input type="radio"/>	Standard S3	S3.SMALL1	1-core	1GB	Intel Xeon Skylake 6133(2.5GHz/2.8Ghz)	1.5Gbps	200k PPS	23 availability zone(s)	None <b>0.02USD/hr</b>
<input type="radio"/>	Standard S3	S3.SMALL2	1-core	2GB	Intel Xeon Skylake 6133(2.5GHz/2.8Ghz)	1.5Gbps	200k PPS	15 availability zone(s)	None <b>0.04USD/hr</b>
<input type="radio"/>	Standard S3	S3.SMALL4	1-core	4GB	Intel Xeon Skylake 6133(2.5GHz/2.8Ghz)	1.5Gbps	200k PPS	21 availability zone(s)	None <b>0.06USD/hr</b>
<input checked="" type="radio"/>	Standard S3	S3.MEDIUM	2-core	2GB	Intel Xeon Skylake 6133(2.5GHz/2.8Ghz)	1.5Gbps	250k PPS	22 availability zone(s)	None <b>0.04USD/hr</b>
<input type="radio"/>	Standard S3	S3.MEDIUM	2-core	4GB	Intel Xeon Skylake 6133(2.5GHz/2.8Ghz)	1.5Gbps	250k PPS	19 availability zone(s)	None <b>0.08USD/hr</b>



- ⑥ [Image] : Custom Image | lab5-webserverXX-golden-img(여기서 XX는 계정번호를 의미)
- ⑦ [System disk] : Premium Cloud Storage 50GB
- ⑧ [Public network bandwidth] : Assign a dedicated public IP for free | By Traffic | 100Mbps

The screenshot shows the AWS Lambda configuration interface. At the top, there are tabs for 'Image' (selected), 'Public image', 'Custom image', and 'Shared image'. A red box highlights the 'Custom image' dropdown which contains 'lab5-webserver00-golden-img | img-58ouv'. Below this, a note states: 'Please note that instances purchased in this region cannot switch between Linux and Windows systems.' Under 'System disk', it shows 'Premium cloud storage' selected, 50 GB, and a note: 'System disk type cannot be changed after purchase'. Under 'Data disk', there is a link to 'Create cloud data disk'. In the 'Public network bandwidth' section, a checkbox 'Assign a dedicated public IP for free' is checked. Below it, a 'By traffic' button is highlighted in blue, and a 'Detailed comparison' link is shown. A slider indicates a bandwidth of 100 Mbps, with markers at 1Mbps, 5Mbps, 20Mbps, and 100Mbps. A note below the slider says: 'Note: The traffic fee is settled on an hourly basis. When your account balance becomes negative, the service will be stopped in 2 hours.' At the bottom, it shows the 'Selected model' as 'S3.MEDIUM2(Standard S3, 2-core, 2 GB)', 'Configuration fee' of 0.05 USD/hr, and 'Network fee' of 0.12 USD/GB. A red box highlights the 'Next: Complete configuration' button.

8. 2단계 Complete Configuration 단계이다. 다음의 각 값을 입력한다.

- ① [Project] : DEFAULT PROJECT
- ② [Security Groups] : Existing Security Groups | lab5-sgXX(여기서 XX는 계정번호를 의미)
- ③ [Security Group Rules] : ICMP, TCP:22, TCP:80, TCP:443

The screenshot shows the AWS Lambda security group configuration interface. It has three tabs: '1.Select model', '2.Complete configuration' (selected), and '3.Confirm configuration'. Under '2.Complete configuration', it shows the 'Project' set to 'DEFAULT PROJECT'. In the 'Security groups' section, 'Existing security groups' is selected, and a dropdown menu shows 'sg-04cdujnd | lab5-sg00' (highlighted with a red box). Below this, there is a note: 'To open other ports, you can: New security group'. Under 'Security group rules', it shows two tabs: 'Inbound rule' (selected) and 'Outbound rule'. A table lists the rules:

Source	Protocol port	Policy	Notes
0.0.0.0/0	ICMP	Allow	Ping service open.
::/0	ICMPV6	Allow	Ping service open.
0.0.0.0/0	TCP:80	Allow	Web service HTTP(80) open.

④ [Instance name] : lab6-cvm-XX(여기서 XX는 계정번호를 의미)

⑤ [Login Methods] : Set Password

⑥ [Username] : ubuntu

⑦ [Password] : P@\$\$W0rd1234

⑧ [Confirm Password] : P@\$\$W0rd1234

⑨ [Security Reinforcement] : Enable for Free

⑩ [Cloud Monitoring] : Enable for Free

The screenshot shows the configuration page for creating a new instance. The 'Instance name' field is set to 'lab6-cvm-00'. The 'Login methods' section has 'Set password' selected. Under 'Security reinforcement', the 'Enable for free' checkbox is checked. Under 'Cloud monitoring', the 'Enable for free' checkbox is also checked. Both sections have a 'Details' link. The entire 'Instance name' field and the 'Set password' section are highlighted with red boxes.

Instance name lab6-cvm-00 Enter a name (up to 40 chars, 29 more allowed). For batch creation, this name will be followed by a sequence number.

Unique instance name [?](#)

Login methods **Set password** SSH key pair Reset password after creation Follow image

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 stopped.

Username ubuntu

Password ..... [Reset](#)

Confirm password ..... [Reset](#)

Security reinforcement  Enable for free  
Free Anti-DDoS Basic [Details](#) and CWP Basic [Details](#)

Cloud monitoring  Enable for free  
FREE cloud monitoring, analysis, alarming, and server monitoring metrics (component installation required) [Details](#)

9. [Advanced settings]를 클릭하여 다음의 값을 설정한다음, [Next:Confirm Configuration] 버튼을 클릭한다.

① [Hostname] : lab6-cvm-XX(여기서 XX는 계정번호를 의미)

The screenshot shows the 'Advanced settings' section of the configuration page. The 'Hostname' field is set to 'lab6-cvm-00'. Below it is a note about password rules. The 'Custom data' field contains a placeholder for shell scripts. A checkbox indicates the input is encoded with base64. At the bottom, the 'Selected model' is listed as 'S3.MEDIUM2(Standard S3, 2-core, 2 GB)', and the 'Configuration fee' is '0.05USD/hr'. The 'Network fee' is '0.12USD/GB'. There are 'Back' and 'Next: Confirm configuration' buttons.

**Advanced settings**

Hostname lab6-cvm-00

Valid characters are lowercase letters (a-z), uppercase letters (A-Z), [0-9], [-]. Hyphens (-) and dots (.) cannot be used consecutively, and cannot be placed at the beginning or end. A number-only password is not allowed.

Unique hostname [?](#)

Custom data (Optional) The custom data is used to configure instances during launching. It supports the Shell format. The original data cannot exceed 16KB. The Shell script must start with "#" or "!" and the path to the interpreter reading the script (usually /bin/bash)

The above input is encoded with base64.

Selected model S3.MEDIUM2(Standard S3, 2-core, 2 GB)

Configuration fee **0.05USD/hr** ([Billing details](#))

Network fee **0.12USD/GB**

[Back](#) [Next: Confirm configuration](#)

10. 마지막 3단계 [Confirm Configuration] 단계이다. 내용을 확인한 다음, [Create launch configuration] 버튼을 클릭한다.

1.Select model      2.Complete configuration      **3.Confirm configuration**

Please make sure port 22 and the ICMP protocol are allowed in the current security group. Otherwise, you will not be able to remotely log in to or ping the CVM. [View](#)  
Keep your password in mind. If you forgot your password, reset it on the CVM console. [View](#)

▼ Region and model Seoul Zone 1; S3.MEDIUM2 (Standard S3, 2-core 2 GB) [Edit](#)

▼ Image Custom image: lab5-webserver00-golden-img [Edit](#)

▼ Storage and bandwidth 50 GB system disk; By traffic: 100Mbps [Edit](#)

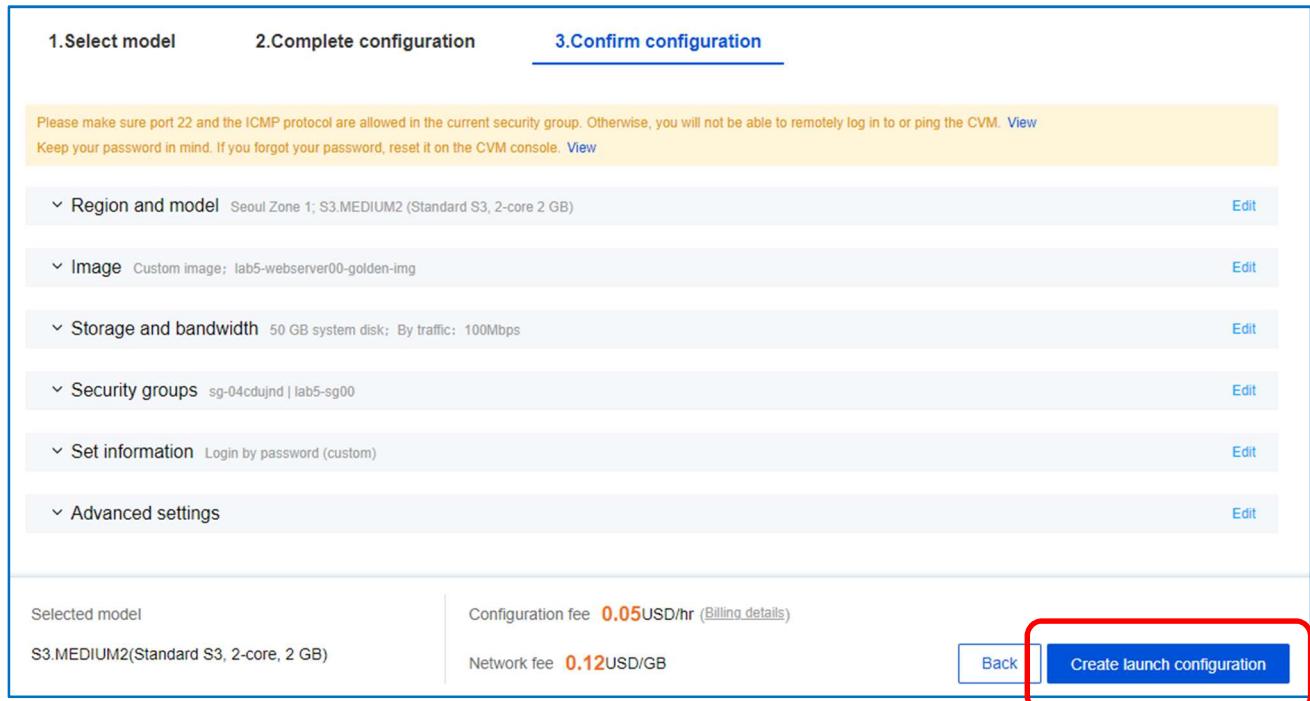
▼ Security groups sg-04cdujnd | lab5-sg00 [Edit](#)

▼ Set information Login by password (custom) [Edit](#)

▼ Advanced settings [Edit](#)

Selected model Configuration fee **0.05USD/hr** ([Billing details](#))  
S3.MEDIUM2(Standard S3, 2-core, 2 GB) Network fee **0.12USD/GB**

[Back](#) **Create launch configuration**

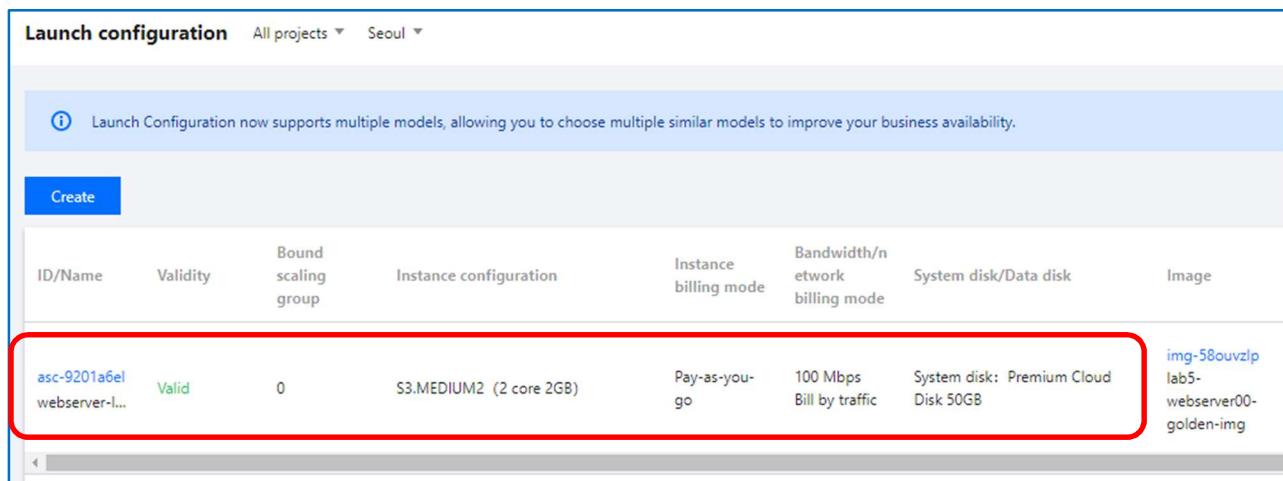


11. 잠시 후, 방금 생성한 Launch Configuration가 목록에 보인다.

Launch configuration All projects ▾ Seoul ▾

ⓘ Launch Configuration now supports multiple models, allowing you to choose multiple similar models to improve your business availability.

ID/Name	Validity	Bound scaling group	Instance configuration	Instance billing mode	Bandwidth/network billing mode	System disk/Data disk	Image
asc-9201a6el webserver-l...	Valid	0	S3.MEDIUM2 (2 core 2GB)	Pay-as-you-go	100 Mbps Bill by traffic	System disk: Premium Cloud Disk 50GB	img-58ouuvzlp lab5-webserver00-golden-img



## Task7. Scaling Group 설정하기

1. 이제 [Scaling group]을 설정할 차례이다. 좌측 메뉴에서 [Scaling group] 메뉴를 클릭한다.

The screenshot shows the Tencent Cloud Auto Scaling interface. On the left sidebar, under the 'Auto Scaling' section, the 'Scaling group' item is highlighted with a red box. A blue 'Create' button is located at the top right of the main content area. The main content area displays a table with columns: ID/Name, Status, Current/Desired, Min/Max Capacity, Cloud Load Balancer, Launch Configuration, Network, Removal policy, Creation Time, and Operation. Below the table, it says 'No data yet'. At the bottom, there are pagination controls and a note 'Total items: 0'.

2. 새 Scaling group을 생성하기 위해 [Create] 파란색 버튼을 클릭한다.

The screenshot shows the 'Scaling group' creation page. A large red box surrounds the entire page, indicating the area where the user needs to click. At the top left, there is a 'Create' button. The main area contains a table with columns: ID/Name, Status, Current/Desired, and Min/Max Capacity. Below the table, it says 'Total items: 0'.

3. [Create scaling group]은 4단계를 거쳐야 한다. 먼저 1단계로 **Basic configuration** 단계이다. 각 값을 설정한 후, [Next] 파란색 버튼을 클릭한다.

- ① [Name] : lab6-scaling-group-XX(여기서 XX는 계정번호를 의미)
- ② [Min capacity] : 1
- ③ [Initial capacity] : 1
- ④ [Max capacity] : 3
- ⑤ [Launch configuration] : webserver-launch-configXX(여기서 XX는 계정번호를 의미)
- ⑥ [Supported network] : lab5-vpcXX(여기서 XX는 계정번호를 의미)
- ⑦ [Support subnet] : lab5-vpcXX-seoul-1(여기서 XX는 계정번호를 의미)

**Create scaling group**

1 Basic configuration > 2 Load balancer configuration > 3 Instance allocation >

4 Other configurations

Name \* lab6-scaling-group-00  
The name can contain up to 55 characters, including Chinese characters, English letters, numbers, underscores, hyphens and periods.

Project Default project

Min capacity \* 1 (with a red box around the input field)

Initial capacity \* 1 (with a red box around the input field)

Max capacity \* 3 (with a red box around the input field)

Launch configuration \* asc-5wacv2pt | webserver-lau... [Create launch configuration](#) [Configure Now](#)

Supported network \* vpc-3t9qeqro | lab5-vpc00 [create a VPC](#)

Support subnet \* 

<input checked="" type="checkbox"/> Subnet ID	Subnet name	Availability zone
subnet-q1h5iwzd	lab5-vpc00-seoul-2	Seoul Zone 2
<input checked="" type="checkbox"/> subnet-0pxlsnq5	lab5-vpc00-seoul-1	Seoul Zone 1

You can select multiple subnets. CVMs will be created in these subnets randomly when auto-scaling up is triggered, so as to implement cross-subnet disaster recovery. [Suggested settings](#)

[Next](#)

4. 다음은 2단계 **Load balancer configuration** 단계이다. 각각의 값을 입력 후, [Next step: Instance allocation] 파란색 버튼을 클릭한다.

- ① **[Load balancing]** : lab6-clbXX(여기서 XX는 계정번호를 의미)
- ② **[Mount the listener]** : lab2-http-listener-XX(여기서 XX는 계정번호를 의미)
- ③ **[Domain name]** : www.example.com
- ④ **[Path URL]** : /
- ⑤ **[Instance port weight]** : 80 | 10

Create scaling group

Basic configuration > Load balancer configuration > Instance allocation >

4 Other configurations

Load balancing: lab6-clb00

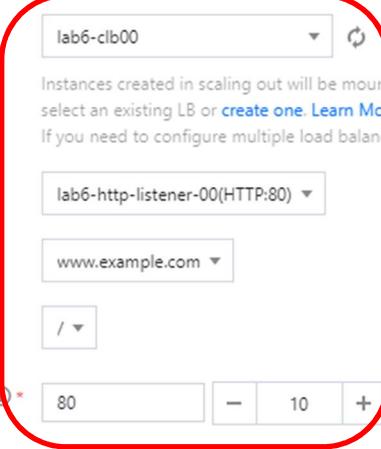
Mount the listener: lab6-http-listener-00(HTTP:80)

Domain name: www.example.com

Path URL: /

Instance port weight: 80 | - | 10 | +

Back Next step: Instance allocation Completed



5. 다음 단계는 **Instance allocation** 단계이다. 바로 **[Next: Other configurations]** 파란색 버튼을 클릭한다.

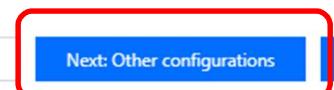
Create scaling group

Basic configuration > Load balancer configuration > 3 Instance allocation >

4 Other configurations

Spot instance allocation:

Back Next: Other configurations Completed



6. 다음 단계는 마지막 4번째 단계로 **Other configurations** 단계이다. 각각의 값을 설정한 후, [Completed] 파란색 버튼을 클릭한다.

- ① **[Removal policy]** : Remove the latest instances
- ② **[Instance creation policy]** : Preferred availability zones(subnets) first

Create scaling group

Basic configuration > Load balancer configuration > Instance allocation >

Other configurations

Removal policy: Remove the latest instance ⓘ

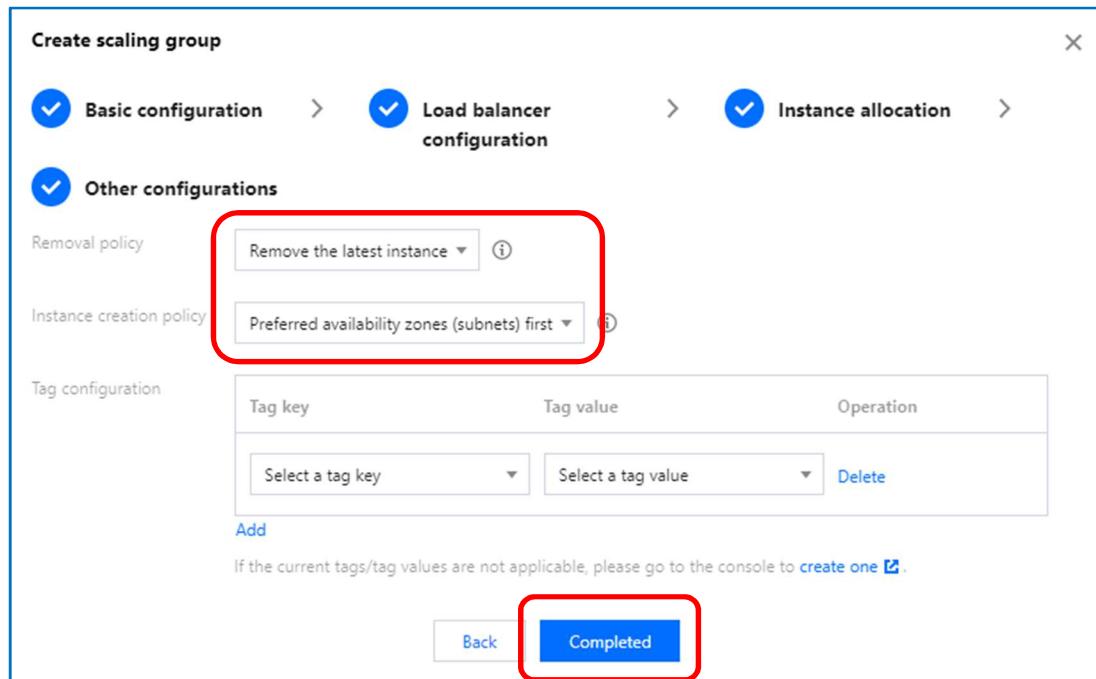
Instance creation policy: Preferred availability zones (subnets) first ⓘ

Tag configuration

Tag key	Tag value	Operation
Select a tag key	Select a tag value	Delete

If the current tags/tag values are not applicable, please go to the console to [create one](#).

Back Completed



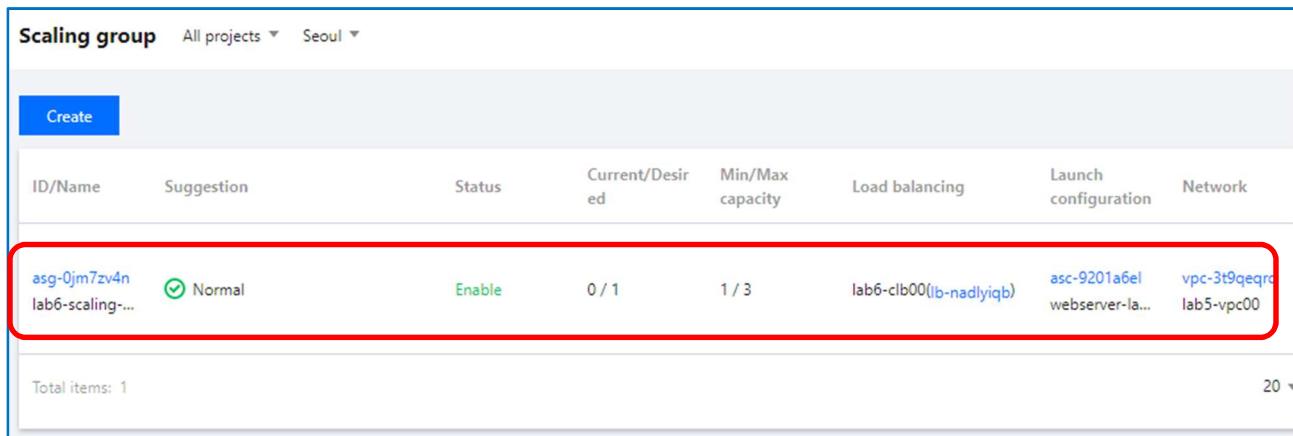
7. 이제 **[Scaling group]** 목록에 방금 생성한 **Scaling group**이 올라온 것을 확인할 수 있다.

Scaling group All projects ▾ Seoul ▾

Create

ID/Name	Suggestion	Status	Current/Desired	Min/Max capacity	Load balancing	Launch configuration	Network
asg-0jm7zv4n lab6-scaling-...	<span style="color: green;">Normal</span>	Enable	0 / 1	1 / 3	lab6-clb00(lb-nadlyiqb)	asc-9201a6el webserver-la... lab5-vpc00	vpc-3t9qeqr...

Total items: 1 20 ▾



## Task8. Scaling Policy 생성하기

6. [Scaling group] 목록에서 방금 생성한 group을 클릭한다.

Scaling group							
Create		All projects ▾ Seoul ▾					
ID/Name	Suggestion	Status	Current/Desir ed	Min/Max capacity	Load balancing	Launch configuration	Network
asg-0jm7zv4n lab6-scaling-...	<span>Normal</span>	<span>Enable</span>	0 / 1	1 / 3	lab6-clb00(lb-nadlyiqb)	asc-9201a6el webserver-la...	vpc-3t9qeqro lab5-vpc00
Total items: 1						20 ▾	

7. 해당 Group의 상세 페이지가 나타나면, 상단 메뉴 중 [Alarm trigger policy] 메뉴를 클릭한다.

← lab6-scaling-group-00 Submit a ticket ↗

[Scaling group details](#) [Associated to](#) Alarm trigger policy [Scheduled action](#) [Notification](#) [Scaling activity](#) [Lifecycle hook](#)

<strong>Basic information</strong>	<a href="#">Edit</a>	<strong>Instance number information</strong>	<a href="#">Edit</a> <a href="#">Refresh</a>
Name: lab6-scaling-group-00		Min capacity: 1	
Project: DEFAULT PROJECT		Desired capacity: 1 ⓘ	
ID: asg-i6ta80pp		Current capacity: 0	
Region: Seoul		Max capacity: 3	
Launch configuration: asc-5wacv2pt(webserver-launch-config00) (1)			
Supported network: vpc-3t9qeqro - subnet-0pxlsnq5 (preferred)			
Creation time: 2023-02-02 08:51:20			
Tags: -			
<strong>Load balancer information</strong>		<strong>Policy information</strong>	<a href="#">Edit</a>
Instances created in scaling out will be mounted to the associated load balancer automatically. You can select an existing LB or <a href="#">create one</a> . <a href="#">Learn More ↗</a>		Removal policy: Remove the latest instance	
		Instance creation policy: Preferred availability zones (subnets) first	
		Activity retry policy: Retry instantly (default)	
		Instance health check: Do not replace unreachable instances Do not replace unhealthy instances ⓘ	
		<strong>Spot instance allocation</strong>	<a href="#">Edit</a>
		Spot instance allocation: <a href="#">Close</a>	

8. [Alarm trigger policy] 페이지에서 새 Policy를 생성하기 위해 [Create] 파란색 버튼을 클릭한다.

The screenshot shows the AWS CloudWatch Metrics Insights interface for a scaling group named 'lab6-scaling-group-00'. The 'Alarm trigger policy' tab is active. A red box highlights the 'Create' button in the top-left corner of the main content area. The rest of the page displays a table with columns for Name, Description, and Notification Recipients, showing 'No data yet' and 'Total items: 0'.

9. [Create alarm policy] 팝업창이다. 각각의 값을 입력한 후, [OK] 파란색 버튼을 클릭한다.

- ① [Name] : add-instance-cpu-over-40
- ② [Use existing policy (Optional)] : lab6-scaling-group-XX(여기서 XX는 계정번호를 의미)
- ③ [if] : CPU Utilization | 1 minute | Min | > | 50 | Consecutive 1 time
- ④ [Scaling group activities] : Increase | 1 | instances | cooldown | 60 second(s)

The screenshot shows the 'Create alarm policy' dialog box. It contains fields for Name (add-instance-cpu-over-40), Use existing policy (optional) (lab6-scaling-group-00), if conditions (CPU utilization over 50% for 1 minute), and Scaling group activities (Increase 1 instance with a 60-second cooldown). The 'OK' button at the bottom is highlighted with a red box.

10. [Alarm trigger policy] 목록에 방금 생성한 Policy를 확인할 수 있다. [Description]을 보면 **When the Min of all instances in the scaling group CPU utilization is larger than 50 % in 1 min(s) for 1 consecutive times, the number of instances increase 1 CVM(s). The cooldown period is 60 seconds.** 즉, Scaling group 대상의 모든 인스턴스가 CPU의 최소 사용율이 1분동안 50%를 초과하면 가상 머신(인스턴스) 1개 증가한다. 쿨다운 시간은 60초이다.로 설정한 것을 확인할 수 있다.

The screenshot shows the AWS CloudWatch Metrics console with the following details:

- Region:** ap-northeast-2
- Scaling group:** lab6-scaling-group-00
- Filter:** Name contains add-instance-cpu-over-40
- Metrics:** CPUUtilization
- Period:** 1 minute
- Statistic:** Minimum
- Threshold:** 50
- Comparison Operator:** Greater Than
- Actions:** Add instance (CVM)
- Description:** When the Min of all instances in the scaling group CPU utilization is larger than 50 % in 1 min(s) for 1 consecutive times, the number of instances increase 1 CVM(s). The cooldown period is 60 seconds.
- Notification Recipients:** -

## Task9. Auto Scaling 테스트하기

1. [Auto Scaling] 페이지에서 [Scaling group] 메뉴를 클릭한다.

The screenshot shows the AWS Auto Scaling console. On the left, there's a sidebar with 'Auto Scaling' at the top, followed by 'Scaling group' (which is highlighted with a red box), 'Launch Configuration', and 'Metrics'. The main area is titled 'Scaling group' with filters 'All projects ▾' and 'Seoul ▾'. A 'Create' button is at the top left of the table. The table has columns: ID/Name, Suggestion, Status, Current/Desired, Min/Max capacity, Load balancing, Launch configuration, and Network. One row is visible: 'asg-0jm7zv4n' (with a note '1 suggestion are provided. Check now'), 'Enable', '1 / 1', '1 / 3', 'lab6-clb00(lb-nadlyiqb)', 'asc-9201a6el', 'vpc-3t9qeqro', 'lab6-scaling...', 'webserver-la...', and 'lab5-vpc00'. At the bottom, it says 'Total items: 1' and '20 ▾'.

2. 이전 Task에서 생성한 Scaling group의 이름을 클릭한다.

The screenshot shows the 'Scaling group' details page. At the top, it says 'Scaling group' with filters 'All projects ▾' and 'Seoul ▾'. Below is a 'Create' button. The table has the same columns as the previous screenshot. One row is selected and highlighted with a red box: 'asg-0jm7zv4n' (with a note 'Normal'), 'Enable', '0 / 1', '1 / 3', 'lab6-clb00(lb-nadlyiqb)', 'asc-9201a6el', 'vpc-3t9qeqro', 'lab6-scaling...', 'webserver-la...', and 'lab5-vpc00'. At the bottom, it says 'Total items: 1' and '20 ▾'.

3. 해당 Scaling group의 상세페이지가 나타나면, 상단 메뉴에서 [Alarm trigger policy]를 클릭한다.

**Scaling group details**

**Associated to** (highlighted with a red box)

**Basic information**

- Name: lab6-scaling-group-00
- Project: DEFAULT PROJECT
- ID: asg-i6ta80pp
- Region: Seoul
- Launch configuration: asc-5wacv2pt(webserver-launch-config00) (1)
- Supported network: vpc-3t9qeqro - subnet-0pxlsnq5 (preferred)
- Creation time: 2023-02-02 08:51:20
- Tags: -

**Instance number information**

- Min capacity: 1
- Desired capacity: 1 (i)
- Current capacity: 0
- Max capacity: 3

**Policy information**

- Removal policy: Remove the latest instance
- Instance creation policy: Preferred availability zones (subnets) first
- Activity retry policy: Retry instantly (default)
- Instance health check: Do not replace unreachable instances  
Do not replace unhealthy instances (i)

**Load balancer information**

Instances created in scaling out will be mounted to the associated load balancer automatically. You can select an existing LB or [create one](#). Learn More (i)

**Spot instance allocation**

Spot instance allocation Close

4. 목록에서 방금 생성한 Policy를 찾고, 해당 Policy의 제일 오른쪽의 [Operation] 중 [Execute] 링크를 클릭한다.

**Scaling group details**

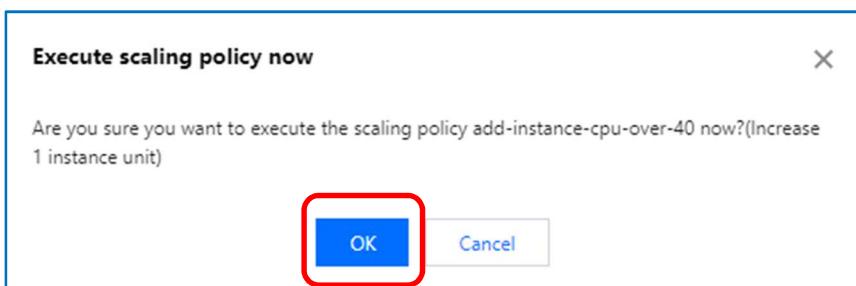
**Associated to**

**Alarm trigger policy** (highlighted with a red box)

Name	Description	Notification Recipients:	Operation
add-instance-cpu-over-40	When the Min of all instances in the scaling group CPU utilization is larger than 50 % in 1 min(s) for 1 consecutive times, the number of instances increase 1 CVM(s). The cooldown period is 60 seconds.	-	Execute (highlighted with a red box) Modify Delete

Total items: 1

5. [Execute scaling policy now] 창이 나타나면, [OK] 파란색 버튼을 클릭한다.



6. 확인을 위해, 페이지 상단 메뉴의 [Products] > [Compute] > [Cloud Virtual Machine] 클릭하여 해당 페이지로 이동한다.

The screenshot shows the Tencent Cloud interface under the 'Products' menu. The 'Compute' section is expanded, and the 'Cloud Virtual Machine' option is selected, indicated by a red box and a cursor icon. Other options in the Compute section include 'Auto Scaling' and 'Batch Compute'. The rest of the page lists various cloud services like Storage, CDN, Networking, and Databases.

7. 인스턴스가 추가된 것을 확인할 수 있다.

The screenshot shows the 'Instances' page with several running instances listed. Two instances are highlighted with a red box: 'ins-011i6jch lab6-cvm-00' and 'ins-238gz647 lab6-cvm-00'. Both instances are shown as 'Running' in 'Seoul Zone 1' with 'Standard S3' configuration. The table includes columns for ID/Name, Monitoring, Status, Availability Zone, Instance Type, Instance Configuration, Primary IPv4, Instance Billing Mode, and Operation. A search bar at the top filters results for 'Project:DEFAULT PROJECT'.

ID/Name	Monitoring	Status	Availability Zone	Instance Type	Instance Configuration	Primary IPv4	Instance Billing Mode	Operation
ins-011i6jch lab6-cvm-00		Running	Seoul Zone 1	Standard S3	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.155.147.14 (Public) 10.0.1.6 (Private)	Pay-as-you-go Created at 2023-02-02 09:13:56	<a href="#">Log In</a> <a href="#">More</a>
ins-238gz647 lab6-cvm-00		Running	Seoul Zone 1	Standard S3	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.155.156.44 (Public) 10.0.1.3 (Private)	Pay-as-you-go Created at 2023-02-02 09:07:54	<a href="#">Log In</a> <a href="#">More</a>
ins-chw6m6p lab6-webserver00-pusan		Running	Seoul Zone 2	Standard S5	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.131.243.217 (EIP) 10.0.2.11 (Private)	Pay-as-you-go Created at 2023-02-01 13:24:03	<a href="#">Log In</a> <a href="#">More</a>
ins-08ycrgtz lab6-webserver00-seoul		Running	Seoul Zone 1	Standard S3	2-core 2GB 100Mbps System disk:Premium Cloud Disk Network:lab5-vpc00	43.155.142.181 (EIP) 10.0.1.16 (Private)	Pay-as-you-go Created at 2023-02-01 12:56:19	<a href="#">Log In</a> <a href="#">More</a>

11. [Cloud Load Balancer] 페이지로 이동하여, [CLB Instance List] 페이지의 목록에 있는 CLB의 VIP 주소를 확인 한다.

ID/Name	Status	VIP	Availability Zone	Network	Health Status
lab6-nadlyjqb lab6-clb00	Normal	150.109.250.76	Seoul Zone 1	vpc-3t9qeqro lab5-vpc00 (10.0.0.0/16)	Normal

12. 웹 브라우저를 띄우고 이 주소로 접속해서 HTTP 요청을 보낸다. **lab6-webserverXX-seoul**(여기서 XX는 계정 번호를 의미)과 **lab6-webserverXX-pusan**(여기서 XX는 계정번호를 의미) 그리고 Auto Scaling에 의해 자동으로 생성된 인스턴스의 수정되지 않은 웹 페이지 모두 번갈아서 웹페이지를 보여준다.

150.109.250.76

150.109.250.76

150.109.250.76