

KG GAME

클라우드 마이그레이션 기술문서

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I. 사업 개요

1. 사업명 : “KG GAME 클라우드 마이그레이션 기획”

2. 사업목적



KG Game은 신작 게임을 정식 릴리즈에 앞서, 베타 테스트를 진행하였고 사용자들의 반응은 매우 폭발적이었다. 회사는 서버 증설이 반드시 필요하다는 점을 인지하게 되었다.

현재 정식 릴리즈 시의 트래픽을 짐작하기가 어려운 상황이며 또한 장비 스펙과 장비개수에 대한 파악도 불가하다. 더불어, 회사는 폭발적인 반응이 만약 일시적인 현상일 경우, 서버 증설에 대한 비용 손해는 막대할 것이다. 회사의 바람대로 신작 게임이 흥행에 성공하게 되었을 경우 회사는 북미와 유럽 리전에서 게임서버를 추가할 예정이다.

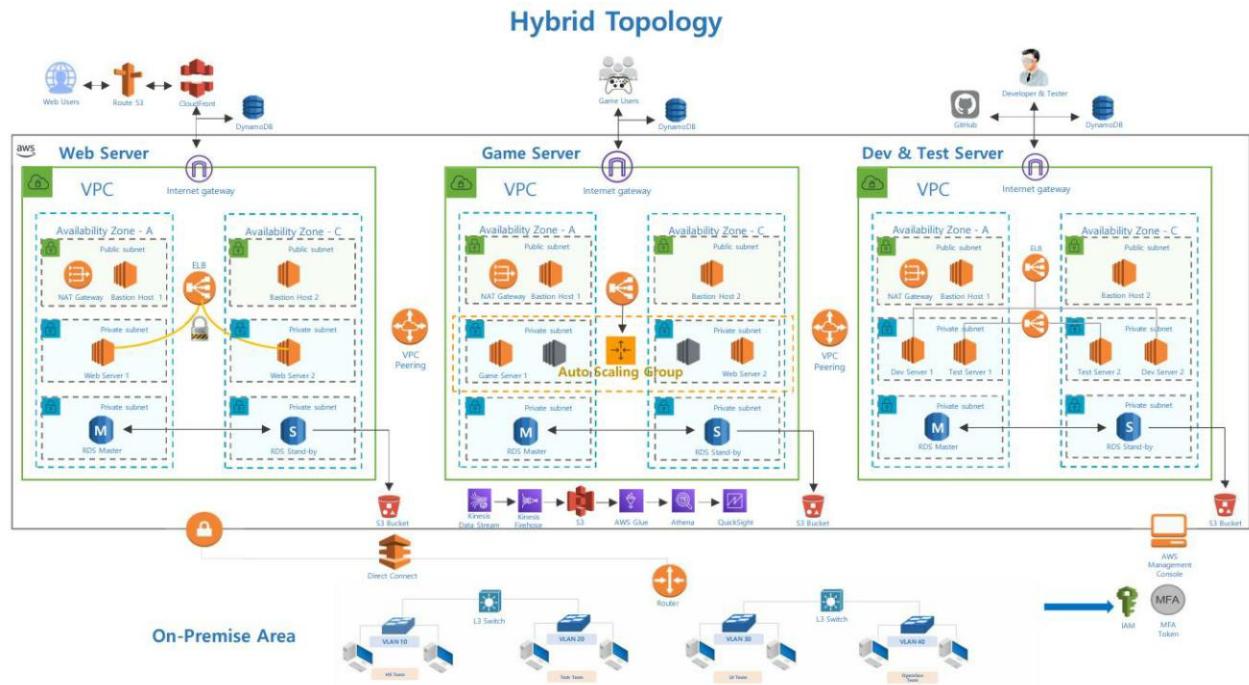
그러나, 현재 회사의 서비스 인프라는 국내에 한정되어 있는 상황이며 빠른 시간 내에 서버를 이전할 수 있고 또한 불안정한 트래픽을 대비하여 유연하고 탄력적인 서버운영이 가능한 클라우드로 마이그레이션을 고려하고 있다.

3. 제안요구 사항

- 1) 회사 내부 구조와 장비는 그대로 활용한다
- 2) 웹서버, 게임서버, 개발 및 테스트서버의 보안강화
- 3) 트래픽에 따라 게임서버를 탄력 있게 관리 (자동확장 및 축소)
- 4) 아시아를 제외한 나머지 국가들도 빠른 속도로 안전하게 웹페이지에 접속할 수 있게 한다.
- 5) 비즈니스와 게임개발을 위한 데이터분석 파이프라인
- 6) 북미 유럽권의 진출을 위한 자동배포 시스템
- 7) 개발전용 서버와 게임 테스트서버 환경 구축

II. Cloud 환경

1. 토플로지



2. IP 및 네트워크 대역

VPC1 Web Server	Net	10.0.0.0 / 16	Availability Zone
	Public Subnet_Web 1	10.0.1.0 / 24	A
	Public Subnet_Web 2	10.0.2.0 / 24	C
	Private Subnet_Web 1	10.0.10.0 / 24	A
	Private Subnet_Web 2	10.0.20.0 / 24	C
	Private Subnet_WebDB 1	10.0.30.0 / 24	A
	Private Subnet_WebDB 2	10.0.40.0 / 24	C

VPC2 Game Server	Net	20.0.0.0 / 16	Availability Zone
	Public Subnet_Game 1	20.0.1.0 / 24	A
	Public Subnet_Game 2	20.0.2.0 / 24	C
	Private Subnet_Game 1	20.0.10.0 / 24	A
	Private Subnet_Game 2	20.0.20.0 / 24	C
	Private Subnet_GameDB 1	20.0.30.0 / 24	A
	Private Subnet_GameDB 2	20.0.40.0 / 24	C

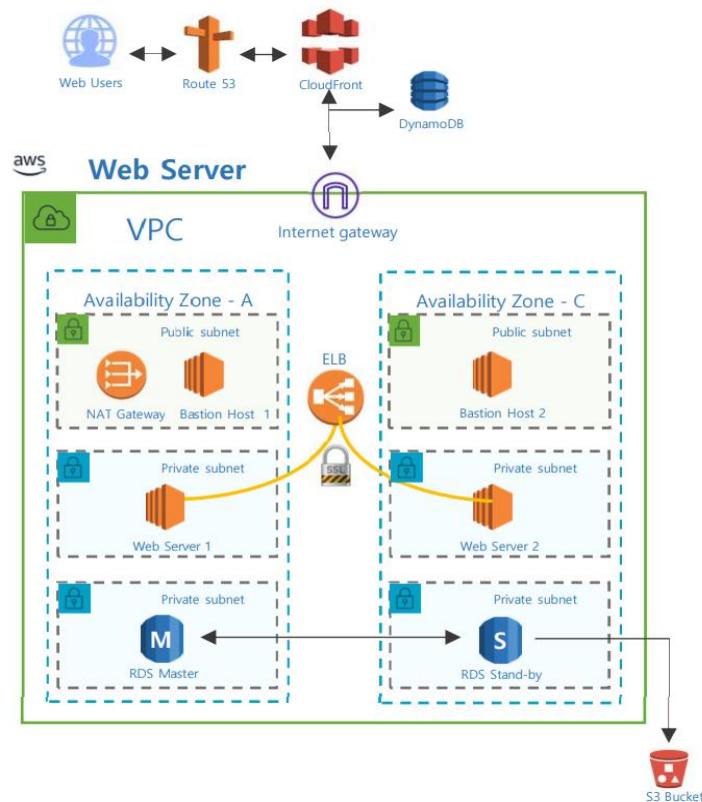
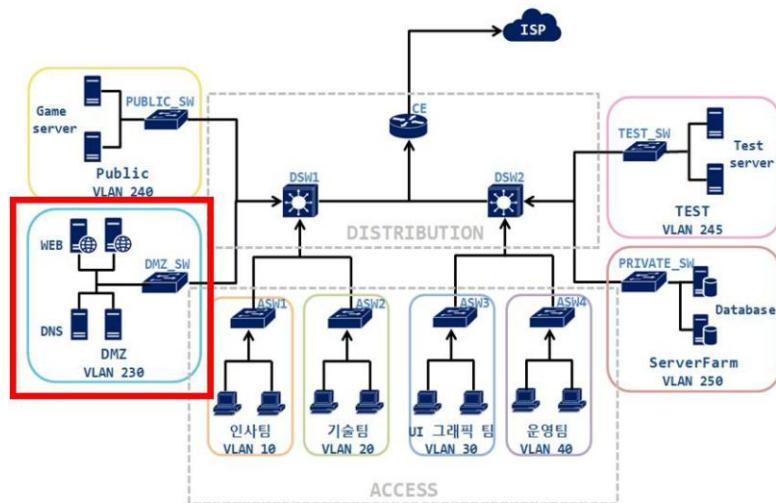
VPC3 Dev & Test Server	Net	30.0.0.0 / 16	Availability Zone
	Public Subnet_DevTest 1	30.0.1.0 / 24	A
	Public Subnet_DevTest 2	30.0.2.0 / 24	C
	Private Subnet_Dev 1	30.0.10.0 / 24	A
	Private Subnet_Dev 2	30.0.20.0 / 24	C
	Private Subnet_Test 1	30.0.30.0 / 24	A
	Private Subnet_Test 2	30.0.40.0 / 24	C

3. AWS 및 타사 서비스 리스트

서비스명	종류	서비스명	종류
VPC	네트워크	Route 53	도메인
Internet Gateway		EIP	IP
Nat Gateway		ACM (Certificate)	인증서
Security Group		Kinesis Data Stream	데이터 수집
Route Table		Kinesis Firehose	데이터 스토어
Public Subnet		AWS Glue	데이터 통합 및 처리
Private Subnet		AWS Athena	데이터 쿼리
EC2		QuickSight	데이터 시각화
ALB (Load Balancer)	네트워크	PuTTY	원격접속
Auto Scaling	자동확장	PuTTYgen	키 관리
CloudWatch	모니터링	pageant	키 관리
DynamoDB	세션관리	Domain Register	도메인 구매 및 등록
RDS	데이터 베이스	SSL/TLS	인증서
CloudFormation	자동배포	GitHub	버전관리 플랫폼
CloudFront	CDN	Website Speed Test	사이트 접속 스피드 테스터
AMI	이미지 파일		

III. AWS 서비스 구축

1. Web Server VPC – 웹서버



(프로젝트 진행하는 동안에 EC2를 종료한 적이 있는 관계로 작업 도중 IP가 바꿀 수 있습니다)

1) VPC 생성

The screenshot shows the AWS VPC service interface. At the top, there's a navigation bar with 'Services' and a search bar. On the left, a sidebar has 'New VPC Experience' selected, followed by 'VPC Dashboard', 'EC2 Global View', and a 'Filter by VPC' dropdown. Below that is a section for 'Your VPCs' with a table showing five existing VPCs: 'test-VPC', 'm1_test', 'My Exam VPC', and 'Shared-VPC'. A red box highlights the 'Create VPC' button at the top right of the table.

The main area is titled 'Create VPC' with a 'Info' link. It contains the following fields:

- VPC settings**
 - Name tag - optional**: A text input field containing 'KG_Web_VPC' with a red box around it.
 - IPv4 CIDR block**: A text input field containing '10.0.0.0/16' with a red box around it.
 - IPv6 CIDR block**: A radio button group where 'No IPv6 CIDR block' is selected (indicated by a red dot).
 - Tenancy**: A dropdown menu set to 'Default'.
- Tags**
 - A descriptive text: 'A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.'
 - A table for adding tags:

Key	Value - optional
<input type="text" value="Name"/> X	<input type="text" value="KG_Web_VPC"/> X Remove
 - A button 'Add new tag'.
 - A note: 'You can add 49 more tags.'

At the bottom right are 'Cancel' and 'Create VPC' buttons, with 'Create VPC' being orange.

You successfully created vpc-0a3d018ce3b9ccceb / KG_Web_VPC

VPC > Your VPCs > vpc-0a3d018ce3b9ccceb

vpc-0a3d018ce3b9ccceb / KG_Web_VPC

Actions ▾

Details Info			
VPC ID vpc-0a3d018ce3b9ccceb	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP options set dopt-71d19c1a	Main route table rtb-0825cab47a654aab	Main network ACL acl-0397012c46194ae01
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 CIDR (Network border group) -	Route 53 Resolver DNS Firewall rule groups -
Owner ID 483843322360			

VPC > Your VPCs > vpc-0a3d018ce3b9ccceb

vpc-0a3d018ce3b9ccceb / KG_Web_VPC

Actions ▾

Details Info			
VPC ID vpc-0a3d018ce3b9ccceb	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP options set dopt-71d19c1a	Main route table rtb-0825cab47a654aab / KG_Web_Private_RouteTable	Main network ACL acl-0397012c46194ae01
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 CIDR (Network border group) -	Route 53 Resolver DNS Firewall rule groups -
Owner ID 483843322360			

VPC > Your VPCs > vpc-0a3d018ce3b9ccceb > Edit DNS hostnames

Edit DNS hostnames [Info](#)

DNS hostnames
Indicates whether instances with public IP addresses get corresponding public DNS hostnames.

VPC ID	DNS hostnames
vpc-0a3d018ce3b9ccceb	<input checked="" type="checkbox"/> Enable

Actions

[Create flow log](#)
[Edit CIDRs](#)
[Edit DHCP options set](#)
Edit DNS hostnames
[Edit DNS resolution](#)
[Manage middlebox routes](#)
[Manage tags](#)
[Delete VPC](#)

Cancel **Save changes**

2) Internet Gateway 생성

Screenshot 1: VPC Details Page

VPC ID	State	DNS hostnames	DNS resolution
vpc-0a3d018ce3b9ccceb	Available	Disabled	Enabled

Screenshot 2: Create Internet Gateway Page

Screenshot 3: Internet Gateway Details Page

Screenshot 4: Attach to VPC Selection Page

3) Subnet 생성 (총 6개)

Subnets Info

Search for services, features, marketplace products, and docs [All+S]

Create subnet

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
vpc-0245e41862d96d5d5	m1_test	Active	vpc-0245e41862d96d5d5	10.0.0.0/16		16777216

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name: KG_Public_Subnet_1

Availability Zone: Asia Pacific (Seoul) / ap-northeast-2a

IPv4 CIDR block: 10.0.1.0/24

Tags - optional:

- Key: Q_Name Value: Q_KG_Public_Subnet_1

Add new tag

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name: KG_Public_Subnet_2

Availability Zone: Asia Pacific (Seoul) / ap-northeast-2c

IPv4 CIDR block: 10.0.2.0/24

Tags - optional:

- Key: Q_Name Value: Q_KG_Public_Subnet_2

Add new tag

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name: KG_Private_Subnet_Web_1_a

Availability Zone: Asia Pacific (Seoul) / ap-northeast-2a

IPv4 CIDR block: 10.0.10.0/24

Tags - optional:

- Key: Q_Name Value: Q_KG_Private_Subnet_Web_1_a

Add new tag

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name: KG_Private_Subnet_Web_2_c

Availability Zone: Asia Pacific (Seoul) / ap-northeast-2c

IPv4 CIDR block: 10.0.20.0/24

Tags - optional:

- Key: Q_Name Value: Q_KG_Private_Subnet_Web_2_c

Add new tag

<p>Subnet settings Specify the CIDR blocks and Availability Zone for the subnet.</p> <p>Subnet 1 of 1</p> <p>Subnet name Create a tag with a key of 'Name' and a value that you specify. KG_Private_Subnet_DB_1_a</p> <p>The name can be up to 256 characters long.</p> <p>Availability Zone Info Choose the zone in which your subnet will reside, or let Amazon choose one for you. Asia Pacific (Seoul) / ap-northeast-2a</p> <p>IPv4 CIDR block Info 10.0.0.0/24</p> <p>▼ Tags - optional</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Key</th> <th>Value - optional</th> <th>Remove</th> </tr> <tr> <td>Q_Name</td> <td>Q_KG_Private_Subnet_DB_1_a</td> <td>Remove</td> </tr> </table> <p>Add new tag You can add 49 more tags.</p> <p>Remove</p> <p>Add new subnet</p> <p style="text-align: right;">Cancel Create subnet</p>	Key	Value - optional	Remove	Q_Name	Q_KG_Private_Subnet_DB_1_a	Remove	<p>Subnet settings Specify the CIDR blocks and Availability Zone for the subnet.</p> <p>Subnet 1 of 1</p> <p>Subnet name Create a tag with a key of 'Name' and a value that you specify. KG_Private_Subnet_DB_2_c</p> <p>The name can be up to 256 characters long.</p> <p>Availability Zone Info Choose the zone in which your subnet will reside, or let Amazon choose one for you. Asia Pacific (Seoul) / ap-northeast-2c</p> <p>IPv4 CIDR block Info 10.0.40.0/24</p> <p>▼ Tags - optional</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Key</th> <th>Value - optional</th> <th>Remove</th> </tr> <tr> <td>Q_Name</td> <td>Q_KG_Private_Subnet_DB_2_c</td> <td>Remove</td> </tr> </table> <p>Add new tag You can add 49 more tags.</p> <p>Remove</p> <p>Add new subnet</p> <p style="text-align: right;">Cancel Create subnet</p>	Key	Value - optional	Remove	Q_Name	Q_KG_Private_Subnet_DB_2_c	Remove
Key	Value - optional	Remove											
Q_Name	Q_KG_Private_Subnet_DB_1_a	Remove											
Key	Value - optional	Remove											
Q_Name	Q_KG_Private_Subnet_DB_2_c	Remove											

- Public subnet 2개의 IP를 자동할당 될 수 있게 설정해준다.

<p>⌚ You have successfully created 1 subnet: subnet-0c40be0859629ceb6</p> <p>Subnets (1/6) Info</p> <p>Filter subnets <input type="text"/> Clear filters <input type="button" value="Search: KG"/></p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Name</th> <th>Subnet ID</th> <th>State</th> <th>VPC</th> <th>IPv4 CIDR</th> </tr> </thead> <tbody> <tr> <td>KG_Public_Subnet_2</td> <td>subnet-0ce897d564d88bac7</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.2.0/24</td> </tr> <tr> <td>KG_Public_Subnet_1</td> <td>subnet-00fc2f31801c2eedc</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.1.0/24</td> </tr> <tr> <td>KG_Private_Subnet_Web_2_c</td> <td>subnet-0c40be0859629ceb6</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.20.0/24</td> </tr> <tr> <td>KG_Private_Subnet_Web_1_a</td> <td>subnet-07f3a4cf63c84fff</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.10.0/24</td> </tr> <tr> <td>KG_Private_Subnet_DB_2_c</td> <td>subnet-0809f36a47a23aa16</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.40.0/24</td> </tr> <tr> <td>KG_Private_Subnet_DB_1_a</td> <td>subnet-0d76fb60ad6a05ddb</td> <td>Available</td> <td>vpc-0a3d018ce3b9cccb KG...</td> <td>10.0.30.0/24</td> </tr> </tbody> </table> <p>VPC > Subnets > subnet-0ce897d564d88bac7 > Modify auto-assign IP settings</p> <h3>Modify auto-assign IP settings <small>Info</small></h3> <p>Enable the auto-assign IP address setting to automatically request a public IPv4 or IPv6 address for a new network interface in this subnet.</p> <p>Settings</p> <p>Subnet ID subnet-0ce897d564d88bac7</p> <p>Auto-assign IPv4 <small>Info</small> <input checked="" type="checkbox"/> Enable auto-assign public IPv4 address</p> <p>Auto-assign customer-owned IPv4 address <small>Info</small> <input type="checkbox"/> Enable auto-assign customer-owned IPv4 address Option disabled because no customer owned pools found.</p> <p style="text-align: right;">Cancel Save</p>	Name	Subnet ID	State	VPC	IPv4 CIDR	KG_Public_Subnet_2	subnet-0ce897d564d88bac7	Available	vpc-0a3d018ce3b9cccb KG...	10.0.2.0/24	KG_Public_Subnet_1	subnet-00fc2f31801c2eedc	Available	vpc-0a3d018ce3b9cccb KG...	10.0.1.0/24	KG_Private_Subnet_Web_2_c	subnet-0c40be0859629ceb6	Available	vpc-0a3d018ce3b9cccb KG...	10.0.20.0/24	KG_Private_Subnet_Web_1_a	subnet-07f3a4cf63c84fff	Available	vpc-0a3d018ce3b9cccb KG...	10.0.10.0/24	KG_Private_Subnet_DB_2_c	subnet-0809f36a47a23aa16	Available	vpc-0a3d018ce3b9cccb KG...	10.0.40.0/24	KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05ddb	Available	vpc-0a3d018ce3b9cccb KG...	10.0.30.0/24	<p>Actions ▾ Create subnet</p> <p>View details <input type="button" value="View details"/></p> <p>Create flow log <input type="button" value="Create flow log"/></p> <p>Modify auto-assign IP settings <input type="button" value="Modify auto-assign IP settings"/></p> <p>Available IPv4 addresses 149</p> <p>Edit IPv6 CIDR <input type="button" value="Edit IPv6 CIDR"/></p> <p>Edit network ACL association <input type="button" value="Edit network ACL association"/></p> <p>Edit route table association <input type="button" value="Edit route table association"/></p> <p>Edit CDR reservations <input type="button" value="Edit CDR reservations"/></p> <p>Share subnet <input type="button" value="Share subnet"/></p> <p>Manage tags <input type="button" value="Manage tags"/></p> <p>Delete subnet <input type="button" value="Delete subnet"/></p>
Name	Subnet ID	State	VPC	IPv4 CIDR																																
KG_Public_Subnet_2	subnet-0ce897d564d88bac7	Available	vpc-0a3d018ce3b9cccb KG...	10.0.2.0/24																																
KG_Public_Subnet_1	subnet-00fc2f31801c2eedc	Available	vpc-0a3d018ce3b9cccb KG...	10.0.1.0/24																																
KG_Private_Subnet_Web_2_c	subnet-0c40be0859629ceb6	Available	vpc-0a3d018ce3b9cccb KG...	10.0.20.0/24																																
KG_Private_Subnet_Web_1_a	subnet-07f3a4cf63c84fff	Available	vpc-0a3d018ce3b9cccb KG...	10.0.10.0/24																																
KG_Private_Subnet_DB_2_c	subnet-0809f36a47a23aa16	Available	vpc-0a3d018ce3b9cccb KG...	10.0.40.0/24																																
KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05ddb	Available	vpc-0a3d018ce3b9cccb KG...	10.0.30.0/24																																

4) Route Table 생성

VPC Dashboard [EC2 Global View](#) [New](#)

Filter by VPC: [Select a VPC](#)

VIRTUAL PRIVATE CLOUD

- Your VPCs
- Subnets**
- Route Tables** [New](#)
- Internet Gateways
- Egress Only Internet Gateways

Subnets (4) Info

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 ac
KG_Public_Subnet_2	subnet-0ce897d564d88bac7	Available	vpc-0a3d018ce3b9ccceb KG...	10.0.2.0/24	-	250
KG_Public_Subnet_1	subnet-00fcf1801c2eedc	Available	vpc-0a3d018ce3b9ccceb KG...	10.0.1.0/24	-	249
KG_Private_Subnet_DB_2_c	subnet-0809f36a47a23aa16	Available	vpc-0a3d018ce3b9ccceb KG...	10.0.40.0/24	-	251
KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05ddb	Available	vpc-0a3d018ce3b9ccceb KG...	10.0.30.0/24	-	251

Route tables (1) Info

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner ID
-	rtb-0825cab47a654aab	-	-	Yes	vpc-0a3d018ce3b9ccceb KG...	483845322360

Create route table [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

VPC
The VPC to use for this route table.

Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="KG_Web_Public_RouteTable"/> Remove

[Add new tag](#)

You can add 49 more tags.

[Cancel](#) [Create route table](#)

Route tables (1/2) [Info](#)

[Actions](#) [Create route table](#)

Filter route tables search: vpc-0a5d018ce5b9ccceb [Clear filters](#)

Name	Route table ID	Explicit subnet associations	Edge associations	Main	VPC	Owner ID
-	rtb-0825cab47a654aab	-	-	Yes	vpc-0a3d018ce3b9ccceb KG_Web_VPC	483845322360
<input checked="" type="checkbox"/> KG_Web_Public_RouteTable	rtb-01b2fed6ca23e2a07	-	-	No	vpc-0a3d018ce3b9ccceb KG_Web_VPC	483845322360

rtb-01b2fed6ca23e2a07 / KG_Web_Public_RouteTable

[Details](#) [Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (1)

[Edit routes](#)

Filter routes Both

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No

VPC > Route tables > rtb-01b2fed6ca23e2a07 > Edit routes

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	<input type="text"/> igw-0aa6cce96c5d42754 (KG_Web_Igw)	-	No

[Add route](#) [Cancel](#) [Preview](#) [Save changes](#)

VPC > Route tables > rtb-01b2fed6ca23e2a07

rtb-01b2fed6ca23e2a07 / KG_Web_Public_RouteTable [Actions](#)

You can now check network connectivity with Reachability Analyzer [Run Reachability Analyzer](#)

[Details](#) [Info](#)

Route table ID rtb-01b2fed6ca23e2a07	Main <input checked="" type="checkbox"/> No	Explicit subnet associations -	Edge associations -
VPC vpc-0a3d018ce3b9ccceb KG_Web_VPC	Owner ID 483845322360		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Explicit subnet associations (0)

[Edit subnet associations](#)

Find subnet association

Subnet ID	IPv4 CIDR	IPv6 CIDR
No subnet associations You do not have any subnet associations.		

VPC > Route tables > rtb-01b2fed6ca23e2a07 > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/6)					
Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID	
<input type="checkbox"/> KG_Private_Subnet_Web_2_c	subnet-05da9f71a9d41c837	10.0.20.0/24	-	Main (rtb-0825cab47a654aab)	
<input type="checkbox"/> KG_Private_Subnet_Web_1_a	subnet-01e0d6fea7db00d39	10.0.10.0/24	-	Main (rtb-0825cab47a654aab)	
<input checked="" type="checkbox"/> KG_Public_Subnet_2	subnet-0ce897d564d88bac7	10.0.2.0/24	-	Main (rtb-0825cab47a654aab)	
<input checked="" type="checkbox"/> KG_Public_Subnet_1	subnet-00fc2f31801c2eedc	10.0.1.0/24	-	Main (rtb-0825cab47a654aab)	
<input type="checkbox"/> KG_Private_Subnet_DB_2_c	subnet-0809f56aa47a23aa16	10.0.40.0/24	-	Main (rtb-0825cab47a654aab)	
<input type="checkbox"/> KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05dd	10.0.30.0/24	-	Main (rtb-0825cab47a654aab)	

Selected subnets

- subnet-00fc2f31801c2eedc / KG_Public_Subnet_1
- subnet-0ce897d564d88bac7 / KG_Public_Subnet_2

Save associations

You have successfully updated subnet associations for rtb-01b2fed6ca23e2a07 / KG_Public_RouteTable.

VPC > Route tables > rtb-01b2fed6ca23e2a07

rtb-01b2fed6ca23e2a07 / KG_Public_RouteTable

You can now check network connectivity with Reachability Analyzer

Actions

Details		Info	
Route table ID	Main	Explicit subnet associations	Edge associations
rtb-01b2fed6ca23e2a07	No	2 subnets	-
VPC vpc-0a3d018ce3b9ccceb KG_Public_VPC	Owner ID 483843322360		

Routes **Subnet associations** **Edge associations** **Route propagation** **Tags**

Explicit subnet associations (2)

Edit subnet associations					
Find subnet association					
Subnet ID	IPv4 CIDR	IPv6 CIDR	Main	Edge associations	Route propagation
subnet-0ce897d564d88bac7 / KG_Public_Subnet_2	10.0.2.0/24	-	-	-	-
subnet-00fc2f31801c2eedc / KG_Public_Subnet_1	10.0.1.0/24	-	-	-	-

- 기본 route table는 Private route table로 사용할 것으로 Private table라고 tag 걸기

Route tables (1/2) **Info**

Filter route tables

search: vpc-0a3d018ce3b9ccceb

Name	Route table ID	Explicit subnet associations	Edge associations	Main	VPC	Owner ID
<input checked="" type="checkbox"/> KG_Public_RouteTable	rtb-0825cab47a654aab	-	-	Yes	vpc-0a3d018ce3b9ccceb KG_Public_VPC	483843322360
<input type="checkbox"/> KG_Private_RouteTable	rtb-01b2fed6ca23e2a07	-	-	No	vpc-0a3d018ce3b9ccceb KG_Private_VPC	483843322360

Create route table

VPC > Route tables > rtb-0825cab47a654aabc

rtb-0825cab47a654aabc / KG_Web_Private_RouteTable

You can now check network connectivity with Reachability Analyzer

Run Reachability Analyzer X

Details Info

Route table ID rtb-0825cab47a654aabc	Main Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0a3d018ce3b9ccceb KG_Web_VPC	Owner ID 483843322360		

Routes Subnet associations Edge associations Route propagation Tags

Explicit subnet associations (0)

Find subnet association

Edit subnet associations

< 1 > ⌂

Subnet ID	IPv4 CIDR	IPv6 CIDR
No subnet associations You do not have any subnet associations.		

VPC > Route tables > rtb-0825cab47a654aabc > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (4/6)

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
KG_Public_Subnet_2	subnet-0ce897d564d88bac7	10.0.2.0/24	-	rtb-01b2fed6ca23e2a07 / KG_Web_Public_RouteTable
KG_Public_Subnet_1	subnet-00fc2f31801c2eedc	10.0.1.0/24	-	rtb-01b2fed6ca23e2a07 / KG_Web_Public_RouteTable
<input checked="" type="checkbox"/> KG_Private_Subnet_DB_2_c	subnet-0809f36a47a23aa16	10.0.40.0/24	-	rtb-0825cab47a654aabc / KG_Web_Private_RouteTable
<input checked="" type="checkbox"/> KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05ddb	10.0.30.0/24	-	rtb-0825cab47a654aabc / KG_Web_Private_RouteTable
<input checked="" type="checkbox"/> KG_Private_Subnet_Web_2_c	subnet-0c40be0859629ceb6	10.0.20.0/24	-	Main (rtb-0825cab47a654aabc / KG_Web_Private_RouteTable)
<input checked="" type="checkbox"/> KG_Private_Subnet_Web_1_a	subnet-07f3a4cf63c84ffff	10.0.10.0/24	-	Main (rtb-0825cab47a654aabc / KG_Web_Private_RouteTable)

Selected subnets

subnet-07f3a4cf63c84ffff / KG_Private_Subnet_Web_1_a X subnet-0c40be0859629ceb6 / KG_Private_Subnet_Web_2_c X subnet-0d76fb60ad6a05ddb / KG_Private_Subnet_DB_1_a X subnet-0809f36a47a23aa16 / KG_Private_Subnet_DB_2_c X

Cancel Save associations

You have successfully updated subnet associations for rtb-0825cab47a654aabc / KG_Web_Private_RouteTable.

VPC > Route tables > rtb-0825cab47a654aabc

rtb-0825cab47a654aabc / KG_Web_Private_RouteTable

You can now check network connectivity with Reachability Analyzer

Run Reachability Analyzer X

Details Info

Route table ID rtb-0825cab47a654aabc	Main Yes	Explicit subnet associations 4 subnets	Edge associations -
VPC vpc-0a3d018ce3b9ccceb KG_Web_VPC	Owner ID 483843322360		

Routes Subnet associations Edge associations Route propagation Tags

Explicit subnet associations (4)

Find subnet association

Edit subnet associations

< 1 > ⌂

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-0809f36a47a23aa16 / KG_Private_Subnet_DB_2_c	10.0.40.0/24	-
subnet-0d76fb60ad6a05ddb / KG_Private_Subnet_DB_1_a	10.0.30.0/24	-
subnet-0c40be0859629ceb6 / KG_Private_Subnet_Web_2_c	10.0.20.0/24	-
subnet-07f3a4cf63c84ffff / KG_Private_Subnet_Web_1_a	10.0.10.0/24	-

5) EC2 생성 - Bastion Host 1

Instances (9) Info

Name	Instance ID	Instance state	Ins...	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-0ba5cd124d7a79612	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)	ami-08b051fc14e6c551e	running	Up	Passing	OK	us-east-1a	meowarie@4838-4332-2360	meowarie@4838-4332-2360	

Step 1: Choose an Amazon Machine Image (AMI)

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)

Ubuntu Server 18.04 LTS (HVM) EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Free tier eligible Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Step 3: Configure Instance Details

No default VPC found. Select another VPC, or create a new default VPC.

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group:

Purchasing option: Request Spot instances

Network: vpc-03d018ce369ccce1 | KG_Web_VPC Create new VPC
No default VPC found. Create a new default VPC.

Subnet: subnet-00fc2f18012eeddc | KG_Public_Subnet_1 Create new subnet
251 IP Addresses available

Auto-assign Public IP: Enable

Placement group: Add instance to placement group
Capacity Reservation: Open

Domain join directory: No directory Create new directory
IAM role: None Create new IAM role

Shutdown behavior: Stop Enable hibernation as an additional stop behavior
Stop - Hibernate behavior:
Enable termination protection: Protect against accidental termination
Monitoring: Enable CloudWatch detailed monitoring
Additional charges apply.

Tenancy: Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

Elastic Inference: Add an Elastic Inference accelerator
Additional charges apply.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0686680c8efb82da8	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

[Add New Volume](#)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.

Key	(128 characters maximum)	Value	(256 characters maximum)	Instances	Volumes	Network Interfaces
Name		KG_Web_Bastion_1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

[Add another tag](#) (Up to 50 tags maximum)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group: Create a new security group Select an existing security group

Security group name: KG_Web_SG

Description: Allow SSH/TCP

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
All ICMP - IPv4	ICMP	0 - 65535	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

[Add Rule](#)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

⚠ Improve your instances' security. Your security group, KG_Web_SG, is open to the world.
Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.
You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

AMI Details [Edit AMI](#)

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612
 First few eligible Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name: KG_Web_SG
 Description: Allow SSH/TCP

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	0.0.0.0/0	
All ICMP - IPv4	All	N/A	0.0.0.0/0	

Instance Details [Edit instance details](#)

Storage [Edit storage](#)

Tags [Edit tags](#)

[Cancel](#) [Previous](#) [Launch](#)

6) EC2 생성 – Web Server 1

Instances (1) Info

Instances (1) Info

Launch Instances

Step 1: Choose an Amazon Machine Image (AMI)

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612 (64-bit x86) / ami-08b051fc14e6c551e (64-bit Arm)

Select
64-bit (x86)
64-bit (Arm)

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Filter by: All instance families Current generation ShowHide Columns

Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, 1 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
t2	t2.micro	1	1	EBS only	-	Low to Moderate	Yes
t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.large	2	8	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.xlarge	4	16	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.2xlarge	8	32	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

Step 3: Configure Instance Details

No default VPC found. Select another VPC, or create a new default VPC.

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: Request Spot instances

Network: vpc-0a3d019cc0eb | KG_Web_VPC Create new VPC
No default VPC found. Create a new default VPC

Subnet: subnet-d7fb67a0a5a5d5db | KG_Private_Subnet_E Create new subnet
251 IP Addresses available

Auto-assign Public IP: Use subnet setting (Disable)

Placement group: Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

Shutdown behavior: Stop
Stop - Hibernate behavior: Enable hibernation as an additional stop behavior

Enable termination protection: Protect against accidental termination

Monitoring: Enable CloudWatch detailed monitoring
Additional charges apply

Tenancy: Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

Elastic Inference: Add an Elastic Inference accelerator
Additional charges apply

Cancel Previous Review and Launch Next: Add Storage

- EC2 기동 시 아파치가 설정이 되도록 User data를 추가해준다. ([UserData 확인](#))

Step 3: Configure Instance Details

Tenancy: Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

Elastic Inference: Add an Elastic Inference accelerator
Additional charges apply.

Credit specification: Unlimited
Additional charges may apply.

File systems: Add file system | Create new file system

Network interfaces:

Device	Network Interface	Subnet	Primary IP	Secondary IP addresses	IPv6 IPs
eth0	New network interface	subnet-01e0d6fe	Auto-assign	Add IP	The selected subnet does not support IPv6 because it does not have an IPv6 CIDR.

Add Device

Advanced Details:

Enclave: Enable
Metadata accessible: Enabled
Metadata version: V1 and V2 (token optional)
Metadata token response hop limit: 1
User data:

```
#!/bin/bash
sudo apt update
#Install Apache
sudo apt -y install unzip
#Install Apache PHP
sudo apt install -y apache2
```

Cancel | Previous | **Review and Launch** | Next: Add Storage

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more about storage options in Amazon EC2.](#)

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0686680c8efb82da8	8	(General Purpose SSD (gp2))	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. [Learn more about tagging your Amazon EC2 resources.](#)

Key (128 characters maximum)	Value (256 characters maximum)	Instances	Volumes	Network Interfaces
Name	KG_Web_Server_1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Add another tag (Up to 50 tags maximum)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group: Create a new security group Select an existing security group

Security Group ID	Name	Description	Actions
sg-0e5e97da0134a5fc	ALB_HTTP	load-balancer-wizard-1 created on 2021-10-26T01:46:50.409+09:00	Copy to new
sg-0099e52014786cfa	default	default VPC security group	Copy to new
sg-00d94fdcc925de224	KG_Web_SG	Allow SSH/ICMP	Copy to new
<input checked="" type="checkbox"/> sg-00fc3353ca34489de	KG_Web_SG_Private	Allow SSH / ICMP / HTTP / HTTPS	Copy to new
sg-0807c18840e93071c	KG_WebServer_sg	launch-wizard-1 created 2021-10-26T03:01:11.988+09:00	Copy to new

Inbound rules for sg-00fc3353ca34489de (Selected security groups: sg-00fc3353ca34489de)

Type	Protocol	Port Range	Source	Description
HTTP	TCP	80	sg-00d94fdcc925de224 (KG_Web_SG)	
SSH	TCP	22	sg-00d94fdcc925de224 (KG_Web_SG)	
HTTPS	TCP	443	sg-00d94fdcc925de224 (KG_Web_SG)	
All ICMP - IPv4	All	N/A	sg-00d94fdcc925de224 (KG_Web_SG)	

[Cancel](#) [Previous](#) [Review and Launch](#)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

▼ AMI Details

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ba5cd124d7a79612

Free tier eligible Ubuntu Server 18.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root Device Type: ebs Virtualization type: hvm

[Edit AMI](#)

▼ Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

[Edit instance type](#)

▼ Security Groups

Security group name: KG_Web_SG_Private
Description: Allow SSH / ICMP / HTTP / HTTPS

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	sg-00d94fdcc925de224	
All ICMP - IPv4	All	N/A	sg-00d94fdcc925de224	
HTTP	TCP	80	sg-00d94fdcc925de224	
HTTPS	TCP	443	sg-00d94fdcc925de224	

[Edit security groups](#)

▼ Instance Details

[Edit instance details](#)

▼ Storage

[Edit storage](#)

▼ Tags

[Edit tags](#)

[Cancel](#) [Previous](#) [Launch](#)

Launch Status

Your instances are now launching. The following instance launches have been initiated: i-03aa5c7acdd348cf9 [View launch log](#)

Get notified of estimated charges
Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances
Your instances are launching, and it may take a few minutes until they are in the running state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances. Click [View Instances](#) to monitor your instances' status. Once your instances are in the running state, you can connect to them from the Instances screen. Find out how to connect to your instances.

Here are some helpful resources to get you started

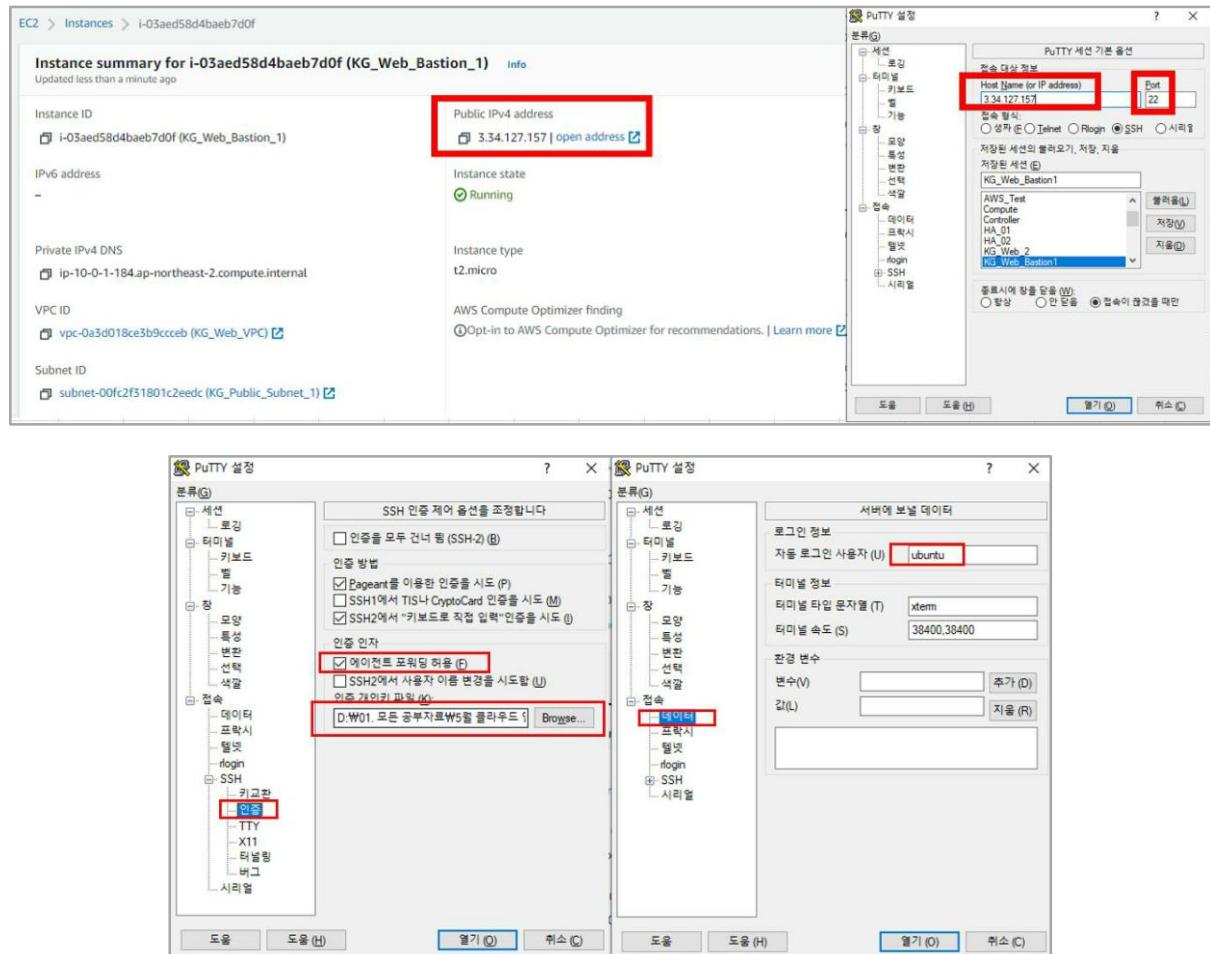
- How to connect to your Linux instance
- Amazon EC2: User Guide
- Learn about AWS Free Usage Tier
- Amazon EC2: Discussion Forum

While your instances are launching you can also

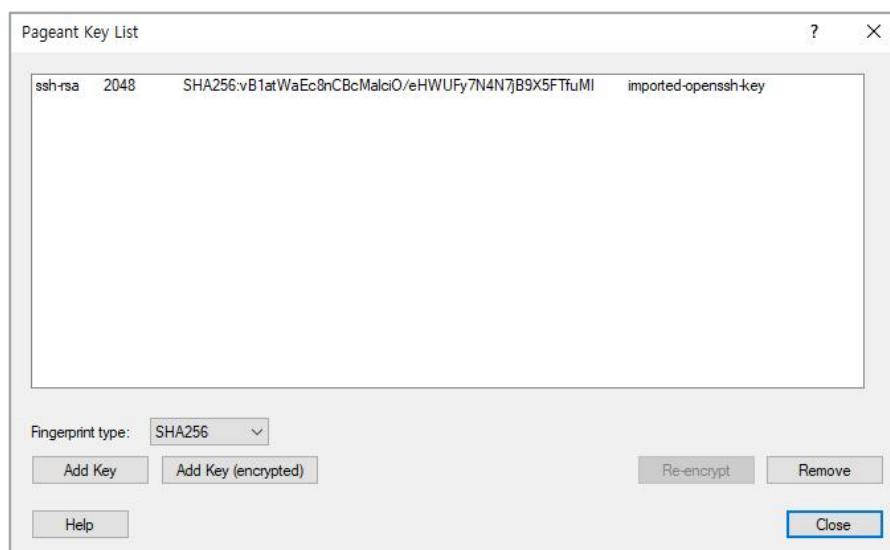
- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)
- Manage security groups

[View Instances](#)

- Putty를 통해 Bastion host 1의 Public IP로 원격접속



- Pageant 을 열어서 우리가 가지고 있는 ppk 키를 등록해준다



- 외부통신 확인

```
ubuntu@ip-10-0-1-184:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=102 time=31.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=102 time=31.6 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=102 time=31.6 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 31.575/31.631/31.683/0.151 ms
```

- Private subnet에서 생성한 Web Server 1에 통신확인

EC2 > Instances > i-057749fe071fc726

Instance summary for i-057749fe071fc726 (KG_Web_Server_1) [Info](#)

Updated less than a minute ago

Instance ID	Public IPv4 address	Private IPv4 addresses
i-057749fe071fc726 (KG_Web_Server_1)	-	10.0.30.14
IPv6 address	Instance state	Public IPv4 DNS
-	Running	-
Private IPv4 DNS	Instance type	Elastic IP addresses
ip-10-0-30-14.ap-northeast-2.compute.internal	t2.micro	-
VPC ID	AWS Compute Optimizer finding	IAM Role
vpc-0a3d018ce3b9ccceb (KG_Web_VPC)	Opt-in to AWS Compute Optimizer for recommendations. Learn more	-
Subnet ID		
subnet-0d76fb60ad6a05ddb (KG_Private_Subnet_DB_1_a)		

```
ubuntu@ip-10-0-1-184:~$ ping 10.0.30.14 -c 3
PING 10.0.30.14 (10.0.30.14) 56(84) bytes of data.
64 bytes from 10.0.30.14: icmp_seq=1 ttl=64 time=0.429 ms
64 bytes from 10.0.30.14: icmp_seq=2 ttl=64 time=0.416 ms
64 bytes from 10.0.30.14: icmp_seq=3 ttl=64 time=0.451 ms

--- 10.0.30.14 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2046ms
rtt min/avg/max/mdev = 0.416/0.432/0.451/0.014 ms
ubuntu@ip-10-0-1-184:~$
```

- Private subnet에 있는 Web Server 1로 접속

```
ubuntu@ip-10-0-1-184:~$ ssh 10.0.30.14
The authenticity of host '10.0.30.14 (10.0.30.14)' can't be established.
ECDSA key fingerprint is SHA256:lsGcRDFX3ZsHsmHxpVjAMlhW4JzR07V9K2m17LxuAdM.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.30.14' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

 System information as of Tue Oct 26 07:40:54 UTC 2021

 System load:  0.0          Processes:      98
 Usage of /:   14.9% of 7.69GB  Users logged in:   0
 Memory usage: 22%
 Swap usage:   0%

0 packages can be updated.
0 of these updates are security updates.
```

- Private Subnet에 있는 EC2들은 외부와 통신불가한 상태, NAT Gateway로 연결해줘야 한다

```
ubuntu@ip-10-0-30-14:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 0 received, 100% packet loss, time 2040ms
```

7) NAT Gateway 생성

NAT gateways [Info](#)

Actions [Create NAT gateway](#)

No NAT gateways found

Elastic IP address 3.36.156.104 (eipalloc-0b30d64c8b02f82cb) allocated.

A highly available, managed Network Address Translation (NAT) service that instances in private subnets can use to connect to services in other VPCs, on-premises networks, or the internet.

NAT gateway settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

KG_Web_NAT_1

The name can be up to 256 characters long.

Subnet
Select a subnet in which to create the NAT gateway.

subnet-00fc2f31801c2eedc (KG_Public_Subnet_1)

Connectivity type
Select a connectivity type for the NAT gateway.

Public
 Private

Elastic IP allocation ID [Info](#)
Assign an Elastic IP address to the NAT gateway.

eipalloc-0b30d64c8b02f82cb [Allocate Elastic IP](#)

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - <i>optional</i>	Remove
<input type="text"/> Name	<input type="text"/> KG_Web_NAT_1	Remove

[Add new tag](#)

You can add 49 more tags.

[Cancel](#) [Create NAT gateway](#)

- Private Route Table에서 해당 NAT Gateway를 등록해준다.

The screenshot shows the AWS VPC Route Tables interface. On the left sidebar, 'Route Tables' is selected. In the main area, a success message says 'Updated routes for rtb-0825cab47a654aab / KG_Web_Private_RouteTable successfully'. The 'Routes' tab is highlighted in red. A table lists two route tables:

Name	Route table ID	Explicit subnet associat...	Main	VPC	Owner ID
KG_Web_Private_RouteTable	rtb-0825cab47a654aab	2 subnets	-	vpc-0a3d018ce3b9cccb KG_...	483843322360
KG_Web_Public_RouteTable	rtb-01b2fed6ca23e2a07	2 subnets	-	vpc-0a3d018ce3b9cccb KG_...	483843322360

Below the table, under 'rtb-0825cab47a654aab / KG_Web_Private_RouteTable', the 'Routes' tab is selected. It shows one route entry:

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No

A red box highlights the 'Edit routes' button at the top right of this section.

At the bottom of the interface, there is a navigation path: VPC > Route tables > rtb-0825cab47a654aab > Edit routes. Below this, the 'Edit routes' dialog is open, showing a table with a single route entry:

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	nat-095f37975d7075ff (KG_Web_NAT_1)	-	No

A red box highlights the target field 'nat-095f37975d7075ff (KG_Web_NAT_1)'. At the bottom of the dialog are 'Cancel', 'Preview', and 'Save changes' buttons.

- 외부 통신 확인

```
ubuntu@ip-10-0-30-14:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=32.9 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=32.6 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=32.7 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 32.694/32.822/32.992/0.193 ms
```

8) AMI 생성

- Web Server 1 기본 세팅 ("yum" 및 "AWSCLI" 설치)

```
ubuntu@ip-10-0-30-14:~$ sudo apt-get update -y
Hit:1 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8570 kB]
Get:5 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
```

```

ubuntu@ip-10-0-30-14:~$ sudo apt-get install -y yum
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  debugedit libarchive13 libdw1 libluat5.2-0 libnspr4 libnss3 libpython-stdlib libpython2.7 libpython2.7-minimal libpython2.7-stdlib
  librpm8 librpmbuild8 librpmio8 librpmsigned8 libsasl0 python python-libxml2 python-lzma python-minimal python-pycurl python-rpm
  python-sqlite python-sqlitecachec python-urllibgraber python2.7 python2.7-minimal rpm rpm-common rpm2cpio
ubuntu@ip-10-0-30-14:~$ sudo apt-get install awscli
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  docutils-common fontconfig fontconfig-config fonts-dejavu-core fonts-droid-fallback fonts-noto-mono ghostscript groff gsfonts
ubuntu@ip-10-0-30-14:~$ aws configure
AWS Access Key ID [None]: [REDACTED]
AWS Secret Access Key [None]: [REDACTED]
Default region name [None]: ap-northeast-2
Default output format [None]: json

```

고가용성을 구축하기 위해 Availability Zone-a에서 구성한 Bastion Host와 Web Server 1을 AMI 이미지로 만들어서 Availability Zone-c에서 생성하도록 한다.

- Web Server 1의 AMI 생성

```

ubuntu@ip-10-0-30-14:~$ aws ec2 create-image --name KG_Web_Server_AMI --instance-id i-057749fe071fcfd726
{
  "ImageId": "ami-0e4805f7bab434729"
}

```

- Bastion Host 1 기본 세팅

```

ubuntu@ip-10-0-1-184:~$ sudo apt-get install awscli
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  docutils-icon fontconfig fontconfig-config fonts-dejavu-core fonts-droid-fallback fonts-noto-mono ghostscript groff gsfonts
  hicolor-icon-theme imagemagick imagemagick-6-common imagemagick-6.q16 libavahi-client3 libavahi-common-data libavahi-common3 libcairo2
  libcurl2 libcurls filters1 libcurlsimage2 libdatriel1 libdjvulibre-text libdjvulibre21 libfftw3-double3 libfontconfig1 libgomp1
  libgraphite2-3 libgs9 libgs9-common libharfbuzz0b libice6 libijs-0.35 libimbase12 libjbig2dec0 libjpeg-turbo8 libjpeg8
  liblcms2-2 liblqr-1-0 libltdl7 libmagickcore-6.q16-3 libmagickcore-6.q16-3-extra libmagickwand-6.q16-3 libnetpbm10 libopenexr22
  libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpaper-utils libpaper1 libpixman-1-0 libsm6 libthai-data libthai0 libtiff5
  libwebp6 libwebpdemux2 libwmf0.2-7 libxaw7 libxcb-render0 libxcb-shm0 libxmu6 libxpm4 libxrender1 libxt6 netpbm
  poppler-data putils python3-boto core python3-dateutil python3-docutils python3-jmespath python3-olefile python3-pil python3-pygments
  python3-roman python3-rsa python3-s3transfer sgml-base x11-common xml-core
ubuntu@ip-10-0-1-184:~$ ubuntu@ip-10-0-1-184:~$ aws configure
AWS Access Key ID [None]: [REDACTED]
AWS Secret Access Key [None]: [REDACTED]
Default region name [None]: ap-northeast-2
Default output format [None]: json

```

- Bastion Host 1의 AMI 생성

```

ubuntu@ip-10-0-1-184:~$ aws ec2 create-image --name KG_Web_Bastion_AMI --instance-id i-03aed58d4baeb7d0f
{
  "ImageId": "ami-064f98a21a0a8f579"
}

```

- AWS 콘솔에서 확인



Actions	AMI Name	AMI ID	Source	Owner	Visibility	Status	Creation Date	Platform	Root Device	Virtualization	Deprecation Time
Launch	KG_Web_Bastion_AMI	ami-064f98a21a0a8f579	483843322360/...	483843322360	Private	available	October 26, 2021 at 12:05...	Other Linux	ebs	hvm	-
Launch	KG_Web_Server_AMI	ami-0adffca1a5d37033	483843322360/...	483843322360	Private	available	October 26, 2021 at 3:21:03...	Other Linux	ebs	hvm	-
Launch	WebServer	ami-017a1c5e6ecd965bc	483843322360/...	483843322360	Private	available	October 15, 2021 at 12:47:4...	Other Linux	ebs	hvm	-

9) EC2 생성 - Bastion Host 2

- Bastion Host 1의 AMI로 Availability Zone C에서 Bastion Host 2 생성

Instances (2) Info

Name	Instance ID	Instance state	Ins...	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
KG_Web_Bastion_1	i-03aeed58d4baeb7d0f	Running	t2.micro	2/2 checks passed	No alarms	ap-northeast-2a	ec2-52-78-237-16.ap...n...	52.78.237.16	-
KG_Web_Server_1	i-01927f0848348ec23	Running	t2.micro	2/2 checks passed	No alarms	ap-northeast-2a	-	-	-

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review Cancel and Exit

Search for an AMI by entering a search term e.g. "Windows"

Quick Start

My AMIs

AWS Marketplace

Community AMIs

Ownership

Owned by me

Shared with me

WebServer - ami-017a1c5e6ecd965bc

Root device type: ebs Virtualization type: hvm Owner: 483843322390 ENA Enabled: Yes

KG_Web_Bastion_AMI - ami-064f98a21a0a9f579

Root device type: ebs Virtualization type: hvm Owner: 483843322390 ENA Enabled: Yes

KG_Web_Server_AMI - ami-0ce56619fd1cf99d8

Root device type: ebs Virtualization type: hvm Owner: 483843322390 ENA Enabled: Yes

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Filter by: All instance families Current generation ShowHide Columns

Currently selected: t2.micro (- ECUs, 1 vCPU, 2.5 GHz, ~ 1 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
I2	I2 nano	1	0.5	EBS only	-	Low to Moderate	Yes
I2	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes

Step 3: Configure Instance Details

No default VPC found. Select another VPC, or create a new default VPC.

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: Request Spot instances

Network: vpc-0a3d18c3b9cccb | KG_Web_VPC Create new VPC

Subnet: subnet-0ce897d564d88ac7 | KG_Public_Subnet_2 Create new subnet

Auto-assign Public IP: Enable

Placement group: Open

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

Shutdown behavior: Stop

Stop - Hibernate behavior: Enable hibernation as an additional stop behavior

Enable termination protection: Protect against accidental termination

Monitoring: Enable CloudWatch detailed monitoring

Tenancy: Shared - Run a shared hardware instance

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0fcab748dc7cdff65d	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	(128 characters maximum)	Value	(256 characters maximum)	Instances	Volumes	Network Interfaces
Name		KG_Web_Bastion_2		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Add another tag (Up to 50 tags maximum)						

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: Create a new security group Select an existing security group

Security Group ID	Name	Description	Actions
sg-0099e620147876cba	default	default VPC security group	Copy to new
sg-00d94fdc925de224	KG_Web_SG	Allow SSH / ICMP	Copy to new
sg-00fc3353ca34489de	KG_Web_SG_Private	Allow SSH / ICMP / HTTP / HTTPS	Copy to new

Inbound rules for sg-00d94fdc925de224 (Selected security groups: sg-00d94fdc925de224)

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	0.0.0.0/0	
All ICMP - IPv4	All	N/A	0.0.0.0/0	

[Cancel](#) [Previous](#) [Review and Launch](#)

10) EC2 생성 – Web Server 2

- Web Server 1의 AMI로 Availability Zone C에서 Web Server 2 생성

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Search for an AMI by entering a search term e.g. "Windows"

Quick Start		Search by Systems Manager parameter					
My AMIs		WebServer - ami-017a1c5e6ecd965bc	Root device type: ebs	Virtualization type: hvm	Owner: 483843322390	ENI Enabled: Yes	Select 64-bit (x86)
AWS Marketplace		KG_Web_Bastion_AMI - ami-064f98a21a0a8f79	Root device type: ebs	Virtualization type: hvm	Owner: 483843322390	ENI Enabled: Yes	Select 64-bit (x86)
Community AMIs		KG_Web_Server_AMI - ami-0adffac1a15d37033	Root device type: ebs	Virtualization type: hvm	Owner: 483843322390	ENI Enabled: Yes	Select 64-bit (x86)
Ownership		KG_Web_Server_AMI - ami-0adffac1a15d37033	Root device type: ebs	Virtualization type: hvm	Owner: 483843322390	ENI Enabled: Yes	Select 64-bit (x86)
<input checked="" type="checkbox"/> Owned by me							
<input type="checkbox"/> Shared with me							

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Filter by: All instance families Current generation ShowHide Columns

Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, ~ 1 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/> t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/> t2	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

No default VPC found. Select another VPC, or create a new default VPC.

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances	<input type="text" value="1"/>	<input type="checkbox"/> Launch into Auto Scaling Group
Purchasing option	<input type="checkbox"/> Request Spot Instances	
Network	<input type="text" value="vpc-0a3d018cae3b9cc0b KG_Web_VPC"/> <input type="button" value="Create new VPC"/> No default VPC found. Create a new default VPC	
Subnet	<input type="text" value="subnet-0c40be0559e29ce6 KG_Private_Subnet_1"/> <input type="button" value="Create new subnet"/> 251 IP Addresses available	
Auto-assign Public IP	<input type="checkbox"/> Use subnet setting (Disable)	
Placement group	<input type="checkbox"/> Add instance to placement group	
Capacity Reservation	<input type="checkbox"/> Open	
Domain join directory	<input type="text" value="No directory"/> <input type="button" value="Create new directory"/>	
IAM role	<input type="text" value="None"/> <input type="button" value="Create new IAM role"/>	
Shutdown behavior	<input type="button" value="Stop"/> <input type="button" value="Hibernate"/>	
Stop - Hibernate behavior	<input type="checkbox"/> Enable hibernation as an additional stop behavior	
Enable termination protection	<input type="checkbox"/> Protect against accidental termination	
Monitoring	<input type="checkbox"/> Enable CloudWatch detailed monitoring <small>Additional charges apply.</small>	
Tenancy	<input type="text" value="Shared - Run a shared hardware instance"/> <input type="button" value="Dedicated"/> <small>Additional charges will apply for dedicated tenancy.</small>	
Elastic Inference	<input type="checkbox"/> Add an Elastic Inference accelerator <small>Additional charges apply.</small>	

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

- ALB(로드밸런서) 사용 시 구분할 수 있게 User data에서 Web Server 1을 2로 수정한다.

Step 3: Configure Instance Details

Elastic Inference Add an Elastic Inference accelerator
 Additional charges apply

Credit specification Unlimited
 Additional charges may apply

File systems Add file system Create new file system

Network interfaces

Device	Network Interface	Subnet	Primary IP	Secondary IP addresses	IPv6 IPs
eth0	New network interface	subnet-05da9f71	Auto-assign	Add IP	The selected subnet does not support IPv6 because it does not have an IPv6 CDR.

Add Device

Advanced Details

Enclave Enable

Metadata accessible Enabled

Metadata version V1 and V2 (token optional)

Metadata token response hop limit 1

User data As text As file Input is always base64 encoded

```
#!/bin/bash -v
# This script installs Apache, MySQL, PHP, and Node.js
# It also creates a database and a user
# Finally, it copies a basic web application from S3 to /var/www/html/basic

# Update package lists
sudo apt-get update

# Install Apache, MySQL, PHP, and Node.js
sudo wget https://web-server-source.s3.ap-northeast-1.amazonaws.com/amazonaws/basic_php7.zip
sudo unzip basic_php7.zip -d /var/www/html/basic
sudo curl -L https://nodejs.org/dist/v10.15.3/node-v10.15.3-linux-x64.tar.xz | tar xJ -C /usr/local
sudo curl -L https://github.com/nodesource/distributions/releases/download/10.x/nodesource_10.x_stable_debian_9.x_all.deb -o nodesource_10.x_stable_debian_9.x_all.deb
sudo dpkg -i nodesource_10.x_stable_debian_9.x_all.deb
sudo curl -L https://getcomposer.org/composer.phar -o /usr/local/bin/composer
sudo chmod +x /usr/local/bin/composer

# Create database and user
mysql -e "CREATE DATABASE test"
mysql -e "CREATE USER 'testuser'@'%' IDENTIFIED BY 'password'; GRANT ALL PRIVILEGES ON test.* TO 'testuser'@'%'; FLUSH PRIVILEGES"

# Copy application from S3
aws s3 cp s3://Security-Solution/KiNGAME-Web-Server-2/g /var/www/html/basic
```

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more about storage options in Amazon EC2](#).

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-032d009926dd00930	<input type="text" value="8"/>	<input type="button" value="General Purpose SSD (gp2)"/>	100 / 3000	N/A	<input checked="" type="checkbox"/>	<input type="button" value="Not Encrypted"/>
Add New Volume								

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	(128 characters maximum)	Value	(256 characters maximum)	Instances	Volumes	Network Interfaces
Name		KG_Web_Server_2		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Add another tag	(Up to 50 tags maximum)					

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:	<input type="radio"/> Create a new security group	<input checked="" type="radio"/> Select an existing security group	
Security Group ID	Name	Description	Actions
sg-0e5e97da0134a5fc	ALB_HTTP	load-balancer-wizard-1 created on 2021-10-26T01:46:50.409+09:00	Copy to new
sg-0099a520147876cba	default	default VPC security group	Copy to new
sg-00d94fdc925de224	KG_Web_SG	Allow SSH/ICMP	Copy to new
sg-00fc3353ca34489de	KG_Web_SG_Private	Allow SSH / ICMP / HTTP / HTTPS	Copy to new
sg-0807c18840e93071c	KG_WebServer_sg	launch-wizard-1 created 2021-10-26T03:01:11.988+09:00	Copy to new

Inbound rules for sg-00fc3353ca34489de (Selected security groups: sg-00fc3353ca34489de)

Type	Protocol	Port Range	Source	Description
HTTP	TCP	80	sg-00d94fdc925de224 (KG_Web_SG)	
SSH	TCP	22	sg-00d94fdc925de224 (KG_Web_SG)	
HTTPS	TCP	443	sg-00d94fdc925de224 (KG_Web_SG)	
All ICMP - IPv4	All	N/A	sg-00d94fdc925de224 (KG_Web_SG)	

[Cancel](#) [Previous](#) [Review and Launch](#)

- Availability c에 있는 Bastion host 2에 원격접속

EC2 > Instances > i-0f5d32d54a6734811 (KG_Web_Bastion_2)

Updated less than a minute ago

Instance summary for i-0f5d32d54a6734811 (KG_Web_Bastion_2)

Public IPv4 address copied

54.180.99.25 | open address

Private IPv4 addresses

10.0.2.75

Public IPv4 DNS

ec2-54-180-99-25.ap-northeast-2.compute.amazonaws.com | open address

Instance ID: i-0f5d32d54a6734811 (KG_Web_Bastion_2)

IPv6 address: -

Instance state: Running

- 기존 Bastion Host 1을 불러와서 Bastion Host 2의 ip로 접속 (기존 세팅 유지)

The screenshot shows the PuTTY configuration window and a warning dialog box.

PuTTY 설정 (Putty Configuration) window:

- Session tab selected.
- Host Name (or IP address): 54.180.99.25
- Port: 22
- Protocol: SSH
- Session dropdown: KG_Web_Bastion2
- Buttons: 적용 (Apply), 취소 (Cancel), 도움말 (Help).

Putty 보안 경고 (Putty Security Warning) dialog box:

- Warning message: "서버의 호스트 키가 레지스터리에 저장되어있지 않습니다. 지금 접속한 서버가 원래 접속하려던 컴퓨터가 맞는지 확신할 수 없습니다." (The server's host key is not stored in the registry. You are not sure if the server you are connecting to is the one you intended to connect to.)
- Message: "서버의 rsa2 공개키 지문은: ssh-rsa 2048 93:4a:31:50:b1:44:5b:c8:ef:f8:dc:db:fa:c2:57:68 이 호스트를 신뢰한다면, 예를 브라우저에서 Putty의 캐시에 이 키를 등록하고, 접속을 계속하세요." (The server's RSA-2048 public key fingerprint is: ssh-rsa 2048 93:4a:31:50:b1:44:5b:c8:ef:f8:dc:db:fa:c2:57:68 If you trust this host, for example, in a browser, register this key in Putty's cache and continue the connection.)
- Buttons: 예(Y) (Yes), 아니요(N) (No), 취소 (Cancel), 도움말 (Help).

- 외부통신 확인

```
ubuntu@ip-10-0-2-75:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=31.0 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=33.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=31.1 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 31.032/31.984/33.751/1.250 ms
```

- Web Server 2로 접속



```
ubuntu@ip-10-0-2-75:~$ ssh 10.0.20.85
The authenticity of host '10.0.20.85 (10.0.20.85)' can't be established.
ECDSA key fingerprint is SHA256:BWERR+3GEv6+nU4V2BGZBEcpRBF09Kh/hxm8mnyLt8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.20.85' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

 System information as of Tue Oct 26 08:19:56 UTC 2021

 System load:  0.05           Processes:      101
 Usage of /:   21.2% of 7.69GB  Users logged in:   0
 Memory usage: 21%            IP address for eth0: 10.0.20.85
 Swap usage:   0%

94 packages can be updated.
66 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

Last login: Tue Oct 26 07:56:18 2021 from 10.0.1.184
```

- 외부통신 확인 (현재 NAT Gateway와 연결 상태이므로 통신가능)

```
ubuntu@ip-10-0-20-85:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=29.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=28.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=28.7 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 28.742/28.929/29.282/0.249 ms
```

11) ALB 생성 (로드밸런싱)

- ALB를 통해 두개의 웹서버가 트래픽을 분산하도록 설정한다

Create Load Balancer						
Name	DNS name	State	VPC ID	Availability Zones	Type	Created
ServiceTest-ALB	ServiceTest-ALB-724639285.ap-northeast-2.elb.amazonaws.com	Active	vpc-05c02c3a7ee82e35	ap-northeast-2a, ap-northeast-2c	application	October

EC2 > Load balancers > Select load balancer type

A complete feature-by-feature comparison along with detailed highlights is also available. [Learn more](#)

Select load balancer type

Load balancer types

Application Load Balancer	Network Load Balancer	Gateway Load Balancer
Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.	Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.	Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.
Create	Create	Create

▶ [Classic Load Balancer - previous generation](#)

[Close](#)

Create Application Load Balancer

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply; and if applicable, it selects a target from the target group for the rule action.

How Application Load Balancers work

Basic configuration

Load balancer name: KGWebALB

Scheme: Internet-facing

IP address type: IPv4

Security groups

Select security groups: KG-ALB-SG sg-051722ff0ab057b3

Listeners and routing

Listener: HTTP:80

Protocol: HTTP Port: 80 Default action: Forward to: Select a target group

Tags - optional

Tags: /

Network mapping

VPC: vpc-0a5018c695cced6

Subnet: subnets-00f2931801c2e0cd, subnets-0ce957d564d88bac7

IP4 settings: Assigned by AWS

Subnet: subnets-00f2931801c2e0cd, subnets-0ce957d564d88bac7

IP4 settings: Assigned by AWS

Listener: HTTP:80

Protocol: HTTP Port: 80 Default action: Create target group

Tags - optional

Tags: /

Summary

Basic configuration: KGWebALB

- Internet-facing
- IPv4

Security groups: KG-ALB-SG sg-051722ff0ab057b3

- ap-northeast-2a
- ap-northeast-2c

Network mapping: vpc-0a5018c695cced6

- KG_VPC_VPC
- KG_Public_Subnet_1
- KG_Public_Subnet_2

Listeners and routing: Listener: HTTP:80

Tags: /

Attributes: Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.

Create load balancer

- Target Group 생성

Specify group details

Your load balancer routes requests to the targets in a target group and performs health checks on the targets.

Basic configuration

Settings in this section cannot be changed after the target group is created.

Choose a target type

Instances

- Supports load balancing to instances within a specific VPC.

IP addresses

- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same instance.
- Offers flexibility with microservice-based architectures, simplifying inter-application communication.

Lambda function

- Facilitates routing to a single Lambda function.
- Accessible to Application Load Balancers only.

Application Load Balancer

- Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
- Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

Target group name

KGWebALBTargetGroup

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Protocol

Protocol: HTTP Port: 80

VPC

Select the VPC with the instances that you want to include in the target group.

KG_VPC_VPC
vpc-0a5018c695cced6
IPv4: 10.0.0.0/16

Protocol version

HTTP1
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.

HTTP2
Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.

gRPC
Send requests to targets using gRPC. Supported when the request protocol is gRPC.

Health checks

The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

Health check protocol

HTTP

Health check path

/

Up to 1024 characters allowed.

Advanced health check settings

Port: The port the load balancer uses when performing health checks on targets. The default is the port on which each target receives traffic from the load balancer, but you can specify a different port.

Traffic port

Override

Healthy threshold

The number of consecutive health checks successes required before considering an unhealthy target healthy.

2

2-10

Unhealthy threshold

The number of consecutive health check failures required before considering a target unhealthy.

2

2-10

Timeout

The amount of time, in seconds, during which no response means a failed health check.

5 seconds

2-120

Interval

The approximate amount of time between health checks of an individual target.

10 seconds

5-300

Success codes

The HTTP codes to use when checking for a successful response from a target. You can specify multiple values (for example, "200,202") or a range of values (for example, "200-299").

200

Cancel **Next**

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2)					
Instance ID	Name	State	Security groups	Zone	Subnet ID
i-046afb16b771c3c3	KG_Web_Server_1	running	KG_Web_SG_Private	ap-northeast-2a	subnet-07f3a4cf63c84fff
i-06af0f1737a6ab1ec	KG_Web_Server_2	running	KG_Web_SG_Private	ap-northeast-2c	subnet-0c40be0859629cb6

Ports for the selected instances
Ports for routing traffic to the selected instances.
80
1-45555 (expands multiple ports with commas)
 Include as pending below

2 selections are now pending below. Include more or register Targets when ready.

Review targets

Targets (2)					
All	Health status	Instance ID	Name	Port	State
X	Pending	i-06af0f1737a6ab1ec	KG_Web_Server_2	80	running
X	Pending	i-046afb16b771c3c3	KG_Web_Server_1	80	running

2 pending

Cancel Previous Create target group

- 다시 ALB생성화면으로 돌아와서 설정한다

Listener HTTP:80

Protocol	Port	Default action	Info
HTTP	80	Forward to	KGWebALB-TargetGroup Target type: Instance, IPv4

Create target group

Add listener

Tags - optional
Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

Summary
Review and confirm your configurations. [Estimate cost](#)

Basic configuration	Security groups	Network mapping	Listeners and routing
KGWebALB • Internet-facing • IPv4	KG-ALB-SG sg-0537228ff0ab057b3	VPC vpc-0a3d018ce3b9cccb KG_VPC • ap-northeast-2a subnet-0fc2f31801c2eedc KG_Public_Subnet_1 • ap-northeast-2c subnet-0ce897d564d88bac7 KG_Public_Subnet_2	• HTTP:80 defaults to KGWebALB-TargetGroup

Tags [Edit](#)
None

Attributes

Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.

Create load balancer

- ALB 설정내용 확인

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
KGWebALB	KGWebALB-1573673935.ap-northeast-2.elb.amazonaws.com	Active	vpc-0a3d018ce3b9ccceb	ap-northeast-2a, ap-northeast-2c	application	October 26, 2021
KGWebALB	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Active	vpc-0a3d018ce3b9ccceb	ap-northeast-2c, ap-northeast-2a	classic	October 26, 2021
ServiceTestALB	ServiceTestALB-724639285.ap-northeast-2.elb.amazonaws.com	Active	vpc-05c02c3a7aea82e35	ap-northeast-2a, ap-northeast-2c	application	October 26, 2021

Load balancer: **KGWebALB**

Description Instances Health check Listeners Monitoring Tags Migration

Connection Draining: Enabled, 300 seconds (Edit)

Edit Instances

Instance ID	Name	Availability Zone	Status	Actions
i-046afb16b7711c3c3	KG_Web_Server_1	ap-northeast-2a	InService (i)	Remove from Load Balancer
i-06bf0f1737a9ab1ec	KG_Web_Server_2	ap-northeast-2c	InService (i)	Remove from Load Balancer

Edit Availability Zones

Availability Zone	Subnet ID	Subnet CIDR	Instance Count	Healthy?	Actions
ap-northeast-2c	subnet-0ce897d564d88bac7	10.0.2.0/24	1	Yes	Remove from Load Balancer
ap-northeast-2a	subnet-00fc2f31801c2eedc	10.0.1.0/24	1	Yes	Remove from Load Balancer

- ALB의 DNS 주소로 접속한다

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
KGWebALB	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Active	vpc-0a3d018ce3b9ccceb	ap-northeast-2c, ap-northeast-2a	classic	October 26, 2021
ServiceTestALB	ServiceTestALB-724639285.ap-northeast-2.elb.amazonaws.com	Active	vpc-05c02c3a7aea82e35	ap-northeast-2a, ap-northeast-2c	application	October 26, 2021

Load balancer: **KGWebALB**

Description Instances Health check Listeners Tags Migration

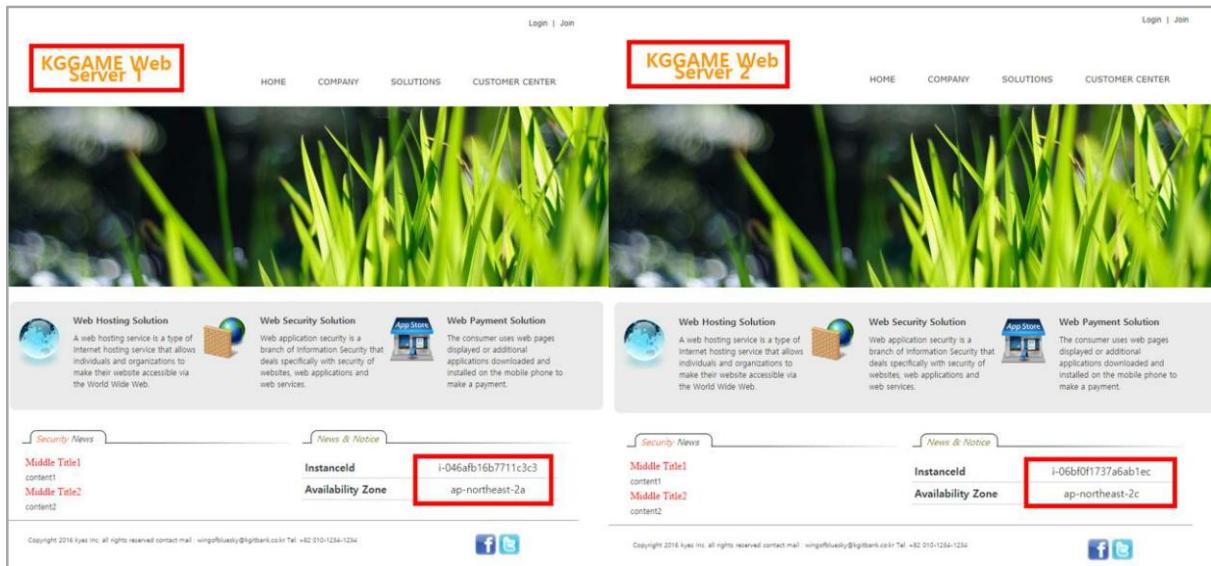
Basic Configuration

Name	KGWebALB	Creation time	October 26, 2021 at 7:29:36 PM UTC+9
* DNS name	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com (A Record)	Hosted zone	ZWKZPGTH48KDX
Type	Classic (Migrate Now)	Status	2 of 2 instances in service
Scheme	internet-facing	VPC	vpc-0a3d018ce3b9ccceb
Availability Zones	subnet-00fc2f31801c2eedc - ap-northeast-2a , subnet-040be0859629ceb6 - ap-northeast-2c		

kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com/basic

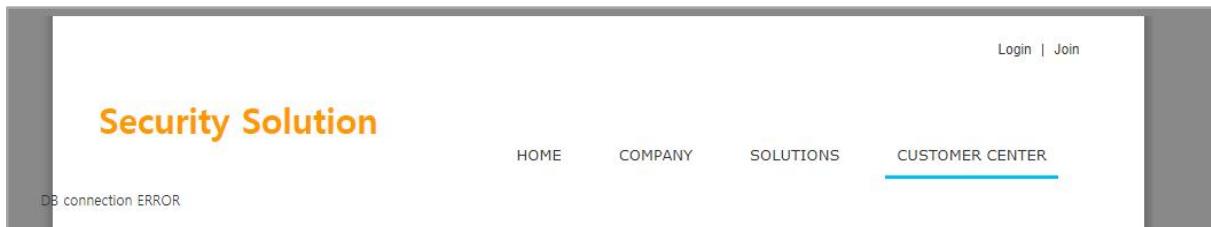
The screenshot shows a web browser displaying the 'KGGAME Web Server' website. The page features a green grass background image. It includes sections for 'Web Hosting Solution', 'Web Security Solution', and 'Web Payment Solution'. At the bottom, there are news items and social media links for Facebook and Twitter.

- 새로 고칠 때마다 Round-robin 식으로 트래픽을 분산해주고 있는 것을 확인할 수 있다.



12) RDS 생성 (웹서버DB)

- 현재 DB 서버가 없기 때문에 "DB connection ERROR"이라고 나온다.



- DB전용 Security Group 생성 (MySQL/Aurora 허용)

Inbound rules

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-0dbf461bfb47ee866	MySQL/Aurora	TCP	3306	Custom	0.0.0.0/0
sgr-0cb51005fd347eadc	SSH	TCP	22	Custom	sg-00d94fdcc925de224

Add rule **Cancel** **Preview changes** **Save rules**

Outbound rules

Type	Protocol	Port range	Destination	Description - optional
All traffic	All	All	Custom	0.0.0.0/0

Add rule **Cancel** **Create security group**

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add new tag

You can add up to 50 more tag.

sg-009c7910f086f472b | KG_Web_MySQL-DB_SG was created successfully

Details

Security group name	Security group ID	Description	VPC ID
KG_Web_MySQL-DB_SG	sg-009c7910f086f472b	Allow MySQL/SSH	vpc-0a3d018ce3b9cccb
Owner	Inbound rules count	Outbound rules count	
4838435322360	2 Permission entries	1 Permission entry	

Inbound rules **Outbound rules** **Tags**

Inbound rules (2)

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
-	sgr-0cb51005fd347eadc	-	SSH	TCP	22	sg-00d94fdcc925de224...	-
-	sgr-0ecf9cfa0c0765db1	-	MySQL/Aurora	TCP	3306	sg-0537228ff0ab057b...	-

- RDS Subnet Group 생성

Amazon RDS

Subnet groups

Amazon Aurora

Amazon Aurora is a MySQL- and PostgreSQL-compatible enterprise-class database, starting at \$1/day. Aurora supports up to 64TB of auto-scaling storage capacity, 6-way replication across three availability zones, and 15 low-latency read replicas. Learn more

Create database

Or, Restore Aurora DB cluster from S3

Resources

You are using the following Amazon RDS resources in the Asia Pacific (Seoul) region (used/quotas)

- DB Instances (0/40)
- Allocated storage (0 TB/100 TB)
- Click here to Increase DB instances limit
- DB Clusters (0/40)
- Reserved instances (0/40)
- Snapshots (1)

Recommended for you

Implementing Cross-Region DR

Learn how to set up Cross-Region disaster recovery (DR) for Aurora PostgreSQL using an Aurora global database spanning multiple Regions. Learn more

Build RDS Operational Tasks

Watch how to enable users to perform common tasks such as snapshots or restart DB instances in Amazon RDS. Learn more

RDS > Subnet groups

Subnet groups (1)

Name	Description	Status	VPC
testgroup	testGroup	Complete	vpc-05c02c3a7aea8e35

RDS > Subnet groups > Create DB Subnet Group

Create DB Subnet Group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.

Subnet group details

Name
You won't be able to modify the name after your subnet group has been created.

Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

Description

VPC
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.

- 두 가용영역에 있는 2개의 DB전용 Subnet ID를 미리 체크하고 선택한다.

Subnets (2/6) Info

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
<input checked="" type="checkbox"/> KG_Private_Subnet_DB_1_a	subnet-0d76fb60ad6a05ddb	Available	vpc-0a3d018ce3b9cccb KG_...	10.0.30.0/24	-	250
<input checked="" type="checkbox"/> KG_Private_Subnet_DB_2_c	subnet-0809f36a47a23aa16	Available	vpc-0a3d018ce3b9cccb KG_...	10.0.40.0/24	-	251

Add subnets

Availability Zones
Choose the Availability Zones that include the subnets you want to add.

Subnets
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.

Subnets selected (2)

Availability zone	Subnet ID	CIDR block
ap-northeast-2a	subnet-0d76fb60ad6a05ddb	10.0.30.0/24
ap-northeast-2c	subnet-0809f36a47a23aa16	10.0.40.0/24

Cancel

- 데이터베이스 생성

The screenshot shows the 'Create database' page in the AWS RDS console. The 'Edition' section is set to 'MySQL Community'. The 'Version' dropdown is set to 'MySQL 5.7.34', which is highlighted with a red box. A note below states: 'MySQL engine versions earlier than 8.0.17 don't support the newest m6g or r6g generation instance classes.' The 'Engine options' section shows various engine types: Amazon Aurora, MySQL (selected), MariaDB, PostgreSQL, Oracle, and Microsoft SQL Server.

- Storage autoscaling은 자동 확장부분이기 때문에 개인 테스트 시 체크를 해지한다

The screenshot shows the 'Settings' tab for creating a new DB instance. In the 'DB instance class' section, 'db.m5.xlarge' is selected. In the 'Storage' section, 'General Purpose SSD (gp2)' is chosen. The 'Storage type' dropdown is set to 'General Purpose SSD (gp2)'. Under 'Storage', there is a note: 'Provisioning less than 100 GiB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. Learn more'.

In the 'Storage autoscaling' section, there is a note: 'Provides dynamic scaling support for your database's storage based on your application's needs.' A checkbox for 'Enable storage autoscaling' is present, which is highlighted with a red box. The note below it says: 'Enabling this feature will allow the storage to increase once the specified threshold is exceeded.'

- 첫번째 옵션을 선택해야만 고가용성 DB가 구축된다. (테스트 시 두번째 선택)

The screenshot shows the 'Availability & durability' section. Under 'Multi-AZ deployment', the option 'Create a standby instance (recommended for production usage)' is selected, which is highlighted with a red box. The note below it says: 'Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.'

- DB는 보안상 Public access를 No로 체크한다
- Security Group은 방금 생성한 DB전용 Security group으로 선택한다.(Default 해지)

Connectivity

Virtual private cloud (VPC) [Info](#)
VPC that defines the virtual networking environment for this DB instance.

KG_Web_VPC (vpc-0a3d018ce3b9ccceb) ▾

Only VPCs with a corresponding DB subnet group are listed.

Subnet group [Info](#)
DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.

kg-db-subnetgroup ▾

Public access [Info](#)

Yes
Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.

No
RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

VPC security group
Choose a VPC security group to allow access to your database. Ensure that the security group rules allow the appropriate incoming traffic.

Choose existing
Choose existing VPC security groups

Create new
Create new VPC security group

Existing VPC security groups

Choose VPC security groups ▾

KG_Web_MySQL-DB_SG X

▶ Additional configuration

Database authentication

Database authentication options [Info](#)

Password authentication
Authenticates using database passwords.

Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.

Password and Kerberos authentication
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Additional configuration

Database options

Initial database name: care_db

DB parameter group: default.mysql5.7

Option group: default:mysql-5-7

Backup

Enable automated backups

Maintenance window: Select window

Encryption

Enable encryption

AWS KMS Key: (default) aws/rds

Estimated monthly costs

DB instance	344.56 USD
Multi-AZ standby instance	344.56 USD
Storage	5.52 USD
Total	694.64 USD

This billing estimate is based on on-demand usage as described in [Amazon RDS Pricing](#). Estimate does not include costs for backup storage, I/Os (if applicable), or data transfer.

Estimated your monthly costs for the DB Instance using the [AWS Simple Monthly Calculator](#).

You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

[Cancel](#) [Create database](#)

- 현재 테스트용으로 Availability Zone a에만 생성한다
- Availability Zone a에 있는 Bastion Host 1에 접속해서 세팅을 해준다

```
ubuntu@ip-10-0-1-184:~$ sudo apt -y install mysql-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libaio1 mysql-client-5.7 mysql-client-core-5.7 mysql-common
The following NEW packages will be installed:
  libaio1 mysql-client mysql-client-5.7 mysql-client-core-5.7 mysql-common
0 upgraded, 5 newly installed, 0 to remove and 36 not upgraded.
```

- root로 들어가서 아파치 업데이트

```
ubuntu@ip-10-0-1-184:~$ sudo -i
root@ip-10-0-1-184:~# apt update
Hit:1 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Fetched 252 kB in 1s (251 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
36 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```

root@ip-10-0-1-184:~# apt -y install unzip
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  zip
The following NEW packages will be installed:
  unzip
0 upgraded, 1 newly installed, 0 to remove and 36 not upgraded.
Need to get 168 kB of archives.
After this operation, 567 kB of additional disk space will be used.
Get:1 http://ap-northeast-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 unzip amd64 6.0-21ubuntu1.1 [168 kB]
Fetched 168 kB in 0s (15.4 MB/s)
Selecting previously unselected package unzip.
(Reading database ... 95259 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-21ubuntu1.1_amd64.deb ...
Unpacking unzip (6.0-21ubuntu1.1) ...
Setting up unzip (6.0-21ubuntu1.1) ...
Processing triggers for mime-support (3.60ubuntu1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
root@ip-10-0-1-184:~# apt -y install mysql-client mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done

```

- wget 명령어로 쿼리문이 들어있는 admin_query.zip 파일을 다운받고 압축을 푼다

```

root@ip-10-0-1-184:~# wget https://web-server-source.s3.ap-northeast-2.amazonaws.com/admin_query.zip
--2021-10-26 12:44:37-- https://web-server-source.s3.ap-northeast-2.amazonaws.com/admin_query.zip
Resolving web-server-source.s3.ap-northeast-2.amazonaws.com (web-server-source.s3.ap-northeast-2.amazonaws.com)... 52.219.58.7
Connecting to web-server-source.s3.ap-northeast-2.amazonaws.com (web-server-source.s3.ap-northeast-2.amazonaws.com)|52.219.58.7|:443...
HTTP request sent, awaiting response... 200 OK
Length: 738 [application/zip]
Saving to: 'admin_query.zip'

admin_query.zip          100%[=====] 738  ---KB/s   in 0s

2021-10-26 12:44:37 (11.8 MB/s) - 'admin_query.zip' saved [738/738]
root@ip-10-0-1-184:~# unzip admin_query.zip
Archive:  admin_query.zip
  inflating: greet.sql
  inflating: member.sql
  inflating: root_query.sql

```

- 파일 내용 확인

```

root@ip-10-0-1-184:~# ls
admin_query.zip  greet.sql  member.sql  root_query.sql  snap
root@ip-10-0-1-184:~#
root@ip-10-0-1-184:~#
root@ip-10-0-1-184:~# cat member.sql
create table member (
  num int unsigned not null auto_increment,
  id varchar(50) not null,
  pass varchar(50) not null,
  name varchar(50),
  nick varchar(50),
  mphone varchar(20),
  email varchar(50),
  regist_day varchar(30),
  primary key(num,id)
);
root@ip-10-0-1-184:~# cat greet.sql
create table greet (
  num int unsigned not null auto_increment,
  id varchar(15),
  nick varchar(10),
  subject varchar(255) not null,
  content text,
  regist_day varchar(20),
  hit int unsigned,
  file_name varchar(255),
  primary key(num)
)

```

```

);root@ip-10-0-1-184:~# cat root_query.sql
create database care_db;
create user careadmin identified by 'hackers';
grant all on care_db.* to careadmin@'localhost' identified by 'hackers';
grant all on care_db.* to careadmin@'%' identified by 'hackers';
grant all privileges on care_db.* to 'careadmin'@'localhost' identified by 'hackers';
grant all privileges on care_db.* to 'careadmin'@'%' identified by 'hackers';

```

- Endpoint를 명령어에 삽입해서 member테이블 및 greet테이블 생성

```

root@ip-10-0-1-184:~# mysql -h database-1.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com -u careadmin -pcareadminpassword care_db < member.sql
mysql: [Warning] Using a password on the command line interface can be insecure.
root@ip-10-0-1-184:~# mysql -h database-1.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com -u careadmin -pcareadminpassword care_db < greet.sql
mysql: [Warning] Using a password on the command line interface can be insecure.

```

- DB접속

```

root@ip-10-0-1-184:~# mysql -h database-1.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com -u careadmin -pcareadminpassword care_db
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.7.34 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>

```

- 데이터베이스 확인; 테이블 확인;

```

mysql> use care_db;
Database changed
mysql> show tables;
+-----+
| Tables_in_care_db |
+-----+
| greet           |
| member          |
+-----+
2 rows in set (0.00 sec)

mysql> use care_db;
Database changed
mysql> show tables;
+-----+
| Tables_in_care_db |
+-----+
| greet           |
| member          |
+-----+
2 rows in set (0.00 sec)

```

```

mysql> desc member;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| num   | int(10) unsigned | NO  | PRI | NULL    | auto_increment |
| id    | varchar(50)      | NO  | PRI | NULL    |                |
| pass  | varchar(50)      | NO  |      | NULL    |                |
| name  | varchar(50)      | YES |      | NULL    |                |
| nick  | varchar(50)      | YES |      | NULL    |                |
| mphone| varchar(20)     | YES |      | NULL    |                |
| email | varchar(50)      | YES |      | NULL    |                |
| regist_day | varchar(30) | YES |      | NULL    |                |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> desc greet;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| num   | int(10) unsigned | NO  | PRI | NULL    | auto_increment |
| id    | varchar(15)      | YES |      | NULL    |                |
| nick  | varchar(10)      | YES |      | NULL    |                |
| subject | varchar(255)    | NO  |      | NULL    |                |
| content | text             | YES |      | NULL    |                |
| regist_day | varchar(20) | YES |      | NULL    |                |
| hit   | int(10) unsigned | YES |      | NULL    |                |
| file_name | varchar(255)  | YES |      | NULL    |                |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)

```

- Web Server 와 DB 연동
- Web Server 1과 Web Server 2에서 다음과 같이 동일한 작업을 한다
 - ◊ Hostname: RDS의 Endpoint를 입력;
 - ◊ Username, password, database는 aws 콘솔에서 입력했던 것과 동일하게 입력

```

ubuntu@ip-10-0-20-85:~$ sudo vi /var/www/html/basic/login/dbconn.php
<?php
$mysql_hostname = 'database-1.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com';
$mysql_username = 'careadmin';
$mysql_password = 'careadminpassword';
$mysql_database = 'care_db';

$connect = mysqli_connect($mysql_hostname, $mysql_username, $mysql_password, $mysql_database);
mysqli_select_db($connect, $mysql_database) or die('DB connection ERROR');
?>

```

- ALB의 DNS로 웹서버에 접속 후 회원가입을 한다

KGGAME Web Server

HOME COMPANY SOLUTIONS CUSTOMER CENTER

Web Hosting Solution

A web hosting service is a type of Internet hosting service that allows individuals and organizations to make their website accessible via the World Wide Web.

Web Security Solution

Web application security is a branch of Information Security that deals specifically with security of websites, web applications and web services.

Web Payment Solution

The consumer uses web pages displayed or additional applications downloaded and installed on the mobile phone to make a payment.

Security Solution

HOME COMPANY SOLUTIONS CUSTOMER CENTER

Membership

Join Us

Basic Info

User ID	KGGAME
Password	*****
Confirm Password	*****
Name	KGGAME
Nickname	KGGAME
Mobile Phone Number	010-1111-2222
E-Mail	kggame@kggame.com

...alb-144350439.ap-northeast-2.elb.amazonaws.com의 메시지
가입 완료

확인

Submit Cancel

- 가입한 ID로 로그인

Login

...alb-144350439.ap-northeast-2.elb.amazonaws.com의 메시지
로그인 성공

확인

아이디 KGGAME

패스워드 *****

로그인하기

- 게시판에 글 올리기

Customer Center

Notice

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닉네임	KGGAME
제목	KG & Cloud Computing
게임회사는 자동확장 및 축소 기능이 있는 클라우드가 필요합니다.	
내용	
파일	파일 선택 선택된 파일 없음
<input type="button" value="완료"/> <input type="button" value="목록"/>	

- 로그인 상태에서 글 올리고 완료를 클릭하면 “로그인 후 이용해 주세요”라고 나온다



이는 로드밸런서를 통해 웹서버1,2는 라운드로빈 방식으로 트래픽을 분산하고 있기 때문에 페이지가 새로고침을 하면 다른 서버로 넘어간다. 이 문제를 해결하기 위해서는 AWS의 DynamoDB를 통해 세션관리를 해줘야 한다

(주의사항: DynamoDB로 세션설정 후 인스턴스를 Stop시키고 다시 Start하면 설정이 사라진다.)

13) DynamoDB - 세션관리

- Web Server 1에서 SDK 설치

```
ubuntu@ip-10-0-10-253:~$ cd /var/www/html
ubuntu@ip-10-0-10-253:/var/www/html$ curl -sS https://getcomposer.org/installer | php
All settings correct for using Composer
Downloading...

Composer (version 2.1.9) successfully installed to: /var/www/html/composer.phar
Use it: php composer.phar

ubuntu@ip-10-0-10-253:/var/www/html$ php composer.phar require AWS/AWS-Sdk-PHP
Using version ^3.199 for aws/aws-sdk-php
./composer.json has been created
Running composer update aws/aws-sdk-php
Loading composer repositories with package information
Updating dependencies
Lock file operations: 12 installs, 0 updates, 0 removals
- Locking aws/aws-crt-php (v1.0.2)
- Locking aws/aws-sdk-php (3.199.4)
- Locking guzzlehttp/guzzle (7.4.0)
- Locking guzzlehttp/promises (1.5.1)
- Locking guzzlehttp/psr7 (2.1.0)
- Locking mtdowling/jmespath.php (2.6.1)
- Locking psr/http-client (1.0.1)
- Locking psr/http-factory (1.0.1)
- Locking psr/http-message (1.0.1)
- Locking ralouphie/getallheaders (3.0.3)
- Locking symfony/deprecation-contracts (v2.4.0)
- Locking symfony/polyfill-mbstring (v1.23.1)
Writing lock file
Installing dependencies from lock file (including require-dev)
Package operations: 12 installs, 0 updates, 0 removals
- Downloading symfony/polyfill-mbstring (v1.23.1)
- Downloading mtdowling/jmespath.php (2.6.1)
- Downloading ralouphie/getallheaders (3.0.3)
- Downloading psr/http-message (1.0.1)
- Downloading psr/http-factory (1.0.1)
- Downloading guzzlehttp/psr7 (2.1.0)
- Downloading guzzlehttp/promises (1.5.1)
- Downloading symfony/deprecation-contracts (v2.4.0)
- Downloading psr/http-client (1.0.1)
- Downloading guzzlehttp/guzzle (7.4.0)
- Downloading aws/aws-crt-php (v1.0.2)
- Downloading aws/aws-sdk-php (3.199.4)
- Installing symfony/polyfill-mbstring (v1.23.1): Extracting archive
- Installing mtdowling/jmespath.php (2.6.1): Extracting archive
- Installing ralouphie/getallheaders (3.0.3): Extracting archive
- Installing psr/http-message (1.0.1): Extracting archive
- Installing psr/http-factory (1.0.1): Extracting archive
- Installing guzzlehttp/psr7 (2.1.0): Extracting archive
- Installing guzzlehttp/promises (1.5.1): Extracting archive
- Installing symfony/deprecation-contracts (v2.4.0): Extracting archive
- Installing psr/http-client (1.0.1): Extracting archive
- Installing guzzlehttp/guzzle (7.4.0): Extracting archive
- Installing aws/aws-crt-php (v1.0.2): Extracting archive
- Installing aws/aws-sdk-php (3.199.4): Extracting archive
5 package suggestions were added by new dependencies, use `composer suggest` to see details.
Generating autoload files
5 packages you are using are looking for funding.
Use the `composer fund` command to find out more!
```

```
ubuntu@ip-10-0-10-253:/var/www/html$ cat ./basic/session.php
<?php
require '/var/www/html/vendor/autoload.php';
use Aws\DynamoDb\DynamoDbClient;
use Aws\DynamoDb\SessionHandler;

$sdk = new Aws\Sdk([
    'region'    => 'ap-northeast-2',
    'version'   => 'latest',
    'http'      => [
        'debug' => false
    ]
]);

$dynamodb = $sdk->createDynamodb();

$sessionHandler = SessionHandler::fromClient($dynamodb, [
    'table_name' => 'usersession'
]);
```

- index.php에서 session.php부분 확인

```
ubuntu@ip-10-0-10-253:/var/www/html$ vi ./basic/index.php
```

```
<?php
    include "session.php";
    session_start();
    header("Cache-Control: no-store, no-cache, must-revalidate, max-age=0");
    header("Cache-Control: post-check=0, pre-check=0", false);
    header("Pragma: no-cache");
?>
<html>
    <head>
        <link href="/basic/css/main.css" rel="stylesheet" type="text/css">
    </head>
    <body>

        <div id="wrap">
            <header>
                <?php
                    if(! $_SESSION['userid'])
                    {
                        ?>
                        <div id="login"><a href=".//login/login_form.php">Login</a>
                        | <a href=".//member/join.php">Join</a>
                        </div>
                    } else {
                    ?>
                        <div id="login"><a href=".//login/logout.php">Logout</a>
                        | <a href=".//member/member_modify.php">Modify</a>
                        </div>
                    <?php } ?>
                <div id="logo">
                    <h1>    <a href="/basic/index.php">KGGAME Web Server 1</a> </h1>
                </div>

                <nav><ul>
                    <li><a href="/basic/index.php">HOME</a></li>
                    <li><a href="/basic/company/welcome.php">COMPANY</a></li>
                    <li><a href="#">SOLUTIONS</a></li>
                    <li><a href="/basic/greet/list.php">CUSTOMER CENTER</a></li>
                </ul></nav>
            <?php } ?>
        </div>
    </body>
</html>
```

- Role 생성 (Web Server가 DynamoDB에 접근 시 사용)
- Aws 콘솔에서 role을 생성하고 Web Server 1, 2에 모두 부여해준다.

Create role

Select type of trusted entity

AWS service EC2, Lambda and others **Another AWS account** Belonging to you or 3rd party **Web identity** Cognito or any OpenID provider **SAML 2.0 federation** Your corporate directory

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose a use case

Common use cases

EC2 Allows EC2 instances to call AWS services on your behalf. *

Lambda Allows Lambda functions to call AWS services on your behalf.

Or select a service to view its use cases

API Gateway	CloudWatch Events	EMR	IoT SiteWise	RAM
AWS Backup	CodeBuild	EMR Containers	IoT Things Graph	RDS
AWS Chatbot	CodeDeploy	ElastiCache	KMS	Redshift
AWS Marketplace	CodeGuru	Elastic Beanstalk	Kinesis	Rekognition
AWS Support	CodeStar Notifications	Elastic Container Registry	Lake Formation	RoboMaker
Amazon OpenSearch Service	Comprehend	Elastic Container Service	Lambda	S3
Amplify	Config	Elastic Transcoder	Lex	SMS
AppStream 2.0	Connect	Elastic Load Balancing	License Manager	SNS
AppSync	DMS	EventBridge	MQ	SWF
Application Auto Scaling	Data Lifecycle Manager	Forecast	MSK Connect	SageMaker
Application Discovery Service	Data Pipeline	GameLift	Machine Learning	Security Hub
Application Migration Service	DataBrew	Global Accelerator	Macie	Service Catalog
	DataSync	Glue	Managed Blockchain	Step Functions

* Required Cancel **Next: Permissions**

Create role

1 **2** **3** **4**

▼ Attach permissions policies

Choose one or more policies to attach to your new role.

[Create policy](#)

[Filter policies](#) Showing 2 results

Policy name	Used as
<input checked="" type="checkbox"/> AmazonDynamoDBFullAccess	Permissions policy (1)
<input type="checkbox"/> AmazonDynamoDBReadOnlyAccess	None

▼ Set permissions boundary

Set a permissions boundary to control the maximum permissions this role can have. This is an advanced feature used to delegate permission management to others. [Learn more](#)

Create role without a permissions boundary
 Use a permissions boundary to control the maximum role permissions

* Required [Cancel](#) [Previous](#) [Next: Tags](#)

Create role

1 **2** **3** **4**

Add tags (optional)

IAM tags are key-value pairs you can add to your role. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this role. [Learn more](#)

Key	Value (optional)	Remove
Name	KG_Web_DynamoDBFull_Role	x
Add new key		

You can add 49 more tags.

Create role

1 **2** **3** **4**

Review

Provide the required information below and review this role before you create it.

Role name*

Use alphanumeric and '+=-,@-_' characters. Maximum 64 characters.

Role description

Maximum 1000 characters. Use alphanumeric and '+=-,@-_' characters.

Trusted entities AWS service: ec2.amazonaws.com

Policies AmazonDynamoDBFullAccess [Edit](#)

Permissions boundary Permissions boundary is not set

- Web Server 1과 Web Server 2에 방금 생성한 role을 부여해준다

The screenshot shows the AWS EC2 Instances page. There are four instances listed:

- KG_Web_Bastion_1 (Running, t2.micro, 2/2 checks passed, No alarms, ap-northeast-2a)
- KG_Web_Bastion_2 (Running, t2.micro, 2/2 checks passed, No alarms, ap-northeast-2a)
- KG_Web_Server_1_Session** (Running, t2.micro, 2/2 checks passed, No alarms, ap-northeast-2a) - This instance is selected.
- KG_Web_Server_2_Session (Running, t2.micro, - , No alarms)

In the Actions menu for the selected instance, the 'Modify IAM role' option is highlighted with a red box. A modal window titled 'Modify IAM role' is open, showing the current IAM role assigned to the instance is 'DynamoDBFullAccess-EC2'. The 'Save' button at the bottom right of the modal is also highlighted with a red box.

- DynamoDB에서 Table 생성

The screenshot shows the AWS DynamoDB Dashboard. On the right side, there is a 'Create resources' section with a 'Create table' button highlighted with a red box.

Below the dashboard, the 'Create table' wizard is open. In the 'Table details' step, the table name 'KG_WebUsers_Session' is entered in the 'Table name' field, which is also highlighted with a red box. Other fields in this step include 'Primary key' (partition key 'id' and sort key optional), 'Provisioned capacity mode' (Read and write capacity set to 5 units each), and 'Encryption at rest' (using AWS owned customer master key).

The 'Settings' step is also visible on the right, showing options for 'Default settings' (using provisioned capacity mode) and 'Customize settings' (using DAX Accelerator).

- Web Server 2에서 SDK 설치

```
ubuntu@ip-10-0-20-68:~$ cd /var/www/html
ubuntu@ip-10-0-20-68:/var/www/html$ curl -sS https://getcomposer.org/installer | php
All settings correct for using Composer
Downloading...
Composer (version 2.1.9) successfully installed to: /var/www/html/composer.phar
Use it: php composer.phar
ubuntu@ip-10-0-20-68:/var/www/html$ php composer.phar require AWS/AWS-sdk-php
Using version ^3.199 for aws/aws-sdk-php
./composer.json has been created
Running composer update aws/aws-sdk-php
Loading composer repositories with package information
Updating dependencies
Lock file operations: 12 installs, 0 updates, 0 removals
- Locking aws/aws-crt-php (v1.0.2)
- Locking aws/aws-sdk-php (3.199.4)
- Locking guzzlehttp/guzzle (7.4.0)
- Locking guzzlehttp/promises (1.5.1)
- Locking guzzlehttp/psr7 (2.1.0)
```

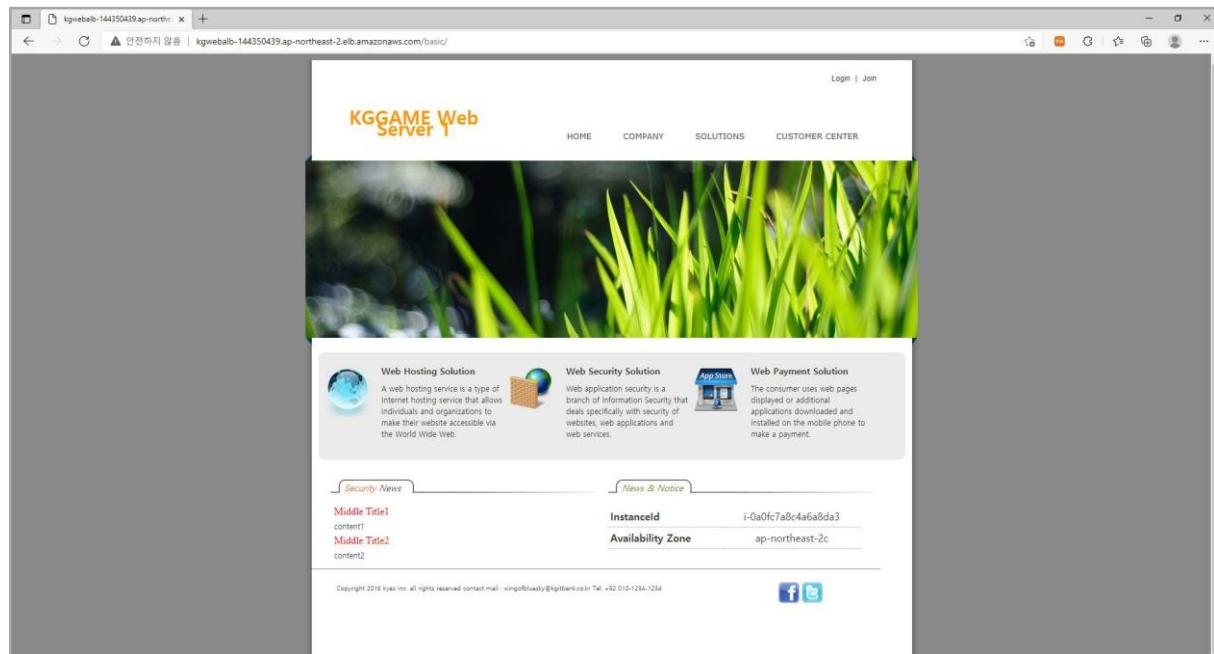
- DB 연결상태 확인 (Web Server 1 & Web Server 2 모두 확인)

```
ubuntu@ip-10-0-20-68:/var/www/html$ cd basic
ubuntu@ip-10-0-20-68:/var/www/html/basic$ sudo vi ./login/dbconn.php
<?php
$mysql_hostname = 'database-1.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com';
$mysql_username = 'careadmin';
$mysql_password = 'careadminpassword';
$mysql_database = 'care_db';

$connect = mysqli_connect($mysql_hostname, $mysql_username, $mysql_password, $mysql_database);

mysqli_select_db($connect, $mysql_database) or die('DB connection ERROR');
?>
```

- ALB의 DNS로 접속해서 확인



- 가입한 ID로 로그인하고 게시판에 글을 올린 후 정보가 유실되는지 테스트한다

Logout | Modify

Security Solution

Customer Center

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Notice

No.	Title	Writer	Date	Read

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글 작성하기

닉네임	KGGAME
제목	KG & Cloud Computing
내용	<p>KGGAME은 게임서버를 Cloud로 마이그레이션 하고 싶습니다.</p>

파일 선택된 파일 없음

완료 목록

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No.	Title	Writer	Date	Read
1	KG & Cloud Computing	KGGAME	2021-10-27	0

[제목] [] [submit]

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글쓰기

- 새로운 ID를 만들어서 해당 게시판에 있는 글이 보이는지 테스트한다

Login Join

Security Solution

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Membership

Join Us	Privacy Policy
---------	----------------

Join Us

Basic Info

...alb-144350439.ap-northeast-2.elb.amazonaws.com의 메시지
가입 완료

User ID: kg_cloud
 Password:
 Confirm Password:
 Name: kg
 Nickname: kg
 Mobile Phone Number: 010-2222-3333
 E-Mail: kg@kggame.com

확인

Submit Cancel



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Notice

No. Title Writer Date Read

1	KG & Cloud Computing	KGGAME	2021-10-27	1
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제목 submit

Prev 1 Next 글쓰기

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Notice

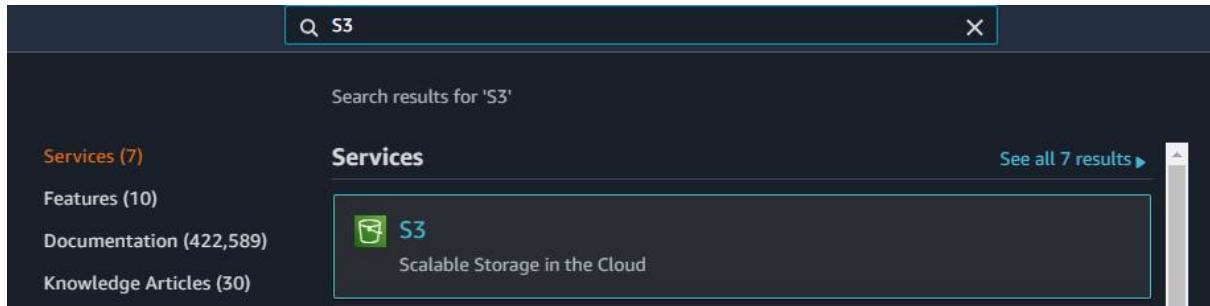
KG & Cloud Computing KGGAME | 조회 : 1 | 2021-10-27

KGGAME은 게임서버를 Cloud로 마이그레이션 하고 싶습니다.

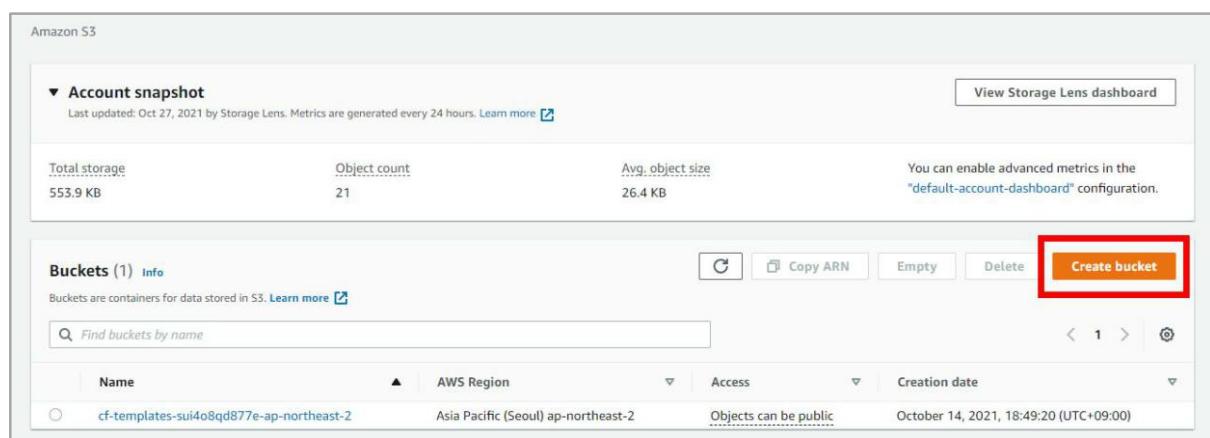
목록 글쓰기

14) S3 Storage 생성

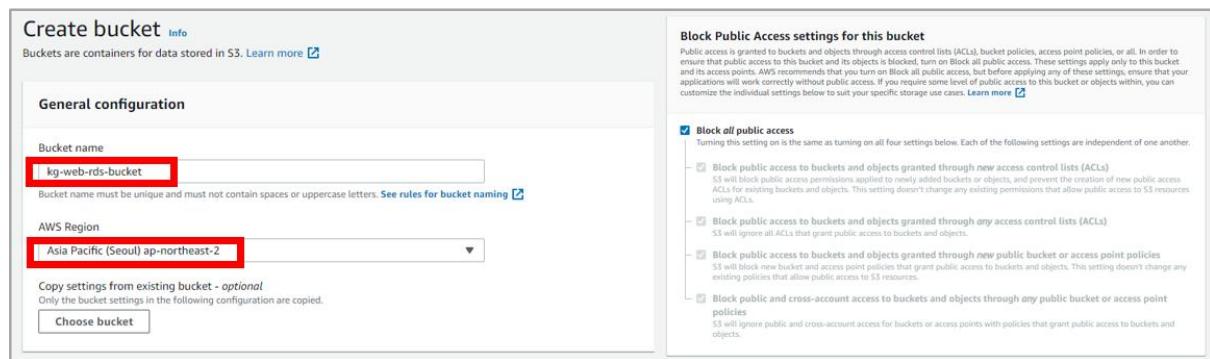
- 웹서버 데이터베이스의 백업데이터를 영구저장이 가능한 S3 스토리지로 이동한다.
- S3 버킷 생성



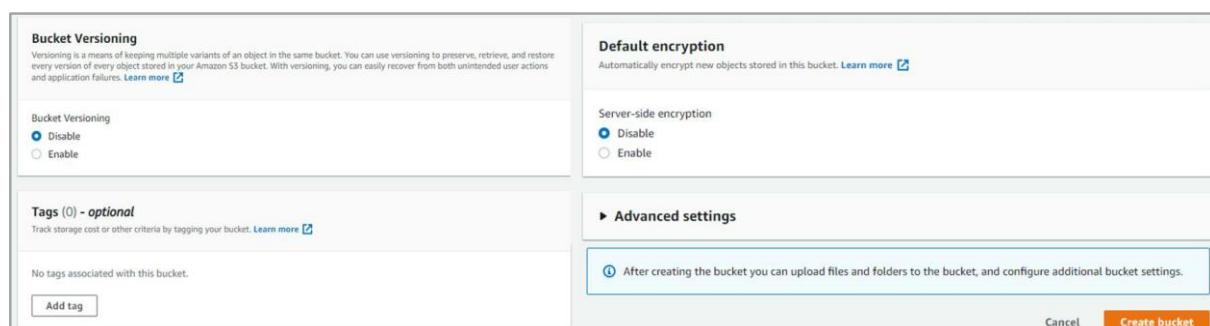
The screenshot shows the AWS search results for 'S3'. The top navigation bar has a search field containing 'S3'. Below it, a 'Services' section lists 'Services (7)', 'Features (10)', 'Documentation (422,589)', and 'Knowledge Articles (30)'. The main result is the 'S3' service card, which includes the text 'Scalable Storage in the Cloud' and a large orange 'Create bucket' button.



The screenshot shows the Amazon S3 dashboard. It features an 'Account snapshot' section with metrics like Total storage (553.9 KB), Object count (21), and Avg. object size (26.4 KB). Below this is a 'Buckets (1)' list with one entry: 'cf-templates-sui4o8qd877e-ap-northeast-2' located in 'Asia Pacific (Seoul) ap-northeast-2'. A red box highlights the 'Create bucket' button at the top right of the bucket list area.



The screenshot shows the 'Create bucket' configuration page. It includes sections for 'General configuration' (Bucket name: 'kg-web-rds-bucket', AWS Region: 'Asia Pacific (Seoul) ap-northeast-2'), 'Block Public Access settings for this bucket' (checkbox checked for 'Block all public access'), and 'Advanced settings' (Bucket Versioning: 'Disable', Default encryption: 'Disable'). A red box highlights the 'kg-web-rds-bucket' input field.



The screenshot continues the 'Create bucket' configuration. It shows 'Tags (0) - optional' (No tags associated with this bucket), 'Default encryption' (Server-side encryption: 'Disable'), and 'Advanced settings' (After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings). A red box highlights the 'Create bucket' button at the bottom right.

- AWS KMS에서 Key 생성

The screenshot shows the AWS search results for 'KMS'. The 'Key Management Service' card is highlighted, featuring the service icon, name, and tagline 'Securely Generate and Manage AWS Encryption Keys'.

AWS Key Management Service

Easily create keys and control encryption across AWS and beyond

AWS Key Management Service (KMS) is a managed service that makes it easy for you to create and manage keys and control the use of encryption across a wide range of AWS services. KMS is a secure and resilient service that uses FIPS 140-2 validated hardware security modules to isolate and protect your keys.

Get started now

You can create a key by clicking the button below.

Create a key

KMS > Customer managed keys > Create key

Configure key

Key type [Help me choose](#)

Symmetric
A single encryption key that is used for both encrypt and decrypt operations

Asymmetric
A public and private key pair that can be used for encrypt/decrypt or sign/verify operations

Advanced options

Cancel **Next**

KMS > Customer managed keys > Create key

Step 1 Configure key

Step 2 Add labels

Step 3 Define key administrative permissions

Step 4 Define key usage permissions

Step 5 Review

Add labels

Alias
You can change the alias at any time. [Learn more](#)

Description - optional
You can change the description at any time.

Tags - optional
You can use tags to categorize and identify your KMS key and help you track your AWS costs. When you add tags to AWS resources, AWS generates a cost allocation report for each tag. [Learn more](#)

Tag key Tag value - optional

Tags

Next

KMS > Customer managed keys > Create key

Step 1 Configure key

Step 2 Add labels

Step 3 Define key administrative permissions

Step 4 Define key usage permissions

Step 5 Review

Define key administrative permissions

Key administrators
Choose the IAM users and roles who can administer this key through the KMS API. You may need to add additional permissions for the users or roles to administer this key from this console. [Learn more](#)

Name	Path	Type
Amerie	/	User
meowamerie	/	User
testuser	/	User
aws-elasticbeanstalk-ec2-role	/	Role
aws-elasticbeanstalk-service-role	/	Role
AWSServiceRoleForAmazonElasticFileSystem	/aws-service-role/elasticfilesystem.amazonaws.com/	Role
AWSServiceRoleForApplicationAutoScaling_DynamoDBTable	/aws-service-role/dynamodb.application-autoscaling.amazonaws.com/	Role
AWSServiceRoleForAutoScaling	/aws-service-role/autoscaling.amazonaws.com/	Role
AWSServiceRoleForElasticBeanstalkManagedUpdates	/aws-service-role/managedupdates.elasticbeanstalk.amazonaws.com/	Role
AWSServiceRoleForElasticLoadBalancing	/aws-service-role/elasticloadbalancing.amazonaws.com/	Role

Key deletion

Allow key administrators to delete this key.

Cancel **Previous** **Next**

KMS > Customer managed keys > Create key

Step 1 Configure key

Step 2 Add labels

Step 3 Define key administrative permissions

Step 4 Define key usage permissions

Step 5 Review

Define key usage permissions

This account
Select the IAM users and roles that can use the KMS key in cryptographic operations. [Learn more](#)

Name	Path	Type
Amerie	/	User
meowamerie	/	User
testuser	/	User
aws-elasticbeanstalk-ec2-role	/	Role
aws-elasticbeanstalk-service-role	/	Role
AWSServiceRoleForAmazonElasticFileSystem	/aws-service-role/elasticfilesystem.amazonaws.com/	Role
AWSServiceRoleForApplicationAutoScaling_DynamoDBTable	/aws-service-role/dynamodb.application-autoscaling.amazonaws.com/	Role
AWSServiceRoleForAutoScaling	/aws-service-role/autoscaling.amazonaws.com/	Role
AWSServiceRoleForElasticBeanstalkManagedUpdates	/aws-service-role/managedupdates.elasticbeanstalk.amazonaws.com/	Role
AWSServiceRoleForElasticLoadBalancing	/aws-service-role/elasticloadbalancing.amazonaws.com/	Role

Other AWS accounts

Specify the AWS accounts that can use this key. Administrators of the accounts you specify are responsible for managing the permissions that allow their IAM users and roles to use this key. [Learn more](#)

Add another AWS account

Cancel **Previous** **Next**

KMS > Customer managed keys > Create key

Step 1
Configure key

Step 2
Add labels

Step 3
Define key administrative permissions

Step 4
Define key usage permissions

Step 5
Review

Review

Key configuration		
Key type Symmetric	Key spec SYMMETRIC_DEFAULT	Key usage Encrypt and decrypt
Origin AWS_KMS	Regionality Single-Region key	

ⓘ You cannot change the key configuration after the key is created.

Alias and description	
Alias KG-Web-Exports-Key	Description Used for RDS snapshot exports to S3 of the "database-1"

Tags	
Key	Value
Name	KG-Web-Exports-Key

Key policy

To change this policy, return to previous steps or edit the text here.

```

1 {
2   "Id": "key-consolepolicy-3",
3   "Version": "2012-10-17",
4   "Statement": [
5     {
6       "Sid": "Enable IAM User Permissions",
7       "Effect": "Allow",
8       "Principal": {
9         "AWS": "arn:aws:iam::483843322360:root"
10      },
11      "Action": "kms:*",
12      "Resource": "*"
13    }
14  ]
15 }

```

Cancel Previous Finish

Success
Your AWS KMS key was created with alias **KG-Web-Exports-Key** and key ID **345c8e89-ba75-4cd8-96ab-d38ac7df3cd3**.

KMS > Customer managed keys

Customer managed keys (1)

Filter keys by properties or tags

Aliases	Key ID	Status	Key spec	Key usage
KG-Web-Exports-Key	345c8e89-ba75-4cd8-96ab-d38ac7df3cd3	Enabled	SYMMETRIC_DEFAULT	Encrypt and decrypt

Key actions ▾ Create key

- KEY ARN을 따로 복사해서 다음 STEP에서 사용한다

KMS > Customer managed keys > Key ID: 345c8e89-ba75-4cd8-96ab-d38ac7df3cd3

345c8e89-ba75-4cd8-96ab-d38ac7df3cd3

General configuration

Alias KG-Web-Exports-Key	Status Enabled	Creation date Oct 28, 2021 15:12 GMT+9
ARN arn:aws:kms:ap-northeast-2:483843322360:key/345c8e89-ba75-4cd8-96ab-d38ac7df3cd3	Description Used for RDS snapshot exports to S3 of the "database-1"	Regionality Single Region

- RDS 데이터베이스의 자동으로 백업한 스냅샷을 S3로 추출한다

Amazon RDS

RDS > Automated backups

Current Region | Replicated | Retained

Current Region backups (1) info

DB name	Earliest restorable time	Latest restorable time	Engine	Encrypted
database-1	October 28, 2021, 5:14:22 AM UTC	October 28, 2021, 5:30:01 AM UTC	mysql	No

System snapshots (1)

rds:database-1-2021-10-28-05-14

Name	DB source	Creation time	Status	Progress	VPC
rds:database-1-2021-10-28-05-14	database-1	Thu Oct 28 2021 14:14:22 GMT+0900	available	Completed	vpc-0a3d018ce3b9ccceb

Amazon RDS

RDS > Snapshots > rds:database-1-2021-10-28-05-14

rds:database-1-2021-10-28-05-14

Details

ARN	Snapshot Creation Time
arn:aws:rds:ap-northeast-2:483843322360:snapshot:rds:database-1-2021-10-28-05-14	October 28, 2021, 5:14:22 AM UTC
Instance/Cluster Name	Instance/Cluster Creation
database-1	October 26, 2021, 12:41:24 PM UTC
Master username	VPC
careadmin	vpc-0a3d018ce3b9ccceb
DB snapshot name	Status
rds:database-1-2021-10-28-05-14	Available
Snapshot type	Storage type
automated	General Purpose SSD (gp2)
DB engine	DB storage
mysql	20 GiB
DB engine version	IOPS
5.7.34	-

Actions

- Restore snapshot
- Copy snapshot
- Share snapshot
- Migrate snapshot
- Export to Amazon S3**
- Delete snapshot

We added a new feature to export your snapshot to S3. Let us know what you think!

RDS > Snapshots > rds:database-1-2021-10-28-05-14 > Export to Amazon S3

Export to Amazon S3

RDS Snapshot Export to Amazon Simple Storage Service (Amazon S3) provides an automated method to extract data from a RDS snapshot and store it in a compressed, consistent, queryable format in an Amazon S3 bucket in your account. [Info](#)

Settings

Export identifier: kg-Web-RDS-Backup

Exported data format: Parquet

Amount of data to be exported:

- All (20 GB): All data in the database will be exported.
- Partial: Define which part of the database you want to export by using identifiers.

S3 destination

S3 bucket: kg-web-rds-bucket

S3 prefix - optional:

To group objects in a bucket, S3 uses a prefix before object names. The forward slash (/) in the prefix represents a folder. For example, use the prefix exports/2019/ for a 2019 folder in an exports folder. [Info](#)

IAM role

IAM role: Create a new role

IAM role name: kg-web-rds-exports-s3

- 보안을 위해 데이터를 암호화 해서 전송하도록 한다. 이 때 위에서 생성한 KMS Key의 ARN값을 KMS Key란에 입력한다.

Encryption

AWS KMS Key [Info](#)

Enter a key ARN

Amazon Resource Name (ARN)

arn:aws:kms:ap-northeast-2:483843322360:key/345c8e89-ba75-4cd8-96ab-d3e

Example: arn:aws:kms:<region>:<accountID>:key/<key-id>

Account: 483843322360

KMS key ID: 345c8e89-ba75-4cd8-96ab-d38ac7df3cd3

Pricing details

For snapshot data export to Amazon S3, the cost of exporting snapshot data is based on the snapshot size. [Learn more](#)

Additional charges apply for storing exported data in Amazon S3. [Learn more](#)

[Cancel](#) [Export to Amazon S3](#)

Starting export and provisioning resources required for KG-Web-RDS-Backup

RDS > Snapshots

Snapshots

Manual System Shared with me Public Backup service Exports in Amazon S3

Exports in Amazon S3 (1)

Name	Status	S3 bucket	Snapshot source	Snapshot time
kg-web-rds-backup	Starting	s3://kg-web-rds-bucket/kg-web-rds-backup	rds:database-1...	October 28, 2021, 5:14:10 AM UTC

The snapshot export KG-Web-RDS-Backup to S3 is complete.

RDS > Snapshots

Snapshots

Manual System Shared with me Public Backup service Exports in Amazon S3

Exports in Amazon S3 (1)

Name	Status	S3 bucket	Snapshot source	Snapshot time
kg-web-rds-backup	Complete	s3://kg-web-rds-bucket/kg-web-rds-backup	rds:database-1...	October 28, 2021, 5:14:10 AM UTC

- S3에 들어가서 추출한 데이터 확인

Amazon S3

Buckets Access Points Object Lambda Access Points Multi-Region Access Points Batch Operations Access analyzer for S3 Block Public Access settings for this account Storage Lens Dashboards AWS Organizations settings

Amazon S3

Account snapshot Storage lens provides visibility into storage usage and activity trends. Learn more View Storage Lens dashboard

Buckets (2) Info Buckets are containers for data stored in S3. Learn more

Name	AWS Region	Access	Creation date
cf-templates-9ui4c8qd877e-ap-northeast-2	Asia Pacific (Seoul) ap-northeast-2	Objects can be public	October 14, 2021, 18:49:20 (UTC+09:00)
kg-web-rds-bucket	Asia Pacific (Seoul) ap-northeast-2	Bucket and objects not public	October 28, 2021, 14:55:53 (UTC+09:00)

Amazon S3 > kg-web-rds-bucket

kg-web-rds-bucket

Objects Properties Permissions Metrics Management Access Points

Objects (1)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Name	Type	Last modified	Size	Storage class
kg-web-rds-backup/	Folder	-	-	-

Amazon S3 > kg-web-rds-bucket > kg-web-rds-backup/

kg-web-rds-backup/

[Copy S3 URI](#)

[Objects](#) [Properties](#)

Objects (3)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Name	Type	Last modified	Size	Storage class
care_db/	Folder	-	-	-
export_info_kg-web-rds-backup.json	json	October 28, 2021, 16:04:51 (UTC+09:00)	624.0 B	Standard
export_tables_info_kg-web-rds-backup_from_1_to_2.json	json	October 28, 2021, 16:04:50 (UTC+09:00)	3.7 KB	Standard

[C](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Find objects by prefix

Amazon S3 > kg-web-rds-bucket > kg-web-rds-backup/ > care_db/

care_db/

[Copy S3 URI](#)

[Objects](#) [Properties](#)

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Name	Type	Last modified	Size	Storage class
care_db.greet/	Folder	-	-	-
care_db.member/	Folder	-	-	-

[C](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Find objects by prefix

15) Route 53 - 도메인 등록

- 타사에서 구매한 도메인을 AWS Route 53을 통해 AWS에 등록

The screenshot shows two main sections of the AWS Route 53 console.

Route 53 Dashboard: This section provides an overview of various services. A red box highlights the "DNS management" section, which includes a "Create hosted zone" button. Other sections shown include "Traffic management", "Availability monitoring", and "Domain registration". Below these are "Readiness check" and "Routing control" sections, each showing a count of 0.

Create hosted zone: This section is titled "Create hosted zone" and contains the following fields:

- Hosted zone configuration:** A description of what a hosted zone is.
- Domain name:** Input field containing "ga1me2cloud3.online". Below it, a note specifies valid characters: a-z, 0-9, ! " # \$ % & ' () * + , - / : ; < = > ? @ [\] ^ _ { } . ~
- Description - optional:** Input field containing "KGPortfolio Domain". A note states the description can have up to 256 characters, with 18/256 currently used.
- Type:** A section where users can choose between "Public hosted zone" (selected) and "Private hosted zone". A note explains the difference: a public hosted zone routes traffic on the internet, while a private one routes traffic within an Amazon VPC.
- Tags:** A section for applying tags to the hosted zone. It includes a table for adding key-value pairs, with one entry: "Name" (Key) and "KGPortfolio Domain" (Value). Buttons for "Add tag" and "Remove tag" are present.
- Buttons at the bottom:** "Cancel" and "Create hosted zone" (highlighted in orange).

ga1me2cloud3.online was successfully created.
Now you can create records in the hosted zone to specify how you want Route 53 to route traffic for your domain.

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online Info

Delete zone Test record Configure query logging

Hosted zone details Edit hosted zone

Records (2) DNSSEC signing Hosted zone tags (1)

Records (1/2) Info
The following table lists the existing records in ga1me2cloud3.online. You can't delete the SOA record or the NS record named ga1me2cloud3.online.

Record name	Type	Routing policy	Value/Route traffic to
ga1me2cloud3.online	NS	Simple	ns-1411.awsdns-48.org, ns-902.awsdns-48.net, ns-398.awsdns-49.com, ns-1648.awsdns-14.co.uk
ga1me2cloud3.online	SOA	Simple	ns-1411.awsdns-48.org, awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400

- AWS 네임서버를 도메인 구매 사이트에 등록한다

ONLY DOMAINS

Domain Info i

Summary DNS Settings Contact Information History

Select the DNS (Domain Name System) option to use with your domain name(s). If you do not understand DNS we recommend that you:

Use OnlyDomains Name Servers ?

Delegate to Your Name Servers ?

Host Name:	IPv4 Address:
ns-1411.awsdns-48.org	
ns-902.awsdns-48.net	
ns-398.awsdns-49.com	
ns-1648.awsdns-14.co.uk	

eg. ns1.yourdns.com

eg. 203.36.226.21

DELEGATE TO YOUR NAME SERVERS

- 새로운 레코드 생성

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online [Info](#)

[Delete zone](#) [Test record](#) [Configure query logging](#)

[Edit hosted zone](#)

Hosted zone details

Records (3) [Info](#)

DNSSEC signing Hosted zone tags (1)

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

	Record name	Type	Value	Routing policy	Alias
www	CNAME	.ga1me2cloud3.online	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Simple routing	<input checked="" type="checkbox"/>
www	NS	ns-1411.awsdns-48.org. ns-902.awsdns-48.net. ns-398.awsdns-49.com. ns-1648.awsdns-14.co.uk.	Simple		
ga1me2cloud3.online	SOA	ns-1411.awsdns-48.org. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400	Simple		

[Create record](#)

Route 53 > Hosted zones > ga1me2cloud3.online > Create record

Quick create record [Info](#)

[Switch to wizard](#)

Record name [Info](#) Record type [Info](#) Value [Info](#) Alias

www .ga1me2cloud3.online CNAME – Routes traffic to another domain [n... ▾](#)

Valid characters: a-z, 0-9, ! " # \$ % & ' () * + , - / ; < = > ? @ [\] ^ _ { } . ~

TTL (seconds) [Info](#) Routing policy [Info](#)

300 Simple routing

+1m 1h 1d

Recommended values: 60 to 172800 (two days)

Add another record

[Create records](#)

Record for ga1me2cloud3.online was successfully created.

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online [Info](#)

[Delete zone](#) [Test record](#) [Configure query logging](#)

[Edit hosted zone](#)

Hosted zone details

Records (3) [Info](#)

DNSSEC signing Hosted zone tags (1)

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

	Record name	Type	Value	Routing policy	Alias
www	CNAME	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Simple		<input checked="" type="checkbox"/>
ga1me2cloud3.online	NS	ns-1411.awsdns-48.org. ns-902.awsdns-48.net. ns-398.awsdns-49.com. ns-1648.awsdns-14.co.uk.	Simple		
ga1me2cloud3.online	SOA	ns-1411.awsdns-48.org. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400	Simple		

- 로컬 PC 혹은 Bastion Host에서 nslookup로 확인한다
- 먼저 웹서버로 들어갈 ALB의 DNS이름으로 확인한다
- 방금 등록한 www.ga1me2cloud3.online으로 확인한다

(주의사항: 루트 도메인 최초 등록은 약 1일정도 걸린다)

```
ubuntu@ip-10-0-1-184:~$ nslookup
> KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:  KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com
Address: 52.79.37.51
Name:  KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com
Address: 3.37.22.174
Name:  KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com
Address: 15.165.245.149
Name:  KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com
Address: 52.78.236.186
> www.ga1me2cloud3.online
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
www.ga1me2cloud3.online canonical name = kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com.
Name:  kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com
Address: 15.165.245.149
Name:  kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com
Address: 3.37.22.174
Name:  kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com
Address: 52.79.37.51
Name:  kgwebalb-144350439.ap-northeast-2.elb.amazonaws.com
Address: 52.78.236.186
```

- 도메인 www.ga1me2cloud3.online으로 접속확인



16) SSL/TLS 등록

현재 웹서버에 접속 시 HTTPS가 아닌 HTTP로 접속된다. URL 옆에 “안전하지 않음”이라고 나온다.
현재 www.ga1me2cloud3.online로 받은 SSL Certificate으로 로드밸런서에 등록을 해본다.

- SSL/TLS를 ACM에 등록한다

The screenshot shows the AWS Certificate Manager interface for importing a certificate. It consists of two main sections: 'Input certificate details' and 'Add Tags'.

Input certificate details:

- Step 1: Input certificate details**: This step contains fields for 'Certificate body', 'Certificate private key', and 'Certificate chain - optional'. Each field has a 'Info' link and a scrollable text area containing PEM-encoded data.
- Step 2: Add Tags**: A 'Tags' section with a 'Info' link and a table for adding metadata. It includes columns for 'Tag key' (with a 'Name' input field), 'Tag value - optional' (with a 'ga1me2cloud3.online' input field), and 'Remove tag'.
- Step 3: Review and import**: A summary of the selected certificate and its tags.

Add Tags:

- A 'Tags' section with a 'Info' link and a table for adding metadata. It includes columns for 'Tag key' (with a 'Name' input field), 'Tag value - optional' (with a 'ga1me2cloud3.online' input field), and 'Remove tag'.
- A note at the bottom says 'You can add 49 more tag(s.)'.

At the bottom of each step, there are 'Cancel', 'Previous', and 'Next' buttons. The 'Next' button is highlighted in orange.

Introducing the new AWS Certificate Manager experience
We are continuously improving the new experience and adding features. [Let us know what you think.](#)

Successfully imported certificate with ID f41cc793-e1a3-4937-aafc-87e1da78fb95
You have successfully imported a certificate into your account in AWS Certificate Manager. No further action is needed at this time.

[View certificate](#)

AWS Certificate Manager > Certificates

Certificates (1)

Certificate ID	Domain name	Type	Status	In use?	Renewal eligibility
f41cc793-e1a3-4937-aafc-87e1da78fb95	ga1me2cloud3.online	Imported	Issued	No	Ineligible

- ALB의 Listeners에 HTTPS 추가

New EC2 Experience Tell us what you think

Create Load Balancers Actions

EC2 Dashboard EC2 Global View Events Tags Limits

Instances Instances Instances Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations

Name DNS name State VPC ID Availability Zones Type Created

KGWebALB KGWebALB-144350439 ap-northeast-2.elb.amazonaws.com vpc-0a3d918ce3b9ccab ap-northeast-2c, ap-northeast-2a classic October

ServiceTest-ALB ServiceTest-ALB-724639285 ap-northeast-2.elb.amazonaws.com Active vpc-05c02c3a7ae82e35 ap-northeast-2a, ap-northeast-2c application October

Load balancer: KGWebALB

Description Instances Health check **Listeners** Monitoring Tags Migration

The following listeners are currently configured for this load balancer:

Load Balancer Protocol	Load Balancer Port	Instance Protocol	Instance Port	Cipher	SSL Certificate
HTTP	80	HTTP	80	N/A	N/A
HTTPS (Secure HTTP)	443	HTTP	80	N/A	Change

Edit

Edit listeners

The following listeners are currently configured for this load balancer:

Load Balancer Protocol	Load Balancer Port	Instance Protocol	Instance Port	Cipher	SSL Certificate
HTTP	80	HTTP	80	N/A	Remove
HTTPS (Secure HTTP)	443	HTTP	80	Change	Change Remove

Add

Cancel **Save**

Select Certificate

AWS Certificate Manager (ACM) is the preferred tool to provision and store server certificates. If you previously stored a server certificate using IAM, you can deploy it to your load balancer. [Learn more](#) about HTTPS/SSL listeners and certificate management.

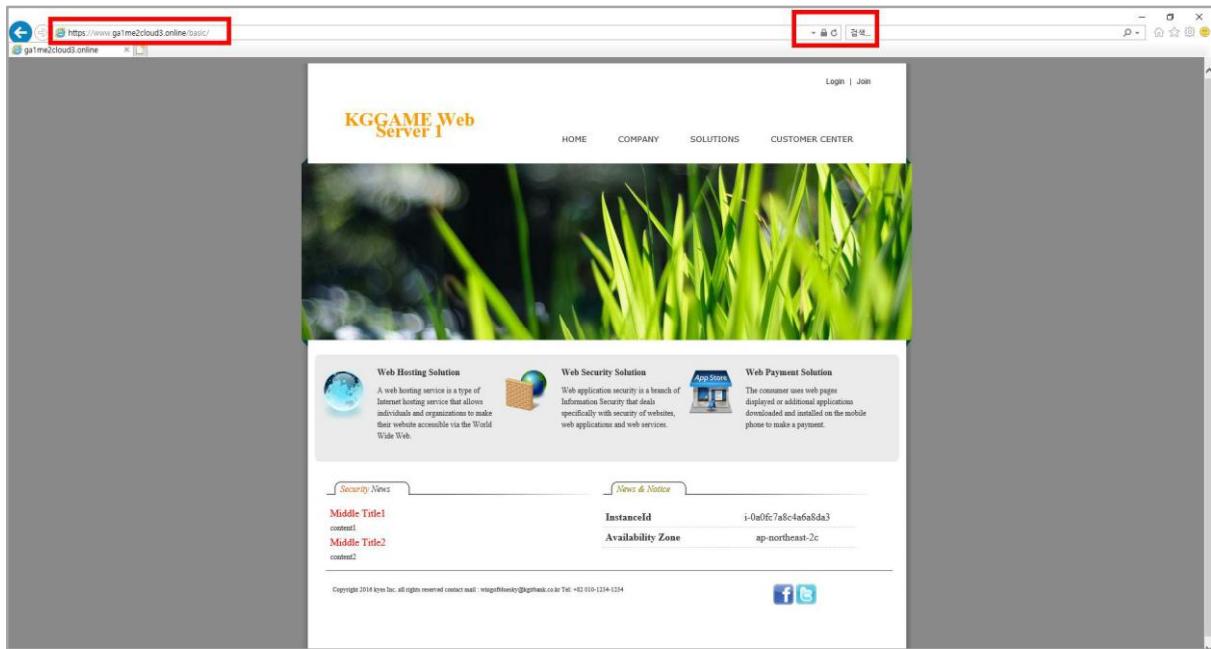
Certificate type: Choose a certificate from ACM (recommended)
 Choose a certificate from IAM
 Upload a certificate to IAM

Request a new certificate from ACM
AWS Certificate Manager makes it easy to provision, manage, deploy, and renew SSL Certificates on the AWS platform. ACM manages certificate renewals for you. [Learn more](#)

Certificate: **ga1me2cloud3.online (f41cc793-e1a3-4937-aafc-87e1da78fb95)**

Cancel **Save**

- ALB의 DNS로 다시 접속해본다 – HTTPS로 접속성공



17) CloudFront 설정 – CDN (웹서버)

ap-northeast-2리전의 주변에 있는 유저들이 접근을 했을 때 속도가 빠르지만 미국이나 유럽에 있는 웹유저들이 접속하기에는 속도가 느리다. 여기서 AWS의 CloudFront로 CDN을 구축한 뒤 미국에 있는 유저들의 접속속도를 테스트해본다.

- CDN 구축 전 스피드 테스트 (미국 뉴욕에서 접속 시 1.7초)

The screenshot shows a website speed test interface. At the top, it says "Website Speed Test" with a subtitle about testing website speed in real browsers. Below that, there's a "Starting URL" input field containing "http://www.ga1me2cloud3.online", a "From Locations" dropdown set to "New York", and a green "Run Test" button. Underneath, it says "Test Options: New York, North America, Desktop, Chrome, 1920x1080 HDTV, No Throttling".

The main results section shows the following data:

Location	Test Result
New York	1.7 Seconds Average First Visit
New York	0.9 Seconds Average Repeat Visit

Below the results, there's a table with columns for Website Preview, Location, Load Time First Visit, Load Time Repeat Visit, Performance, Best Practice, and SEO. The "New York" row shows values: 1.7 s, 95 KB, 0.9 s, 1 KB, 100, 73, 68.

- CloudFront 설정

The screenshot shows the Amazon CloudFront landing page. It features the heading "Amazon CloudFront" and the subtext "Securely deliver content with low latency and high transfer speeds". A call-to-action button at the bottom right says "Create a CloudFront distribution".

At the bottom left, there's a small note: "Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency and high transfer speeds."

Create distribution

Origin

Origin domain
Choose an AWS origin, or enter your origin's domain name.

Protocol info

- HTTP only
- HTTPS only
- Match viewer

HTTP port
Enter your origin's HTTP port. The default is port 80.
80

HTTPS port
Enter your origin's HTTPS port. The default is port 443.
443

Minimum origin SSL protocol Info
The minimum SSL protocol that CloudFront uses with the origin.

- TLSv1.2
- TLSv1.1
- TLSv1
- SSLv3

Origin path - optional Info
Enter a URL path to append to the origin domain name for origin requests.

Name
Enter a name for this origin.

Add custom header - optional
CloudFront includes this header in all requests that it sends to your origin.

Enable Origin Shield Info
Origin Shield is an additional caching layer that can help reduce the load on your origin and help protect its availability.

- No
- Yes

Additional settings

Default cache behavior

Path pattern Info
Default (*)

Compress objects automatically Info
 Yes

Viewer

Viewer protocol policy

- HTTP and HTTPS
- Redirect HTTP to HTTPS
- HTTPS only

Cache policy and origin request policy (recommended)

- Cache policy and origin request policy (recommended)
- Legacy cache settings

Cache policy
Choose an existing cache policy or create a new one.

CachingOptimized Default policy when CF compression is enabled
 CachingOptimized

Origin request policy - optional
Choose an existing origin request policy or create a new one.

Select origin policy Create policy

Additional settings

Function type	Function ARN / Name	Include body
Viewer request	No association	
Viewer response	No association	
Origin request	No association	
Origin response	No association	

Function associations - optional Info
Choose an edge function to associate with this cache behavior, and the CloudFront event that invokes the function.

주의사항:

Custom SSL certificate 을 먼저 등록해줘야 한다. 현재 US East(N.Virginia) 리전만 적용이 가능하므로 상단 Certificate Manager에서 등록했던 것과 동일하게 US East(N.Virginia) 리전의 ACM에도 SSL Certificate를 등록해줘야 한다

Settings

Price class Info
Choose the price class associated with the maximum price that you want to pay.

- Use all edge locations (best performance)
- Use only North America and Europe
- Use North America, Europe, Asia, Middle East, and Africa

AWS WAF web ACL optional
Choose the web ACL in AWS WAF to associate with this distribution.

Alternate domain name (CNAME) optional
Add the custom domain names that you use in URLs for the files served by this distribution.

Custom SSL certificate optional
Associate a certificate from AWS Certificate Manager. The certificate must be in the US East (N. Virginia) Region (us-east-1).

ga1me2cloud3.online (9ab7a0b3-58da-4ce6-b904-f82710aec383) Request certificate

Description optional

Cancel **Save changes**

- Route 53에서 해당 Cloudfront Distribution을 A레코드 형식으로 등록해준다.

The screenshot shows the 'Hosted zones (1)' section of the Route 53 console. It lists one hosted zone: 'ga1me2cloud3.online'. The details are as follows:

Domain name	Type	Created by	Record count	Description	Hosted zone ID
ga1me2cloud3.online	Public	Route 53	4	KGPortfolio Domain	Z02533853UPQ10NVA7XV5

The screenshot shows the 'Records (4)' tab of the hosted zone 'ga1me2cloud3.online'. It displays four records:

Record name	Type	Routing policy	Value/Route traffic to
ga1me2cloud3.online	NS	Simple	ns-1411.awsdns-48.org. ns-902.awsdns-48.net. ns-398.awsdns-49.com. ns-1648.awsdns-14.co.uk.
ga1me2cloud3.online	SOA	Simple	ns-1411.awsdns-48.org. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
_lead8927be9b9d58a9bb17bcd9b6cffc3....	CNAME	Simple	9D80A0F706D24EF171E1552E5A48797A.F9EAD8F62B8A2E7FEDB9D1E05FDB27C.ac1a7e2...
www.ga1me2cloud3.online	CNAME	Simple	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com

The screenshot shows the 'Create record' page for the hosted zone 'ga1me2cloud3.online'. The 'Quick create record' section is filled out as follows:

Record name: blog	Record type: A – Routes traffic to an IPv4 address and so...	Route traffic to: Alias
Valid characters: a-z, 0-9, ! # \$ % & ' () * + , - / : ; < = > ? @ [\] ^ _ { } . ~		Alias to CloudFront distribution: US East (N. Virginia)
Routing policy: Simple routing		Evaluate target health: No

At the bottom right, there are 'Add another record', 'Cancel', and 'Create records' buttons.

Record for ga1me2cloud3.online was successfully created.

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online [Info](#)

[Delete zone](#) [Test record](#) [Configure query logging](#)

Hosted zone details [Edit hosted zone](#)

[Records \(5\)](#) [DNSSEC signing](#) [Hosted zone tags \(1\)](#)

Records (5) [Info](#)

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

<input type="checkbox"/> Record name	Type	Routin...	Differ...	Value/Route traffic to
<input type="checkbox"/> ga1me2cloud3.online	A	Simple	-	d22wx5587qjqud.cloudfront.net.
<input type="checkbox"/> ga1me2cloud3.online	NS	Simple	-	ns-1411.awsdns-48.org. ns-902.awsdns-48.net. ns-398.awsdns-49.com. ns-1648.awsdns-14.co.uk
<input type="checkbox"/> ga1me2cloud3.online	SOA	Simple	-	ns-1411.awsdns-48.org. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
<input type="checkbox"/> _lead8927be9b9d58a9bb17bcd9b6cffc3....	CNAME	Simple	-	9D80A0F706D24EF171E1552E5A48797A.F9EAD8F6288A2E7FEDB09D1E05FDB27C.ac1a7e2
<input type="checkbox"/> www.ga1me2cloud3.online	CNAME	Simple	-	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com

- CDN 구축 후 스피드 테스트 (미국 뉴욕에서 접속 시 0.3초 즉 82% 빨라졌다)

<http://ga1me2cloud3.online> [●](#)

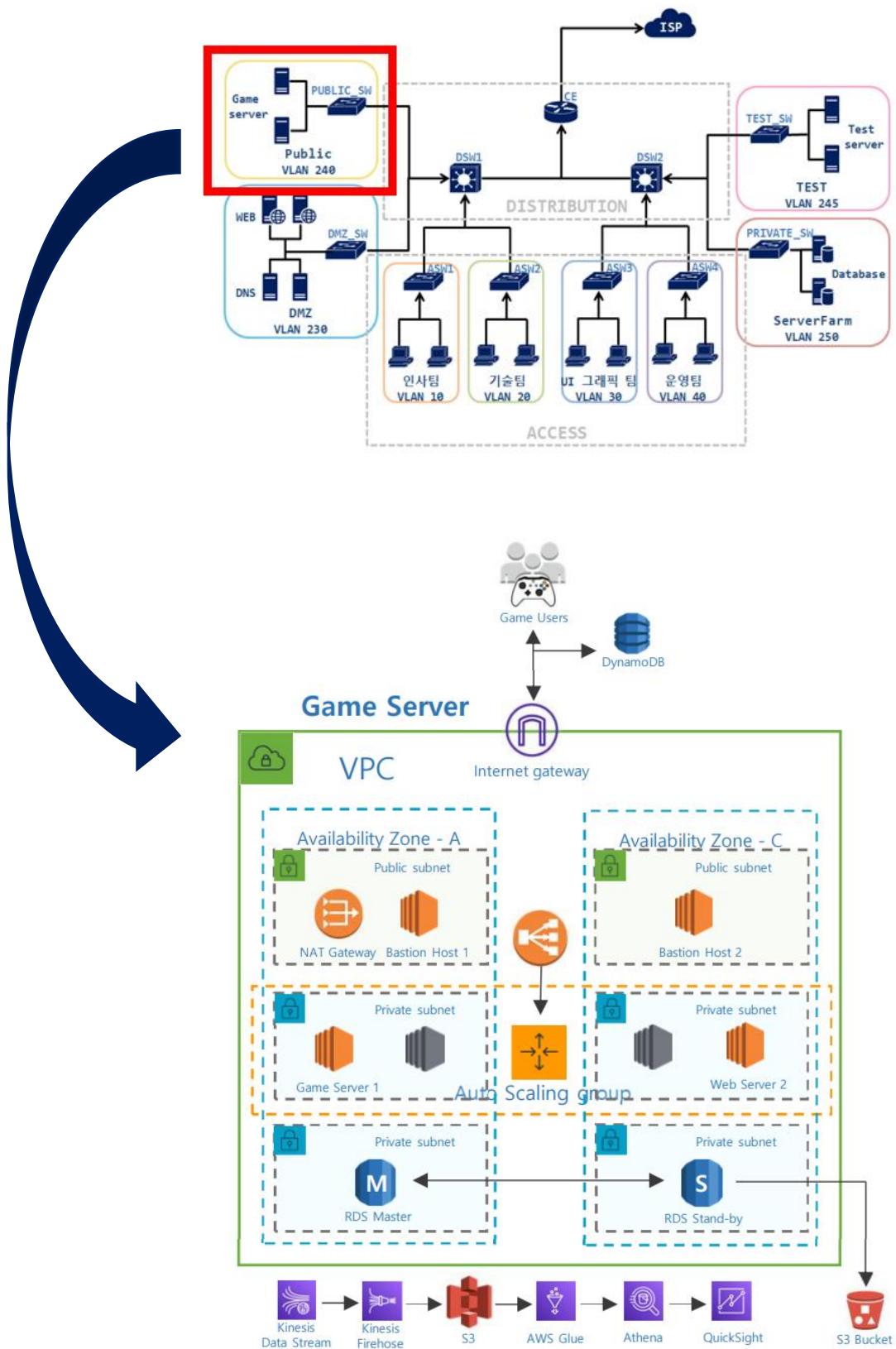
Website Speed Test Summary Report [Login](#)

New York Locations [Desktop, Chrome, 1920x1080 HDTV](#) [No Throttling](#)

Test Time: 10/28/2021 1:55:57 AM

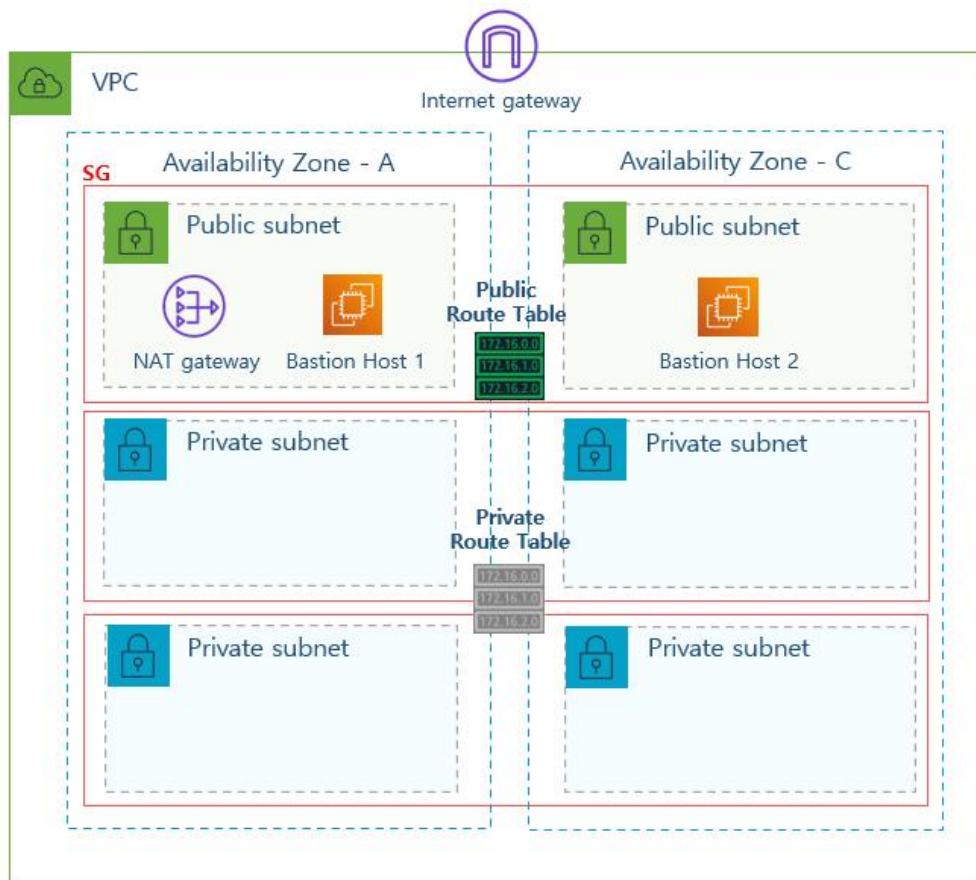
1 of 1 Locations	1 of 1 Locations	0.3 Seconds	0.1 Seconds
Checks Complete	Errors From	Average First Visit	Average Repeat Visit
Website Preview	Location	Load Time First Visit	Load Time Repeat Visit
New York	0.3 s 915 B	0.1 s 915 B	Temporary Unavailable

2. Game Server VPC – 게임서버

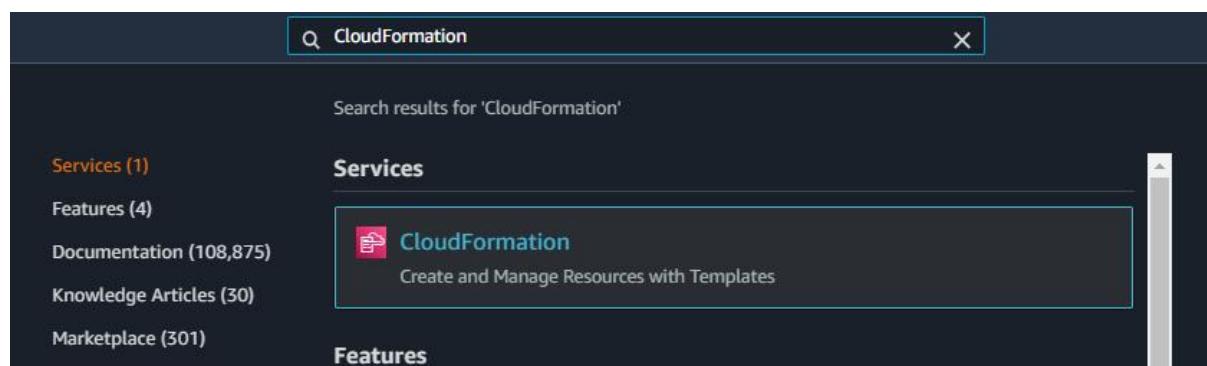


1) CloudFormation Stack 생성

- 북미 및 유럽권 진출 시 자동배포 시스템을 사용해야 하므로 게임서버 기본 구성은 자동 배포 서비스인 CloudFormation을 이용해서 구축한다.
- 기본 구성 토플로지 (CloudFormation에 사용한 Json파일은 [링크를 클릭](#)해서 확인가능)



- CloudFormation에서 Stack 생성



CloudFormation > Stacks				
Stacks (1) C Delete Update Stack actions ▾ Create stack ▾				
Stack name	Status	Created time	Description	
CloudFormation-Test	CREATE_COMPLETE	2021-10-16 14:34:07 UTC+0900	KGITBANK AWS Exam For Training Class	

CloudFormation > Stacks > Create stack

Create stack

Step 1 Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Prerequisite - Prepare template

Prepare template
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

Template is ready Use a sample template Create template in Designer

Specify template
A template is a JSON or YAML file that describes your stack's resources and properties.

Template source
Selecting a template generates an Amazon S3 URL where it will be stored.

Amazon S3 URL Upload a template file

Upload a template file
 AWS_KGGAME_CloudFormation_v1.json
JSON or YAML formatted file

S3 URL: https://s3.ap-northeast-2.amazonaws.com/cf-templates-sui4o8qd877e-ap-northeast-2/202130104c-AWS_KGGAME_CloudFormation_v1.json

Cancel **Next**

CloudFormation > Stacks > Create stack

Specify stack details

Step 1 Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Stack name

Stack name
KG-Game-Server-CloudFormation
Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters
Parameters are defined in your template and allow you to input custom values when you create or update a stack.

InstanceType
EC2 instance type

KeyName
Name of an existing EC2 KeyPair to enable SSH access to the instance

SSHLocation
The IP address range that can be used to SSH to the EC2 instances

Cancel **Previous** **Next**

CloudFormation > Stacks > Create stack

Configure stack options

Step 1 Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Tags

You can specify tags (key-value pairs) to apply to resources in your stack. You can add up to 50 unique tags for each stack. [Learn more](#)

Key	Value	Remove
-----	-------	--------

Add tag

Permissions

Choose an IAM role to explicitly define how CloudFormation can create, modify, or delete resources in the stack. If you don't choose a role, CloudFormation uses permissions based on your user credentials. [Learn more](#)

IAM role - optional
Choose the IAM role for CloudFormation to use for all operations performed on the stack.

IAM role name	Sample-role-name	▼	Remove
---------------	------------------	---	--------

Stack failure options

Behavior on provisioning failure
Specify the roll back behavior for a stack failure. [Learn more](#)

Roll back all stack resources
Roll back the stack to the last known stable state.

Preserve successfully provisioned resources
Preserves the state of successfully provisioned resources, while rolling back failed resources to the last known stable state. Resources without a last known stable state will be deleted upon the next stack operation.

CloudFormation > Stacks > Create stack

Review KG-Game-Server-CloudFormation

Step 1: Specify template

Edit

Template

Template URL
https://s3.ap-northeast-2.amazonaws.com/cf-templates-sui4o8qd877e-ap-northeast-2/2021301g2C-AWS_KGGAME_CloudFormation_v1.json

Stack description
KG GAME - Server Automatic Configuration with CloudFormation

Estimate cost

Step 2: Specify stack details

Edit

Parameters (3)

Key	Value
InstanceType	t2.micro
KeyName	jobClassSeoulRegionKey
SSHLocation	20.0.0.0/16

Stack creation options

Timeout
-

Termination protection
Disabled

▶ Quick-create link

Cancel Previous Create change set **Create stack**

The screenshots illustrate the creation of two CloudFormation stacks: 'KG-Game-Server-CloudFormation' and 'CloudFormation-Test'. The first stack is currently in progress, while the second is complete.

- Screenshot 1:** Shows the 'Events' tab for the 'KG-Game-Server-CloudFormation' stack. One event is listed: 'CREATE_IN_PROGRESS' at 2021-10-28 19:34:40 UTC+0900. The status reason is 'User Initiated'.
- Screenshot 2:** Shows the 'Events' tab for the same stack after completion. 67 events are listed, all with status 'CREATE_COMPLETE'. These include various resources like RouteTableAssociation, GameServerInstance, PrivateRoute, and Subnets.
- Screenshot 3:** Shows the 'Events' tab for the 'KG-Game-Server-CloudFormation' stack again, but now it is marked as 'CREATE_COMPLETE' in the stack list. No events are listed under the 'Events' tab for this stack.

- CloudFormation으로 생성한 VPC, Route Table, Security Group, NAT Gateway, 인스턴스 등을 확인한다.

The screenshot shows the 'Details' tab for a VPC named 'vpc-0f4b5f46323ad270e / KG_Game_VPC'. Key details include:

- VPC ID:** vpc-0f4b5f46323ad270e
- Tenancy:** Default
- Default VPC:** No
- Owner ID:** 483843322360
- State:** Available
- DHCP options set:** dopt-71d19c1a
- IPv4 CIDR:** 20.0.0.0/16
- Main route table:** rtb-00230ddcd8087272f6
- IPv6 CIDR (Network border group):** -
- Main hostnames:** Enabled
- DNS resolution:** Enabled
- Main network ACL:** acl-0b4230da1f52d3920d
- Route 53 Resolver DNS Firewall rule groups:** -

Subnets (6) Info

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
KG_Game_Public_Subnet_1	subnet-0cbdd7f7e03fa226	Available	vpc-0f4b5f46323ad270e KG...	20.0.1.0/24	-	249
KG_Game_Private_Subnet_1_a	subnet-0f499d7f1f16ab7831	Available	vpc-0f4b5f46323ad270e KG...	20.0.10.0/24	-	250
KG_Game_Private_Subnet_2_c	subnet-045af142fcccc1cb6b	Available	vpc-0f4b5f46323ad270e KG...	20.0.20.0/24	-	250
KG_GameDB_Private_Subnet_2_c	subnet-013d6be5c3140f840	Available	vpc-0f4b5f46323ad270e KG...	20.0.40.0/24	-	251
KG_Game_Public_Subnet_2	subnet-09196cd47c8f25b78	Available	vpc-0f4b5f46323ad270e KG...	20.0.2.0/24	-	250
KG_GameDB_Private_Subnet_1_a	subnet-095afda82940c6159	Available	vpc-0f4b5f46323ad270e KG...	20.0.30.0/24	-	251

Route tables (3) Info

Name	Route table ID	Explicit subnet associations	Edge associations	Main	VPC	Owner ID
	rtb-00230dcf8087272f6	-	-	Yes	vpc-0f4b5f46323ad270e KG...	483843322360
KG_Game_Private_RouteTable	rtb-02489fb629c79c122	4 subnets	-	No	vpc-0f4b5f46323ad270e KG...	483843322360
KG_Game_Public_RouteTable	rtb-02b75dde515dbba2	2 subnets	-	No	vpc-0f4b5f46323ad270e KG...	483843322360

- Public Subnet은 현재 Internet Gateway과 연결상태

rtb-02b75dde515dbba2 / KG_Game_Public_RouteTable

Details Info

Route table ID rtb-02b75dde515dbba2	Main No	Explicit subnet associations 2 subnets	Edge associations -
VPC vpc-0f4b5f46323ad270e KG_Game_VPC	Owner ID 483843322360		

Routes (2)

Destination	Target	Status	Propagated
20.0.0.0/16	local	Active	No
0.0.0.0/0	igw-0294b3aa87d9e90aa	Active	No

Security Groups (2) Info

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound rules count
KG_Game_S...	sg-01deb2c207a7d89379	KG_Game_SG_Bastion	vpc-0f4b5f46323ad270e	Enable SSH access via ...	483843322360	1 Permission entry	1 Permission entry
KG_Gam...	sg-06bde926d0ed74a75	KG_Game_SG_Private	vpc-0f4b5f46323ad270e	Enable SSH, ICMP, HTTP	483843322360	2 Permission entries	1 Permission entry

Instances (2) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 address
KG_Game_Bastion_1	i-0521a6bb7981c838	Running	t2.micro	Initializing	No alarms	ap-northeast-2a	ec2-13-209-9-126.ap...	13.209.9.126
KG_Game_Bastion_2	i-0b6ef3916eb28cf5a	Running	t2.micro	Initializing	No alarms	ap-northeast-2c	ec2-3-34-3-7.ap.northe...	3.34.3.7

- Availability a에 있는 Bastion Host 1 확인 (외부 통신확인)

EC2 > Instances > i-082d36117d5d5280c

Instance summary for i-082d36117d5d5280c (KG_Game_Bastion_1)

Updated less than a minute ago

Instance ID	Public IPv4 address	Private IPv4 addresses
i-082d36117d5d5280c (KG_Game_Bastion_1)	3.34.255.139 open address	20.0.1.247
IPv6 address	Instance state	Public IPv4 DNS
-	Running	ec2-5-34-255-139.ap-northeast-2.compute.amazonaws.com open address

```
[ec2-user@ip-20-0-1-247 ~]$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=101 time=26.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=101 time=26.5 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=101 time=26.5 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 26.546/26.559/26.574/0.011 ms
```

- Availability c에 있는 Bastion Host 2 확인 (외부 통신확인)

EC2 > Instances > i-05221a6bb7981c838

Instance summary for i-05221a6bb7981c838 (KG_Game_Bastion_2)

Updated less than a minute ago

Instance ID	Public IPv4 address	Private IPv4 addresses
i-05221a6bb7981c838 (KG_Game_Bastion_2)	13.209.9.126 open address	20.0.1.221
IPv6 address	Instance state	Public IPv4 DNS
-	Running	ec2-13-209-9-126.ap-northeast-2.compute.amazonaws.com open address

```
[ec2-user@ip-20-0-1-221 ~]$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=32.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=32.3 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=32.2 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 32.236/32.272/32.317/0.210 ms
```

- 기본 세팅

```
[ec2-user@ip-20-0-1-221 ~]$ aws configure
AWS Access Key ID [None]:
AWS Secret Access Key [None]:
Default region name [None]: ap-northeast-2
Default output format [None]: json
```

2) 자동확장용 게임서버 생성

- User Data 다운받기 (부하테스트용)

```
[ec2-user@ip-20-0-1-221 ~]$ wget https://s3.ap-northeast-2.amazonaws.com/sysops-test.kukuboor.com/UserData.txt
--2021-10-28 14:42:43- https://s3.ap-northeast-2.amazonaws.com/sysops-test.kukuboor.com/UserData.txt
Resolving s3.ap-northeast-2.amazonaws.com (s3.ap-northeast-2.amazonaws.com)... 52.219.58.146
Connecting to s3.ap-northeast-2.amazonaws.com (s3.ap-northeast-2.amazonaws.com)|52.219.58.146|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 303 [text/plain]
Saving to: 'UserData.txt'

100%[=====] 303      ---K/s   in 0s

2021-10-28 14:42:43 (10.5 MB/s) - 'UserData.txt' saved [303/303]

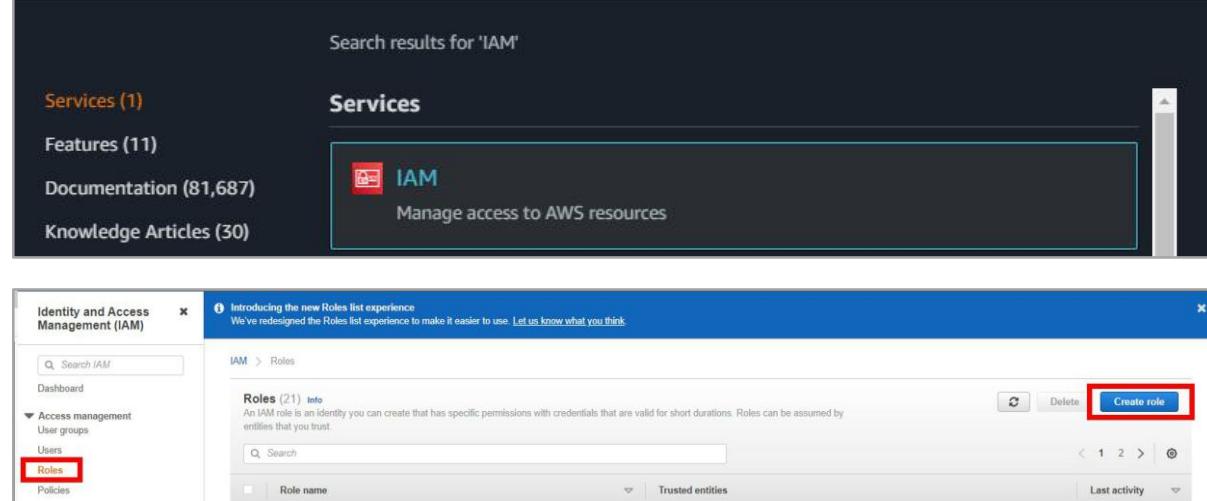
[ec2-user@ip-20-0-1-221 ~]$ ll
total 4
-rw-rw-r-- 1 ec2-user ec2-user 303 Nov  3 2020 UserData.txt
[ec2-user@ip-20-0-1-221 ~]$ cat UserData.txt
#!/bin/bash
# Install Apache Web Server and PHP
yum install -y httpd mysql php
# Download Lab files
wget https://s3.ap-northeast-2.amazonaws.com/sysops-test.kukuboor.com/lab-app-Loadtest.zip
unzip lab-app-Loadtest.zip -d /var/www/html/
# Turn on web server
chkconfig httpd on
```

- 자동확장용 게임서버 원본 생성

```
[ec2-user@ip-20-0-1-221 ~]$ aws ec2 run-instances --key-name jobClassSeoulRegionKey --instance-type t2.micro --image-id ami-0e4a9ad2eb120e054 --user-data https://s3.ap-northeast-2.amazonaws.com/sysops-test.kukuboor.com/UserData.txt --security-group-ids sg-01150ea705b8c4600 --subnet-id subnet-079d66557efcfe9b --associate-public-ip-address --tag-specifications 'ResourceType=instance,Tags=[{Key=Name,Value=KGGameServerBaseImage}]' --output text --query 'Instances[*].InstanceId'
i-030d6e805fbbed2f
```

3) Kinesis Data Stream 설정 및 연결 (게임서버 원본에서 설정)

- Kinesis 전용 role 생성



Create role

Select type of trusted entity

Choose a use case

Common use cases

- EC2** Allows EC2 Instances to call AWS services on your behalf
- Lambda** Allows Lambda functions to call AWS services on your behalf

Or select a service to view its use cases

API Gateway	CloudWatch Events	EMR	IoT StepWise	RAM
AWS Backup	CodeBuild	EMR Containers	IoT Things Graph	RDS
AWS Chatbot	CodeDeploy	ElasticCache	KMS	Redshift
AWS Marketplace	CodeGuru	Elastic Beanstalk	Kinesis	Rekognition
AWS Support	CodeStar Notifications	Elastic Container Registry	Lake Formation	RoboMaker
Amazon OpenSearch Service	Comprehend	Elastic Container Service	Lambda	S3
Amplify	Config	Elastic Transcoder	Lex	SMS
AppStream 2.0	Connect	Elastic LoadBalancing	License Manager	SNS
AppSync	Data Lifecycle Manager	EventBridge	MQ	SWF
Application Auto Scaling	Data Pipeline	Forecast	MSK Connect	SageMaker
Application Discovery Service	Databrew	GameLift	Machine Learning	Security Hub
Application Migration Service	DataSync	Global Accelerator	Macie	Service Catalog
Application Migration Service	Glue	Managed Blockchain	Step Functions	

[Cancel](#) [Next: Permissions](#)

Create role

Attach permissions policies

Choose one or more policies to attach to your new role.

[Create policy](#)

Filter policies Showing 10 results

Policy name	Used as
AmazonKinesisFirehoseFullAccess	None
AmazonSQFullAccess	Permissions policy (2)
AmazonKinesisFullAccess	None
AmazonKinesisReadOnlyAccess	None
AmazonKinesisVideoStreamsFullAccess	None
AmazonKinesisVideoStreamsReadOnlyAccess	None
AWSLambdaKinesisExecutionRole	None
DynamoDBKinesisReplicationServiceRolePolicy	None

Set permissions boundary

Set a permissions boundary to control the maximum permissions this role can have. This is an advanced feature used to delegate permission management to others. Learn more

Create role without a permissions boundary

Use a permissions boundary to control the maximum role permissions

Create role

Add tags (optional)

IAM tags are key-value pairs you can add to your role. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this role. [Learn more](#)

Key	Value (optional)	Remove
Name	Kinesis_Data_Stream	X
Add new key		

You can add 49 more tags.

* Required [Cancel](#) [Previous](#) [Create role](#)

The role kinesis-demo has been created.

IAM > Roles

Roles (22) [Info](#)

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

1 match

Role name	Trusted entities	Last activity
kinesis-demo	AWS Service: ec2	

[Cancel](#) [Previous](#) [Next: Tags](#)

[Cancel](#) [Previous](#) [Create user](#)

- 게임서버 확장용 원본에게 생성한 role을 부여한다

Instances (1/3) [Info](#)

search: Game Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Pub	Actions	Launch instances
<input checked="" type="checkbox"/> KGGameServerBaselImage	i-030d6e805fbbed2f	Running	t2.micro	2/2 checks passed	No alarms	+ ap-northeast-2a	ec2-52-78-132-34.ap-n...	52.78.132.34	Connect	View details
<input type="checkbox"/> KG_Game_Bastion_2	i-0b6ef5916eb28cf5a	Stopped	t2.micro	-	No alarms	+ ap-northeast-2c	-	-	Manage instance state	
<input type="checkbox"/> KG_Game_Bastion_1	i-05221a6bb7981c838	Running	t2.micro	2/2 checks passed	No alarms	+ ap-northeast-2a	ec2-52-78-132-34.ap-n...	52.78.132.34	Instance settings	

Actions ▾ [Launch instances](#)

Connect

View details

Manage instance state

Instance settings

Networking

Security

Image and templates

Monitor and troubleshoot

[Modify IAM role](#)

EC2 > Instances > i-030d6e805fbbed2f > Modify IAM role

Modify IAM role [Info](#)

Attach an IAM role to your instance.

Instance ID

i-030d6e805fbbed2f (KGGameServerBaselImage)

IAM role

Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

▼ ↻ [Create new IAM role](#)

Cancel **Save**

- Kinesis Data Stream 생성

Kinesis

Search results for 'Kinesis'

Services (5)

Features (4)

Documentation (44,970)

Knowledge Articles (30)

Services

Kinesis

Work with Real-Time Streaming Data

See all 5 results

Analytics

Amazon Kinesis services

Collect, process, and analyze data streams in real time.

Get started

Kinesis Data Streams
Collect streaming data with a data stream.

Kinesis Data Firehose
Process and deliver streaming data with data delivery stream.

Kinesis Data Analytics
Analyze streaming data with data analytics application.

Create data stream

Create data stream Info

Data stream configuration

Data stream name

kinesis-demo

Acceptable characters are uppercase and lowercase letters, numbers, underscores, hyphens and periods.

Data stream capacity Info

Data records are stored in Kinesis Data Stream. A shard is a uniquely identified sequence of data records in a stream.

Number of open shards

The total capacity of a stream is the sum of the capacities of its shards. Enter number of provisioned shards to see total data stream capacity.

1

Shard estimator

Minimum: 1, Maximum available: 200, Account quota limit: 200.

Request shard quota increase [\[\]](#)

Total data stream capacity

Shard capacity is determined by the number of open shards. Each open shard ingests up to 1 MiB/second and 1000 records/second and emits up to 2 MiB/second. If writes and reads exceed capacity, the application will receive throttles.

Write capacity

1 MiB/second and 1000 records/second

Read capacity

2 MiB/second

Cancel

Create data stream

Data stream kinesis-demo successfully created.

kinesis-demo Info[Delete](#)

Data stream summary

Status

Active

Data retention period

1 day

ARN

arn:aws:kinesis:ap-northeast-2:483843322360:stream/kinesis-demo

Creation time

October 30, 2021, 22:45 GMT+9

[Applications](#)[Monitoring](#)[Configuration](#)[Enhanced fan-out \(0\)](#)

Producers Info

Producers put records into Kinesis Data Streams.

Amazon Kinesis Agent

Use a stand-alone Java software application to send data to the stream. [Learn more \[\]](#)[View in GitHub \[\]](#)

AWS SDK

Use AWS SDK for Java to develop producers. [Learn more \[\]](#)[View in GitHub \[\]](#)

Amazon Kinesis Producer Library (KPL)

Use KPL to develop producers. [Learn more \[\]](#)[View in GitHub \[\]](#)

Consumers Info

Consumers get records from Kinesis Data Streams and process them.

Amazon Kinesis Data Analytics

Use an Amazon Kinesis Data Analytics application to process and analyze using SQL or Java.

[Process data in real time \[New\]](#)

Amazon Kinesis Data Firehose

Use an Amazon Kinesis Data Firehose delivery stream to process and store records in a destination.

[Process with delivery stream](#)

Amazon Kinesis Client Library (KCL)

Use Kinesis Client Library to develop consumers. [Learn more \[\]](#)[View in GitHub \[\]](#)

4) Kinesis Data Firehose 설정 및 연결



- 테스트를 하기 위해 여기서는 "Direct PUT"를 선택한다.
- 데이터 수집 후 S3에 저장, Destination을 S3로 선택한다.

Choose source and destination
Specify the source and the destination for your delivery stream. You cannot change the source and destination of your delivery stream once it has been created.

Source [Info](#) Direct PUT

Destination [Info](#) Amazon S3

Delivery stream name

Delivery stream name kinesis-firehose-demo
Acceptable characters are uppercase and lowercase letters, numbers, underscores, hyphens, and periods.

Transform and convert records - optional
Configure Kinesis Data Firehose to transform and convert your record data.

Transform source records with AWS Lambda [Info](#)
Kinesis Data Firehose can invoke an AWS Lambda function to transform, filter, un-compress, convert and process your source data records. The specified AWS Lambda function can also be used to provide dynamic partitioning keys for the incoming source data before its delivery to the specified destination.

Data transformation
 Disabled
 Enabled

Convert record format [Info](#)
Data in Apache Parquet or Apache ORC format is typically more efficient to query than JSON. Kinesis Data Firehose can convert your JSON-formatted source records using a schema from a table defined in AWS Glue. For records that aren't in JSON format, create a Lambda function that converts them to JSON in the Transform source records with AWS Lambda section above.

Record format conversion
 Disabled
 Enabled

Destination settings [Info](#)

Specify the destination settings for your delivery stream.

S3 bucket

[Browse](#) [Create](#)

Format: s3://bucket

Dynamic partitioning [Info](#)

Dynamic partitioning enables you to create targeted data sets by partitioning streaming S3 data based on partitioning keys. You can partition your source data with inline parsing and/or the specified AWS Lambda function. You can enable dynamic partitioning only when you create a new delivery stream. You cannot enable dynamic partitioning for an existing delivery stream. Enabling dynamic partitioning incurs additional costs per GiB of partitioned data. For more information, see [Kinesis Data Firehose pricing](#).

Disabled
 Enabled

- 데이터를 저장할 S3버킷 생성

Amazon S3 > Create bucket

Create bucket [Info](#)
Buckets are containers for data stored in S3. [Learn more](#)

General configuration

Bucket name Bucket name must be unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#)

AWS Region

Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.
[Choose bucket](#)

Block Public Access settings for this bucket

Block all public access Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- Block public access to buckets and objects granted through [new access control lists \(ACLs\)](#)
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through [any access control lists \(ACLs\)](#)
S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through [new public bucket or access point policies](#)
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through [any public bucket or access point policies](#)
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

Bucket Versioning
Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

Bucket Versioning
 Disable
 Enable

Tags (0) - optional
Track storage cost or other criteria by tagging your bucket. [Learn more](#)

No tags associated with this bucket.
[Add tag](#)

Default encryption
Automatically encrypt new objects stored in this bucket. [Learn more](#)

Server-side encryption
 Disable
 Enable

Advanced settings

[After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings.](#)

[Cancel](#) [Create bucket](#)

- Kinesis Firehose 생성화면에서 방금 생성한 버킷 선택

S3 bucket

s3://kinesis-demo-20211030

Dynamic partitioning - Info
Dynamic partitioning enables you to create targeted data sets by partitioning streaming S3 data based on partitioning keys. You can partition your source data with inline parsing and/or the specified AWS Lambda function. You can enable dynamic partitioning only when you create a new delivery stream. You cannot enable dynamic partitioning for an existing delivery stream. Enabling dynamic partitioning incurs additional costs per Gig of partitioned data. For more information, see Kinesis Data Firehose pricing.

Disabled
 Enabled

S3 bucket prefix - optional
By default, Kinesis Data Firehose appends the prefix "YYYY/MM/dd/HH" (in UTC) to the data it delivers to Amazon S3. You can override this default by specifying a custom prefix that includes expressions that are evaluated at runtime.

Enter a prefix

You can repeat the same keys in your S3 bucket prefix. Maximum S3 bucket prefix characters: 1024.

S3 bucket error output prefix - optional
You can specify an S3 bucket error output prefix to be used in error conditions. This prefix can include expressions for Kinesis Data Firehose to evaluate at runtime.

Enter a prefix

Buffer hints, compression and encryption
The fields below are pre-populated with the recommended default values for S3. Pricing may vary depending on storage and request costs.

Advanced settings
Server-side encryption disabled; error logging enabled; IAM role KinesisFirehoseServiceRole-kinesis--ap-northeast-2-1635601823267; no tags.

Permissions - Info
Kinesis Data Firehose uses this IAM role for all the permissions that the delivery stream needs. To specify different roles for the different permissions, use the API or the CLI.

Create or update IAM role KinesisFirehoseServiceRole-kinesis--ap-northeast-2-1635601823267
Creates a new role or updates an existing one and adds the required policies to it, and enables Kinesis Data Firehose to assume it.

Choose existing IAM role
The role that you choose must have policies that include the permissions that Kinesis Data Firehose needs.

Tags - Info
You can add tags to organize your AWS resources, track costs, and control access.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags.

kinesis-firehose-demo Info

Delivery stream details

Status <input checked="" type="radio"/> Active	Destination Amazon S3	Data transformation Disabled	Creation time October 30, 2021, 23:05 GMT+9
Source Amazon Kinesis Data Streams	ARN arn:aws:kinesis:ap-northeast-2:483843322360:delivery-stream/kinesis-firehose-demo	Dynamic partitioning Disabled	

Test with demo data Info
Ingest simulated data to test the configuration of your delivery stream. Standard Amazon Kinesis Data Firehose charges apply.

Monitoring **Configuration** **Destination error logs**

Delivery stream metrics Info

Records read from Kinesis Data Streams (Sum)	Bytes read from Kinesis Data Streams (Sum)	DescribeStream operations throttled (Average)
1	1	1
0.8	0.8	0.8

1h 3h 12h 1d 3d 1w Custom Add to dashboard

- 게임서버 확장용 (KGGameServerBaselineImage) 인스턴스와 kinesis 연결

The screenshot shows the AWS EC2 Instances page. A specific instance, i-030d6e805fbbed2f (KGGameServerBaselineImage), is selected. The Public IPv4 address is 52.78.132.34, with a 'Connect' button and a link to open the address. The Private IPv4 address is 20.0.1.11.

- 인스턴스에서 Yum update 후 Kinesis Agent 설치

```
[ec2-user@ip-20-0-1-49 ~]$ sudo yum update
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
Resolving Dependencies
--> Running transaction check
--> Package amazon-linux-extras.noarch 0:2.0.0-1.amzn2 will be updated
--> Package amazon-linux-extras.noarch 0:2.0.1-1.amzn2 will be an update
--> Package amazon-linux-extras-yum-plugin.noarch 0:2.0.0-1.amzn2 will be updated
--> Package amazon-linux-yum-plugin.noarch 0:2.0.1-1.amzn2 will be an update
--> Package dmidecode.x86_64 1:3.0-5.amzn2.0.2 will be updated
--> Package dmidecode.x86_64 1:3.2-5.amzn2.1 will be an update
[ec2-user@ip-20-0-1-49 ~]$ sudo yum install -y aws-kinesis-agent
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
Resolving Dependencies
--> Running transaction check
--> Package aws-kinesis-agent.noarch 0:2.0.2-1.amzn2 will be installed
--> Processing Dependency: java >= 1:1.8.0 for package: aws-kinesis-agent-2.0.2-1.amzn2.noarch
--> Running transaction check
--> Package java-11-amazon-corretto.x86_64 1:11.0.12+7-1.amzn2 will be installed
--> Processing Dependency: java-11-amazon-corretto-headless(x86-64) = 1:11.0.12+7-1.amzn2 for package: 1:java-11-amazon-corretto-11.0.12+7
Dependency Installed:
  als-audio.x86_64 0:1.1.4.1-2.amzn2
  dejavu-sans-fonts.noarch 0:2.33-6.amzn2
  dejavu-serif-fonts.noarch 0:2.33-6.amzn2
  fontpackages-filesystem.noarch 0:1.44-8.amzn2
  java-11-amazon-corretto.x86_64 1:11.0.12+7-1.amzn2
  javapackages-tools.noarch 0:3.4.1-11.amzn2
  libSM.x86_64 0:1.2.2-2.amzn2.0.2
  libX11-common.noarch 0:1.6.7-3.amzn2.0.2
  libXext.x86_64 0:1.3.3-3.amzn2.0.2
  libXinerama.x86_64 0:1.1.3-2.1.amzn2.0.2
  libXrender.x86_64 0:0.9.10-1.amzn2.0.2
  libXtst.x86_64 0:1.2.3-1.amzn2.0.2
  libXslt.x86_64 0:1.1.28-6.amzn2
  python-lxml.x86_64 0:3.2.1-4.amzn2.0.3
  dejavu-fonts-common.noarch 0:2.33-6.amzn2
  dejavu-sans-mono-fonts.noarch 0:2.33-6.amzn2
  fontconfig.x86_64 0:2.13.0-4.3.amzn2
  giflib.x86_64 0:4.1.6-9.amzn2.0.2
  java-11-amazon-corretto-headless.x86_64 1:11.0.12+7-1.amzn2
  libICE.x86_64 0:1.0.9-9.amzn2.0.2
  libX11.x86_64 0:1.6.7-3.amzn2.0.2
  libXau.x86_64 0:1.0.8-2.1.amzn2.0.2
  libXi.x86_64 0:1.7.9-1.amzn2.0.2
  libXrandr.x86_64 0:1.5.1-2.amzn2.0.3
  libXt.x86_64 0:1.1.5-3.amzn2.0.2
  libxcb.x86_64 0:1.12-1.amzn2.0.2
  python-javapackages.noarch 0:3.4.1-11.amzn2
Complete!
```

- 테스트할 데이터 (인게임 아이템 판매 데이터)를 다운받고 압축을 푸다
- LogGenerator.py의 권한을 변경한다

```
[ec2-user@ip-20-0-1-49 ~]$ ll
total 95476
drwxr-xr-x 3 ec2-user ec2-user 78 Oct 31 06:54 aws
-rw-rw-r-- 1 ec2-user ec2-user 44955907 Oct 31 06:53 awscliv2.zip
-rw-rw-r-- 1 ec2-user ec2-user 1772 Jun 29 11:18 LogGenerator.py
-rw-rw-r-- 1 ec2-user ec2-user 7220943 Jun 29 15:20 LogGenerator.zip
-rw-rw-r-- 1 ec2-user ec2-user 45580638 Feb 4 2019 OnlineRetail.csv
[ec2-user@ip-20-0-1-49 ~]$ chmod a+x LogGenerator.py
[ec2-user@ip-20-0-1-49 ~]$ less LogGenerator.py
[ec2-user@ip-20-0-1-49 ~]$ ls
aws awscliv2.zip LogGenerator.py LogGenerator.zip OnlineRetail.csv
[ec2-user@ip-20-0-1-49 ~]$ ll
total 95476
drwxr-xr-x 3 ec2-user ec2-user 78 Oct 31 06:54 aws
-rw-rw-r-- 1 ec2-user ec2-user 44955907 Oct 31 06:53 awscliv2.zip
-rwxrwxr-x 1 ec2-user ec2-user 1772 Jun 29 11:18 LogGenerator.py
-rw-rw-r-- 1 ec2-user ec2-user 7220943 Jun 29 15:20 LogGenerator.zip
-rw-rw-r-- 1 ec2-user ec2-user 45580638 Feb 4 2019 OnlineRetail.csv
```

- 로그를 수집할 디렉터리(cadabra) 생성

```
[ec2-user@ip-20-0-1-36 ~]$ sudo mkdir /var/log/cadabra
[ec2-user@ip-20-0-1-36 ~]$ sudo nano /etc/aws-kinesis/agent.json
```

- Aws kinesis agent 설정파일 수정
 - ◊ filePattern: 데이터 수집할 디렉터리와 파일형식을 입력한다.
 - ◊ deliveryStream: 방금 생성한 deliveryStream의 이름을 입력한다.

```
{
  "cloudwatch.emitMetrics": true,
  "firehose.endpoint": "https://firehose.ap-northeast-2.amazonaws.com",
  "flows": [
    {
      "filePattern": "/var/log/cadabra/*.log",
      "deliveryStream": "kinesis-firehose-demo"
    }
  ]
}
```

- Aws kinesis agent를 start하고 자동시작 등록

```
[ec2-user@ip-20-0-1-49 ~]$ sudo service aws-kinesis-agent start
Starting aws-kinesis-agent (via systemctl):
[ OK ]
[ec2-user@ip-20-0-1-49 ~]$ sudo chkconfig aws-kinesis-agent on
```

- 데이터를 수집할 디렉터리에 테스트 데이터를 입력한다.

```
[ec2-user@ip-20-0-1-49 ~]$ sudo ./LogGenerator.py 500000
Writing 500000 lines starting at line 0
Wrote 500000 lines.
```

- 데이터 수집 성공

```
[ec2-user@ip-20-0-1-36 ~]$ tail -f /var/log/aws-kinesis-agent/aws-kinesis-agent.log
2021-10-31 09:43:14.380+0000 (FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log].MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.tailing.FileTailer [INFO] FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log]: Tailer Progress: Tailer has parsed 50000 records (42036722 bytes), and 500000 records, skipped 0 records, and has successfully sent 500000 records to destination.
2021-10-31 09:43:14.383+0000 (Agent.MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.Agent [INFO] Agent: Progress: 500000 records parsed (42036722 bytes), and 500000 records sent successfully to destinations. Uptime: 690040ms
2021-10-31 09:43:14.380+0000 (FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log].MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.tailing.FileTailer [INFO] FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log]: Tailer Progress: Tailer has parsed 50000 records (42036722 bytes), transformed 0 records, skipped 0 records, and has successfully sent 500000 records to destination.
2021-10-31 09:43:14.381+0000 (Agent.MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.Agent [INFO] Agent: Progress: 500000 records parsed (42036722 bytes), and 500000 records sent successfully to destinations. Uptime: 720038ms
2021-10-31 09:44:14.380+0000 (FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log].MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.tailing.FileTailer [INFO] FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log]: Tailer Progress: Tailer has parsed 50000 records (42036722 bytes), transformed 0 records, skipped 0 records, and has successfully sent 500000 records to destination.
2021-10-31 09:44:14.382+0000 (Agent.MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.Agent [INFO] Agent: Progress: 500000 records parsed (42036722 bytes), and 500000 records sent successfully to destinations. Uptime: 750038ms
2021-10-31 09:44:14.380+0000 (FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log].MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.tailing.FileTailer [INFO] FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log]: Tailer Progress: Tailer has parsed 50000 records (42036722 bytes), transformed 0 records, skipped 0 records, and has successfully sent 500000 records to destination.
2021-10-31 09:44:14.383+0000 (Agent.MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.Agent [INFO] Agent: Progress: 500000 records parsed (42036722 bytes), and 500000 records sent successfully to destinations. Uptime: 780038ms
2021-10-31 09:45:14.380+0000 (FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log].MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.tailing.FileTailer [INFO] FileTailer[fh:kinesis-firehose-demo:/var/log/cadabra/*.log]: Tailer Progress: Tailer has parsed 50000 records (42036722 bytes), transformed 0 records, skipped 0 records, and has successfully sent 500000 records to destination.
2021-10-31 09:45:14.381+0000 (Agent.MetricsEmitter RUNNING) com.amazon.kinesis.streaming.agent.Agent [INFO] Agent: Progress: 500000 records parsed (42036722 bytes), and 500000 records sent successfully to destinations. Uptime: 810038ms
```

- S3에서 수집한 데이터 확인

Amazon S3

Buckets (4) Info

Total storage 208.8 KB Object count 13 Avg. object size 16.1 KB You can enable advanced metrics in the "default-account-dashboard" configuration.

Buckets (4) Info

Buckets are containers for data stored in S3. Learn more [\[?\]](#)

X 1 match

Name	AWS Region	Access	Creation date
kinesis-demo-20211030	Asia Pacific (Seoul) ap-northeast-2	Bucket and objects not public	October 30, 2021, 22:56:28 (UTC+09:00)

Amazon S3 > kinesis-demo-20211030 > 2021/ > 10/ > 31/ > 09/

09/ [Copy S3 URI](#)

Objects (9)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 Inventory](#) [\[?\]](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#) [\[?\]](#)

Name	Type	Last modified	Size	Storage class
kinesis-firehose-demo-1-2021-10-31-09-33-04-4af22f13-316a-40bb-b43c-c47db3e93df5	-	October 31, 2021, 18:33:09 (UTC+09:00)	4.7 MB	Standard
kinesis-firehose-demo-1-2021-10-31-09-33-07-b333641b-52c7-46d6-9eff-e5639e0271f6	-	October 31, 2021, 18:33:13 (UTC+09:00)	4.7 MB	Standard
kinesis-firehose-demo-1-2021-10-31-09-33-12-d80222ef-eaad-4568-8d26-a5f3ab78e63	-	October 31, 2021, 18:33:26 (UTC+09:00)	4.7 MB	Standard
kinesis-firehose-demo-1-2021-10-31-09-33-25-68912b3b-2b07-450b-a2a0-858dee37d6ff	-	October 31, 2021, 18:33:36 (UTC+09:00)	4.7 MB	Standard
kinesis-firehose-demo-1-2021-10-31-09-33-34-6aca0a54-ff7c-4880-a42f-5a21404f28e3	-	October 31, 2021, 18:33:36 (UTC+09:00)	4.7 MB	Standard
kinesis-firehose-demo-1-2021-10-31-09-33-35-6725a918-630a-49cc-81e5-1663fba231ea	-	October 31, 2021, 18:33:51 (UTC+09:00)	4.7 MB	Standard

- 수집한 데이터를 다운받아서 확인한다

Amazon S3 > kinesis-demo-20211030 > 2021/ > 10/ > 31/ > 09/ > kinesis-firehose-demo-1-2021-10-31-09-33-07-b333641b-52c7-46d6-9eff-e5639e0271f6 [Info](#)

[Copy S3 URI](#) Download [Open](#) [Object actions ▾](#)

Properties **Permissions** **Versions**

Object overview

Owner	S3 URI
AWS Region	s3://kinesis-demo-20211030/2021/10/31/09/kinesis-firehose-demo-1-2021-10-31-09-33-07-b333641b-52c7-46d6-9eff-e5639e0271f6
Last modified	Amazon Resource Name (ARN)
October 31, 2021, 18:33:13 (UTC+09:00)	arn:aws:s3:::kinesis-demo-20211030/2021/10/31/09/kinesis-firehose-demo-1-2021-10-31-09-33-07-b333641b-52c7-46d6-9eff-e5639e0271f6
Size	Entity tag (Etag)
4.7 MB	34877c3a4dde00128620fa721da3619b
Type	Object URL
Key	https://kinesis-demo-20211030.s3.ap-northeast-2.amazonaws.com/2021/10/31/09/kinesis-firehose-demo-1-2021-10-31-09-33-07-b333641b-52c7-46d6-9eff-e5639e0271f6

5) AMI 생성 (게임서버 확장용 인스턴스)

```
[ec2-user@ip-20-0-1-221 ~]$ aws ec2 create-image --name Game_Server_AMI --instance-id i-030d6e805fbbed2f
{
    "ImageId": "ami-071f34f4475ec3eaa"
```

6) ALB 생성 (로드밸런싱)

EC2 > Load balancers > Select load balancer type

Select load balancer type

A complete feature-by-feature comparison along with detailed highlights is also available. [Learn more](#)

Name	DNS name	State	VPC ID	Availability Zones	Type	Create
KGWWebALB	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Active	vpc-0a3d018ce3b9cc6b	ap-northeast-2c, ap-northeast-2a	classic	October
ServiceTest-ALB	ServiceTest-ALB-724639285.ap-northeast-2.elb.amazonaws.com	Active	vpc-05c02c3a7aea82e35	ap-northeast-2a, ap-northeast-2c	application	October

Load balancer types

Application Load Balancer [Info](#)

Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

[Create](#)

Network Load Balancer [Info](#)

Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

[Create](#)

Gateway Load Balancer [Info](#)

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

[Create](#)

▶ [Classic Load Balancer - previous generation](#)

[Close](#)

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 1: Configure Load Balancer

Basic Configuration

To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an Internet-facing load balancer in the selected network with a listener that receives HTTP traffic on port 80.

Name	<input type="text" value="KGGameALB"/>
Scheme	<input checked="" type="radio"/> Internet-facing <input type="radio"/> Internal
IP address type	<input type="text" value="ipv4"/>

Listeners

A listener is a process that checks for connection requests, using the protocol and port that you configured.

Load Balancer Protocol	Load Balancer Port
<input type="text" value="HTTP"/>	<input type="text" value="80"/>
Add listener	

Availability Zones

Specify the Availability Zones to enable for your load balancer. The load balancer routes traffic to the targets in these Availability Zones only. You can specify only one subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC	Subnet
<input type="checkbox"/> vpc-0ba99e64c1ffce91 (20.0.0.0/16) KG_Game_VPC	<input checked="" type="checkbox"/> subnet-079d6557efce1e9b (KG_Game_Public_Sub)
<input checked="" type="checkbox"/> ap-northeast-2a	IPv4 address <input type="text" value="Assigned by AWS"/>
<input checked="" type="checkbox"/> ap-northeast-2c	<input type="checkbox"/> subnet-0442d311dbdc54af (KG_Game_Public_Sub)
	IPv4 address <input type="text" value="Assigned by AWS"/>

Add-on services

Additional AWS services can be integrated with this load balancer at launch when you enable them below. You can also add these and other services after your load balancer is created by reviewing the "Integrated Services" tab for the selected load balancer.

AWS Global Accelerator

Create an accelerator to get static IP addresses and improve the performance and availability of your application. [Learn more](#)
Additional charges apply

Your Accelerator will be created with the following name that you can customize. Once your Accelerator is created you can manage it from the Global Accelerator console.

Accelerator name
Maximum 64 characters. Letters and numbers only.

[Tags](#)

[Cancel](#) [Next: Configure Security Settings](#)

- HTTPS를 허용해줬기 때문에 위에서 만든 Certificate을 등록해준다

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 2: Configure Security Settings

⚠ Improve your load balancer's security Your load balancer is not using any secure listener.
If your traffic to the load balancer needs to be secure, use the HTTPS protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under Basic Configuration section. You can also continue with current settings.

Step 3: Configure Security Groups

A security group is a set of firewall rules that control the traffic to your load balancer. On this page, you can add rules to allow specific traffic to reach your load balancer. First, decide whether to create a new security group or select an existing one.

Assign a security group:

- Create a new security group
- Select an existing security group

Security group name:
Description: Allow HTTP/HTTPS

Type	Protocol	Port Range	Source
<input type="text" value="HTTP"/>	<input type="text" value="TCP"/>	<input type="text" value="80"/>	<input type="text" value="Custom"/> <input type="text" value="0.0.0.0/0.../0"/>
<input type="text" value="HTTPS"/>	<input type="text" value="TCP"/>	<input type="text" value="443"/>	<input type="text" value="Custom"/> <input type="text" value="0.0.0.0/0.../0"/>
Add Rule			

Step 4: Configure Routing

Your load balancer routes requests to the targets in this target group using the protocol and port that you specify here. It also performs health checks on the targets using these settings. The target group you specify in this step will apply to all of the listeners configured on this load balancer. You can edit or add listeners after the load balancer is created.

Target group

Target group	New target group
Name	KGGameALBTarGetGroup
Target type	Instance
Protocol	HTTP
Port	80
Protocol version	<input checked="" type="radio"/> HTTP1 Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2. <input type="radio"/> HTTP2 Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available. <input type="radio"/> gRPC Send requests to targets using gRPC. Supported when the request protocol is gRPC.
Health checks	
Protocol	HTTP
Path	/

Advanced health check settings

Port	<input checked="" type="radio"/> traffic port <input type="radio"/> override
Healthy threshold	2
Unhealthy threshold	2
Timeout	5 seconds
Interval	10 seconds
Success codes	200

Cancel **Previous** **Next: Register Targets**

Step 5: Register Targets

Registers targets with your target group. If you register a target in an enabled Availability Zone, the load balancer starts routing requests to the targets as soon as the registration process completes and the target passes the initial health checks.

Registered targets

To deregister instances, select one or more registered instances and then click Remove.

Remove	Instance	Name	Port	State	Security groups	Zone
No instances available.						

Instances

To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered	on port	443																												
<input type="text"/> Search Instances <input type="button" value="X"/> <table border="1"> <thead> <tr> <th>Instance</th> <th>Name</th> <th>State</th> <th>Security groups</th> <th>Zone</th> <th>Subnet ID</th> <th>Subnet CIDR</th> </tr> </thead> <tbody> <tr> <td>i-0522fa6bb7981cd38</td> <td>KG_Game_Bastion_1</td> <td>running</td> <td>KG_Game_SG_Bastion</td> <td>ap-northeast-2a</td> <td>subnet-079d66557efcefe9b</td> <td>20.0.1.0/24</td> </tr> <tr> <td>i-030d6e605fbbed2f</td> <td>KGGameServerBaseline...</td> <td>running</td> <td>KG_Game_SG_Private</td> <td>ap-northeast-2a</td> <td>subnet-079d66557efcefe9b</td> <td>20.0.1.0/24</td> </tr> <tr> <td>i-0b6ef3916eb28cf5a</td> <td>KG_Game_Bastion_2</td> <td>running</td> <td>KG_Game_SG_Bastion</td> <td>ap-northeast-2c</td> <td>subnet-0442d311dbdca5af</td> <td>20.0.2.0/24</td> </tr> </tbody> </table>			Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR	i-0522fa6bb7981cd38	KG_Game_Bastion_1	running	KG_Game_SG_Bastion	ap-northeast-2a	subnet-079d66557efcefe9b	20.0.1.0/24	i-030d6e605fbbed2f	KGGameServerBaseline...	running	KG_Game_SG_Private	ap-northeast-2a	subnet-079d66557efcefe9b	20.0.1.0/24	i-0b6ef3916eb28cf5a	KG_Game_Bastion_2	running	KG_Game_SG_Bastion	ap-northeast-2c	subnet-0442d311dbdca5af	20.0.2.0/24
Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR																								
i-0522fa6bb7981cd38	KG_Game_Bastion_1	running	KG_Game_SG_Bastion	ap-northeast-2a	subnet-079d66557efcefe9b	20.0.1.0/24																								
i-030d6e605fbbed2f	KGGameServerBaseline...	running	KG_Game_SG_Private	ap-northeast-2a	subnet-079d66557efcefe9b	20.0.1.0/24																								
i-0b6ef3916eb28cf5a	KG_Game_Bastion_2	running	KG_Game_SG_Bastion	ap-northeast-2c	subnet-0442d311dbdca5af	20.0.2.0/24																								

Load Balancer Creation Status

Successfully created load balancer
Load balancer KGGameALB was successfully created.
Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic, and for the targets to complete the registration process and pass the initial health checks.

Suggested next steps

- Discover other services that you can integrate with your load balancer. Visit the Integrated services tab within KGGameALB
- Consider using AWS Global Accelerator to further improve the availability and performance of your applications. AWS Global Accelerator console

Close

7) Auto Scaling 생성

- Auto Scaling용 시작구성 생성

Auto Scaling

Launch Configurations

Name	AMI ID	Instance type	Spot price	Creation time
WebServerLaunch...	ami-017a1c5e6ec...	t2.micro	-	Fri Oct 15 2021 01:04:08 GMT+0900 (한국 표준시)

Create launch configuration

EC2 > Launch configurations > Create launch configuration

Create launch configuration Info

Launch configuration name	Additional configuration - optional										
Name KG-Game-Autoscaling-Configuration	Purchasing option <small>Info</small> <input type="checkbox"/> Request Spot Instances IAM instance profile <small>Info</small> <input type="checkbox"/> Service IAM role Monitoring <small>Info</small> <input type="checkbox"/> Enable EC2 instance detailed monitoring within CloudWatch EBS-optimized instance <input type="checkbox"/> Launch as EBS-optimized instance Advanced details <small>(Later, if you want to use a different launch configuration, you can create a new one and apply it to any Auto Scaling group. Existing launch configurations cannot be edited.)</small>										
Amazon machine image (AMI) <small>Info</small>	Storage (volumes) <small>Info</small>										
AMI Game_Server_AMI	EBS volumes <table border="1"><thead><tr><th>Volume type</th><th>Device</th><th>Snapshot</th><th>Size (GiB)</th><th>Volume type</th></tr></thead><tbody><tr><td>Root</td><td>/dev/nvda</td><td>snap-0c6a3f733011f241d</td><td>8</td><td>General purpose SSD</td></tr></tbody></table> <small>(Free tier eligible customers can get up to 30 GB of EBS storage. Learn more about free usage tier eligibility and usage restrictions.)</small>	Volume type	Device	Snapshot	Size (GiB)	Volume type	Root	/dev/nvda	snap-0c6a3f733011f241d	8	General purpose SSD
Volume type	Device	Snapshot	Size (GiB)	Volume type							
Root	/dev/nvda	snap-0c6a3f733011f241d	8	General purpose SSD							
Instance type <small>Info</small>											
Instance type t2.micro (1 vCPU, 1 GiB, EBS Only)											
Choose instance type											

Security groups Info

Assign a security group

- Create a new security group
- Select an existing security group

Security groups				Copy to new	View rules
	Security group ID	Name	VPC ID	Description	
<input checked="" type="checkbox"/>	sg-037fbbae80a829c5f5	KGGGameALB-sg	vpc-0f4b5f46323ad270e	Allow HTTP/HTTPS	

⚠️ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

⚠️ You will not be able to connect to this instance as the AMI requires port(s) 22 to be open in order to have access. Your current security group doesn't have port(s) 22 open.

Successfully created launch configuration: KG-Game-Autoscaling-Configuration

EC2 > Launch configurations

Launch configurations (2) Info

Actions	Copy to launch template	Create launch configuration		
Search launch configurations				
Name	AMI ID	Instance type	Spot price	Creation time
KG-Game-Autoscaling-Configuration	ami-0a27158418...	t2.micro	-	Thu Oct 28 2021 22:09:55 GMT+0900 (한국 표준시)
WebServerLaunchConfigurationAWSEExam	ami-017a1c5e6ec...	t2.micro	-	Fri Oct 15 2021 01:04:08 GMT+0900 (한국 표준시)

- Auto Scaling Group 생성

EC2 > Launch configurations

Launch configurations (1/2) Info

Actions	Copy to launch template	Create launch configuration		
Search launch configurations				
Name	AMI ID	Instance type	Spot price	Creation time
KG-Game-Autoscaling-Configuration	ami-0a27158418...	t2.micro	-	Thu Oct 28 2021 22:09:55 GMT+0900 (한국 표준시)
WebServerLaunchConfigurationAWSEExam	ami-017a1c5e6ec...	t2.micro	-	Fri Oct 15 2021 01:04:08 GMT+0900 (한국 표준시)

[Create Auto Scaling group](#)

EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1 Choose launch template or configuration

Step 2 Choose instance launch options

Step 3 (optional) Configure advanced options

Step 4 (optional) Configure group size and scaling policies

Step 5 (optional) Add notifications

Step 6 (optional) Add tags

Step 7 Review

Choose launch template or configuration Info

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group. If you currently use launch configurations, you might consider migrating to launch templates.

Name

Auto Scaling group name
Enter a name to identify the group.
KG-Game-Autoscaling-Group
Must be unique to this account in the current Region and no more than 255 characters.

Launch configuration Info Switch to launch template

Launch configuration
Choose a launch configuration that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

KG-Game-Autoscaling-Configuration

Create a launch configuration <small>Info</small>	Launch configuration	AMI ID	Date created
	KG-Game-Autoscaling-Configuration	ami-0a27158418e3e1441	Thu Oct 28 2021 22:09:55 GMT+0900 (한국 표준시)
Security groups	Instance type	Key pair name	
sg-037fbae80a829c5f5 <small>Info</small>	t2.micro	-	

Cancel **Next**

EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1 Choose launch template or configuration

Step 2 Choose instance launch options

Step 3 (optional) Configure advanced options

Step 4 (optional) Configure group size and scaling policies

Step 5 (optional) Add notifications

Step 6 (optional) Add tags

Step 7 Review

Choose instance launch options Info

Customize the purchase options and instance types, and choose the VPC network environment into which your instances are launched.

Network Info

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-0f4b5f46323ad270e (KG_Game_VPC) 20.0.0.0/16

Create a VPC Info

Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets

ap-northeast-2a | subnet-0f499d71f16ab7831 (KG_Game_Private_Subnet_1_a) 20.0.10.0/24

ap-northeast-2c | subnet-045af42fccce1cb6b (KG_Game_Private_Subnet_2_c) 20.0.20.0/24

Create a subnet Info

Cancel **Previous** **Skip to review** **Next**

EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1
Choose launch template or configuration

Step 2
Choose instance launch options

Step 3 (optional)
Configure advanced options

Step 4 (optional)
Configure group size and scaling policies

Step 5 (optional)
Add notifications

Step 6 (optional)
Add tags

Step 7
Review

Configure advanced options Info

Choose a load balancer to distribute incoming traffic for your application across instances to make it more reliable and easily scalable. You can also set options that give you more control over health check replacements and monitoring.

Load balancing - optional Info

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

No load balancer
Traffic to your Auto Scaling group will not be fronted by a load balancer.

Attach to an existing load balancer
Choose from your existing load balancers.

Attach to a new load balancer
Quickly create a basic load balancer to attach to your Auto Scaling group.

Attach to an existing load balancer

Select the load balancers that you want to attach to your Auto Scaling group.

Choose from your load balancer target groups
This option allows you to attach Application, Network, or Gateway Load Balancers.

Choose from Classic Load Balancers

Existing load balancer target groups
Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.

Select target groups

KGGGameALBTargetGroup | HTTP
Application Load Balancer: KGGGameALB

Health checks - optional

Health check type Info
EC2 Auto Scaling automatically replaces instances that fail health checks. If you enabled load balancing, you can enable ELB health checks in addition to the EC2 health checks that are always enabled.

EC2 ELB

Health check grace period
The amount of time until EC2 Auto Scaling performs the first health check on new instances after they are put into service.

300 seconds

Additional settings - optional

Monitoring Info

Enable group metrics collection within CloudWatch

Cancel Previous Skip to review Next

- 기본 서버는 2개, 확장 시 4개까지 늘릴 수 있게 설정하고 테스트한다

EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1 Choose launch template or configuration

Step 2 Choose instance launch options

Step 3 (optional) Configure advanced options

Step 4 (optional) Configure group size and scaling policies

Step 5 (optional) Add notifications

Step 6 (optional) Add tags

Configure group size and scaling policies Info

Set the desired, minimum, and maximum capacity of your Auto Scaling group. You can optionally add a scaling policy to dynamically scale the number of instances in the group.

Group size - optional Info

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity	2
Minimum capacity	2
Maximum capacity	4

- CPU가 45%이상으로 넘어가면 확장하도록 설정한다.

Step 7 Review

Scaling policies - optional

Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. Info

<input checked="" type="radio"/> Target tracking scaling policy Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.	<input type="radio"/> None
Scaling policy name <input type="text" value="Target Tracking Policy"/>	
Metric type <input type="text" value="Average CPU utilization"/>	
Target value <input type="text" value="45"/>	
Instances need <input type="text" value="150"/> seconds warm up before including in metric	
<input type="checkbox"/> Disable scale in to create only a scale-out policy	

Instance scale-in protection - optional

Instance scale-in protection
If protect from scale in is enabled, newly launched instances will be protected from scale in by default.

Enable instance scale-in protection

Cancel Previous Skip to review Next

EC2 > Auto Scaling groups > Create Auto Scaling group

Add notifications Info

Send notifications to SNS topics whenever Amazon EC2 Auto Scaling launches or terminates the EC2 instances in your Auto Scaling group.

Step 1 Choose launch template or configuration

Step 2 Choose instance launch options [Add notification](#)

Step 3 (optional) Configure advanced options

Step 4 (optional) Configure group size and scaling policies

[Cancel](#) [Previous](#) [Skip to review](#) [Next](#)

EC2 > Auto Scaling groups > Create Auto Scaling group

Add tags Info

Add tags to help you search, filter, and track your Auto Scaling group across AWS. You can also choose to automatically add these tags to instances when they are launched.

Step 1 Choose launch template or configuration

Step 2 Choose instance launch options

Step 3 (optional) Configure advanced options

Step 4 (optional) Configure group size and scaling policies

Step 5 (optional) Add notifications

Step 6 (optional) [Add tags](#)

Tags (1)

Key	Value - optional	Tag new instances
Name	KG-Game-AutoScaling-G	<input checked="" type="checkbox"/>

[Add tag](#) 49 remaining [Remove](#)

[Cancel](#) [Previous](#) [Next](#)

KG-Game-Autoscaling-Group, 1 Scaling policy created successfully

EC2 > Auto Scaling groups

Auto Scaling groups (1)

<input type="checkbox"/>	Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max	Availability Zones
<input type="checkbox"/>	KG-Game-Autoscaling-Group...	KG-Game-Autoscaling-Configuration	2	-	2	2	4	ap-northeast-2a, ap-northeast-2c

[Edit](#) [Delete](#) [Create an Auto Scaling group](#)

- 확인작업:

- ✧ Auto Scaling의 Instance management 항목에 2개의 인스턴스의 Healthy상태 확인

The screenshot shows the AWS EC2 Auto Scaling Instances page. At the top, a green banner indicates "KG-Game-Autoscaling-Group, 1 Scaling policy created successfully". Below the banner, the navigation bar includes "Details", "Activity", "Automatic scaling", "Instance management" (which is highlighted in orange), "Monitoring", and "Instance refresh". The main section is titled "Instances (2)". A table lists two instances:

Instance ID	Lifecycle	Instance type	Weighted capacity	Launch template/configuration	Availability Zone	Health status	Protected from
i-00c3d7ad4fe061772	Pending	t2.micro	-	KG-Game-Autoscaling-Configurat...	ap-northeast-2a	Healthy	
i-013f59fb6a165cfdc	Pending	t2.micro	-	KG-Game-Autoscaling-Configurat...	ap-northeast-2c	Healthy	

- ALB의 DNS name으로 웹 브라우저에서 접속하기
- CPU가 45%이상으로 올라가면 2개에서 4개까지 추가되는지 확인한다

The screenshot shows the AWS Load Balancers page. The table lists three load balancers:

Name	DNS name	State	VPC ID	Availability Zones	Type	Create
KGGameALB	KGGameALB-2008211993.ap-northeast-2.elb.amazonaws.com	Active	vpc-0ba99e54c11fc1e91	ap-northeast-2c, ap-northeast-2a	application	October
KGWebALB	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com	Active	vpc-0a3d018ce3b9ccceb	ap-northeast-2c, ap-northeast-2a	classic	October
ServiceTest-ALB	ServiceTest-ALB-724639285.ap-northeast-2.elb.amazonaws.com	Active	vpc-05c02c3a7aea82e35	ap-northeast-2a, ap-northeast-2c	application	October

Below the table, the "KGGameALB" configuration is shown. The "DNS name" field is highlighted with a red box and contains "KGGameALB-2008211993.ap-northeast-2.elb.amazonaws.com (A Record)".

The screenshot shows the AWS Lambda function test interface. The top part displays the AWS Lambda logo and a "Load Test" button. Below it, there is a table with "Meta-Data" and "Value" columns. A red arrow points down to a box labeled "Current CPU Load: 0%".

The bottom part shows a browser window with the URL "kggamealb-2008211993.ap-northeast-2.elb.amazonaws.com/load.php". The browser displays a message "Under High CPU Load! (auto-refresh in 5 seconds)". A red arrow points down to another box labeled "Current CPU Load: 100%".

- CloudWatch에서 Alarm확인

- High Alarm이 들어오고 있다는 것이 확인된다.

- Auto Scaling Groups에 현재 2개가 아닌 4개의 인스턴스가 있다. 즉 게임서버 트래픽이 몰릴 때 자동확장으로 인해 게임서버가 2개에서 4개까지 확장되었다

- 웹 브라우저를 닫고 트래픽이 줄어들 때 4개에서 2개로 줄어드는지 확인한다.

- 트래픽이 다운되고 약 20분후에 게임서버가 4개에서 3개, 3개에서 2개로 줄어들었다

The screenshot shows the AWS CloudWatch Metrics Insights interface. A query has been run against the CloudWatch Metrics Insights metrics. The results are displayed in a table with columns for Time, Metric Name, and Value. The table shows two data points: one at approximately 2023-09-12T00:00:00Z with a value of 4, and another at approximately 2023-09-12T01:00:00Z with a value of 2.

Time	Metric Name	Value
2023-09-12T00:00:00Z	GameServerCount	4
2023-09-12T01:00:00Z	GameServerCount	2

8) Route 53 – 도메인 등록

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online [Info](#)

Delete zone Test record Configure query logging

Hosted zone details [Edit hosted zone](#)

Records (5) DNSSEC signing Hosted zone tags (1)

Records (5) Info
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

<input type="checkbox"/>	Record name	Type	Routin...	Differ...	Value/Route traffic to
<input type="checkbox"/>	ga1me2cloud3.online	A	Simple	-	d22wx5587qjqud.cloudfront.net. ns-1411.awsdns-48.org. ns-902.awsdns-48.net. ns-398.awsdns-49.com. ns-1648.awsdns-14.co.uk.
<input type="checkbox"/>	ga1me2cloud3.online	NS	Simple	-	ns-1411.awsdns-48.org. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
<input type="checkbox"/>	_edad8927be9b9d58a9bb17bcd9b6cffc3....	CNAME	Simple	-	9D80A0F706D24EF171E1552E5A48797A.F9EAD8F62B8A2E7FEDB09D1E05FDB27C.ac1a7e2
<input type="checkbox"/>	www.ga1me2cloud3.online	CNAME	Simple	-	KGWebALB-144350439.ap-northeast-2.elb.amazonaws.com

[Filter records by property or value](#) Type Routing policy Alias

< 1 > ⌂

- 게임서버를 A레코드로 Route 53에 등록해준다.

Route 53 > Hosted zones > ga1me2cloud3.online > Create record

Quick create record [Info](#) Switch to wizard

Record 1

Record name [Info](#) **Record type** [Info](#) **Route traffic to** [Info](#)

game ,ga1me2cloud3.online A – Routes traffic to an IPv4 address and so... Alias

Valid characters: a-z, 0-9, ! " # \$ % & ' () * + , - / ; < = > ? @ [\] ^ _ { } . ~

Alias to CloudFront distribution US East (N. Virginia)

An alias to a CloudFront distribution and an alias to another record in the same hosted zone are global and available only in US East (N. Virginia).

drfprsr8bg9vjx.cloudfront.net

Routing policy [Info](#) **Evaluate target health**
Simple routing No

Add another record

Cancel [Create records](#)

Record for ga1me2cloud3.online was successfully created.

Route 53 > Hosted zones > ga1me2cloud3.online

ga1me2cloud3.online [Info](#)

Delete zone Test record Configure query logging

▶ Hosted zone details [Edit hosted zone](#)

Records (6) DNSSEC signing Hosted zone tags (1)

Records (6) [Info](#)

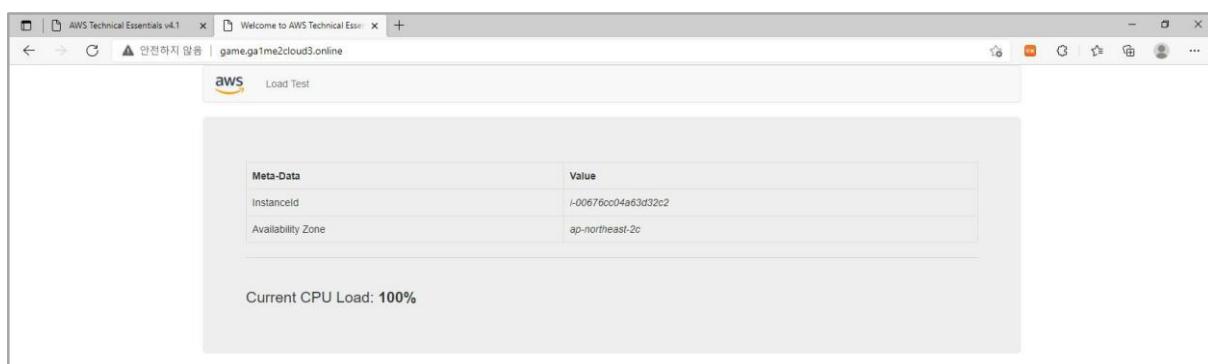
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

Filter records by property or value Type Routing policy Alias 1 match < 1 > ⌂

"game" X Clear filters

Record name	Type	Routing...	Differ...	Value/Route traffic to
game.ga1me2cloud3.online	A	Simple	-	drfpsr8bg9vjx.cloudfront.net.

- 해당 도메인으로 웹에서 접속해본다



9) RDS 생성 (게임서버 DB)

- DB용 Security Group 생성

The screenshot shows the 'Create security group' wizard. In the 'Basic details' step, a security group name 'KG_Game_SQL-DB_SG' is entered. In the 'Inbound rules' step, a MySQL/Aurora rule is defined with TCP port 3306, source 'Custom' (Bastion), and destination 'Security Groups' (selected 'KG_Game_SG_Bastion'). In the 'Optional tags' step, no tags are added. Finally, the 'Create security group' button is visible.

- DB용 Subnet group 생성

The screenshot shows the AWS RDS search results for 'RDS'. It highlights the 'Services' section, which includes 'Amazon Aurora' (with a 'Create database' button) and 'Resources' (listing DB instances, parameter groups, and allocated storage). A red box highlights the 'Subnet groups' link in the left sidebar.

RDS > Subnet groups

Subnet groups (2)

Name	Description	Status	VPC
kg-db-subnetgroup	KG-DB-SubnetGroup	Complete	vpc-0a3d018ce5b9ccceb
testgroup	testGroup	Complete	vpc-05c02c3a7aea82e35

RDS > Subnet groups > Create DB Subnet Group

Create DB Subnet Group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.

Subnet group details

Name
kggame_db_group

Description
kggame_db_group

VPC
KG_Game_VPC (vpc-0ba99e64c11fc1e91)

Add subnets

Availability Zones
ap-northeast-2a, ap-northeast-2c

Subnets
subnet-009e1b6b4b5fc1561 (20.0.30.0/24), subnet-0fa4b1a3a5e265154 (20.0.40.0/24)

Subnets selected (2)

Availability zone	Subnet ID	CIDR block
ap-northeast-2c	subnet-0fa4b1a3a5e265154	20.0.40.0/24
ap-northeast-2a	subnet-009e1b6b4b5fc1561	20.0.30.0/24

Cancel **Create**

- 데이터베이스 생성

Amazon RDS

Amazon Aurora
Amazon Aurora is a MySQL- and PostgreSQL-compatible enterprise-class database, starting at \$1/day. Aurora supports up to 64TB of auto-scaling storage capacity, 6-way replication across three availability zones, and 15 low-latency read replicas. Learn more

Create database

RDS > Create database

Create database

Choose a database creation method

Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type MySQL

Edition MySQL Community

Known issues/limitations
Review the Known issues/limitations to learn about potential compatibility issues with specific database versions.

Version MySQL 5.7.23

Templates

Production
Use defaults for high availability and fast, consistent performance.

Dev/Test
This instance is intended for development use outside of a production environment.

Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS.

Settings

DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.
kggame-data-sample

Credentials Settings

Master username [Info](#)
Type a login ID for the master user of your DB instance.
kgadmin

Master password [Info](#)
Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote)', "(double quote)" and @ (at sign).

Confirm password [Info](#)

DB instance class

Storage

Storage type [Info](#)
General Purpose SSD (gp2)
Allocated storage
20 GIB (Minimum: 20 Gib. Maximum: 65,536 Gib) Higher allocated storage [may improve](#) IOPS performance.

Storage autoscaling [Info](#)
Provides dynamic scaling support for your database's storage based on your application's needs.
 Enable storage autoscaling
Enabling this feature will allow the storage to increase once the specified threshold is exceeded.

- 고가용성 DB구축은 여기서 반드시 Multi-AZ를 선택해야 한다.
- 테스트용은 두번 째 “Do not create a standby instance”를 선택한다.

Availability & durability

Multi-AZ deployment [Info](#)

- Create a standby instance (recommended for production usage)**
Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.
- Do not create a standby instance**

Connectivity

Virtual private cloud (VPC) [Info](#)
VPC that defines the virtual networking environment for this DB instance.
KG_Game_VPC (vpc-0ba99e64c11fc1e91)

Subnet group [Info](#)
DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.
kggame_db_group

Public access [Info](#)

- Yes**
Amazon EC2 Instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.
- No**
RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

VPC security group
Choose a VPC security group to allow access to your database. Ensure that the security group rules allow the appropriate incoming traffic.

Existing VPC security groups
Choose VPC security groups
KG_Game_MySQL-DB_SG

Database authentication

Database authentication options [Info](#)

- Password authentication**
Authenticates using database passwords.
- Password and IAM database authentication**
Authenticates using the database password and user credentials through AWS IAM users and roles.
- Password and Kerberos authentication** (not available for this version)
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Additional configuration

Database options

Initial database name [Info](#)
kggame_data_sample

DB parameter group [Info](#)
default.mysql5.7

Option group [Info](#)
default:mysql-5.7

Backup

Enable automated backups
Creates a point-in-time snapshot of your database

Backup retention period [Info](#)
Choose the number of days that RDS should retain automatic backups for this instance.
35 days

Maintenance

- Enable auto minor version upgrade** (checked): Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.
- Maintenance window**: Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.
 - Select window
 - No preference (selected)
- Deletion protection**: Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Backup window: Select the period for which you want automated backups of the database to be created by Amazon RDS.

- Select window
- No preference (selected)
- Copy tags to snapshots

Encryption

- Enable encryption** (checked): Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)
- AWS KMS Key**: [Info](#) (default) aws/rds
- Account**: 483843322360
- KMS key ID**: alias/aws/rds

Performance Insights: [Info](#)

- Enabling Performance Insights will automatically enable the MySQL Community performance schema. [Learn more](#)
- Enable Performance Insights

DB identifier	Role	Engine	Region & AZ	Size	Status	CPU	Current activity	Maintenance
database-1	Instance	MySQL Community	ap-northeast-2a	db.t2.micro	Available	5.57%	0 Connections	none
kgame-data-sample	Instance	MySQL Community	ap-northeast-2a	db.t2.micro	Available	4.17%	0 Connections	next window

- RDS 세팅
- Bastion Host에 원격접속 후 Mariadb를 설치해준다.

```
[root@ip-20-0-1-221 ec2-user]# sudo yum install mariadb-server
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package mariadb-server.x86_64 1:5.5.68-1.amzn2 will be installed
--> Processing Dependency: mariadb(x86-64) = 1:5.5.68-1.amzn2 for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl-DBI for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl-DBD-MySQL for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl(Data::Dumper) for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl(DBI) for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Running transaction check
---> Package mariadb.x86_64 1:5.5.68-1.amzn2 will be installed
---> Package perl-DBD-MySQL.x86_64 0:4.023-6.amzn2 will be installed
---> Package perl-DBI.x86_64 0:1.627-4.amzn2.0.2 will be installed
--> Processing Dependency: perl(RPC::PlServer) >= 0.2001 for package: perl-DBI-1.627-4.amzn2.0.2.x86_64
```

- 게임 데이터베이스 샘플을 다운받고 압축 풀기

```
[ec2-user@ip-20-0-1-221 ~]$ wget https://github.com/meowcatmeoww/Git_Sample/raw/master/kgame_data_sample.zip
--2021-10-30 09:28:17- https://github.com/meowcatmeoww/Git_Sample/raw/master/kgame_data_sample.zip
Resolving github.com (github.com)... 15.164.81.167
Connecting to github.com (github.com)|15.164.81.167|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://raw.githubusercontent.com/meowcatmeoww/Git_Sample/master/kgame_data_sample.zip [following]
--2021-10-30 09:28:18- https://raw.githubusercontent.com/meowcatmeoww/Git_Sample/master/kgame_data_sample.zip
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.108.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 534044 (522K) [application/zip]
Saving to: 'kgame_data_sample.zip'

100%[=====] 534,044 --.-K/s in 0.1s

2021-10-30 09:28:18 (4.52 MB/s) - 'kgame_data_sample.zip' saved [534044/534044]

[ec2-user@ip-20-0-1-221 ~]$ unzip kgame_data_sample.zip
Archive:  kgame_data_sample.zip
  inflating: kgame_data_sample.sql
[ec2-user@ip-20-0-1-221 ~]$
```

- RDS의 Endpoint를 복사한다

RDS > Databases > kgame-data-sample

kgame-data-sample

Summary

DB identifier kgame-data-sample	CPU 4.00%	Status Available	Class db.t2.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ ap-northeast-2a

Connectivity & security

Endpoint & port	Networking	Security
Endpoint kgame-data-sample.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com	Availability Zone ap-northeast-2a	VPC security groups KG_Game_SQL-DB_SG (sg-01e7a0dd2146f2849) Active
Port 3306	VPC KG_Game_VPC (vpc-0ba99e64c11fc1e91)	Publicly accessible No
	Subnet group	

- 해당 게임 데이터 샘플을 RDS에 삽입한다.

```
[root@ip-20-0-1-221 ec2-user]# mysql -h kgame-data-sample.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com -u kgadmin -pkgadmindkgadmin kgame_data_sample < kgame_data_sample.sql
[root@ip-20-0-1-221 ec2-user]#
```

- DB에 접속

```
[root@ip-20-0-1-221 ec2-user]# mysql -h kgame-data-sample.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com -u kgadmin -pkgadmindkgadmin kgame_data_sample
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 5.7.23-log Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [kgame_data_sample]>
```

- 데이터 베이스 확인

```
MySQL [kgame_data_sample]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| innodb |
| kgame_data_sample |
| mysql |
| performance_schema |
| sys |
| video_games |
+-----+
7 rows in set (0.00 sec)

MySQL [kgame_data_sample]> use kgame_data_sample;
Database changed
MySQL [kgame_data_sample]>
```

현재 게임서버는 비어 있는 상황이므로 DB연동부분은 생략한다.

10) S3 Storage 생성

- 게임서버 데이터베이스의 백업데이터를 영구저장이 가능한 S3 스토리지로 이동한다.
- S3 버킷 생성

Buckets (2) Info

Buckets are containers for data stored in S3. Learn more [\[\]](#)

Name	AWS Region	Access	Creation date
cf-templates-sui4o8qd877e-ap-northeast-2	Asia Pacific (Seoul) ap-northeast-2	Objects can be public	October 14, 2021, 18:49:20 (UTC+09:00)
kg-web-rds-bucket	Asia Pacific (Seoul) ap-northeast-2	Bucket and objects not public	October 28, 2021, 14:55:53 (UTC+09:00)

Create bucket [Info](#)

Buckets are containers for data stored in S3. Learn more [\[\]](#)

General configuration

Bucket name **kg-game-rds-bucket**
Bucket name must be unique and must not contain spaces or uppercase letters. See rules for bucket naming [\[\]](#)

AWS Region **Asia Pacific (Seoul) ap-northeast-2**

Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.
Choose bucket

Block Public Access settings for this bucket

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your application does not directly witness public access. If you do, set the appropriate level of access control on this bucket or objects within, so you can customize the individual settings below to suit your specific storage use cases. [Learn more \[\]](#)

Block all public access
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- Block public access to buckets and objects granted through new access control lists (ACLs)**
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

Bucket Versioning

Versing is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more \[\]](#)

Bucket Versioning Disable Enable

Tags (0) - optional

Track storage cost or other criteria by tagging your bucket. [Learn more \[\]](#)

No tags associated with this bucket.
Add tag

Default encryption

Automatically encrypt new objects stored in this bucket. [Learn more \[\]](#)

Server-side encryption Disable Enable

Advanced settings

After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings.

Create bucket

- 게임서버 데이터를 S3로 추출

Amazon RDS

RDS > Automated backups

Current Region backups (2) Info

Current Region | Replicated | Retained

DB name	Earliest restorable time	Latest restorable time	Engine	Encrypted
database-1	October 28, 2021, 5:14:22 AM UTC	October 30, 2021, 10:15:00 AM UTC	mysql	No
kggame-data-sample	October 30, 2021, 9:08:06 AM UTC	October 30, 2021, 10:15:00 AM UTC	mysql	No

System snapshots (1)

Name	DB source	Creation time	Status	Progress	VPC
rds:kggame-data-sample-2021-10-30-09-06	kggame-data-sample	Sat Oct 30 2021 10:08:06 GMT+0900	available	Completed	vpc-0ba99e64c11fc1e9f

RDS > Snapshots > rds:kggame-data-sample-2021-10-30-09-06

rds:kggame-data-sample-2021-10-30-09-06

Details	
ARN	arn:aws:rds:ap-northeast-2:483843322360:snapshot:rds:kggame-data-sample-2021-10-30-09-06
Instance/Cluster Name	kggame-data-sample
Master username	kgadmin
DB snapshot name	rds:kggame-data-sample-2021-10-30-09-06
Snapshot Creation Time	October 30, 2021, 9:08:06 AM UTC
Instance/Cluster Creation	October 30, 2021, 9:06:52 AM UTC
VPC	vpc-0ba99e64c11fc1e91
Status	Available

Actions

- Restore snapshot
- Copy snapshot
- Share snapshot
- Migrate snapshot
- Export to Amazon S3**
- Delete snapshot

RDS > Snapshots > rds:kggame-data-sample-2021-10-30-09-06 > Export to Amazon S3

Export to Amazon S3

RDS Snapshot Export to Amazon Simple Storage Service (Amazon S3) provides an automated method to extract data from a RDS snapshot and store it in a compressed, consistent, queryable format in an Amazon S3 bucket in your account. [Info](#)

Settings	Exported data
Export Identifier	Exported data format Parquet
Enter a name to identify the export. The name must be unique across all snapshot exports owned by your AWS account in the current AWS Region.	Amount of data to be exported The data to be exported is what is available when the snapshot was created. <input checked="" type="radio"/> All (20 GB) All data in the database will be exported <input type="radio"/> Partial Define which part of the database you want to export by using identifiers.
<input type="text" value="KG-Game-RDS-Backup"/>	
The export identifier is case-insensitive, but is stored as all lowercase (as in "myexport"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.	

S3 destination	Encryption
S3 bucket <input type="text" value="kg-game-rds-bucket"/>	AWS KMS Key Info <input type="text" value="KG-Web-Exports-Key"/>
S3 prefix - optional	Account 483843322360
To group objects in a bucket, S3 uses a prefix before object names. The forward slash (/) in the prefix represents a folder. For example, use the prefix exports/2019/ for a 2019 folder in an exports folder. Info	KMS key ID 345c8e89-ba75-4cd8-96ab-d38ac7df3cd3
IAM role	Pricing details
IAM role Choose or create an IAM role to grant write access to your S3 bucket. <input type="text" value="Create a new role"/>	For snapshot data export to Amazon S3, the cost of exporting snapshot data is based on the snapshot size. Learn more Additional charges apply for storing exported data in Amazon S3. Learn more
IAM role name <input type="text" value="kg-game-rds-export-s3"/>	
	Export to Amazon S3

- S3에서 추출한 데이터 확인

Amazon S3 > kg-game-rds-bucket

kg-game-rds-bucket [Info](#)

Objects	Properties	Permissions	Metrics	Management	Access Points
Objects (1)					
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 Inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more					
<input type="button" value="Copy S3 URI"/> <input type="button" value="Copy URL"/> <input type="button" value="Download"/> <input type="button" value="Open"/> <input type="button" value="Delete"/> <input type="button" value="Actions"/> <input type="button" value="Create folder"/> <input type="button" value="Upload"/>					
<input type="text" value="Find objects by prefix"/>					
<input type="checkbox"/> Name	<input type="button" value="▲"/> Type	<input type="button" value="▼"/> Last modified	<input type="button" value="▼"/> Size	<input type="button" value="▼"/> Storage class	<input type="button" value="▼"/>
<input type="checkbox"/> kggame_data_sample.sql	sql	October 30, 2021, 19:38:31 (UTC+09:00)	1.8 MB	Standard	

11) AWS Glue – Crawler 생성

- S3에 있는 데이터를 조직하고 정리한다.

The screenshot shows the AWS Glue search results for 'Glue'. The 'AWS Glue' service card is highlighted, describing it as a fully managed ETL service. Below the card, there is a link to 'Add crawler'.

The screenshot shows the 'Crawlers' list page. The 'Add crawler' button is highlighted with a red box. The table headers include Name, Schedule, Status, Logs, Last runtime, Median runtime, Tables updated, and Tables added. A message indicates no crawlers have been created yet.

The screenshot shows the 'Add crawler' dialog for 'Crawler info'. The 'Crawler name' field is filled with 'gamedata_test' and highlighted with a red box. Other fields include 'Tags, description, security configuration, and classifiers (optional)', 'Description', and 'Security configuration' (set to 'None').

The screenshot shows the 'Add crawler' dialog for 'Crawler source type'. It lists 'gamedata_test' under 'Crawler info'. Under 'Crawler source type', 'Data stores' is selected. It also includes sections for 'Repeat crawls of S3 data stores' (with options for 'Crawl all folders', 'Crawl new folders only', and 'Crawl changed folders identified by Amazon S3 Event Notifications') and navigation buttons 'Back' and 'Next'.

Add crawler

Crawler info
gamedata_test

Crawler source type

Data stores

Data store

S3 s3://kinesis-demo-20211030

Connection

Select a connection

Optional: include a Network connection to use with this S3 target. Note that each crawler is limited to one Network connection so any future S3 targets will also use the same connection (or none, if left blank).

Add connection

Crawl data in

Specified path in my account
 Specified path in another account

Include path

s3://kinesis-demo-20211030

All folders and files contained in the include path are crawled. For example, type s3://MyBucket/MyFolder/ to crawl all objects in MyFolder within MyBucket.

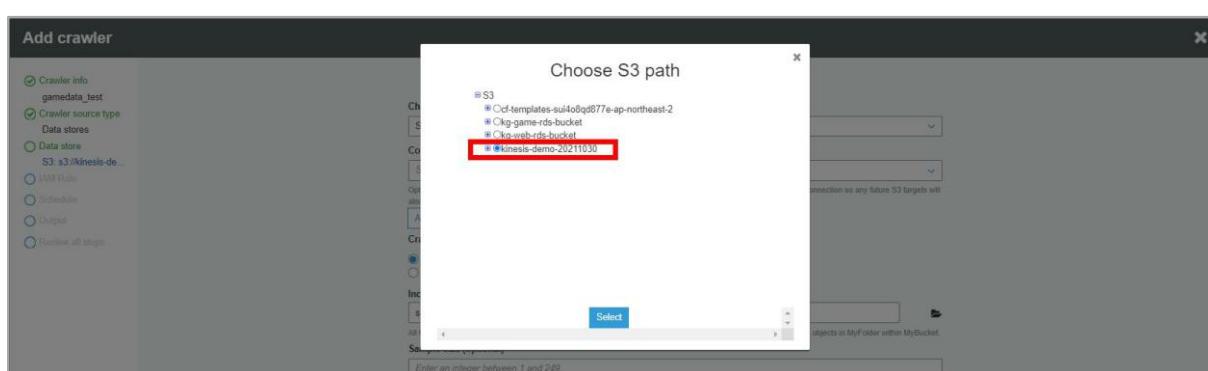
Sample size (optional)

Enter an integer between 1 and 249.

This field sets the number of files in each leaf folder to be crawled. If not set, all the files are crawled.

Exclude patterns (optional)

Back Next



Add crawler

Crawler info
gamedata_test

Crawler source type

Data stores

Data store

S3 s3://kinesis-demo-20211030

Add another data store

Yes
 No

Back Next

Chosen data stores
S3 s3://kinesis-demo...

Add crawler

Crawler info
gamedata_test

Crawler source type

Data stores

Data store

S3 s3://kinesis-demo-20211030

IAM role

Create a new IAM role
 Use an existing IAM role

AWSGlueServiceRole- gamedata-test

The IAM role allows the crawler to run and access your Amazon S3 data stores. Learn more

Update a policy in an IAM role
 Choose an existing IAM role
 Create a new IAM role

To create an IAM role, you must have **CreateRole**, **CreatePolicy**, and **AttachRolePolicy** permissions.

Create an IAM role named "AWSGlueServiceRole-rolename" and attach the AWS managed policy, **AWSGlueServiceRole**, plus an inline policy that allows read access to:

- s3://kinesis-demo-20211030

You can also create an IAM role on the [IAM console](#).

Back Next

Add crawler

Configure the crawler's output

Crawler info: gamedata_test

Crawler source type: Data stores

Data store: S3: s3://kinesis-de...

IAM Role: arn:aws:iam::4838433:22360:role/service-role/AWSGlueServiceRole-gamedatatest

Schedule: Run on demand

Output: game-data-test

Review all steps

Database: game-data-test

Add database

Prefix added to tables (optional):

Grouping behavior for S3 data (optional):

Create a single schema for each S3 path (checked)

Table level:

Specify table level if table level location is known

Configuration options (optional):

Back Next

Add crawler

Tags: -

Data stores:

- Data store: S3
- Include path: s3://kinesis-demo-20211030
- Connection:
- Exclude patterns:

IAM role: arn:aws:iam::4838433:22360:role/service-role/AWSGlueServiceRole-gamedatatest

Schedule: Run on demand

Output:

- Database: game-data-test
- Prefix added to tables (optional):
- Create a single schema for each S3 path (true)
- Table level (optional):
- Configuration options:

 - Schema updates in the data store: Update the table definition in the data catalog
 - Object deletion in the data store: Mark the table as deprecated in the data catalog

Back Finish

Crawlers: A crawler connects to a data store, progresses through a prioritized list of classifiers to determine the schema for your data, and then creates metadata tables in your data catalog.

User preferences

Show: 1 - 1

Add crawler	Run crawler	Action	Filter by tags and attributes					
<input checked="" type="checkbox"/> Name		Schedule	Status	Logs	Last runtime	Median runtime	Tables updated	Tables added
<input checked="" type="checkbox"/> gamedata_test			Ready		0 secs	0 secs	0	0

Crawlers: A crawler connects to a data store, progresses through a prioritized list of classifiers to determine the schema for your data, and then creates metadata tables in your data catalog.

User preferences

Show: 1 - 1

Crawler "gamedata_test" completed and made the following changes: 1 tables created, 0 tables updated. See the tables created in database game-data-test.

Add crawler	Run crawler	Action	Filter by tags and attributes					
<input type="checkbox"/> Name		Schedule	Status	Logs	Last runtime	Median runtime	Tables updated	Tables added
<input type="checkbox"/> gamedata_test			Ready	Logs	44 secs	44 secs	0	1

- Crawler를 실행한 데이터는 Databases 항목에서 확인할 수 있다.

The first screenshot shows the 'Databases' page with a new database named 'game-data-test' being created. The second screenshot shows the 'game-data-test' database details, including its name and location. The third screenshot shows the 'Tables' page for the 'game-data-test' database, listing a single table named 'kinesis_demo_20211030'.

- 데이터 상세 내용을 확인할 수 있다

This screenshot provides a detailed view of the 'kinesis_demo_20211030' table. It shows the table's properties, including its schema (with columns 1 through 5), table properties (such as sizeKey, objectCount, and recordCount), and serde parameters. The table properties section is highlighted with a blue box.

Table properties	Value
sizeKey	42036722
objectCount	10
UPDATED_BY_CRAWLER	gamedata_test
CrawlerSchemaDeserializerVersion	1.0
recordCount	484854
averageRecordSize	85
CrawlerSchemaDeserializerVersion	1.0
compressionType	none
columnsOrdered	true
areColumnsQuoted	false
delimiter	,
typeOfData	file

12) AWS Athena – 데이터 쿼리

- 데이터 쿼리를 빠르게 실행할 수 있다.

The screenshot shows the AWS search interface with the query 'Athena'. The results page lists various services and documentation. The 'Athena' service is highlighted with a purple icon and a callout box containing the text 'Query Data in S3 using SQL'.

The screenshot shows the Amazon Athena landing page. It features the title 'Amazon Athena' and the tagline 'Start querying data instantly.' Below the title, there is a brief description of what Athena is and a button labeled 'Explore the query editor' which is highlighted with a red box.

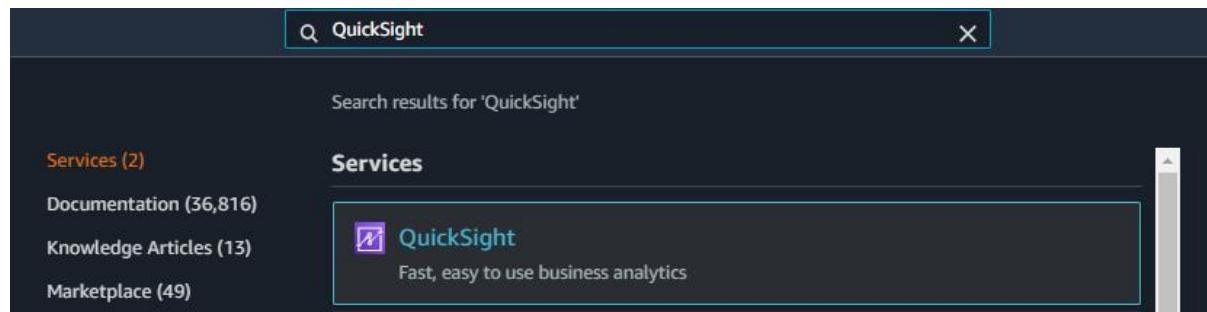
- 쿼리를 실행하면 데이터를 더 쉽게 확인할 수 있다.

The screenshot shows the Amazon Athena console. A query is being run against a table named 'kinensis_demo_20211030'. The results table displays 10 rows of data with columns including col0 through col7 and partition_0, partition_1, and partition_2. The 'Run again' button is highlighted with a red box.

col0	col1	col2	col3	col4	col5	col6	col7	partition_0	partition_1	partition_2
562598	85053	FRENCH ENAMEL CANDLEHOLDER	6	8/8/2011 10:00	2.1	15152	United Kingdom	2021	10	31
562602	22845	VINTAGE CREAM CAT FOOD CONTAINER	2	8/8/2011 10:11	6.35	12865	Austria	2021	10	31
562602	23029	DRAWER KNOB CRACKLE GLAZE GREEN	12	8/8/2011 10:11	1.65	12865	Austria	2021	10	31
562602	21669	BLUE STRIPE CERAMIC DRAWER KNOB	12	8/8/2011 10:11	1.25	12865	Austria	2021	10	31
562602	23032	DRAWER KNOB CRACKLE GLAZE IVORY	12	8/8/2011 10:11	1.65	12865	Austria	2021	10	31
562602	23306	SET OF 36 DOILIES PANTRY DESIGN	12	8/8/2011 10:11	1.45	12865	Austria	2021	10	31
562574	20996	JAZZ HEARTS ADDRESS BOOK	4	8/7/2011 12:42	0.19	14903	United Kingdom	2021	10	31
562574	21754	HOME BUILDING BLOCK WORD	1	8/7/2011 12:42	5.95	14903	United Kingdom	2021	10	31
562574	22118	JOY WOODEN BLOCK LETTERS	1	8/7/2011 12:42	4.95	14903	United Kingdom	2021	10	31
562574	850998	JUMBO BAG RED RETROSPOT	3	8/7/2011 12:42	2.08	14903	United Kingdom	2021	10	31

13) QuickSight – 데이터 시각화

- QuickSight 서비스를 통해 모든 데이터를 원하는 데로 시각화한다



The screenshot shows the AWS search interface with the query 'QuickSight'. The results page displays a 'Services' section with two items: 'Documentation (36,816)' and 'Knowledge Articles (13)'. Below this is a larger box for 'Marketplace (49)'. Inside the Marketplace box, the 'QuickSight' service card is highlighted. The card features the QuickSight logo, the text 'Fast, easy to use business analytics', and a 'View Details' button.

Create your QuickSight account

Standard Back

Authentication method

Use IAM federated identities & QuickSight-managed users
Authenticate with single sign-on (SAML or OpenID Connect), AWS IAM credentials, or QuickSight credentials

Use IAM federated identities only
Authenticate with single sign-on (SAML or OpenID Connect) or AWS IAM credentials

QuickSight region

Select a region i

Asia Pacific (Seoul) ▼

Account info

QuickSight account name i
You will need this for you and others to sign in

Amerie-QuickSight

Notification email address i
For QuickSight to send important notifications

amerielee215@gmail.com

QuickSight access to AWS services

Make your existing AWS data and users available in QuickSight. [Learn more](#)

Allow access and autodiscovery for these resources

-  Amazon Redshift
-  Amazon RDS
-  IAM
-  Amazon S3 (5 buckets selected)

[Select S3 buckets](#)

-  Amazon Athena
Make sure you've chosen the right Amazon S3 buckets for QuickSight access
-  Amazon S3 Storage Analytics
-  AWS IoT Analytics
-  Amazon OpenSearch Service
-  Amazon SageMaker
-  Amazon Timestream

[Finish](#)

Notification email address:

For QuickSight notifications, enter your email address.

amerie-quicksight@meowamerie.com

QuickSight account settings

Select Amazon S3 buckets

S3 Buckets Linked To QuickSight Account S3 Buckets You Can Access Across AWS

Select the buckets that you want QuickSight to be able to access.

Selected buckets have read only permissions by default. However, you must give write permissions for Athena Workgroup feature.

Select all

S3 Bucket	Write permission for Athena Workgroup
<input checked="" type="checkbox"/> cf-templates-sui4o8qd877e-ap-northeast-2	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> game-data-test-1031	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> kg-game-rds-bucket	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> kg-web-rds-bucket	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> kinesis-demo-20211030	<input checked="" type="checkbox"/>

[Cancel](#) [Finish](#)

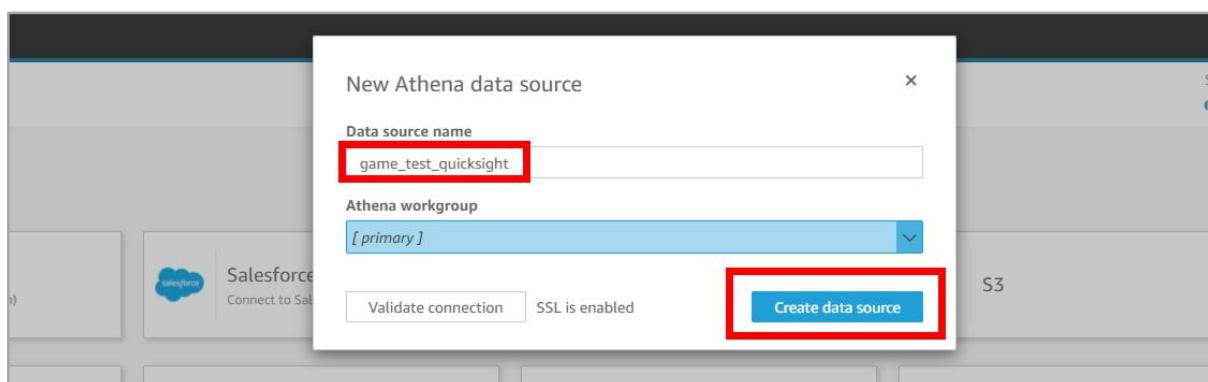
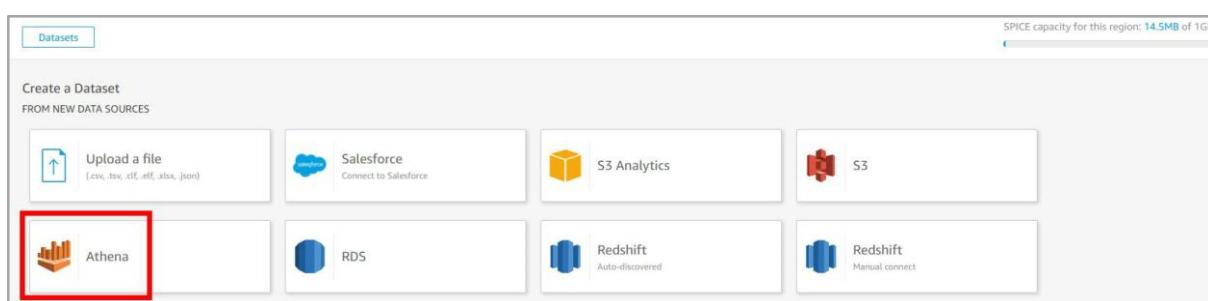
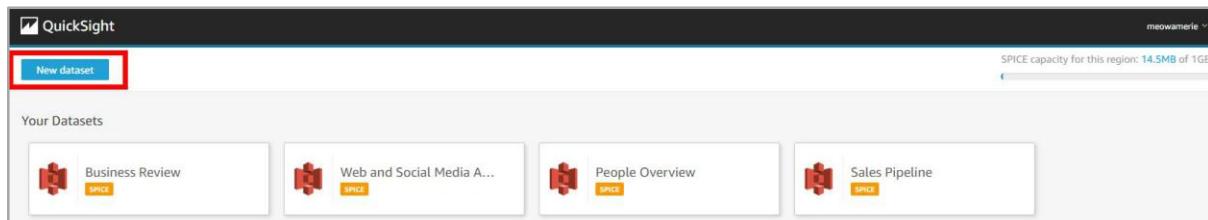
Congratulations! You are signed up for Amazon QuickSight!

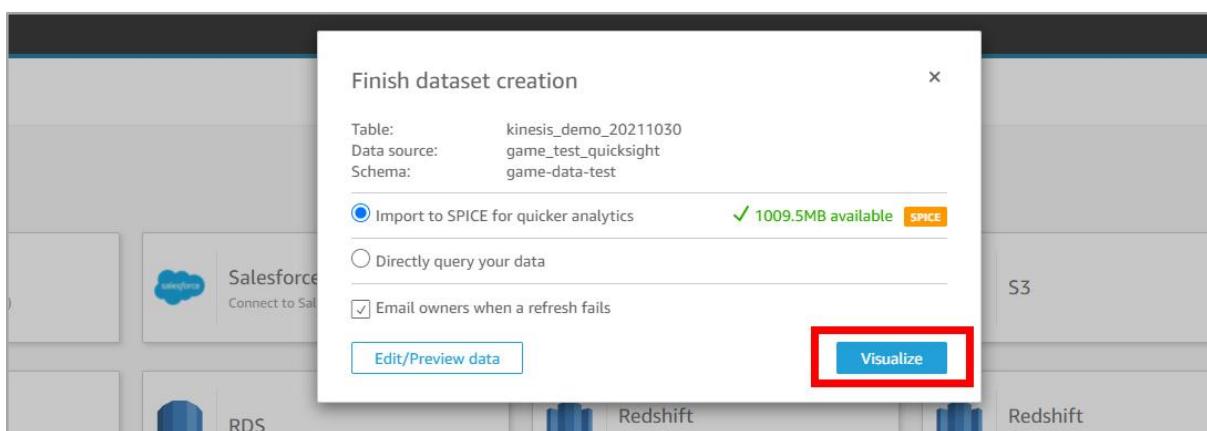
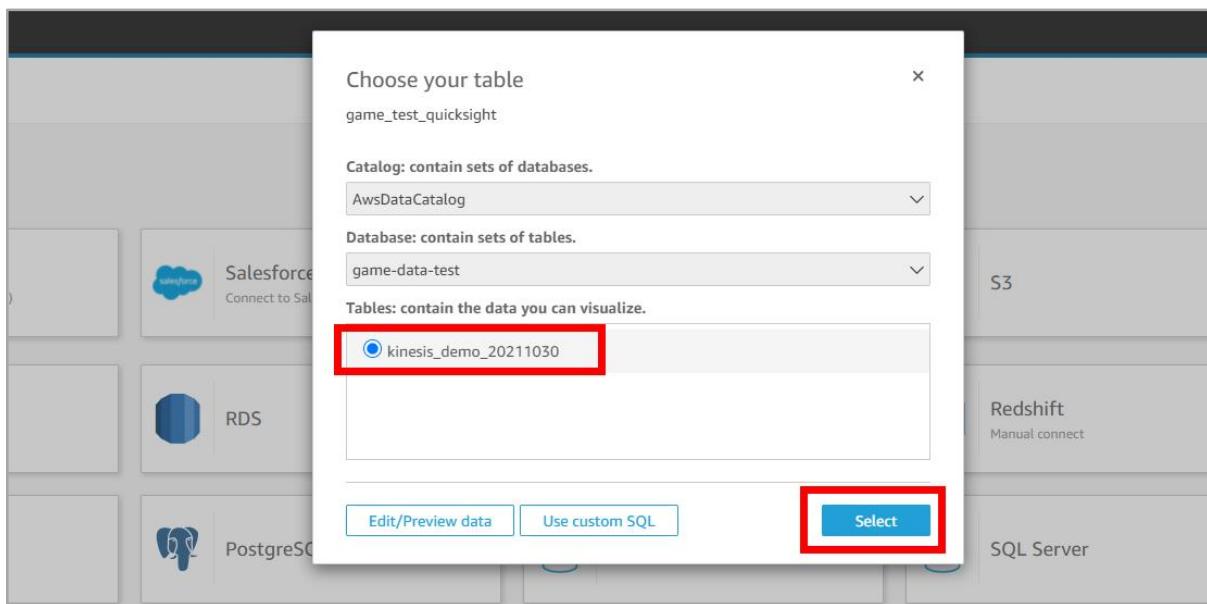
Access QuickSight with the following information

Account name: amerie-quicksight

Username: meowamerie

[Go to Amazon QuickSight](#)





QuickSight

+ Add Undo Redo kinesis_demo_20211030 analysis

Dataset: SPICE kinesis_demo_20211030

Field wells X axis Value # col3 (Sum) Group/Color col2

Sheet 1 +

Sum of Col3 by Col2

You need to add or remove fields

Vertical bar chart requires 1 dimension in X axis

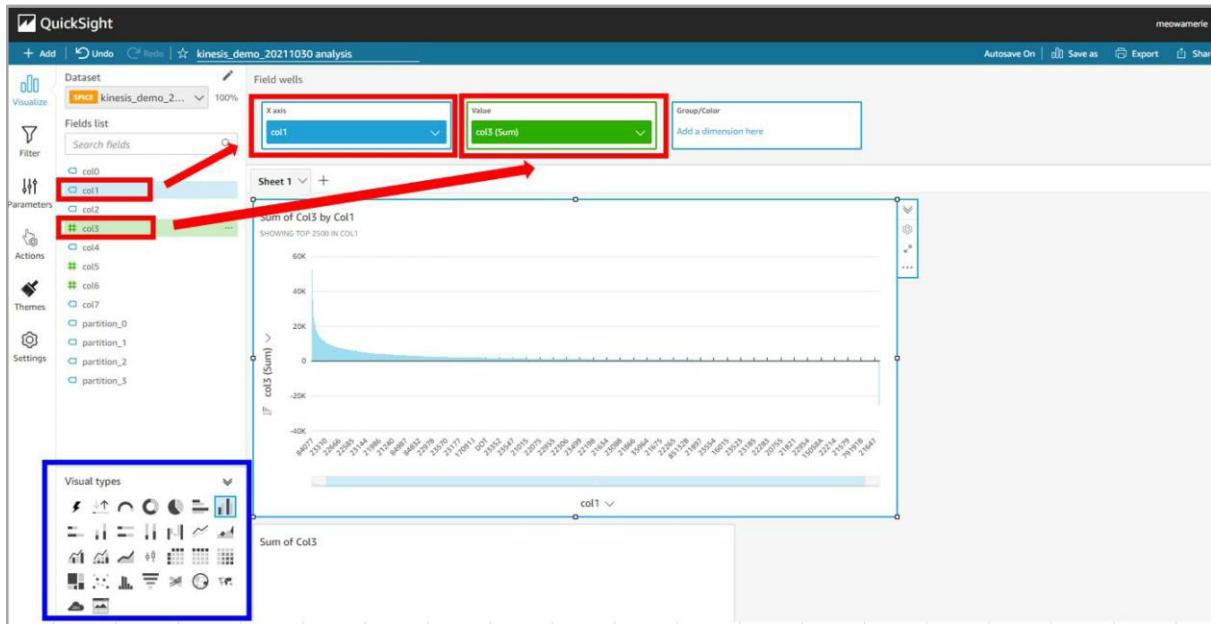
Import complete:
100% SUCCESS
500240 rows were imported to SPICE
0 rows were skipped

Fields list

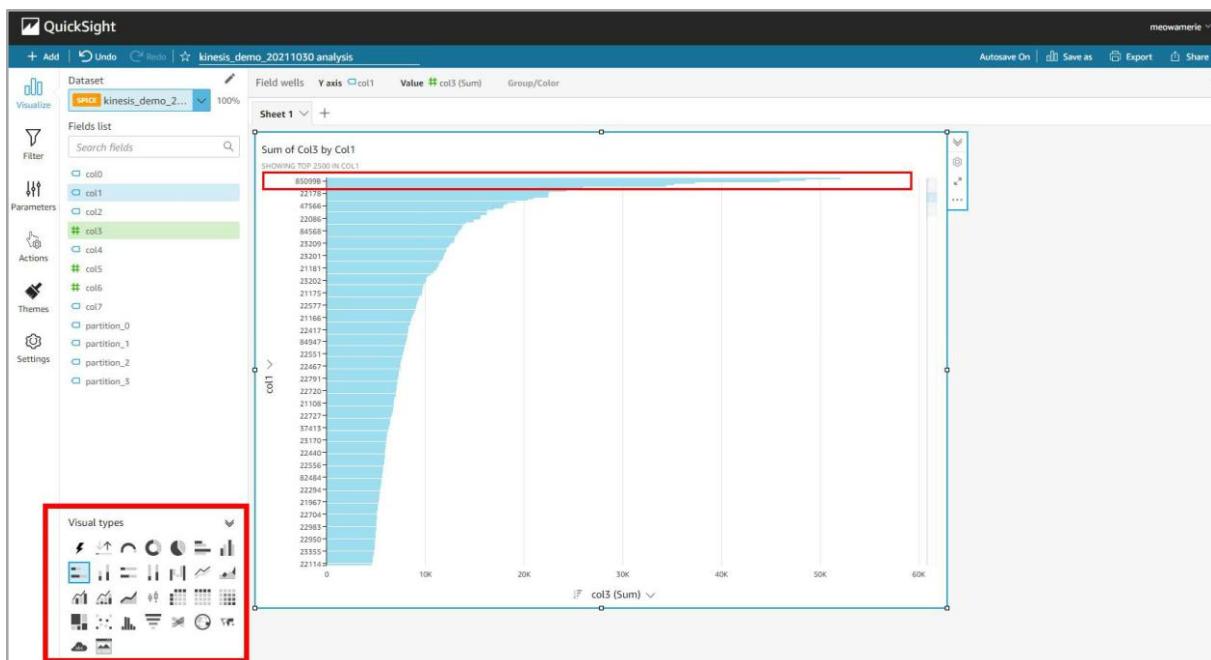
Search fields

col0
col1
col2
col3
col4
col5
col6
col7
partition_0
partition_1
partition_2
partition_3

Visual types

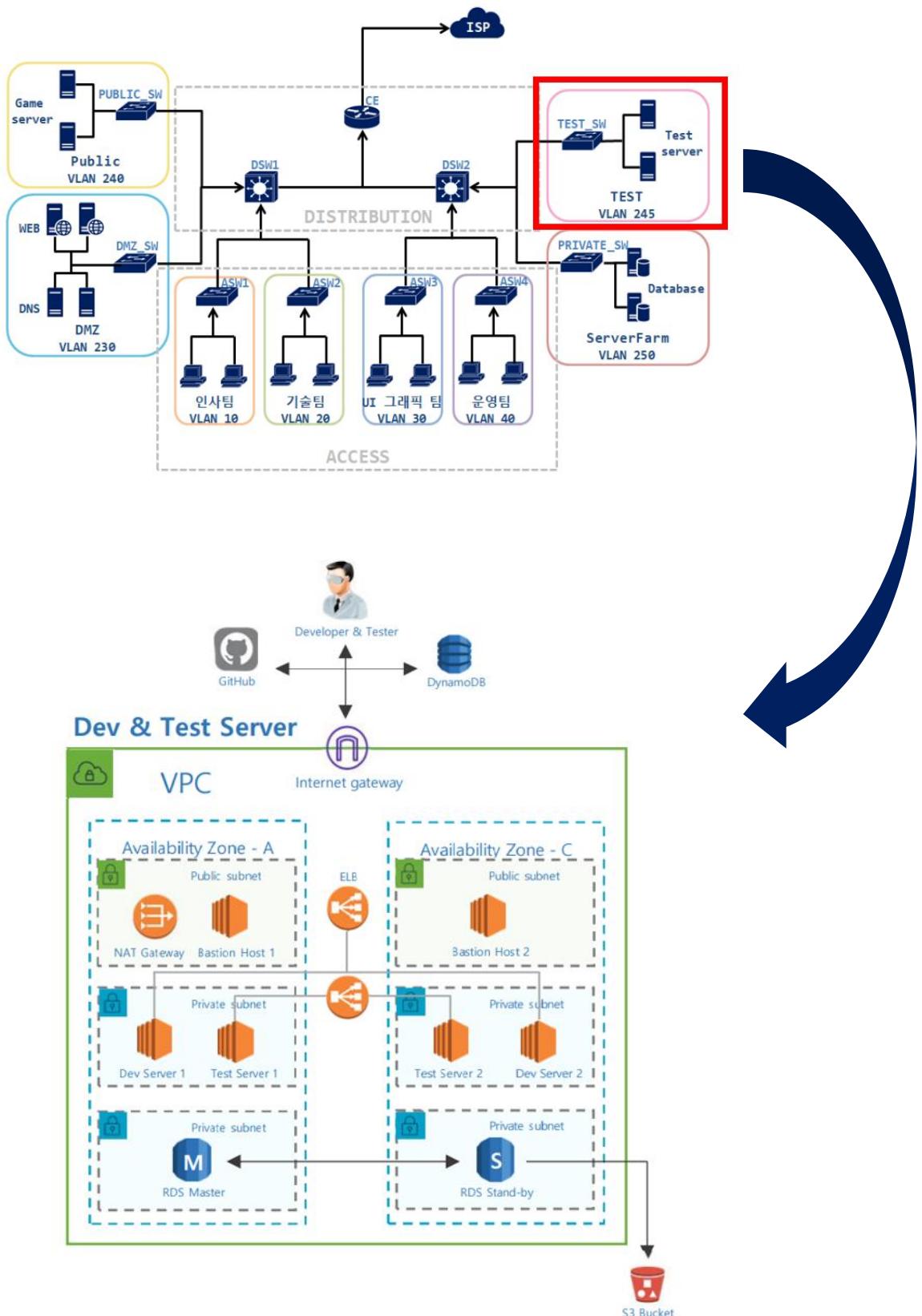


- 여러가지 형태로 시각화 시킬 수 있다.
- 그래픽으로 쉽게 확인이 가능하며 가장 많이 판매된 아이템ID를 한눈에 확인이 가능하다.



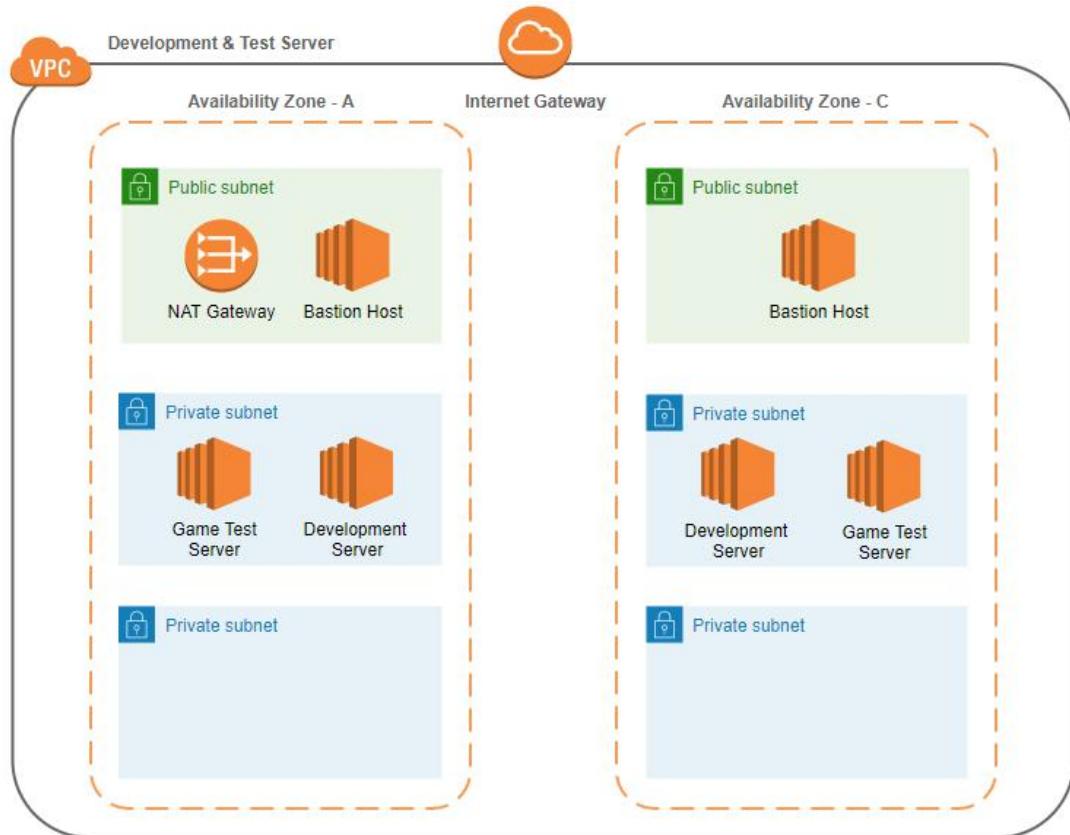
- 게임회사에게 데이터는 아주 중요한 자산이다. 데이터는 반드시 99.999999999%의 내구성을 가진 S3 스토리지로 안전하게 저장해야 한다. 저장 뿐만이 아니라 S3로 이동 후 데이터 엔지니어, 마케팅, 기획팀, 운영팀 등 여러 부서에서 데이터를 쉽게 분석할 수 있으며 비즈니스에 활용할 수 있다.

3. Development & Test Server VPC – 개발 및 테스트서버



1) CloudFormation Stack 생성

- 기본 구성 토플로지 (CloudFormation에 사용한 Json파일은 [링크를 클릭](#)해서 확인가능)



- CloudFormation에서 Stack 생성

Screenshot of the AWS CloudFormation console:

- Search results for 'CloudFormation':** Shows a list of services and features related to CloudFormation.
- Services (1):** Shows the CloudFormation service entry.
- Features (4):** Shows links to Documentation, Knowledge Articles, and Designer.
- CloudFormation Stack List:** Shows a table of existing stacks:

Stack name	Status	Created time	Description
KG-Game-Server-CloudFormation-	CREATE_COMPLETE	2021-10-28 23:13:09 UTC+0900	KG GAME - Server Automatic Configuration with CloudFormation

CloudFormation > Stacks > Create stack

Create stack

Specify template

Step 1 Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Prerequisite - Prepare template

Prepare template
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

Template is ready Use a sample template Create template in Designer

Specify template
A template is a JSON or YAML file that describes your stack's resources and properties.

Template source
Selecting a template generates an Amazon S3 URL where it will be stored.

Amazon S3 URL Upload a template file

Upload a template file

Choose file AWS_KGGAME_CloudFormation_DevTestServer.json
JSON or YAML formatted file

S3 URL: https://s3.ap-northeast-2.amazonaws.com/cf-templates-sui408qd877e-ap-northeast-2/2021305h1r-AWS_KGGAME_CloudFormation_DevTestServer.json [View in Designer](#)

Next

CloudFormation > Stacks > Create stack

Specify stack details

Specify template

Step 1 Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Stack name

Stack name
KG-DevTestServer-CloudFormation
Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters
Parameters are defined in your template and allow you to input custom values when you create or update a stack.

InstanceType
EC2 instance type

KeyName
Name of an existing EC2 KeyPair to enable SSH access to the instance

SSHLlocation
The IP address range that can be used to SSH to the EC2 instances

Next

CloudFormation > Stacks > Create stack

Step 1 Specify template

Configure stack options

Tags
You can specify tags (key-value pairs) to apply to resources in your stack. You can add up to 50 unique tags for each stack. [Learn more](#)

Name	KG-DevTestServer-CloudFormation	Remove
Add tag		

Permissions
Choose an IAM role to explicitly define how CloudFormation can create, modify, or delete resources in the stack. If you don't choose a role, CloudFormation uses permissions based on your user credentials. [Learn more](#)

IAM role name	Sample-role-name	Remove
---------------	------------------	--------

Stack failure options

Behavior on provisioning failure
Specify the roll back behavior for a stack failure. [Learn more](#)

Roll back all stack resources
Roll back the stack to the last known stable state.

Preserve successfully provisioned resources
Preserves the state of successfully provisioned resources, while rolling back failed resources to the last known stable state. Resources without a last known stable state will be deleted upon the next stack operation.

Step 2 Specify stack details

Review KG-DevTestServer-CloudFormation

Step 1: Specify template

Template

Template URL
https://s3.ap-northeast-2.amazonaws.com/cf-templates-sui4o8qd877e-ap-northeast-2/2021305hr-AWS_KGAME_CloudFormation_DevTestServer.json

Stack description
KG GAME - Dev&Test Server Automatic Configuration with CloudFormation

[Estimate cost](#)

Step 2: Specify stack details

Parameters (3)

Key	Value
InstanceType	t2.micro
KeyName	jobClassSeoulRegionKey
SSHLocation	30.0.0.0/16

Quick-create link

[Cancel](#) [Previous](#) [Create change set](#) **Create stack**

CloudFormation > Stacks > KG-DevTestServer-CloudFormation

KG-DevTestServer-CloudFormation

Stack info | Events | Resources | Outputs | Parameters | Template | Change sets

Events (78)

Timestamp	Logical ID	Status	Status reason
2021-11-01 15:51:49 UTC+0900	PublicRouteTableAssociation1	CREATE_COMPLETE	-
2021-11-01 15:51:49 UTC+0900	PublicRouteTableAssociation2	CREATE_COMPLETE	-
2021-11-01 15:51:49 UTC+0900	PrivateRouteTableAssociation3	CREATE_COMPLETE	-
2021-11-01 15:51:48 UTC+0900	PrivateRouteTableAssociation2	CREATE_COMPLETE	-
2021-11-01 15:51:48 UTC+0900	PrivateRouteTableAssociation1	CREATE_COMPLETE	-
2021-11-01 15:51:48 UTC+0900	PrivateRouteTableAssociation4	CREATE_COMPLETE	-
2021-11-01 15:51:46 UTC+0900	PublicRoute	CREATE_COMPLETE	-
2021-11-01 15:51:34 UTC+0900	BastionServerInstance1	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:34 UTC+0900	TestServerInstance1	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:34 UTC+0900	DevelopmentServerInstance1	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:34 UTC+0900	BastionServerInstance2	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:33 UTC+0900	PublicRouteTableAssociation1	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:33 UTC+0900	TestServerInstance2	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:33 UTC+0900	DevelopmentServerInstance2	CREATE_IN_PROGRESS	Resource creation initiated
2021-11-01 15:51:33 UTC+0900	AutoscalingGroup1	CREATE_IN_PROGRESS	Resource creation initiated

CloudFormation > Stacks > KG-DevTestServer-CloudFormation

KG-DevTestServer-CloudFormation

Stack info | Events | Resources | Outputs | Parameters | Template | Change sets

Events (89)

Timestamp	Logical ID	Status	Status reason
2021-11-01 15:53:40 UTC+0900	KG-DevTestServer-CloudFormation	CREATE_COMPLETE	-

- CloudFormation으로 생성한 VPC, Route Table, Security Group, NAT Gateway, 인스턴스 등을 확인한다.

Your VPCs (1/1) Info

vpc-040ed1b8824ff1b46 / KG_Dev_VPC

Actions | Create VPC

Details | CIDs | Flow logs | Tags

Details

VPC ID vpc-040ed1b8824ff1b46	State Available	DNS hostnames Enabled	DNS resolution Enabled
Tenancy Default	DHCP options set dopt-71d19c1a	Main route table rtb-093392c1a5c9e1afe	Main network ACL acl-0ac736740564d0926
Default VPC No	IPv4 CIDR 30.0.0.0/16	IPv6 CIDR (Network border group) -	Route 53 Resolver DNS Firewall rule groups -
Owner ID 483843322360			

Subnets (6) Info

	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
KG_Dev_Private_Subnet_1_a	subnet-0900019c44249213c	Available	vpc-040ed1b8824ff1b46 KG...	30.0.10.0/24	-	-	249
KG_Dev_Private_Subnet_2_c	subnet-00d2168457667293a	Available	vpc-040ed1b8824ff1b46 KG...	30.0.20.0/24	-	-	249
KG_Dev_Public_Subnet_1	subnet-088e1fd890dfb032f	Available	vpc-040ed1b8824ff1b46 KG...	30.0.1.0/24	-	-	249
KG_Dev_Public_Subnet_2	subnet-088d406790e57abd7	Available	vpc-040ed1b8824ff1b46 KG...	30.0.2.0/24	-	-	250
KG_DevDB_Private_Subnet_1_a	subnet-061ff0aa08f6db96	Available	vpc-040ed1b8824ff1b46 KG...	30.0.30.0/24	-	-	251
KG_DevDB_Private_Subnet_2_c	subnet-02933873632b5c9d	Available	vpc-040ed1b8824ff1b46 KG...	30.0.40.0/24	-	-	251

Route tables (3) Info

	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner ID
-	rtb-093392c1a5c9e1afe	-	-	Yes	vpc-040ed1b8824ff1b46 KG...	483843322360	
KG_Dev_Public_RouteTable	rtb-01b53bf41a324a677	2 subnets	-	No	vpc-040ed1b8824ff1b46 KG...	483843322360	
KG_Dev_Private_RouteTable	rtb-0b8b6c6de6e11f6e9	4 subnets	-	No	vpc-040ed1b8824ff1b46 KG...	483843322360	

NAT gateways (1/1) Info

	Name	NAT gateway ID	Connectivit...	State	State message	Elastic IP address	Private IP address	Network interface ID
KG-DevTestServer...	nat-06f3321280bb8acb5	Public	Available	-	3.34.104.190	30.0.1.104	eni-08a9548408767a213	

nat-06f3321280bb8acb5 / KG-DevTestServer-CloudFormation

- Details
- Monitoring
- Tags

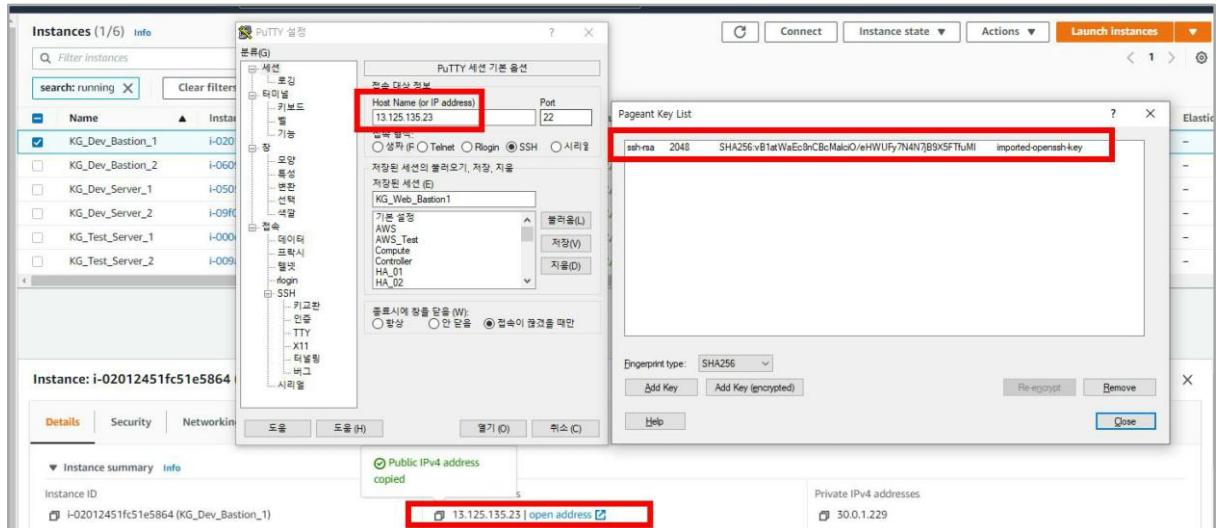
Details

NAT gateway ID nat-06f3321280bb8acb5	Connectivity type Public	State Available	State message -
Elastic IP address 3.34.104.190	Private IP address 30.0.1.104	Network interface ID eni-08a9548408767a213	VPC vpc-040ed1b8824ff1b46
Subnet subnet-088e1fd890dfb032f	Created 2021/11/01 16:23 GMT+9	Deleted -	-

Instances (6) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic
KG_Dev_Bastion_1	i-02012451fc51e5864	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2a	ec2-13-125-135-23.ap...	13.125.135.23	-
KG_Dev_Bastion_2	i-06099232745af733b	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2c	ec2-54-180-87-188.ap...	54.180.87.188	-
KG_Dev_Server_1	i-0505b56ca4c4b35ae	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2a	-	-	-
KG_Dev_Server_2	i-09f0d4fd5db5ecab0	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2c	-	-	-
KG_Test_Server_1	i-000c59a4fa1261e7a	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2a	-	-	-
KG_Test_Server_2	i-009aa734bf63bc794	Running	t2.micro	2/2 checks passed	No alarms	+	ap-northeast-2c	-	-	-

- Bastion Host 1에 원격 접속 후 외부통신 확인



```
ubuntu@ip-30-0-1-229:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=103 time=31.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=103 time=31.5 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=103 time=31.5 ms
```

- Dev Server 1로 원격접속해서 외부통신 확인

```
Instance: i-0505b56ca4c4b35ae (KG_Dev_Server_1)

Details Security Networking Storage Status checks Monitoring Tags

Instance ID: i-0505b56ca4c4b35ae (KG_Dev_Server_1)
Public IPv4 address: -
Private IPv4 addresses: 30.0.10.251

ubuntu@ip-30-0-1-229:~$ ssh 30.0.10.251
The authenticity of host '30.0.10.251 (30.0.10.251)' can't be established.
ECDSA key fingerprint is SHA256:BBBBSa0svqg7eTeqHRagCcvxj5kfewS2GR7cRE3qhy9w.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '30.0.10.251' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

 System information as of Mon Nov 1 07:30:40 UTC 2021

 System load: 0.01      Processes:         99
 Usage of /: 17.9% of 7.69GB  Users logged in:   0
 Memory usage: 23%          IP address for eth0: 30.0.10.251
 Swap usage: 0%

 94 packages can be updated.
 66 of these updates are security updates.
 To see these additional updates run: apt list --upgradable

 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@ip-30-0-10-251:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=29.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=28.4 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=28.4 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 28.433/28.716/29.256/0.381 ms
```

- Test Server 1로 접속해서 외부통신 확인

Instance: i-000c59a4fa1261e7a (KG_Test_Server_1)

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID i-000c59a4fa1261e7a (KG_Test_Server_1)	Public IPv4 address -	Private IPv4 addresses 30.0.10.56
---	--------------------------	--------------------------------------

```
ubuntu@ip-30-0-1-229:~$ ssh 30.0.10.56
The authenticity of host '30.0.10.56' (30.0.10.56) can't be established.
ECDSA key fingerprint is SHA256:vna/GG4kV4JYlbsS8vhR/1wfU77awhYK/0PHcFhvS8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '30.0.10.56' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

 System information as of Mon Nov  1 07:34:18 UTC 2021

 System load:  0.0          Processes:      98
 Usage of /:   17.8% of 7.69GB  Users logged in:  0
 Memory usage: 22%           IP address for eth0: 30.0.10.56
 Swap usage:   0%

94 packages can be updated.
66 of these updates are security updates.
To see these additional updates run: apt list --upgradable

ubuntu@ip-30-0-10-56:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=43 time=27.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=43 time=26.8 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=43 time=26.8 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 26.858/26.981/27.221/0.254 ms
```

- Bastion Host 2에 원격접속해서 외부통신 확인

The screenshot shows the AWS CloudWatch Instances interface and a Putty session window. In the CloudWatch Instances list, 'KG_Dev_Bastion_2' is selected. The Putty session window shows the configuration for connecting to 'KG_Dev_Bastion_2' at port 22. The AWS Key Manager (AWS KMS) page shows the 'Pageant Key List' for the selected instance, listing the imported OpenSSH key. The terminal window at the bottom shows the ping command being run.

Instances (1/6) Info

PUTTY 설정

Host Name (or IP address)
54.180.87.188

Status check
2/2 checks passed

Pageant Key List

ssh-rsa 2048 SHA256vB1atWaEc9nC8cMalcOeHWUf7N4N1B5x5FThM imported.openssh-key

Details Security

Instance summary Info

Instance ID: i-06099232745

54.180.87.188 | open address

```
ubuntu@ip-30-0-2-78:~$ ubuntu@ip-30-0-2-78:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=30.9 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=31.0 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=30.9 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/ave/max/mdev = 30.960/31.004/31.088/0.059 ms
```

- Dev Server 2로 원격접속해서 외부통신 확인



```

Instance: i-09f0d4fd5db5ecab0 (KG_Dev_Server_2)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

▼ Instance summary Info
Instance ID Public IPv4 address Private IPv4 addresses
i-09f0d4fd5db5ecab0 (KG_Dev_Server_2) - 30.0.20.119

ubuntu@ip-30-0-2-78:~$ ssh 30.0.20.119
The authenticity of host '30.0.20.119' (30.0.20.119) can't be established.
ECDSA key fingerprint is SHA256:dIntEkwPH2pgAIBkAKVYizIxJjuDPGh+akH/bU/l96w.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '30.0.20.119' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

System information as of Mon Nov  1 07:40:47 UTC 2021

System load: 0.0      Processes:      99
Usage of /: 17.8% of 7.69GB  Users logged in:  0
Memory usage: 22%      IP address for eth0: 30.0.20.119
Swap usage: 0%

94 packages can be updated.
66 of these updates are security updates.
To see these additional updates run: apt list --upgradable

ubuntu@ip-30-0-20-119:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=43 time=27.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=43 time=27.5 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=43 time=27.5 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 27.506/27.599/27.778/0.229 ms

```

- Test Server 2로 원격접속해서 외부통신 확인



```

Instance: i-009aa734bf63bc794 (KG_Test_Server_2)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

▼ Instance summary Info
Instance ID Public IPv4 address Private IPv4 addresses
i-009aa734bf63bc794 (KG_Test_Server_2) - 30.0.20.148

ubuntu@ip-30-0-2-78:~$ ssh 30.0.20.148
The authenticity of host '30.0.20.148' (30.0.20.148) can't be established.
ECDSA key fingerprint is SHA256:E4Dkdvd12qE72ld+7dy05F254YJosNkkRJoSvnpZLS0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '30.0.20.148' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

System information as of Mon Nov  1 07:43:04 UTC 2021

System load: 1.2      Processes:      99
Usage of /: 17.8% of 7.69GB  Users logged in:  0
Memory usage: 22%      IP address for eth0: 30.0.20.148
Swap usage: 0%

94 packages can be updated.
66 of these updates are security updates.
To see these additional updates run: apt list --upgradable

ubuntu@ip-30-0-20-148:~$ ping 8.8.8.8 -c 3
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=100 time=29.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=100 time=28.9 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=100 time=28.9 ms

--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 28.927/29.100/29.376/0.241 ms

```

2) ALB 생성 (로드밸런싱)

- Dev Server 1 및 Dev Server 2의 로드밸런서 생성
 - ◇ 현재 개발서버는 시각적 테스트를 위해 아파치를 설치한 상태이며 HTTP를 열어준다

Create Application Load Balancer

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

How Application Load Balancers work

Basic configuration

Load balancer name: KGDevTestALB

Scheme: Internet-facing

IP address type: IPv4

Network mapping

VPC info: Select the virtual private cloud (VPC) for your targets. Only VPCs with an internet gateway are enabled for selection. The selected VPC cannot be changed after the load balancer is created. If you select the VPC for your targets, view your target groups.

Mappings info: Select one or more Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection. Subnets cannot be removed after the load balancer is created, but additional subnets can be added.

Security groups

Select security groups: Create new security group

Create security group

Security group name: KG-Dev-SG

Description: Allow HTTP

VPC: vpc-040ed1b8824ff1046

Inbound rules:

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	Anywhere-IPv4	0.0.0.0/0

- 다시 ALB 설정화면에서 방금 생성한 ALB전용 Security Group선택 후 Target Group을 생성한다.

<p>Protocol version</p> <p><input checked="" type="radio"/> HTTP1 Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.</p> <p><input type="radio"/> HTTP2 Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.</p> <p><input type="radio"/> gRPC Send requests to targets using gRPC. Supported when the request protocol is gRPC.</p>
--

<p>Health checks The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.</p> <p>Health check protocol</p> <p>HTTP ▾</p> <p>Health check path Use the default path of "/" to ping the root, or specify a custom path if preferred. /</p> <p>Up to 1024 characters allowed.</p> <p>▼ Advanced health check settings</p> <p>Port The port the load balancer uses when performing health checks on targets. The default is the port on which each target receives traffic from the load balancer, but you can specify a different port.</p> <p><input checked="" type="radio"/> Traffic port</p> <p><input type="radio"/> Override</p> <p>Healthy threshold The number of consecutive health checks successes required before considering an unhealthy target healthy. 2</p> <p>2-10</p> <p>Unhealthy threshold The number of consecutive health check failures required before considering a target unhealthy. 2</p> <p>2-10</p> <p>Timeout The amount of time, in seconds, during which no response means a failed health check. 5 seconds</p> <p>2-120</p>

<p>Interval The approximate amount of time between health checks of an individual target 10 seconds 5-300</p> <p>Success codes The HTTP codes to use when checking for a successful response from a target. You can specify multiple values (for example, "200,202") or a range of values (for example, "200-299"). 200</p> <p>► Tags - optional Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them.</p>

Cancel **Next**

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2/6)

Instance ID	Name	State	Security groups	Zone	Subnet ID
i-000c594fa1261e7a	KG_Test_Server_1	running	KG_Dev_SG_Private	ap-northeast-2a	subnet-0900019c44249213c
i-02012451fc1e5864	KG_Dev_Bastion_1	running	KG_Dev_SG_Bastion	ap-northeast-2a	subnet-088ef1d890dfb032f
i-0505b56ca4c4b35ae	KG_Dev_Server_1	running	KG_Dev_SG_Private	ap-northeast-2a	subnet-0900019c44249213c
i-09f0d4fd5db5ecab0	KG_Dev_Server_2	running	KG_Dev_SG_Private	ap-northeast-2c	subnet-00d2168457667293a
i-06099232745af733b	KG_Dev_Bastion_2	running	KG_Dev_SG_Bastion	ap-northeast-2c	subnet-08d406790e57abd7
i-099aa734bf63bc794	KG_Test_Server_2	running	KG_Dev_SG_Private	ap-northeast-2c	subnet-00d2168457667293a

2 selected

Ports for the selected instances
Ports for routing traffic to the selected instances:
80
1-65535 (separate multiple ports with commas)
Include as pending below

Review targets

Targets (0)

All	Health status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
-----	---------------	-------------	------	------	-------	-----------------	------	-----------

No instances added yet
Specify Instances above, or leave the group empty if you prefer to add targets later.

0 pending

Cancel Previous **Create target group**

Review targets

Targets (2)

All	Health status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
X	Pending	i-09f0d4fd5db5ecab0	KG_Dev_Server_2	80	running	KG_Dev_SG_Private	ap-northeast-2c	subnet-00d2168457667293a
X	Pending	i-0505b56ca4c4b35ae	KG_Dev_Server_1	80	running	KG_Dev_SG_Private	ap-northeast-2a	subnet-0900019c44249213c

2 pending

Cancel Previous **Create target group**

Successfully created target group: KGDev/TestTargetGroup

EC2 > Target groups

Target groups (1) Info

Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
KGDev/TestTargetGroup	arnaws:elasticloadbalancin...	80	HTTP	Instance	-	vpc-040cd1b8824ff1b46

- 다시 ALB 설정화면으로 돌아와서 방금 생성한 Target Group을 선택한다.

Listeners and routing [Info](#)
A listener is a process that checks for connection requests, using the protocol and port you configure. Traffic received by the listener is then routed per your specification. You can specify multiple rules and multiple certificates per listener after the load balancer is created.

▼ Listener HTTP:80 [Remove](#)

Protocol	Port	Default action Info	HTTP ▼
HTTP ▼	: 80 1-65535	Forward to KGDevTestTargetGroup Target type: Instance, IPv4	Edit
Create target group			

[Add listener](#)

▶ Tags - optional
Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

Summary
Review and confirm your configurations. [Estimate cost](#)

Basic configuration Edit KGDevTestALB <ul style="list-style-type: none">Internet-facingIPv4	Security groups Edit <ul style="list-style-type: none">KG_Dev_SG_Private sg-0a971f71b83606ba8	Network mapping Edit <ul style="list-style-type: none">VPC vpc-040ed1b8824ff1b46 KG_Dev_VPC<ul style="list-style-type: none">ap-northeast-2a subnet-088e1fd890dfb032f KG_Dev_Public_Subnet_1ap-northeast-2c subnet-0d8d406790e57abd7 KG_Dev_Public_Subnet_2	Listeners and routing Edit <ul style="list-style-type: none">HTTP:80 defaults to KGDevTestTargetGroup
Tags Edit None			
Attributes Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.			

[Cancel](#) [Create load balancer](#)

Successfully created load balancer: **KGDevTestALB**
Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

EC2 > Load balancers

Suggested next steps

- Review, customize, or enable attributes for your load balancer and listeners using the **Description** and **Listeners** tabs within KGDevTestALB.
- Discover other services that you can integrate with your load balancer. Visit the **Integrated services** tab within KGDevTestALB.

[View load balancer](#)

- Test Server 1 및 Test Server 2의 로드밸런서 생성
 - ◇ 현재 테스트서버는 시각적인 테스트를 위해 아파치를 설치한 상태이며 HTTP를 열어 준다

EC2 > Load balancers > Create Application Load Balancer

Create Application Load Balancer Info

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

How Application Load Balancers work

Basic configuration

Load balancer name Info
The name must be unique within your AWS account and cannot be changed after the load balancer is created.
KG-Test-Server-ALB

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Scheme info
Scheme cannot be changed after the load balancer is created.
 Internet-facing
An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. Learn more Info

Internal
An internal load balancer routes requests from clients to targets using private IP addresses.

IP address type Info
Select the type of IP addresses that your subnets use:
 IPv4
Recommended for internal load balancers.
 Dualstack
Includes IPv4 and IPv6 addresses.

Network mapping Info
The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC info
Select the virtual private cloud (VPC) for your targets. Only VPCs with an internet gateway are enabled for selection. The selected VPC cannot be changed after the load balancer is created. To change the VPC, see [Change your target group](#).

Subnet
Select up to two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection. Subnets cannot be removed after the load balancer is created, but additional subnets can be added.

Mappings Info
Select up to two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection. Subnets cannot be removed after the load balancer is created, but additional subnets can be added.

ap-northeast-2a
Subnet: **subnet-0d86406790e57abd7** **KG_Dev_Public_Subnet_1**

IPv4 settings
Assigned by AWS

ap-northeast-2c
Subnet: **subnet-0d86406790e57abd7** **KG_Dev_Public_Subnet_2**

IPv4 settings
Assigned by AWS

Security groups Info

A security group is a set of firewall rules that control the traffic to your load balancer.

Security groups

Select security groups Info

Create new security group Info

EC2 > Security Groups > Create security group

Create security group Info

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name Info
KG-Test-SG
Name cannot be edited after creation.

Description Info
Allow HTTP

VPC Info
vpc-040ed1b8824ff1b46

Inbound rules Info

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	Custom	Q 0.0.0.0/0

Add rule

The screenshot shows the 'Outbound rules' section of the AWS Security Group creation interface. It includes fields for Type (All traffic), Protocol (All), Port range (All), Destination (Custom, 0.0.0.0/0), and Description (optional). There is also an 'Add rule' button and a 'Delete' button.

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add new tag

You can add up to 50 more tag

Cancel Create security group

- 다시 ALB 설정화면에 돌아와서 방금 생성한 ALB전용 Security Group을 선택한다

The screenshot shows the 'Security groups' list interface. It displays a single item: 'KG-Test-SG sg-0a995b56fe2144180'. The 'Create new security group' button is also visible.

- ALB의 Target Group을 생성한다.

The screenshot shows the 'Listeners and routing' configuration interface. It lists a 'Listener HTTP:80' with 'Protocol' set to 'HTTP' and 'Port' set to '80'. The 'Default action' dropdown is set to 'Forward to Select a target group' and contains the option '1-65535'. A red box highlights the 'Create target group' button below the dropdown.

▼ Listener HTTP:80 Remove

Protocol Port Default action Info

HTTP : 80 Forward to Select a target group 1-65535

Create target group

Add listener

EC2 > Target groups > Create target group

Step 1
Specify group details

Your load balancer routes requests to the targets in a target group and performs health checks on the targets.

Step 2
Register targets

Basic configuration
Settings in this section cannot be changed after the target group is created.

Choose a target type

- Instances
 - Supports load balancing to instances within a specific VPC.
- IP addresses
 - Supports load balancing to VPC and on-premises resources.
 - Facilitates routing to multiple IP addresses and network interfaces on the same instance.
 - Offers flexibility with microservice based architectures, simplifying inter-application communication.
- Lambda function
 - Facilitates routing to a single Lambda function.
 - Accessible to Application Load Balancers only.
- Application Load Balancer
 - Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
 - Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

Target group name

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Protocol	Port
HTTP	: 80

VPC
Select the VPC with the instances that you want to include in the target group.

KG_Dev_VPC vpc-040ed1b8824ff1b46 IPv4: 30.0.0.0/16	▼
--	---

Protocol version

- HTTP1
 - Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.
- HTTP2
 - Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.
- gRPC
 - Send requests to targets using gRPC. Supported when the request protocol is gRPC.

Health checks

The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

Health check protocol

HTTP ▾

Health check path

Use the default path of "/" to ping the root, or specify a custom path if preferred.

Up to 1024 characters allowed.

Advanced health check settings

Port
The port the load balancer uses when performing health checks on targets. The default is the port on which each target receives traffic from the load balancer, but you can specify a different port.

Traffic port
 Override

Healthy threshold

The number of consecutive health checks successes required before considering an unhealthy target healthy.

2-10

Unhealthy threshold

The number of consecutive health check failures required before considering a target unhealthy.

2-10

Timeout

The amount of time, in seconds, during which no response means a failed health check.

seconds
2-120

Interval

The approximate amount of time between health checks of an individual target.

seconds
5-300

Success codes

The HTTP codes to use when checking for a successful response from a target. You can specify multiple values (for example, "200,202") or a range of values (for example, "200-299").

▶ Tags - optional

Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them.

Cancel **Next**

EC2 > Target groups > Create target group

Step 1
Specify group details

Step 2
Register targets

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2/6)

Instance ID	Name	State	Security groups	Zone	Subnet ID
i-000c59a4fa1261e7a	KG_Test_Server_1	running	KG_Dev_SG_Private	ap-northeast-2a	subnet-0900019c44249213c
i-009aa734bf63bc794	KG_Test_Server_2	running	KG_Dev_SG_Private	ap-northeast-2c	subnet-00d2168457667293a

2 selected

Ports for the selected instances
Ports for routing traffic to the selected instances:
80
1-65535 (separate multiple ports with commas)

Include as pending below

Review targets

Targets (2)

Remove	Health status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
X	Pending	i-009aa734bf63bc794	KG_Test_Server_2	80	✓ running	KG_Dev_SG_Private	ap-northeast-2c	subnet-00d2168457667293a
X	Pending	i-000c59a4fa1261e7a	KG_Test_Server_1	80	✓ running	KG_Dev_SG_Private	ap-northeast-2a	subnet-0900019c44249213c

2 pending

Cancel Previous Create target group

- 다시 ALB 생성화면에 돌아와서 이어서 설정한다

Listeners and routing Info

A listener is a process that checks for connection requests, using the protocol and port you configure. Traffic received by the listener is then routed per your specification. You can specify multiple rules and multiple certificates per listener after the load balancer is created.

▼ Listener HTTP:80

Protocol: HTTP	Port: 80	Default action: Forward to: KGTestServerTargetGroup Target type: Instance, IPv4	HTTP	<input checked="" type="checkbox"/>
----------------	----------	---	------	-------------------------------------

Create target group

Add listener

Tags Edit
None

Attributes

ⓘ Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.

Cancel **Create load balancer**

Successfully created load balancer: **KG-Test-Server-ALB**

Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

EC2 > Load balancers

Suggested next steps

- Review, customize, or enable attributes for your load balancer and listeners using the **Description** and **Listeners** tabs within **KG-Test-Server-ALB**.
- Discover other services that you can integrate with your load balancer. Visit the **Integrated services** tab within **KG-Test-Server-ALB**.

View load balancer

3) RDS 생성 (개발&테스트서버 DB)

- DB Subnet Group 생성

The screenshot shows the 'Create DB Subnet Group' wizard. In the 'Subnet group details' step, the name 'KGDevTest-DB-SubnetGroup' is entered. In the 'Add subnets' step, four subnets are selected from the 'ap-northeast-2' availability zone: subnet-061ff00aa08f6db96 (30.0.30.0/24), subnet-0900019c44249213c (30.0.10.0/24), subnet-029333873632b5c9d (30.0.40.0/24), and subnet-00d2168457667293a (30.0.20.0/24). The 'Subnets selected' table lists these subnets with their respective subnet IDs and CIDR blocks.

Availability zone	Subnet ID	CIDR block
ap-northeast-2a	subnet-061ff00aa08f6db96	30.0.30.0/24
ap-northeast-2a	subnet-0900019c44249213c	30.0.10.0/24
ap-northeast-2c	subnet-029333873632b5c9d	30.0.40.0/24
ap-northeast-2c	subnet-00d2168457667293a	30.0.20.0/24

After creation, a success message is displayed: 'Successfully created KGDevTest-DB-SubnetGroup. View subnet group'.

- 데이터베이스 전용 Security Group 생성

The screenshot shows the 'Create security group' wizard. In the 'Basic details' step, the name 'KG_Development_MySQL_DB_SG' and description 'Allow MySQL' are entered. In the 'Inbound rules' step, a rule is configured to allow MySQL traffic (TCP port 3306) from the 'KG_Dev_SG_Private' security group. The 'Source' dropdown shows the selected security group.

Outbound rules [Info](#)

Type	Protocol	Port range	Destination	Description - optional
All traffic	All	All	Custom	0.0.0.0/0

[Add rule](#)

Tags - optional
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

[Add new tag](#)
You can add up to 50 more tag

[Cancel](#) [Create security group](#)

sg-0721e20bb114d036a - KG_Development_MySQL_DB_SG

[Actions](#)

Details			
Security group name <input checked="" type="checkbox"/> KG_Development_MySQL_DB_SG	Security group ID <input checked="" type="checkbox"/> sg-0721e20bb114d036a	Description <input checked="" type="checkbox"/> Allow MySQL	VPC ID <input checked="" type="checkbox"/> vpc-040ed1b8824ff1b46
Owner <input checked="" type="checkbox"/> 483843322360	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

- 데이터베이스 생성

Create database

[Choose a database creation method](#)

Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Edition
 MySQL Community

Known issues/limitations
Review the Known issues/limitations [Info](#) to learn about potential compatibility issues with specific database versions.

Version
MySQL 5.7.34

Templates
Choose a sample template to meet your use case.

Production
Use defaults for high availability and fast, consistent performance.

Dev/Test
This instance is intended for development use outside of a production environment.

Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS.

Settings

DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

Credentials Settings

Master username [Info](#)
Type a login ID for the master user of your DB instance.

Auto generate a password
Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote)', "(double quote)" and @ (at sign).

Confirm password [Info](#)

DB instance class

Storage

Storage type [Info](#)
General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage
20 GiB
(Minimum: 20 GiB, Maximum: 65,536 GiB) Higher allocated storage **may improve** IOPS performance.

Storage autoscaling [Info](#)
Provides dynamic scaling support for your database's storage based on your application's needs.

Enable storage autoscaling
Enabling this feature will allow the storage to increase once the specified threshold is exceeded.

- Storage autoscaling은 스토리지 자동 확장부분이기 때문에 개인 테스트 시 체크를 해지 한다
- 반드시 첫번째 옵션을 선택해야 고가용성 DB가 구축된다. 테스트 시 "Do not create a standby instance"를 선택한다

Availability & durability

Multi-AZ deployment [Info](#)

Create a standby instance (recommended for production usage)
Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.

Do not create a standby instance

Connectivity

Virtual private cloud (VPC) [Info](#)
VPC that defines the virtual networking environment for this DB instance.

Only VPCs with a corresponding DB subnet group are listed.

Subnet group [Info](#)
DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.

Public access [Info](#)

Yes
Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.

No
RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

VPC security group
Choose a VPC security group to allow access to your database. Ensure that the security group rules allow the appropriate incoming traffic.

Choose existing
Choose existing VPC security groups

Create new
Create new VPC security group

Existing VPC security groups

Additional configuration

Database authentication

Database authentication options [Info](#)

Password authentication
Authenticates using database passwords.

Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.

Password and Kerberos authentication
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Additional configuration

Database options

Initial database name [Info](#)
kgdevtest_data_sample

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group [Info](#)
default:mysql5.7

Option group [Info](#)
default:mysql-5.7

Backup

Enable automated backups
Creates a point-in-time snapshot of your database

⚠ Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to details [here](#).

Backup retention period [Info](#)
Choose the number of days that RDS should retain automatic backups for this instance.
35 days

Backup window [Info](#)
Select the period for which you want automated backups of the database to be created by Amazon RDS.

Select window

No preference

Copy tags to snapshots

Encryption

Enable encryption
Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

AWS KMS Key [Info](#)
(default) aws/rds

Account
483843322360

KMS key ID
alias/aws/rds

Performance Insights [Info](#)

ⓘ Enabling Performance Insights will automatically enable the MySQL Community performance schema.
[Learn more](#)

Enable Performance Insights

Retention period [Info](#)
Default (7 days)

AWS KMS Key [Info](#)
(default) aws/rds

Account
483843322360

KMS key ID
alias/aws/rds

⚠ You can't change the KMS key after enabling Performance Insights.

Ensure that general, slow query, and audit logs are turned on. Error logs are enabled by default. [Learn more](#)

Maintenance

Auto minor version upgrade [Info](#)

Enable auto minor version upgrade
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

Maintenance window [Info](#)
Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

Select window

No preference

Deletion protection

Enable deletion protection
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Successfully created database kgdevtest											View connection details	X				
RDS > Databases																
Databases											<input checked="" type="radio"/> Group resources		Modify	Actions ▾	Restore from S3	Create database
DB identifier	Role	Engine	Region & AZ	Size	Status	CPU	Current activity	Maintenance	V							
kgdevtest	Instance	MySQL Community	ap-northeast-2a	db.t2.micro	Available	-	0 Connections	none	V							

4) DynamoDB – 세션관리

- 현재 개발서버1,2와 테스트서버1,2에 시각적인 테스트를 위해 아파치를 설치해기 때문에 개발서버1,2와 테스트서버1,2에 아래와 같이 동일하게 설정한다
- SDK 설치

```
ubuntu@ip-30-0-10-251:~$ cd /var/www/html
ubuntu@ip-30-0-10-251:/var/www/html$ curl -sS https://getcomposer.org/installer | php
All settings correct for using Composer
Downloading...

Composer (version 2.1.10) successfully installed to: /var/www/html/composer.phar
Use it: php composer.phar
ubuntu@ip-30-0-10-251:/var/www/html$ php composer.phar require AWS/AWS-sdk-php
Using version ^3.199 for aws/aws-sdk-php
./composer.json has been created
Running composer update aws/aws-sdk-php
Loading composer repositories with package information
Updating dependencies
Lock file operations: 12 installs, 0 updates, 0 removals
  - Installing psr/http-client (1.0.1): Extracting archive
  - Installing guzzlehttp/guzzle (7.4.0): Extracting archive
  - Installing aws/aws-crt-php (v1.0.2): Extracting archive
  - Installing aws/aws-sdk-php (3.199.7): Extracting archive
5 package suggestions were added by new dependencies, use `composer suggest` to see details.
Generating autoload files
5 packages you are using are looking for funding.
Use the `composer fund` command to find out more!
ubuntu@ip-30-0-10-251:/var/www/html$ cat ./basic/session.php
<?php
require '/var/www/html/vendor/autoload.php';
use Aws\DynamoDb\AwsClient;
use Aws\DynamoDb\SessionHandler;

$sdk = new Aws\Sdk([
    'region'  => 'ap-northeast-2',
    'version' => 'latest',
    'http'    => [
        'debug' => false
    ]
]);
$dynamodb = $sdk->createDynamodb();

$sessionHandler = SessionHandler::fromClient($dynamodb, [
    'table_name' => 'usersession'
]);
$sessionHandler->register();
```

- 개발서버1,2와 테스트서버1,2에 DynamoDB로 접근할 수 있는 role를 부여해준다

The screenshot shows the AWS EC2 Instances page. A list of instances is displayed, including:

- KG_Dev_Bastion_1 (i-02012451fc51e5864)
- KG_Dev_Bastion_2 (i-06099232745af733b)
- KG_Dev_Server_1 (i-0505b56ca4c4b35ae)** (selected and highlighted with a red box)
- KG_Dev_Server_2 (i-09f0d4fd5db5ecab0)
- KG_Test_Server_1 (i-000c59a4fa1261e7a)
- KG_Test_Server_2 (i-009aa734bf63bc794)

In the Actions menu for the selected instance, the 'Modify IAM role' option is highlighted with a red box.

The screenshot shows the 'Modify IAM role' dialog box. It includes the following fields:

- Instance ID: i-0505b56ca4c4b35ae (KG_Dev_Server_1)
- IAM role: Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.
- Role selection dropdown: Set to 'DynamoDBFullAccess-EC2' (highlighted with a red box).
- Create new IAM role: A link to create a new IAM role.
- Buttons: 'Cancel' and 'Save' (highlighted with a red box).

- DynamoDB Table 생성

◇ 개발 서버 및 테스트 서버는 서로 다른 Table name을 사용해야 한다.

- DB연동

◇ 개발서버1,2와 테스트서버1,2는 모두 동일하게 설정해준다

```
ubuntu@ip-30-0-10-251:/var/www/html$ cd ./basic
ubuntu@ip-30-0-10-251:/var/www/html/basic$ sudo vi ./login/dbconn.php

<?php
$mysql_hostname = 'kgdevtest.ce553ffb4qlg.ap-northeast-2.rds.amazonaws.com';
$mysql_username = 'kgdevadmin';
$mysql_password = 'kgdevadminkgdevadmin';
$mysql_database = 'kgdevtest_data_sample';

$connect = mysqli_connect($mysql_hostname, $mysql_username, $mysql_password, $mysql_database);
mysqli_select_db($connect, $mysql_database) or die('DB connection ERROR');
?>
```

- 개발서버1,2의 로드밸런서 DNS로 접속해서 테스트한다.
 - 새로 고칠 때마다 Round-robin식으로 트래픽을 분산해주고 있는 것을 확인할 수 있다.
- ◇ 현재 시각적인 테스트를 위해 아파치를 설치했기 때문에 웹 브라우저로 확인한다.

AWS CloudFront Basic Configuration:

- Name: KGDevTestALB
- ARN: arn:aws:elasticloadbalancing:ap-northeast-2:483843322360:loadbalancer/app/KGDevTestALB/6a0538651a6d10c8
- DNS name: KGDevTestALB-1833564006.ap-northeast-2.elb.amazonaws.com (A Record)

Browser Screenshots:

- Left Window (Development Server 1):** Instance ID: i-0520955ca4db15ae, Availability Zone: ap-northeast-2a
- Right Window (Development Server 2):** Instance ID: i-09044fd5dbfecd0, Availability Zone: ap-northeast-2c

- 테스트 서버1,2의 로드밸런서 DNS로 접속해서 테스트한다.
 - 새로 고칠 때마다 Round-robin식으로 트래픽을 분산해주고 있는 것을 확인할 수 있다.
- ◇ 현재 시각적인 테스트를 위해 아파치를 설치했기 때문에 웹 브라우저로 확인한다.

AWS CloudFront Basic Configuration:

- Name: KG-Test-Server-ALB
- ARN: arn:aws:elasticloadbalancing:ap-northeast-2:483843322360:loadbalancer/app/KG-Test-Server-ALB/aa48c96b393d53e
- DNS name: KG-Test-Server-ALB-756671693.ap-northeast-2.elb.amazonaws.com (A Record)

Browser Screenshots:

- Left Window (Test Server 1):** Instance ID: i-00053aef12b7ef7a, Availability Zone: ap-northeast-2a
- Right Window (Test Server 2):** Instance ID: i-009aa754b683c794, Availability Zone: ap-northeast-2c

5) S3 Storage 생성

- 개발서버 및 테스트서버의 데이터베이스 자동백업 스냅샷을 S3로 전송하고 보관한다
- S3전용버킷 생성

Create bucket Info

Buckets are containers for data stored in S3. Learn more [\[?\]](#)

General configuration

Bucket name: kg-devtest-rds-bucket kg-devtest-rds-bucket

AWS Region: Asia Pacific (Seoul) ap-northeast-2

Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.

Block Public Access settings for this bucket

Block all public access

Block public access to buckets and objects granted through new access control lists (ACLS)

Block public access to buckets and objects granted through any access control lists (ACLS)

Block public access to buckets and objects granted through new public bucket or access point policies

Block public and cross-account access to buckets and objects through any public bucket or access point policies

Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more \[?\]](#)

Bucket Versioning: Disable Enable

Tags (0) - optional

Track storage cost or other criteria by tagging your bucket. [Learn more \[?\]](#)

No tags associated with this bucket.

Add tag

Default encryption

Automatically encrypt new objects stored in this bucket. [Learn more \[?\]](#)

Server-side encryption: Disable Enable

Advanced settings

After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings.

Successfully created bucket "kg-devtest-rds-bucket"

To upload files and folders, or to configure additional bucket settings choose [View details](#).

Amazon S3

Account snapshot

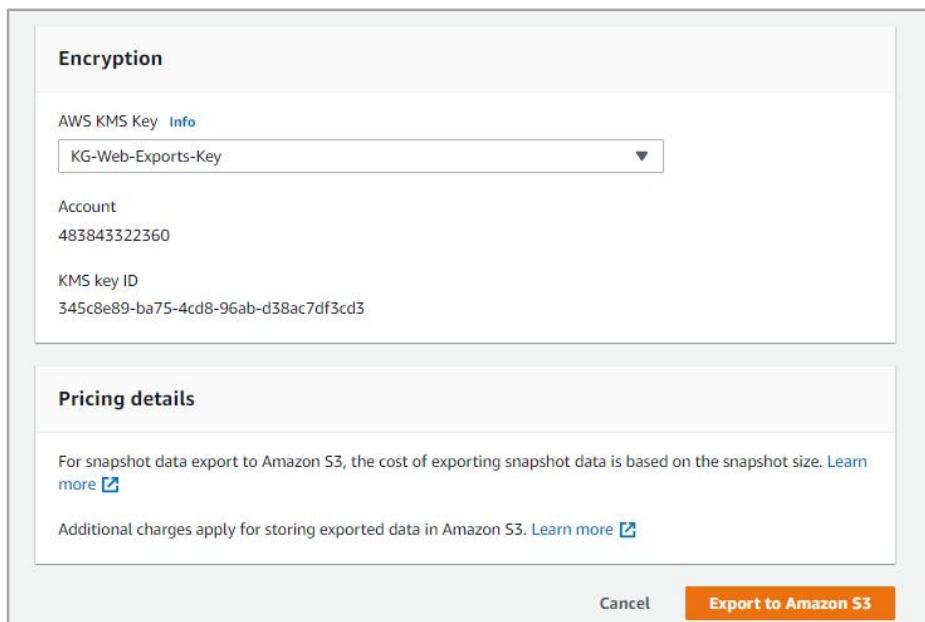
Last updated: Oct 31, 2021 by Storage Lens. Metrics are generated every 24 hours. [Learn more \[?\]](#)

Buckets (7) Info

Buckets are containers for data stored in S3. [Learn more \[?\]](#)

Name	AWS Region	Access	Creation date
kg-devtest-rds-bucket	Asia Pacific (Seoul) ap-northeast-2	Bucket and objects not public	November 1, 2021, 21:00:49 (UTC+09:00)

- 자동백업 스냅샷을 S3 버킷으로 추출한다.



- S3 버킷에서 스냅샷 확인

Amazon S3

Buckets

Access Points

Object Lambda Access Points

Multi-Region Access Points

Batch Operations

Access analyzer for S3

Block Public Access settings for this account

Storage Lens

Dashboards

AWS Organizations settings

Amazon S3

Buckets

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Storage Lens

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AWS Organizations settings

Amazon S3

Buckets

Access Points

Object Lambda Access Points

Multi-Region Access Points

Batch Operations

Access analyzer for S3

Block Public Access settings for this account

Storage Lens

Dashboards

AWS Organizations settings

Feature spotlight

6) Git & GitHub

- Dev Server 1, Dev Server2에 다음과 같이 동일하게 설정한다.

```
ubuntu@ip-30-0-10-251:~$ pwd
/home/ubuntu
ubuntu@ip-30-0-10-251:~$ mkdir ./Git_Sample
ubuntu@ip-30-0-10-251:~$ cd ./Git_Sample/
ubuntu@ip-30-0-10-251:~/Git_Sample$ git init
Initialized empty Git repository in /home/ubuntu/Git_Sample/.git/
ubuntu@ip-30-0-10-251:~/Git_Sample$ ls -la
total 12
drwxrwxr-x 3 ubuntu ubuntu 4096 Nov  1 12:26 .
drwxr-xr-x 8 ubuntu ubuntu 4096 Nov  1 12:26 ..
drwxrwxr-x 7 ubuntu ubuntu 4096 Nov  1 12:26 .git
ubuntu@ip-30-0-10-251:~/Git_Sample$ cat ./.git
cat: ./.git: Is a directory
ubuntu@ip-30-0-10-251:~/Git_Sample$ ls ./.git
HEAD branches config description hooks info objects refs
ubuntu@ip-30-0-10-251:~/Git_Sample$ git status
On branch master

No commits yet

nothing to commit (create/copy files and use "git add" to track)
ubuntu@ip-30-0-10-251:~/Git_Sample$ echo "KGAME Git DevTest" > DevTest.txt
ubuntu@ip-30-0-10-251:~/Git_Sample$ ls
DevTest.txt
ubuntu@ip-30-0-10-251:~/Git_Sample$ cat DevTest.txt
KGAME Git DevTest
ubuntu@ip-30-0-10-251:~/Git_Sample$ git add DevTest.txt
ubuntu@ip-30-0-10-251:~/Git_Sample$ git commit
ubuntu@ip-30-0-10-251:~/Git_Sample$ nano .git/COMMIT_EDITMSG
GNU nano 2.9.3                                         -  o  x
GNU nano 2.9.3                                         /home/ubuntu/Git_Sample/.git/COMMIT_EDITMSG                                         Modified ^

"1st DevTest commit"
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# Committer: Ubuntu <ubuntu@ip-30-0-10-251.ap-northeast-2.compute.internal>
#
# On branch master
#
# Initial commit
#
# Changes to be committed:
#       new file:   DevTest.txt
#
[master (root-commit) c1c4e73] "1st DevTest commit"
Committer: Ubuntu <ubuntu@ip-30-0-10-251.ap-northeast-2.compute.internal>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

git config --global --edit

After doing this, you may fix the identity used for this commit with:

git commit --amend --reset-author

1 file changed, 1 insertion(+)
create mode 100644 DevTest.txt
ubuntu@ip-30-0-10-251:~/Git_Sample$ git status
On branch master
nothing to commit, working tree clean
ubuntu@ip-30-0-10-251:~/Git_Sample$ git log
commit c1c4e730acf3bf9e907629d752d19743df96307 (HEAD -> master)
Author: Ubuntu <ubuntu@ip-30-0-10-251.ap-northeast-2.compute.internal>
Date:   Mon Nov  1 12:29:58 2021 +0000

        "1st DevTest commit"
```

- Github 설정 (보안을 위해 개발자를 지정해서 공유하도록 한다.)

The screenshot shows the GitHub interface for creating a new repository. The top navigation bar includes 'Search or jump to...', 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. A green banner at the top says 'Learn Git and GitHub without any code!' with a message about the Hello World guide. On the right, there's a 'New repository' button highlighted with a red box. Below it are links for 'Import repository', 'New gist', and 'New organization'. The main area is titled 'Create a new repository'. It asks if a repository contains all project files, including the revision history. It shows the 'Owner' dropdown set to 'meowcatmeoww' and the 'Repository name' input field containing 'Git_Sample', both highlighted with red boxes. A note below says 'Great repository names are short and memorable. Need inspiration? How about psychic-octo-umbrella?' The 'Description (optional)' field contains 'Portfolio_Test'. Under 'Visibility', the 'Private' radio button is selected, also highlighted with a red box. Below that, there's a section for initializing the repository with options like 'Add a README file', 'Add .gitignore', and 'Choose a license', none of which are checked. At the bottom is a 'Create repository' button.

meowcatmeoww / Git_Sample Private

Code Issues Pull requests Actions Projects Security Insights Settings

Quick setup — if you've done this kind of thing before

Set up in Desktop or HTTPS SSH https://github.com/meowcatmeoww/Git_Sample.git

Get started by creating a new file or uploading an existing file. We recommend every repository include a README, LICENSE, and .gitignore.

...or create a new repository on the command line

```
echo "# Git_Sample" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/meowcatmeoww/Git_Sample.git
git push -u origin main
```

- Github 원격저장소의 링크를 개발서버 Git bash에 등록해준다

```
ubuntu@ip-30-0-10-251:~/Git_Sample$ git remote add origin https://github.com/meowcatmeoww/Git_Sample.git
ubuntu@ip-30-0-10-251:~/Git_Sample$ git remote -v
origin  https://github.com/meowcatmeoww/Git_Sample.git (fetch)
origin  https://github.com/meowcatmeoww/Git_Sample.git (push)
```

- 토큰 발급받기

Settings / Developer settings

GitHub Apps
OAuth Apps
Personal access tokens

Personal access tokens

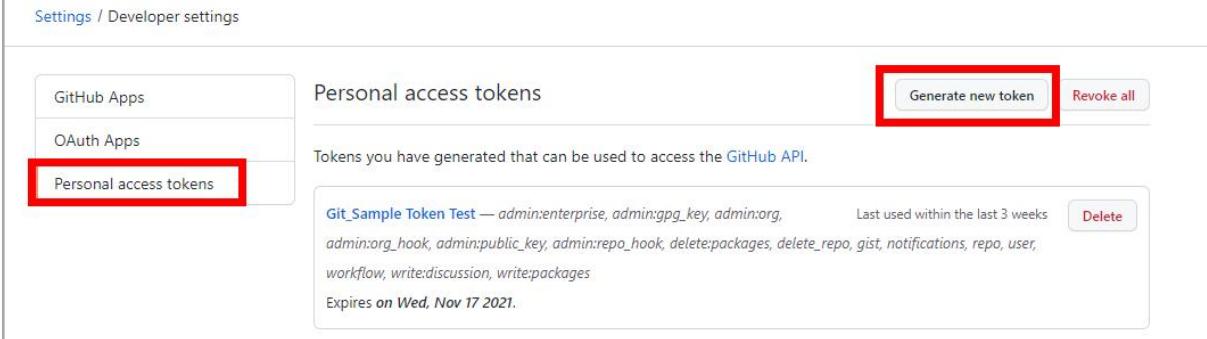
Tokens you have generated that can be used to access the GitHub API.

Git_Sample Token Test — admin:enterprise, admin:gpg_key, admin:org, admin:org_hook, admin:public_key, admin:repo_hook, delete:packages, delete_repo, gist, notifications, repo, user, workflow, write:discussion, write:packages

Last used within the last 3 weeks **Delete**

Expires on **Wed, Nov 17 2021**.

Generate new token **Revoke all**



Settings / Developer settings

GitHub Apps
OAuth Apps
Personal access tokens

New personal access token

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to authenticate to the API over Basic Authentication.

Note
Portfolio_Git_Sample

What's this token for?

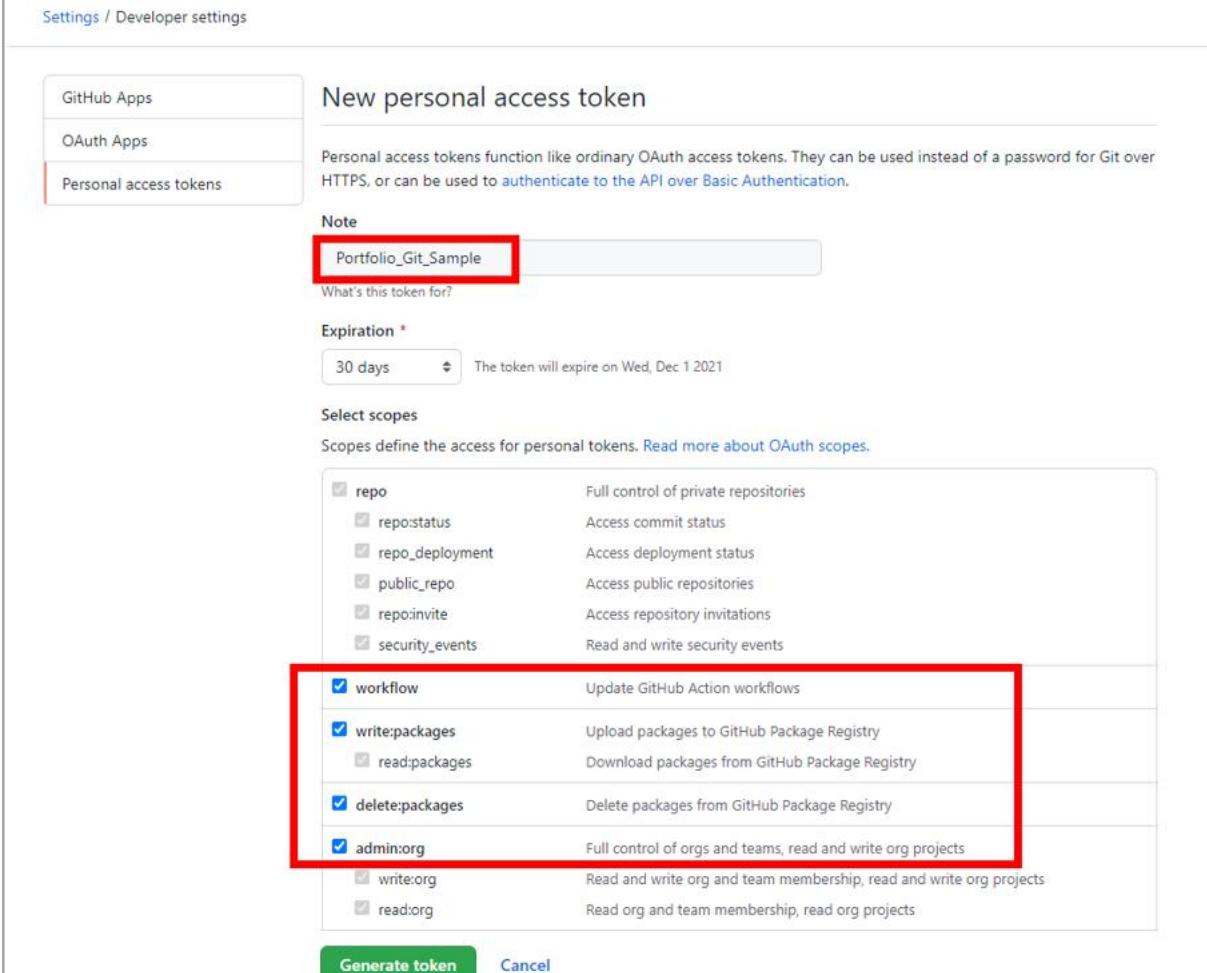
Expiration *
30 days The token will expire on Wed, Dec 1 2021

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes](#).

<input type="checkbox"/> repo	Full control of private repositories
<input type="checkbox"/> repo:status	Access commit status
<input type="checkbox"/> repo_deployment	Access deployment status
<input type="checkbox"/> public_repo	Access public repositories
<input type="checkbox"/> repo:invite	Access repository invitations
<input type="checkbox"/> security_events	Read and write security events
<input checked="" type="checkbox"/> workflow	Update GitHub Action workflows
<input checked="" type="checkbox"/> write:packages	Upload packages to GitHub Package Registry
<input type="checkbox"/> read:packages	Download packages from GitHub Package Registry
<input checked="" type="checkbox"/> delete:packages	Delete packages from GitHub Package Registry
<input checked="" type="checkbox"/> admin:org	Full control of orgs and teams, read and write org projects
<input type="checkbox"/> write:org	Read and write org and team membership, read and write org projects
<input type="checkbox"/> read:org	Read org and team membership, read org projects

Generate token **Cancel**



Some of the scopes you've selected are included in other scopes. Only the minimum set of necessary scopes has been saved. [X](#)

[Settings / Developer settings](#)

[GitHub Apps](#) [Personal access tokens](#)

[OAuth Apps](#)

[Personal access tokens](#)

Personal access tokens

Tokens you have generated that can be used to access the GitHub API.

Make sure to copy your personal access token now. You won't be able to see it again!

ghp_QRUzFmOmswOwwJIrBsuhGZkClOREP0fomSt copy	Delete
<small>Git_Sample Token Test — admin:enterprise, admin:gpg_key, admin:org, admin:org_hook, admin:public_key, admin:repo_hook, delete:packages, delete_repo, gist, notifications, repo, user, workflow, write:discussion, write:packages</small>	
<small>Expires on Wed, Nov 17 2021.</small>	

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).

- GitHub에 commit한 파일 올리기

- ✧ Username은 현재 Github의 username을 사용한다.
- ✧ Password는 위에서 발급받은 토큰으로 입력한다.

```
ubuntu@ip-30-0-10-251:~/Git_Sample$ git push -u origin master
Username for 'https://github.com': meowcatmeoww
Password for 'https://meowcatmeoww@github.com': 
remote: Support for password authentication was removed on August 13, 2021. Please use a personal access token instead.
remote: Please see https://github.blog/2020-12-15-token-authentication-requirements-for-git-operations/ for more information.
fatal: Authentication failed for 'https://github.com/meowcatmeoww/Git_Sample.git'
ubuntu@ip-30-0-10-251:~/Git_Sample$ git push -u origin master
Username for 'https://github.com': meowcatmeoww
Password for 'https://meowcatmeoww@github.com': 
Counting objects: 3, done.
Writing objects: 100% (3/3), 263 bytes | 263.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/meowcatmeoww/Git_Sample.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
```

- Github의 repository에서 방금 개발서버에서 commit한 파일을 확인해본다

The screenshot shows two GitHub repository pages side-by-side:

- Top Repository:** meowcatmeoww / [Git_Sample](#) (Public). It displays a commit history with one entry: "Ubuntu "1st DevTest commit" by c1c4e73 39 minutes ago. The commit message "1st DevTest commit" is highlighted with a red box.
- Bottom Repository:** meowcatmeoww / [Git_Sample](#) (Public). It shows the same commit history and details. The commit message "1st DevTest commit" is also highlighted with a red box.

7) Route 53 – 도메인 등록

- 시각적인 테스트를 위해 개발서버 및 테스트서버의 DNS를 A레코드로 등록한다.

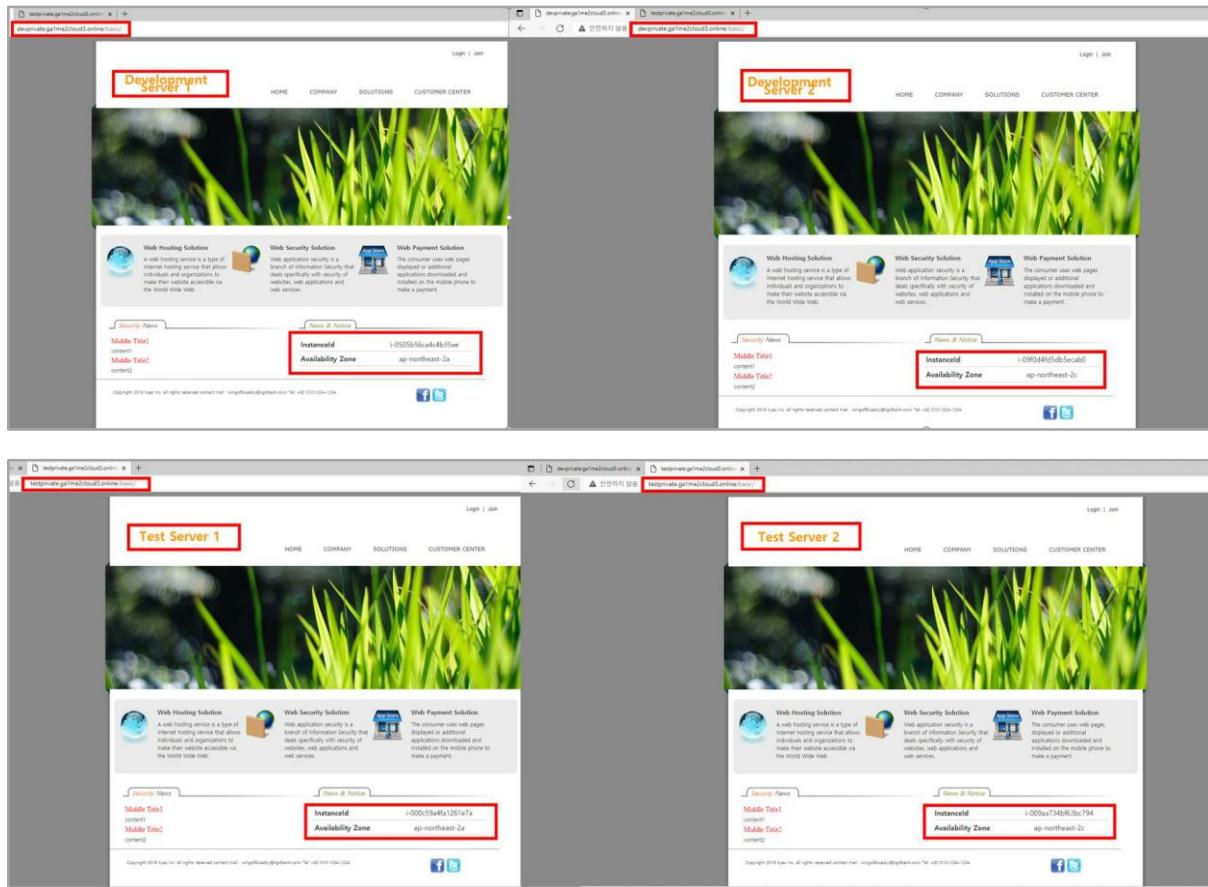
The screenshot shows the AWS Route 53 Dashboard. On the left, a sidebar lists navigation options: Dashboard, Hosted zones, Health checks, Traffic flow, Traffic policies, Policy records, Domains, Registered domains, Pending requests, Resolver, VPCs, Inbound endpoints, and Outbound endpoints. The 'Hosted zones' option is selected and highlighted with a red box. The main content area is titled 'Route 53 Dashboard' and contains four sections: 'DNS management' (with 1 Hosted zone), 'Traffic management', 'Availability monitoring', and 'Domain registration'. Below this is the 'Route 53 > Hosted zones' section, which displays a table of hosted zones. One row for 'ga1me2cloud3.online' is selected and highlighted with a red box. The table columns include Domain name, Type, Created by, Record count, Description, and Hosted zone ID.

The screenshot shows the 'Create record' page for the 'ga1me2cloud3.online' hosted zone. It displays two records being created:

- Record 1:** Record name: devprivate, Record type: A, Route traffic to: dualstack.KGDevTestALB-1833564006.ap (Alias)
- Record 2:** Record name: testprivate, Record type: A, Route traffic to: 1693.ap-northeast-2.elb.amazonaws.com (Alias)

Both records have 'Simple routing' as their routing policy and 'Evaluate target health' set to 'Yes'. The 'Switch to wizard' button is visible at the top right of the form.

- 도메인으로 접속 테스트



4. VPC Peering

1) Web Server VPC 및 Game Server vpc 연결

VPC > Peering connections > Create peering connection

Create peering connection

A VPC peering connection is a networking connection between two VPCs that enables you to route traffic between them privately. [Info](#)

Peering connection settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

KG-WEB-GAME

Select a local VPC to peer with
VPC ID (Requester)

vpc-0a3d018ce3b9ccceb (KG_Web_VPC)

VPC CIDRs for vpc-0a3d018ce3b9ccceb (KG_Web_VPC)

CIDR	Status	Status reason
10.0.0.0/16	Associated	-

Select another VPC to peer with
Account

My account
 Another account

Region

This Region (ap-northeast-2)
 Another Region

VPC ID (Acceptor)

vpc-0ba99e64c11fc1e91 (KG_Game_VPC)

VPC CIDRs for vpc-0ba99e64c11fc1e91 (KG_Game_VPC)

CIDR	Status	Status reason
20.0.0.0/16	Associated	-

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - *optional*

Name KG-WEB-GAME Remove

Add new tag

You can add 49 more tags.

Cancel Create peering connection

2) Game Server VPC 및 Dev&Test Server VPC 연결

VPC > Peering connections > Create peering connection

Create peering connection

A VPC peering connection is a networking connection between two VPCs that enables you to route traffic between them privately. [Info](#)

Peering connection settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

Select a local VPC to peer with
VPC ID (Requester)

VPC CIDRs for vgc-0ba99e64c11fc1e91 (KG_Game_VPC)

CIDR	Status	Status reason
20.0.0.0/16	Associated	-

Select another VPC to peer with

Account

My account
 Another account

Region

This Region (ap-northeast-2)
 Another Region

VPC ID (Acceptor)

VPC CIDRs for vgc-040ed1b8824ff1b46 (KG_Dev_VPC)

CIDR	Status	Status reason
30.0.0.0/16	Associated	-

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - <i>optional</i>
<input type="text" value="Name"/> <input type="button" value="X"/>	<input type="text" value="KG-GAME-DevTest"/> <input type="button" value="X"/> <input type="button" value="Remove"/>

You can add 49 more tags.

3) Web Server VPC 및 Dev&Test Server VPC 연결

VPC > Peering connections > Create peering connection

Create peering connection

A VPC peering connection is a networking connection between two VPCs that enables you to route traffic between them privately. [Info](#)

Peering connection settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

KG-WEB-DevTest

Select a local VPC to peer with
VPC ID (Requester)

vpc-0a3d018ce3b9ccceb (KG_Web_VPC)

VPC CIDRs for vpc-0a3d018ce3b9ccceb (KG_Web_VPC)

CIDR	Status	Status reason
10.0.0.0/16	Associated	-

Select another VPC to peer with
Account

My account
 Another account

Region

This Region (ap-northeast-2)
 Another Region

VPC ID (Acceptor)

vpc-040ed1b8824ff1b46 (KG_Dev_VPC)

VPC CIDRs for vpc-040ed1b8824ff1b46 (KG_Dev_VPC)

CIDR	Status	Status reason
30.0.0.0/16	Associated	-

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - <i>optional</i>
<input type="text"/> Name	<input type="text"/> KG-WEB-DevTest

Add new tag

You can add 49 more tags.

Cancel Create peering connection

Three screenshots of the AWS VPC Peering Connections console showing the creation and acceptance of peering connections between different VPCs.

Screenshot 1: Shows the creation of a peering connection between KG-GAME-Dev... and KG-WEB-GAME. The status is "Pending acceptance". The "Accept request" button is highlighted.

Name	Peering connection ID	Status	Requester VPC	Acceptor VPC	Requester CIDR	Actions
KG-GAME-Dev...	pcx-0f75694caf9ffe0e3	Pending acceptance	vpc-0ba99e64c11fc1e91 / KG...	vpc-040ed1b8824ff1b46 / KG...	20.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection
KG-WEB-GAME	pcx-0505918cd059b39e6	Pending acceptance	vpc-0a3d018ce3b9ccceb / KG...	vpc-0ba99e64c11fc1e91 / KG...	10.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection

Screenshot 2: Shows the peering connection established between KG-GAME-Dev... and KG-WEB-GAME. The status is "Active". The "Accept request" button is highlighted.

Name	Peering connection ID	Status	Requester VPC	Acceptor VPC	Requester CIDR	Actions
KG-GAME-Dev...	pcx-0f75694caf9ffe0e3	Active	vpc-0ba99e64c11fc1e91 / KG...	vpc-040ed1b8824ff1b46 / KG...	20.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection
KG-WEB-GAME	pcx-0505918cd059b39e6	Pending acceptance	vpc-0a3d018ce3b9ccceb / KG...	vpc-0ba99e64c11fc1e91 / KG...	10.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection

Screenshot 3: Shows the creation of a peering connection between KG-WEB-DevTest and KG-WEB-GAME. The status is "Pending acceptance". The "Accept request" button is highlighted.

Name	Peering connection ID	Status	Requester VPC	Acceptor VPC	Requester CIDR	Actions
KG-WEB-GAME	pcx-0505918cd059b39e6	Active	vpc-0a3d018ce3b9ccceb / KG...	vpc-0ba99e64c11fc1e91 / KG...	10.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection
KG-GAME-Dev...	pcx-0f75694caf9ffe0e3	Active	vpc-0ba99e64c11fc1e91 / KG...	vpc-040ed1b8824ff1b46 / KG...	20.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection
KG-WEB-DevTest	pcx-0892d299dd94c5e24	Pending acceptance	vpc-0a3d018ce3b9ccceb / KG...	vpc-040ed1b8824ff1b46 / KG...	10.0.0.0/16	View details Accept request Reject request Edit DNS settings Manage tags Delete peering connection

Screenshot 4: Shows the peering connection established between KG-WEB-DevTest and KG-WEB-GAME. The status is "Active". The "Accept request" button is highlighted.

Name	Peering connection ID	Status	Requester VPC	Acceptor VPC	Requester CIDRs	Acceptor CIDRs	Requester owner ID
KG-GAME-Dev...	pcx-0f75694caf9ffe0e3	Active	vpc-0ba99e64c11fc1e91 / KG...	vpc-040ed1b8824ff1b46 / KG...	20.0.0.0/16	30.0.0.0/16	483843322360
KG-WEB-DevTest	pcx-0892d299dd94c5e24	Active	vpc-0a3d018ce3b9ccceb / KG...	vpc-040ed1b8824ff1b46 / KG...	10.0.0.0/16	30.0.0.0/16	483843322360
KG-WEB-GAME	pcx-0505918cd059b39e6	Active	vpc-0a3d018ce3b9ccceb / KG...	vpc-0ba99e64c11fc1e91 / KG...	10.0.0.0/16	20.0.0.0/16	483843322360

- 모든 Routing table에 VPC peering 정보 등록

Screenshot of the AWS Route Tables console showing the configuration of a route table for a VPC peering connection.

The "KG_Web_Public_RouteTable" is selected and highlighted with a red box. The "Routes" tab is active, showing two routes:

- Destination: 10.0.0.0/16, Target: local, Status: Active, Propagated: No
- Destination: 0.0.0.0/0, Target: igw-0aa6cce96c5d42754, Status: Active, Propagated: No

An "Edit routes" button is highlighted with a red box at the top right of the route table details.

Name	Route table ID	Explicit subnet associations	Edge associations	Main	VPC	Owner ID
rtb-093392c1a5c9e1af	-	-	-	Yes	vpc-040ed1b8824ff1b46 / KG...	483843322360
rtb-06ca2ea1af9bf2187	-	-	-	Yes	vpc-0ba99e64c11fc1e91 / KG...	483843322360
KG_Dev_Private_RouteTable	rtb-0b8b6c6de6e11f6e9	4 subnets	-	No	vpc-040ed1b8824ff1b46 / KG...	483843322360
KG_Public_Private_RouteTable	rtb-01b53bf41a324a677	2 subnets	-	No	vpc-040ed1b8824ff1b46 / KG...	483843322360
KG_Game_Private_RouteTable	rtb-0b773fa7081ee63df	4 subnets	-	No	vpc-0ba99e64c11fc1e91 / KG...	483843322360
KG_Game_Public_RouteTable	rtb-00e7aa8186e0bf2ac	2 subnets	-	No	vpc-0ba99e64c11fc1e91 / KG...	483843322360
KG_Web_Private_RouteTable	rtb-0825cab47a654ab	4 subnets	-	Yes	vpc-0a3d018ce3b9ccceb / KG...	483843322360
KG_Web_Public_RouteTable	rtb-01b2fed6ca23e2a07	2 subnets	-	No	vpc-0a3d018ce3b9ccceb / KG...	483843322360

VPC > Route tables > rtb-01b2fed6ca23e2a07 > Edit routes

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
Q 0.0.0.0/0	Q igw-0aa6cce96c5d42754	Active	No
Q 20.0.0.0/16	<input type="text" value="Q pcf"/> pcf-0505918cd059b39e6 (KG-WEB-GAME)	Active	No
Add route			

Cancel Preview Save changes

Route tables (1/2) Info

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
KG_Web_Private_RouteTable	rtb-0825cab47a654aab	4 subnets	-	Yes	vpc-0a3d018ce3b9ccceb KG_...	483843322360
KG_Web_Public_RouteTable	rtb-01b2fed6ca23e2a07	2 subnets	-	No	vpc-0a3d018ce3b9ccceb KG_...	483843322360

rtb-01b2fed6ca23e2a07 / KG_Web_Public_RouteTable

Details Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
20.0.0.0/16	pcf-0505918cd059b39e6	Active	No
30.0.0.0/16	pcf-0892d299dd94c5e24	Active	No
0.0.0.0/0	igw-0aa6cce96c5d42754	Active	No

Edit routes

Route tables (1/2) Info

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
KG_Web_Private_RouteTable	rtb-0825cab47a654aab	4 subnets	-	Yes	vpc-0a3d018ce3b9ccceb KG_...	483843322360
KG_Web_Public_RouteTable	rtb-01b2fed6ca23e2a07	2 subnets	-	No	vpc-0a3d018ce3b9ccceb KG_...	483843322360

rtb-0825cab47a654aab / KG_Web_Private_RouteTable

Details Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Destination	Target	Status	Propagated
0.0.0.0/0	nat-00edec8f31e727f62	Active	No
10.0.0.0/16	local	Active	No
20.0.0.0/16	pcf-0505918cd059b39e6	Active	No
30.0.0.0/16	pcf-0892d299dd94c5e24	Active	No

Route tables (1/3) Info

Filter route tables

search: kg_game X Clear filters

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
-	rtb-06ca2ea1af9bf2187	-	-	Yes	vpc-0ba99e64c11fc1e91 KG...	483843322360
KG_Game_Private_RouteTable	rtb-0b773fa7081ee63df	4 subnets	-	No	vpc-0ba99e64c11fc1e91 KG...	483843322360
KG_Game_Public_RouteTable	rtb-00e7aa8186e0bfa2c	2 subnets	-	No	vpc-0ba99e64c11fc1e91 KG...	483843322360

rtb-00e7aa8186e0bfa2c / KG_Game_Public_RouteTable

Details Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Filter routes Both

Destination	Target	Status	Propagated
0.0.0.0/0	igw-09a055e481aa6a052	Active	No
20.0.0.0/16	local	Active	No
10.0.0.0/16	pxc-0505918cd059b39e6	Active	No
30.0.0.0/16	pxc-0f75694cafbbfe0e3	Active	No

Route tables (1/3) Info

Filter route tables

search: kg_game X Clear filters

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
-	rtb-06ca2ea1af9bf2187	-	-	Yes	vpc-0ba99e64c11fc1e91 KG...	483843322360
KG_Game_Private_RouteTable	rtb-0b773fa7081ee63df	4 subnets	-	No	vpc-0ba99e64c11fc1e91 KG...	483843322360
KG_Game_Public_RouteTable	rtb-00e7aa8186e0bfa2c	2 subnets	-	No	vpc-0ba99e64c11fc1e91 KG...	483843322360

rtb-0b773fa7081ee63df / KG_Game_Private_RouteTable

Details Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Filter routes Both

Destination	Target	Status	Propagated
20.0.0.0/16	local	Active	No
0.0.0.0/0	nat-0a836a83894066e26	Active	No
10.0.0.0/16	pxc-0505918cd059b39e6	Active	No
30.0.0.0/16	pxc-0f75694cafbbfe0e3	Active	No

Route tables (1/3) Info

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner ID
<input checked="" type="checkbox"/> KG_Dev_Public_RouteTable	rtb-01b53bf41a324a677	2 subnets	-	No	vpc-040ed1b8824ff1b46 KG_...	483843322360
<input type="checkbox"/> KG_Dev_Private_RouteTable	rtb-0b8b6c6de6e11f6e9	4 subnets	-	No	vpc-040ed1b8824ff1b46 KG_...	483843322360
<input type="checkbox"/>	rtb-093392c1a5c9e1afe	-	-	Yes	vpc-040ed1b8824ff1b46 KG_...	483843322360

rtb-01b53bf41a324a677 / KG_Dev_Public_RouteTable

Details | **Routes** | Subnet associations | Edge associations | Route propagation | Tags

Routes (4)

Destination	Target	Status	Propagated
10.0.0.0/16	pxc-0892d299dd94c5e24	Active	No
20.0.0.0/16	pxc-0f75694cafbfffe0e3	Active	No
30.0.0.0/16	local	Active	No
0.0.0.0/0	igw-0a7cb25d53e980c5c	Active	No

Route tables (1/3) Info

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner ID
<input type="checkbox"/> KG_Dev_Public_RouteTable	rtb-01b53bf41a324a677	2 subnets	-	No	vpc-040ed1b8824ff1b46 KG_...	483843322360
<input checked="" type="checkbox"/> KG_Dev_Private_RouteTable	rtb-0b8b6c6de6e11f6e9	4 subnets	-	No	vpc-040ed1b8824ff1b46 KG_...	483843322360
<input type="checkbox"/>	rtb-093392c1a5c9e1afe	-	-	Yes	vpc-040ed1b8824ff1b46 KG_...	483843322360

rtb-0b8b6c6de6e11f6e9 / KG_Dev_Private_RouteTable

Details | **Routes** | Subnet associations | Edge associations | Route propagation | Tags

Routes (4)

Destination	Target	Status	Propagated
10.0.0.0/16	pxc-0892d299dd94c5e24	Active	No
20.0.0.0/16	pxc-0f75694cafbfffe0e3	Active	No
30.0.0.0/16	local	Active	No
0.0.0.0/0	nat-0be70ce6d447a3050	Active	No

- 각 Security Group에 사설 네트워크 대역대 등록

① Inbound security group rules successfully modified on security group (sg-00fc3553ca34489de | KG_Web_SG_Private)

▶ Details

Security Groups (1/4) Info

Filter security groups search: kg_web Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound
<input checked="" type="checkbox"/> KG_Web_SG_Private	sg-00fc3553ca34489de	KG_Web_SG_Private	vpc-0a3d018ce3b9ccceb	Allow SSH / ICMP / HT...	483843322360	6 Permission entries	1 Permissio
<input type="checkbox"/> KG_Web_SG_Bastion	sg-00d94fdcc925de224	KG_Web_SG	vpc-0a3d018ce3b9ccceb	Allow SSH/ICMP	483843322360	2 Permission entries	1 Permissio
<input type="checkbox"/> KG_Web_MySQL-DB_SG	sg-009c7910f086f472b	KG_Web_MySQL-DB_SG	vpc-0a3d018ce3b9ccceb	Allow MySQL/SSH	483843322360	3 Permission entries	1 Permissio

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (6)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
<input type="checkbox"/>	sgr-050ffed70c0a74470	IPv4	All traffic	All	All	20.0.0.0/16	-
<input type="checkbox"/>	sgr-04e37ac2fa33e521	IPv4	All traffic	All	All	30.0.0.0/16	-
<input type="checkbox"/>	sgr-0389b96af2a32566f	-	All ICMP - IPv4	ICMP	All	sg-00d94fdcc925de22...	-
<input type="checkbox"/>	sgr-005820de2ac858a...	-	SSH	TCP	22	sg-00d94fdcc925de22...	-
<input type="checkbox"/>	sgr-09e90ceef16fc53f2c	-	HTTPS	TCP	443	sg-0537228ff0ab057b...	-
<input type="checkbox"/>	sgr-0722150fb46f2ba0	-	HTTP	TCP	80	sg-0537228ff0ab057b...	-

② Inbound security group rules successfully modified on security group (sg-00d94fdcc925de224 | KG_Web_SG)

▶ Details

Security Groups (1/4) Info

Filter security groups search: kg_web Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound
<input type="checkbox"/> KG_Web_SG_Private	sg-00fc3553ca34489de	KG_Web_SG_Private	vpc-0a3d018ce3b9ccceb	Allow SSH / ICMP / HT...	483843322360	6 Permission entries	1 Permissio
<input checked="" type="checkbox"/> KG_Web_SG_Bastion	sg-00d94fdcc925de224	KG_Web_SG	vpc-0a3d018ce3b9ccceb	Allow SSH/ICMP	483843322360	4 Permission entries	1 Permissio
<input type="checkbox"/> KG_Web_MySQL-DB_SG	sg-009c7910f086f472b	KG_Web_MySQL-DB_SG	vpc-0a3d018ce3b9ccceb	Allow MySQL/SSH	483843322360	3 Permission entries	1 Permissio

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (4)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
<input type="checkbox"/>	sgr-062cad5e03d2d10...	IPv4	All traffic	All	All	30.0.0.0/16	-
<input type="checkbox"/>	sgr-056cc7572bdafc820	IPv4	All traffic	All	All	20.0.0.0/16	-
<input type="checkbox"/>	sgr-06494af6bfdf0a309	IPv4	SSH	TCP	22	0.0.0.0/0	-
<input type="checkbox"/>	sgr-0a0417dbc19f43d3b	IPv4	All ICMP - IPv4	ICMP	All	0.0.0.0/0	-

⌚ Inbound security group rules successfully modified on security group (sg-009c7910f086f472b | KG_Web_SQL-DB_SG)

▶ Details

Security Groups (1/4) Info

Filter security groups

search: kg_web X Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count
KG_Web_SQL_Private	sg-00fc3353ca34489de	KG_Web_SQL_Private	vpc-0a3d018ce3b9ccceb	Allow SSH / ICMP / HT...	483843322360	6 Permission entries
KG_Web_SQL_Bastion	sg-00d94fdcc925de224	KG_Web_SQL	vpc-0a3d018ce3b9ccceb	Allow SSH/ICMP	483843322360	4 Permission entries
KG_Web_SQL-DB_SG	sg-009c7910f086f472b	KG_Web_SQL-DB_SG	vpc-0a3d018ce3b9ccceb	Allow MySQL/SSH	483843322360	5 Permission entries
...

sg-009c7910f086f472b - KG_Web_SQL-DB_SG

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer X

Inbound rules (5)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-00da5ff14a9f7995c	IPv4	All traffic	All	All	20.0.0.0/16	-
-	sgr-0dbfb461bf847ee866	IPv4	MySQL/Aurora	TCP	3306	0.0.0.0/0	-
-	sgr-0842bd95385418...	IPv4	All traffic	All	All	30.0.0.0/16	-
-	sgr-0cb51005fd347eadc	-	SSH	TCP	22	sg-00d94fdcc925de22...	-
-	sgr-0ecf9fa0c0765db1	-	MySQL/Aurora	TCP	3306	sg-00d94fdcc925de22...	-

⌚ Inbound security group rules successfully modified on security group (sg-01e7a0dd2146f2849 | KG_Game_SQL-DB_SG)

▶ Details

Security Groups (1/3) Info

Filter security groups

search: kg_game X Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Out...
KG_Game_SQL_Private	sg-01150ea705b8c4600	KG_Game_SQL_Private	vpc-0ba99e64c11fc1e91	Enable SSH, ICMP, HTTP	483843322360	4 Permission entries	1 Pe...
KG_Game_SQL_Bastion	sg-078612abccfd8024d	KG_Game_SQL_Bastion	vpc-0ba99e64c11fc1e91	Enable SSH access via ...	483843322360	3 Permission entries	1 Pe...
KG_Game_SQL-DB_SG	sg-01e7a0dd2146f2849	KG_Game_SQL-DB_SG	vpc-0ba99e64c11fc1e91	Created by RDS manag...	483843322360	3 Permission entries	1 Pe...

sg-078612abccfd8024d - KG_Game_SQL_Bastion

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer X

Inbound rules (3)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-0566862298c431...	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sgr-053a773431f3e555f	IPv4	All traffic	All	All	10.0.0.0/16	-
-	sgr-0cd811b1a200f84f0	IPv4	All traffic	All	All	30.0.0.0/16	-

⌚ Inbound security group rules successfully modified on security group (sg-01e7a0dd2146f2849 | KG_Game_MySQL-DB_SG)

▶ Details

Security Groups (1/3) Info

Filter security groups

search: kg_game Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound rules count
<input checked="" type="checkbox"/> KG_Game_SG_Private	sg-01150ea705b8c4600	KG_Game_SG_Private	vpc-0ba99e64c11fc1e91	Enable SSH, ICMP, HTTP	483843322360	4 Permission entries	1 Pe
<input type="checkbox"/> KG_Game_SG_Bastion	sg-078612abccfd8024d	KG_Game_SG_Bastion	vpc-0ba99e64c11fc1e91	Enable SSH access via ...	483843322360	3 Permission entries	1 Pe
<input type="checkbox"/> KG_Game_MySQL-DB_SG	sg-01e7a0dd2146f2849	KG_Game_MySQL-DB_...	vpc-0ba99e64c11fc1e91	Created by RDS manag...	483843322360	3 Permission entries	1 Pe

sg-01150ea705b8c4600 - KG_Game_SG_Private

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (4)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-07fa2b1852c765b82	IPv4	HTTP	TCP	80	0.0.0.0/0	-
-	sgr-040080f72de843b1	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sgr-0373e74ec00c5a775	IPv4	All traffic	All	All	10.0.0.0/16	-
-	sgr-0566f8ede604df1e9	IPv4	All traffic	All	All	30.0.0.0/16	-

⌚ Inbound security group rules successfully modified on security group (sg-01e7a0dd2146f2849 | KG_Game_MySQL-DB_SG)

▶ Details

Security Groups (1/3) Info

Filter security groups

search: kg_game Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound rules count
<input type="checkbox"/> KG_Game_SG_Private	sg-01150ea705b8c4600	KG_Game_SG_Private	vpc-0ba99e64c11fc1e91	Enable SSH, ICMP, HTTP	483843322360	4 Permission entries	1 Pe
<input type="checkbox"/> KG_Game_SG_Bastion	sg-078612abccfd8024d	KG_Game_SG_Bastion	vpc-0ba99e64c11fc1e91	Enable SSH access via ...	483843322360	3 Permission entries	1 Pe
<input checked="" type="checkbox"/> KG_Game_MySQL-DB_SG	sg-01e7a0dd2146f2849	KG_Game_MySQL-DB_...	vpc-0ba99e64c11fc1e91	Created by RDS manag...	483843322360	3 Permission entries	1 Pe

sg-01e7a0dd2146f2849 - KG_Game_MySQL-DB_SG

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (3)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-07718dbaa4081b...	IPv4	All traffic	All	All	10.0.0.0/16	-
-	sgr-0fd91d7542608f28d	IPv4	All traffic	All	All	30.0.0.0/16	-
-	sgr-0ae10497915d88...	-	MySQL/Aurora	TCP	3306	sg-078612abccfd8024...	-

⌚ Inbound security group rules successfully modified on security group (sg-0721e20bb114d036a | KG_Development_MySQL_DB_SG)

▶ Details

Security Groups (1/4) Info

Filter security groups

search: dev Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count
<input checked="" type="checkbox"/> KG_Dev_SG_Private	sg-0a971f71b83606ba8	KG_Dev_SG_Private	vpc-040ed1b8824ff1b46	Enable SSH, HTTP	483843322360	4 Permission entries
<input type="checkbox"/> KG_Dev_SG_Bastion	sg-0f43a9b1fabcb3b3fb	KG_Dev_SG_Bastion	vpc-040ed1b8824ff1b46	Enable SSH access via ...	483843322360	3 Permission entries
<input type="checkbox"/> KG_Dev_MySQL_DB_SG	sg-0721e20bb114d036a	KG_Development_MyS...	vpc-040ed1b8824ff1b46	Allow MySQL	483843322360	3 Permission entries
<input type="checkbox"/> -	sg-0dc2ab0e661444e4b	KG-Dev-SG	vpc-040ed1b8824ff1b46	Allow HTTP	483843322360	1 Permission entry

sg-0a971f71b83606ba8 - KG_Dev_SG_Private

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (4)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-092e4260398be5...	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sgr-015380bdb60945...	IPv4	HTTP	TCP	80	0.0.0.0/0	-
-	sgr-0803771b9bc126b43	IPv4	All traffic	All	All	10.0.0.0/16	-
-	sgr-092835e2de8b11a...	IPv4	All traffic	All	All	20.0.0.0/16	-

⌚ Inbound security group rules successfully modified on security group (sg-0721e20bb114d036a | KG_Development_MySQL_DB_SG)

▶ Details

Security Groups (1/4) Info

Filter security groups

search: dev Clear filters

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count
<input type="checkbox"/> KG_Dev_SG_Private	sg-0a971f71b83606ba8	KG_Dev_SG_Private	vpc-040ed1b8824ff1b46	Enable SSH, HTTP	483843322360	4 Permission entries
<input checked="" type="checkbox"/> KG_Dev_SG_Bastion	sg-0f43a9b1fabcb3b3fb	KG_Dev_SG_Bastion	vpc-040ed1b8824ff1b46	Enable SSH access via ...	483843322360	3 Permission entries
<input type="checkbox"/> KG_Dev_MySQL_DB_SG	sg-0721e20bb114d036a	KG_Development_MyS...	vpc-040ed1b8824ff1b46	Allow MySQL	483843322360	3 Permission entries
<input type="checkbox"/> -	sg-0dc2ab0e661444e4b	KG-Dev-SG	vpc-040ed1b8824ff1b46	Allow HTTP	483843322360	1 Permission entry

sg-0f43a9b1fabcb3b3fb - KG_Dev_SG_Bastion

Details Inbound rules Outbound rules Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Inbound rules (3)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-04f47b20e17a33c7c	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sgr-033dbbd291d0f2a...	IPv4	All traffic	All	All	10.0.0.0/16	-
-	sgr-0f22f7b84fb00d201	IPv4	All traffic	All	All	20.0.0.0/16	-

The screenshot shows the AWS CloudFormation console with a success message: "Inbound security group rules successfully modified on security group (sg-0721e20bb114d036a | KG_Development_MySQL_DB_SG)". Below this, the "Security Groups (1/4)" section displays a table of security groups. One row, "KG_Dev_MySQL_DB_SG", is selected and highlighted with a red box. The table includes columns for Name, Security group ID, Security group name, VPC ID, Description, Owner, and Inbound rules count. The "Inbound rules" tab is selected, showing three rules. Two of these rules are also highlighted with red boxes. The first rule allows all traffic from 10.0.0.0/16 to port 3306. The second rule allows all traffic from 20.0.0.0/16 to port 3306. The third rule is for MySQL/Aurora on port 3306.

- VPC간 통신확인

- Web Server에서 Game Server로 통신확인

The screenshot shows two terminal sessions and their corresponding AWS CloudWatch logs. The top terminal session on an Ubuntu host (ip-10-0-1-184) runs a ping command to a Game Server instance (ip-20-0-1-221). The response shows three packets transmitted, three received, and 0% packet loss. The bottom terminal session runs a ping command to a Web Server instance (ip-20-0-1-36). The response shows three packets transmitted, three received, and 0% packet loss. Both instances are shown in the AWS CloudWatch interface, with their respective public and private IP addresses listed.

- Web Server에서 Dev&Test Server로 통신확인

```
ubuntu@ip-10-0-1-184:~$ ping 30.0.1.229 -c 3
PING 30.0.1.229 (30.0.1.229) 56(84) bytes of data.
64 bytes from 30.0.1.229: icmp_seq=1 ttl=64 time=0.558 ms
64 bytes from 30.0.1.229: icmp_seq=2 ttl=64 time=0.460 ms
64 bytes from 30.0.1.229: icmp_seq=3 ttl=64 time=0.502 ms

--- 30.0.1.229 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2032ms
rtt min/avg/max/mdev = 0.460/0.506/0.558/0.047 ms
ubuntu@ip-10-0-1-184:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
Lifecycle Manager	i-2012451fc51e5864 (KG_Dev_Bastion_1)	3.36.78.110 open address	

```
ubuntu@ip-10-0-1-184:~$ ping 30.0.10.251 -c 3
PING 30.0.10.251 (30.0.10.251) 56(84) bytes of data.
64 bytes from 30.0.10.251: icmp_seq=1 ttl=64 time=0.551 ms
64 bytes from 30.0.10.251: icmp_seq=2 ttl=64 time=0.511 ms
64 bytes from 30.0.10.251: icmp_seq=3 ttl=64 time=0.909 ms

--- 30.0.10.251 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2051ms
rtt min/avg/max/mdev = 0.511/0.657/0.909/0.178 ms
ubuntu@ip-10-0-1-184:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
Lifecycle Manager	i-0505b56ca4c4b35ae (KG_Dev_Server_1)	-	

```
ubuntu@ip-10-0-1-184:~$ ping 30.0.10.56 -c 3
PING 30.0.10.56 (30.0.10.56) 56(84) bytes of data.
64 bytes from 30.0.10.56: icmp_seq=1 ttl=64 time=0.493 ms
64 bytes from 30.0.10.56: icmp_seq=2 ttl=64 time=0.539 ms
64 bytes from 30.0.10.56: icmp_seq=3 ttl=64 time=0.558 ms

--- 30.0.10.56 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2055ms
rtt min/avg/max/mdev = 0.493/0.530/0.558/0.027 ms
ubuntu@ip-10-0-1-184:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
Lifecycle Manager	i-000c59a4fa1261e7a (KG_Test_Server_1)	-	

- Game Server에서 Web Server로 통신확인

```
[ec2-user@ip-20-0-1-221 ~]$ ping 10.0.1.184 -c 3
PING 10.0.1.184 (10.0.1.184) 56(84) bytes of data.
64 bytes from 10.0.1.184: icmp_seq=1 ttl=64 time=0.445 ms
64 bytes from 10.0.1.184: icmp_seq=2 ttl=64 time=0.534 ms
64 bytes from 10.0.1.184: icmp_seq=3 ttl=64 time=0.463 ms

--- 10.0.1.184 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2055ms
rtt min/avg/max/mdev = 0.445/0.480/0.534/0.046 ms
[ec2-user@ip-20-0-1-221 ~]$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
Lifecycle Manager	i-03aed58d4baeb7d0f (KG_Web_Bastion_1)	3.36.54.66 open address	

```
[ec2-user@ip-20-0-1-221 ~]$ ping 10.0.10.220 -c 3
PING 10.0.10.220 (10.0.10.220) 56(84) bytes of data.
64 bytes from 10.0.10.220: icmp_seq=1 ttl=64 time=0.423 ms
64 bytes from 10.0.10.220: icmp_seq=2 ttl=64 time=0.556 ms
64 bytes from 10.0.10.220: icmp_seq=3 ttl=64 time=0.467 ms

--- 10.0.10.220 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2031ms
rtt min/avg/max/mdev = 0.423/0.482/0.556/0.055 ms
[ec2-user@ip-20-0-1-221 ~]$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
Lifecycle Manager	i-046afb16b7711c3c3 (KG_Web_Server_1)	-	

- Game Server에서 Dev&Test Server로 통신확인

```
[ec2-user@ip-20-0-1-221 ~]$ ping 30.0.10.251 -c 3
PING 30.0.10.251 (30.0.10.251) 56(84) bytes of data.
64 bytes from 30.0.10.251: icmp_seq=1 ttl=64 time=0.468 ms
64 bytes from 30.0.10.251: icmp_seq=2 ttl=64 time=0.464 ms
64 bytes from 30.0.10.251: icmp_seq=3 ttl=64 time=0.493 ms

--- 30.0.10.251 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2038ms
rtt min/avg/max/mdev = 0.464/0.475/0.493/0.012 ms
[ec2-user@ip-20-0-1-221 ~]$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-0505b56ca4c4b35ae (KG_Dev_Server_1)	-	<input checked="" type="checkbox"/> 30.0.10.251

```
[ec2-user@ip-20-0-1-221 ~]$ ping 30.0.10.56 -c 3
PING 30.0.10.56 (30.0.10.56) 56(84) bytes of data.
64 bytes from 30.0.10.56: icmp_seq=1 ttl=64 time=0.664 ms
64 bytes from 30.0.10.56: icmp_seq=2 ttl=64 time=0.532 ms
64 bytes from 30.0.10.56: icmp_seq=3 ttl=64 time=1.43 ms

--- 30.0.10.56 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2047ms
rtt min/avg/max/mdev = 0.532/0.877/1.435/0.398 ms
[ec2-user@ip-20-0-1-221 ~]$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-000e59a4fa1261e7a (KG_Test_Server_1)	-	<input checked="" type="checkbox"/> 30.0.10.56

- Dev&Test Server에서 Web Server로 통신확인

```
ubuntu@ip-30-0-1-229:~$ ping 10.0.1.184 -c 3
PING 10.0.1.184 (10.0.1.184) 56(84) bytes of data.
64 bytes from 10.0.1.184: icmp_seq=1 ttl=64 time=0.498 ms
64 bytes from 10.0.1.184: icmp_seq=2 ttl=64 time=0.481 ms
64 bytes from 10.0.1.184: icmp_seq=3 ttl=64 time=0.466 ms

--- 10.0.1.184 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2029ms
rtt min/avg/max/mdev = 0.466/0.481/0.498/0.028 ms
ubuntu@ip-30-0-1-229:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-03aed58d4baeb7d0f (KG_Web_Bastion_1)	3.36.54.66 open address <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 10.0.1.184

```
ubuntu@ip-30-0-1-229:~$ ping 10.0.10.220 -c 3
PING 10.0.10.220 (10.0.10.220) 56(84) bytes of data.
64 bytes from 10.0.10.220: icmp_seq=1 ttl=64 time=0.474 ms
64 bytes from 10.0.10.220: icmp_seq=2 ttl=64 time=0.456 ms
64 bytes from 10.0.10.220: icmp_seq=3 ttl=64 time=1.32 ms

--- 10.0.10.220 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2026ms
rtt min/avg/max/mdev = 0.456/0.752/1.327/0.407 ms
ubuntu@ip-30-0-1-229:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-046afb16b7711c3c3 (KG_Web_Server_1)	-	<input checked="" type="checkbox"/> 10.0.10.220

- Dev&Test Server에서 Game Server로 통신확인

```
ubuntu@ip-30-0-1-229:~$ ping 20.0.1.221 -c 3
PING 20.0.1.221 (20.0.1.221) 56(84) bytes of data.
64 bytes from 20.0.1.221: icmp_seq=1 ttl=255 time=0.403 ms
64 bytes from 20.0.1.221: icmp_seq=2 ttl=255 time=0.498 ms
64 bytes from 20.0.1.221: icmp_seq=3 ttl=255 time=0.536 ms

--- 20.0.1.221 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2026ms
rtt min/avg/max/mdev = 0.403/0.479/0.536/0.055 ms
ubuntu@ip-30-0-1-229:~$
```

Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-05221a6b7981c338 (KG_Game_Bastion_1)	3.36.95.200 open address <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 20.0.1.221

```
ubuntu@ip-30-0-1-229:~$ ping 20.0.1.36 -c 3
PING 20.0.1.36 (20.0.1.36) 56(84) bytes of data.
64 bytes from 20.0.1.36: icmp_seq=1 ttl=255 time=0.458 ms
64 bytes from 20.0.1.36: icmp_seq=2 ttl=255 time=0.408 ms
64 bytes from 20.0.1.36: icmp_seq=3 ttl=255 time=0.413 ms

--- 20.0.1.36 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2028ms
rtt min/avg/max/mdev = 0.408/0.426/0.458/0.028 ms
ubuntu@ip-30-0-1-229:~$
```

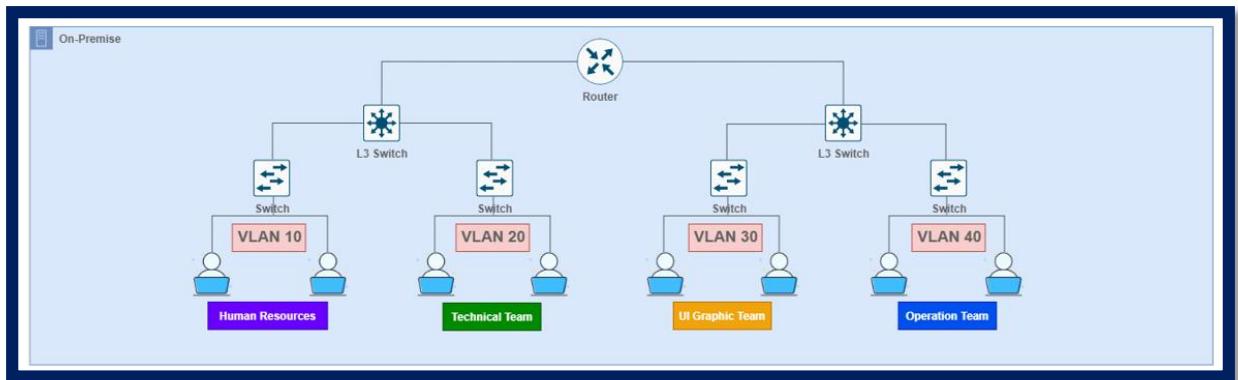
Snapshots	Instance ID	Public IPv4 address	Private IPv4 addresses
	i-0ff762fb8551f4f6 (KGGameServerBaselineImage_data_test)	3.36.67.205 open address <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 20.0.1.36

IV. On-Premise 환경 및 구축

1. IP 할당 :

공인 IP – 192.10.10.0/24 & 사설 IP - 10.10.0.0/16

2. 네트워크 구조



VLAN 10	인사팀
VLAN 20	기술팀
VLAN 30	UI 그래픽팀
VLAN 40	운영팀

3. 장비 리스트

장비명	장비 유형	목적
CE	Router	외부 통신
DSW1	L3 Switch	라우팅
DSW2	L3 Switch	라우팅
ASW_HR	L2 Switch	내부 통신
ASW_Tech	L2 Switch	내부 통신
ASW_UI	L2 Switch	내부 통신
ASW_Ope	L2 Switch	내부 통신
VPCs 1 ~ 8	End device	회사 내부 END Device

4. 네트워크 대역 및 Server IP 정보

VLAN 10	Net	10.10.10.0/24
	PC1	10.10.10.1/24
	PC2	10.10.10.2/24
VLAN 20	Net	10.10.20.0/24
	PC1	10.10.20.1/24
	PC2	10.10.20.2/24
VLAN 30	Net	10.10.30.0/24
	PC1	10.10.40.1/24
	PC2	10.10.40.2/24
VLAN 40	Net	10.10.40.0/24
	PC1	10.10.40.1/24
	PC2	10.10.40.2/24
CE - DSW1	Net	10.10.100.0/30
	CE	10.10.100.1/30
	DSW1	10.10.100.2/30
CE - DSW2	Net	10.10.100.4/30
	DSW2	10.10.100.5/30
	CE	10.10.100.6/30
DSW1 - DSW2	Net	10.10.100.8/30
	DSW1	10.10.100.9/30
	DSW2	10.10.100.10/30

5. 네트워크 설정

1) PC IP 설정

```
HR_PC1 : ip 10.10.10.1 255.255.255.0 10.10.10.254  
HR-PC2 : ip 10.10.10.2 255.255.255.0 10.10.10.254  
Tech_PC1 : ip 10.10.20.1 255.255.255.0 10.10.20.254  
Tech_PC2 : ip 10.10.20.2 255.255.255.0 10.10.20.254  
UI_PC1 : ip 10.10.30.1 255.255.255.0 10.10.30.254  
UI_PC2 : ip 10.10.30.2 255.255.255.0 10.10.30.254  
Ope_PC1 : ip 10.10.40.1 255.255.255.0 10.10.40.254  
Ope_PC2 : ip 10.10.40.2 255.255.255.0 10.10.40.254
```

2) ASW 장비 설정 (L2 Switch)

▶ ASW_HR (인사팀)

- 기본설정

```
IOU#configure terminal  
IOU#hostname ASW_HR  
ASW_HR(config)#enable secret kgb3  
ASW_HR(config)#no ip domain lookup  
ASW_HR(config)#line console 0  
ASW_HR(config-line)#logging synchronous  
ASW_HR(config-line)#exec-timeout 5 0  
ASW_HR(config-line)#password kggame123  
ASW_HR(config-line)#login  
ASW_HR(config-line)#exit
```

```
ASW_HR(config)#interface range ethernet 0/0-3, ethernet 1/0-3, ethernet 2/0-3, ethernet  
3/0-3  
ASW_HR(config-if-range)#shutdown  
ASW_HR(config-if-range)#exit
```

- VLAN 설정

```
ASW_HR(config)#vlan 10  
ASW_HR(config-vlan)#name HR  
ASW_HR(config-vlan)#exit
```

- VLAN Access Link 설정

```
ASW_HR(config)#interface range ethernet 0/0-1  
ASW_HR(config-if-range)#description ##HR_USER_PC##  
ASW_HR(config-if-range)#switchport mode access  
ASW_HR(config-if-range)#switchport access vlan 10  
ASW_HR(config-if-range)#spanning-tree portfast  
ASW_HR(config-if-range)#no shutdown  
ASW_HR(config-if-range)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
ASW_HR(config)#interface range ethernet 2/0-1  
ASW_HR(config-if-range)#description ##DSW1_Uplink_Trunk_Port##  
ASW_HR(config-if-range)#switchport trunk encapsulation dot1q  
ASW_HR(config-if-range)#switchport trunk allowed vlan 10  
ASW_HR(config-if-range)#switchport trunk native vlan 999  
ASW_HR(config-if-range)#switchport mode trunk  
ASW_HR(config-if-range)#switchport nonegotiate  
ASW_HR(config-if-range)#channel-group 1 mode desirable  
ASW_HR(config-if-range)#no shutdown  
ASW_HR(config-if-range)#exit  
ASW_HR(config)#interface range ethernet 2/2-3  
ASW_HR(config-if-range)#description ##DSW2_Uplink_Trunk_Port##  
ASW_HR(config-if-range)#switchport trunk encapsulation dot1q  
ASW_HR(config-if-range)#switchport trunk allowed vlan 10  
ASW_HR(config-if-range)#switchport trunk native vlan 999  
ASW_HR(config-if-range)#switchport mode trunk  
ASW_HR(config-if-range)#switchport nonegotiate  
ASW_HR(config-if-range)#channel-group 2 mode desirable  
ASW_HR(config-if-range)#no shutdown  
ASW_HR(config)#end  
ASW_HR#wr
```

▶ AWS_Tech (기술팀)

- 기본설정

```
IOU#configure terminal
IOU(config)#hostname ASW_Tech
ASW_Tech(config)#enable secret kgb3
ASW_Tech(config)#no ip domain lookup
ASW_Tech(config)#line console 0
ASW_Tech(config-line)#logging synchronous
ASW_Tech(config-line)#exec-timeout 5 0
ASW_Tech(config-line)#password kggame123
ASW_Tech(config-line)#login
ASW_Tech(config-line)#exit
ASW_Tech(config)#interface range ethernet 0/0-3, ethernet 1/0-3, ethernet 2/0-3, ethernet 3/0-3
ASW_Tech(config-if-range)#shutdown
ASW_Tech(config-if-range)#exit
```

- VLAN 설정

```
ASW_Tech(config)#vlan 20
ASW_Tech(config-vlan)#name Tech
ASW_Tech(config-vlan)#exit
```

- VLAN Access Link 설정

```
ASW_Tech(config)#interface range ethernet 0/0-1
ASW_Tech(config-if-range)#description ##Tech_USER_PC##
ASW_Tech(config-if-range)#switchport mode access
ASW_Tech(config-if-range)#switchport access vlan 20
ASW_Tech(config-if-range)#spanning-tree portfast
ASW_Tech(config-if-range)#no shutdown
ASW_Tech(config-if-range)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
ASW_Tech(config)#interface range ethernet 2/2-3
ASW_Tech(config-if-range)#description ##DSW1_Uplink_Trunk_Port##
```

```
ASW_Tech(config-if-range)#switch trunk encapsulation dot1q
ASW_Tech(config-if-range)#switchport trunk allowed vlan 20
ASW_Tech(config-if-range)#switchport trunk native vlan 999
ASW_Tech(config-if-range)#switchport mode trunk
ASW_Tech(config-if-range)#switchport nonegotiate
ASW_Tech(config-if-range)#channel-group 1 mode desirable
ASW_Tech(config-if-range)#no shutdown
ASW_Tech(config-if-range)#exit
ASW_Tech(config)#interface range ethernet 2/0-1
ASW_Tech(config-if-range)#description ##DSW2_Uplink_Trunk_port##
ASW_Tech(config-if-range)#switchport trunk encapsulation dot1q
ASW_Tech(config-if-range)#switchport trunk allowed vlan 20
ASW_Tech(config-if-range)#switchport trunk native vlan 999
ASW_Tech(config-if-range)#switchport mode trunk
ASW_Tech(config-if-range)#switchport nonegotiate
ASW_Tech(config-if-range)#channel-group 2 mode desirable
ASW_Tech(config-if-range)#no shutdown
ASW_Tech(config)#end
ASW_Tech#wr
```

▶ ASW_UI (그래픽팀)

- 기본설정

```
IOU#configure terminal
IOU(config)#hostname ASW_UI
ASW_UI(config)#enable secret kgb3
ASW_UI(config)#no ip domain lookup
ASW_UI(config)#line console 0
ASW_UI(config-line)#logging synchronous
ASW_UI(config-line)#exec-timeout 5 0
ASW_UI(config-line)#password kggame123
ASW_UI(config-line)#login
ASW_UI(config-line)#exit
ASW_UI(config)#interface range ethernet 0/0-3, ethernet 1/0-3, ethernet 2/0-3, ethernet 3/0-3
ASW_UI(config-if-range)#shutdown
ASW_UI(config-if-range)#exit
```

- VLAN 설정

```
ASW_UI(config)#vlan 30  
ASW_UI(config-vlan)#name UI  
ASW_UI(config-vlan)#exit
```

- VLAN Access Link 설정

```
ASW_UI(config)#interface range ethernet 0/0-1  
ASW_UI(config-if-range)#description ##UI_USER_PC##  
ASW_UI(config-if-range)#switchport mode access  
ASW_UI(config-if-range)#switchport access vlan 30  
ASW_UI(config-if-range)#spanning-tree portfast  
ASW_UI(config-if-range)#no shutdown  
ASW_UI(config-if-range)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
ASW_UI(config)#interface range ethernet 2/0-1  
ASW_UI(config-if-range)#description ##DSW1_Uplink_Trunk_Port##  
ASW_UI(config-if-range)#switchport trunk encapsulation dot1q  
ASW_UI(config-if-range)#switchport trunk allowed vlan 30  
ASW_UI(config-if-range)#switchport trunk native vlan 999  
ASW_UI(config-if-range)#switchport mode trunk  
ASW_UI(config-if-range)#switchport nonegotiate  
ASW_UI(config-if-range)#channel-group 1 mode desirable  
ASW_UI(config-if-range)#no shutdown  
ASW_UI(config-if-range)#exit  
ASW_UI(config)#interface range ethernet 2/2-3  
ASW_UI(config-if-range)#description ##DSW2_Uplink_Trunk_Port##  
ASW_UI(config-if-range)#switchport trunk encapsulation dot1q  
ASW_UI(config-if-range)#switchport trunk allowed vlan 30  
ASW_UI(config-if-range)#switchport trunk native vlan 999  
ASW_UI(config-if-range)#switchport mode trunk  
ASW_UI(config-if-range)#switchport nonegotiate  
ASW_UI(config-if-range)#channel-group 2 mode desirable  
ASW_UI(config-if-range)#no shutdown  
ASW_UI(config)#end  
ASW_UI#wr
```

▶ ASW_Ope (운영팀)

- 기본설정

```
IOU(config)#hostname ASW_Ope
ASW_Ope(config)#enable secret kgb3
ASW_Ope(config)#no ip domain lookup
ASW_Ope(config)#line console 0
ASW_Ope(config-line)#logging synchronous
ASW_Ope(config-line)#exec-timeout 5 0
ASW_Ope(config-line)#password kggame123
ASW_Ope(config-line)#login
ASW_Ope(config-line)#exit
ASW_Ope(config)#interface range ethernet 0/0-3, ethernet 1/0-3, ethernet 2/0-3, ethernet 3/0-3
ASW_Ope(config-if-range)#shutdown
ASW_Ope(config-if-range)#exit
```

- VLAN 설정

```
ASW_Ope(config)#vlan 40
ASW_Ope(config-vlan)#name Ope
ASW_Ope(config-vlan)#exit
```

- VLAN Access Link 설정

```
ASW_Ope(config)#interface range ethernet 0/0-1
ASW_Ope(config-if-range)#description ##Ope_USER_PC##
ASW_Ope(config-if-range)#switchport mode access
ASW_Ope(config-if-range)#switchport access vlan 40
ASW_Ope(config-if-range)#spanning-tree portfast
ASW_Ope(config-if-range)#no shutdown
ASW_Ope(config-if-range)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
ASW_Ope(config)#interface range ethernet 2/0-1
ASW_Ope(config-if-range)#description ##DSW1_Uplink_Trunk_Port##
ASW_Ope(config-if-range)#switchport trunk encapsulation dot1q
```

```
ASW_Ope(config-if-range)#switchport trunk allowed vlan 40
ASW_Ope(config-if-range)#switchport trunk native vlan 999
ASW_Ope(config-if-range)#switchport mode trunk
ASW_Ope(config-if-range)#switchport nonegotiate
ASW_Ope(config-if-range)#channel-group 1 mode desirable
ASW_Ope(config-if-range)#no shutdown
ASW_Ope(config-if-range)#exit
ASW_Ope(config)#interface range ethernet 2/2-3
ASW_Ope(config-if-range)#description ##DSW2_Uplink_Trunk_Port###
ASW_Ope(config-if-range)#switchport trunk encapsulation dot1q
ASW_Ope(config-if-range)#switchport trunk allowed vlan 40
ASW_Ope(config-if-range)#switchport trunk native vlan 999
ASW_Ope(config-if-range)#switchport mode trunk
ASW_Ope(config-if-range)#switchport nonegotiate
ASW_Ope(config-if-range)#channel-group 2 mode desirable
ASW_Ope(config-if-range)#no shutdown
ASW_Ope(config)#end
ASW_Ope#wr
```

3) DSW 장비 설정 (L3 Switch)

▶ DSW1

- 기본설정

```
DSW1#configure terminal
DSW1(config)#enable secret kgb3
DSW1(config)#no ip domain lookup
DSW1(config)#line console 0
DSW1(config-line)#logging synchronous
DSW1(config-line)#exec-time 5 0
DSW1(config-line)#password kggame123
DSW1(config-line)#login
DSW1(config-line)#exit
DSW1(config)#interface range e 0/0 - 3, e 1/0 - 3, e 2/0 - 3, e 3/0 - 3, e4/0 - 1
DSW1(config-if-range)#shutdown
DSW1(config-if-range)#exit
```

- VLAN 설정

```
DSW1(config)#vlan 10
DSW1(config-vlan)#name HR
DSW1(config-vlan)#exit
DSW1(config)#vlan 20
DSW1(config-vlan)#name Tech
DSW1(config-vlan)#exit
DSW1(config)#vlan 30
DSW1(config-vlan)#name UI
DSW1(config-vlan)#exit
DSW1(config)#vlan 40
DSW1(config-vlan)#name Ope
DSW1(config-vlan)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
DSW1(config)#interface range e2/0 – 1
DSW1(config-if-range)#desc ##ASW_HR_Trunk_Port##
DSW1(config-if-range)#switchport trunk encapsulation dot1q
DSW1(config-if-range)#switchport trunk allowed vlan 10, 20, 30, 40
DSW1(config-if-range)#switchport trunk native vlan 999
DSW1(config-if-range)#switchport mode trunk
DSW1(config-if-range)#switchport nonegotiate
DSW1(config-if-range)#channel-group 1 mode desirable
DSW1(config-if-range)#no shutdown
DSW1(config-if-range)#exit
DSW1(config)#interface range e2/2 – 3
DSW1(config-if-range)#desc ##ASW_Tech_Trunk_Port##
DSW1(config-if-range)#switchport trunk encapsulation dot1q
DSW1(config-if-range)#switchport trunk allowed vlan 10, 20, 30, 40
DSW1(config-if-range)#switchport trunk native vlan 999
DSW1(config-if-range)#switchport mode trunk
DSW1(config-if-range)#switchport nonegotiate
DSW1(config-if-range)#channel-group 2 mode desirable
DSW1(config-if-range)#no shutdown
DSW1(config-if-range)#exit
```

```
DSW1(config)#interface range e3/0 – 1
DSW1(config-if-range)#desc ##ASW_UI_Trunk_Port##
DSW1(config-if-range)#switchport trunk encapsulation dot1q
DSW1(config-if-range)#switchport trunk allowed vlan 10, 20, 30, 40
DSW1(config-if-range)#switchport trunk native vlan 999
DSW1(config-if-range)#switchport mode trunk
DSW1(config-if-range)#switchport nonegotiate
DSW1(config-if-range)#channel-group 3 mode desirable
DSW1(config-if-range)#no shutdown
DSW1(config-if-range)#exit
```

```
DSW1(config)#interface range e3/2 – 3
DSW1(config-if-range)#desc ##ASW_Ope_Trunk_Port##
DSW1(config-if-range)#switchport trunk encapsulation dot1q
DSW1(config-if-range)#switchport trunk allowed vlan 10, 20, 30, 40
DSW1(config-if-range)#switchport trunk native vlan 999
DSW1(config-if-range)#switchport mode trunk
DSW1(config-if-range)#switchport nonegotiate
DSW1(config-if-range)#channel-group 4 mode desirable
DSW1(config-if-range)#no shutdown
DSW1(config-if-range)#exit
```

- Inter-VLAN SVI 설정 및 HSRP

```
DSW1(config)#track 1 interface e 0/0 line-protocol
DSW1(config-track)#exit
```

```
DSW1(config)#interface vlan 10
DSW1(config-if)#desc ##VLAN10_Gateway##
DSW1(config-if)#ip add 10.10.10.252 255.255.255.0
DSW1(config-if)#ip helper-address 10.10.250.4
DSW1(config-if)#standby 10 ip 10.10.10.254
DSW1(config-if)#standby 10 priority 110
DSW1(config-if)#standby 10 track 1 decrement 50
DSW1(config-if)#standby 10 preempt delay minimum 30
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

```
DSW1(config)#interface vlan 20
DSW1(config-if)#desc ##VLAN20_Gateway##
DSW1(config-if)#ip add 10.10.20.252 255.255.255.0
DSW1(config-if)#ip helper-address 10.10.250.4
DSW1(config-if)#standby 20 ip 10.10.20.254
DSW1(config-if)#standby 20 priority 110
DSW1(config-if)#standby 20 track 1 decrement 50
DSW1(config-if)#standby 20 preempt delay minimum 30
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

```
DSW1(config)#interface vlan 30
DSW1(config-if)#desc ##VLAN30_Gateway##
DSW1(config-if)#ip add 10.10.30.252 255.255.255.0
DSW1(config-if)#ip helper-address 10.10.250.4
DSW1(config-if)#standby 30 ip 10.10.30.254
DSW1(config-if)#standby 30 priority 110
DSW1(config-if)#standby 30 track 1 decrement 50
DSW1(config-if)#standby 30 preempt delay minimum 30
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

```
DSW1(config)#interface vlan 40
DSW1(config-if)#desc ##VLAN40_Gateway##
DSW1(config-if)#ip add 10.10.40.252 255.255.255.0
DSW1(config-if)#ip helper-address 10.10.250.4
DSW1(config-if)#standby 40 ip 10.10.40.254
DSW1(config-if)#standby 40 preempt
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

- Connection SVI 설정

▶ Router Connection

```
DSW1(config)#interface e 0/0
DSW1(config-if)#desc ##CE_Connection##
DSW1(config-if)#no switchport
DSW1(config-if)#ip add 10.10.100.2 255.255.255.252
DSW1(config-if)#duplex full
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

▶ DSW2 Connection

```
DSW1(config)#interface e 0/1
DSW1(config-if)#desc ##DSW2_Connetion##
DSW1(config-if)#no switchport
DSW1(config-if)#ip add 10.10.100.9 255.255.255.252
DSW1(config-if)#no shutdown
DSW1(config-if)#exit
```

- RSTP 설정

```
DSW1(config)#spanning-tree vlan 10 priority 4096
DSW1(config)#spanning-tree vlan 20 priority 4096
DSW1(config)#spanning-tree vlan 30 priority 4096
```

- Routing 구간 RIP 설정

```
DSW1(config)#router rip
DSW1(config-router)#version 2
DSW1(config-router)#no auto-summary
DSW1(config-router)#network 10.0.0.0
DSW1(config-router)#exit
DSW1(config)#no ip cef
DSW1(config)#exit
DSW1#wr
```

▶ DSW2

- 기본설정

```
IOU>enable
IOU#configure terminal
IOU(config)#hostname DSW2
DSW2(config)#no ip domain lookup
DSW2(config)#enable secret kgb3
DSW2(config)#line console 0
DSW2(config-line)#exec-timeout 5 0
DSW2(config-line)#logging synchronous
DSW2(config-line)#password kggame123
DSW2(config-line)#login
DSW2(config-line)#exit

DSW2(config)#interface range e0/0-3, e1/0-3, e2/0-3, e3/0-3, e4/0-1
DSW2(config-if-range)#shutdown
DSW2(config-if-range)#exit
```

- VLAN 설정

```
DSW2(config)#vlan 10
DSW2(config-vlan)#name HR
DSW2(config-vlan)#exit
DSW1(config-vlan)#exit
DSW2(config)#vlan 20
DSW2(config-vlan)#name Tech
DSW2(config-vlan)#exit
DSW2(config)#vlan 30
DSW2(config-vlan)#name UI
DSW2(config-vlan)#exit
DSW2(config)#vlan 40
DSW2(config-vlan)#name Ope
DSW2(config-vlan)#exit
```

- VLAN Trunk Link 설정 및 Port Channel 구성

```
DSW2(config)#interface range e2/0-1
DSW2(config-if-range)#desc ##ASW_HR_Trunk_Port##
DSW2(config-if-range)#switchport trunk encapsulation dot1q
DSW2(config-if-range)#switchport mode trunk
DSW2(config-if-range)#switchport trunk allowed vlan 10,20,30,40
DSW2(config-if-range)#switchport trunk native vlan 999
DSW2(config-if-range)#switchport nonegotiate
DSW2(config-if-range)#channel-group 1 mode desirable
DSW2(config-if-range)#no shutdown
DSW2(config-if-range)#exit
```

```
DSW2(config)#interface range e2/0-1
DSW2(config-if-range)#desc ##ASW_Tech_Trunk_Port##
DSW2(config-if-range)#switchport trunk encapsulation dot1q
DSW2(config-if-range)#switchport mode trunk
DSW2(config-if-range)#switchport trunk allowed vlan 10,20,30,40
DSW2(config-if-range)#switchport trunk native vlan 999
DSW2(config-if-range)#switchport nonegotiate
DSW2(config-if-range)#channel-group 2 mode desirable
DSW2(config-if-range)#no shutdown
DSW2(config-if-range)#exit
```

```
DSW2(config)#interface range e3/0-1
DSW2(config-if-range)#desc ##ASW_UI_Trunk_Port##
DSW2(config-if-range)#switchport trunk encapsulation dot1q
DSW2(config-if-range)#switchport mode trunk
DSW2(config-if-range)#switchport trunk allowed vlan 10,20,30,40
DSW2(config-if-range)#switchport trunk native vlan 999
DSW2(config-if-range)#switchport nonegotiate
DSW2(config-if-range)#channel-group 3 mode desirable
DSW2(config-if-range)#no shutdown
DSW2(config-if-range)#exit
```

```
DSW2(config)#interface range e3/2-3
DSW2(config-if-range)#desc ##ASW_Ope_Trunk_Port##
```

```
DSW2(config-if-range)#switchport trunk encapsulation dot1q
DSW2(config-if-range)#switchport mode trunk
DSW2(config-if-range)#switchport trunk allowed vlan 10,20,30,40
DSW2(config-if-range)#switchport trunk native vlan 999
DSW2(config-if-range)#switchport nonegotiate
DSW2(config-if-range)#channel-group 4 mode desirable
DSW2(config-if-range)#no shutdown
DSW2(config-if-range)#exit
```

- Inter-VLAN SVI 설정 및 HSRP

```
DSW2(config)#track 1 interface e0/0 line-protocol
DSW2(config-track)#exit
```

```
DSW2(config)#interface vlan 10
DSW2(config-if)#desc ##VLAN10_Gateway##
DSW2(config-if)#ip add 10.10.10.253 255.255.255.0
DSW2(config-if)#ip helper-address 10.10.250.5
DSW2(config-if)#standby 10 ip 10.10.10.254
DSW2(config-if)#standby 10 preempt
DSW2(config-if)#no shutdown
DSW2(config-if)#exit
```

```
DSW2(config)#interface vlan 20
DSW2(config-if)#desc ##VLAN20_Gateway##
DSW2(config-if)#ip add 10.10.20.253 255.255.255.0
DSW2(config-if)#ip helper-address 10.10.250.5
DSW2(config-if)#standby 20 ip 10.10.20.254
DSW2(config-if)#standby 20 preempt
DSW2(config-if)#no shutdown
DSW2(config-if)#exit
```

```
DSW2(config)#interface vlan 30
DSW2(config-if)#desc ##VLAN30_Gateway##
DSW2(config-if)#ip add 10.10.30.253 255.255.255.0
DSW2(config-if)#ip helper-address 10.10.250.5
```

```
DSW2(config-if)#standby 30 ip 10.10.30.254
DSW2(config-if)#standby 30 preempt
DSW2(config-if)#no shutdown
DSW2(config-if)#exit

DSW2(config)#interface vlan 40
DSW2(config-if)#desc ##VLAN40_Gateway##
DSW2(config-if)#ip add 10.10.40.253 255.255.255.0
DSW2(config-if)#ip helper-address 10.10.250.5
DSW2(config-if)#standby 40 ip 10.10.40.254
DSW2(config-if)#standby 40 priority 110
DSW2(config-if)#standby 40 track 1 decrement 50
DSW2(config-if)#standby 40 preempt delay minimum 30
DSW2(config-if)#no shutdown
DSW2(config-if)#exit
```

- Connection SVI 설정

▶ Router Connection

```
DSW2(config)#interface e0/0
DSW2(config-if)#desc ##CE_Connection##
DSW2(config-if)#no switchport
DSW2(config-if)#ip add 10.10.100.6 255.255.255.252
DSW2(config-if)#duplex full
DSW2(config-if)#no shutdown
DSW2(config-if)#exit
```

▶ DSW1 Connection

```
DSW2(config)#interface e0/1
DSW2(config-if)#desc ##DSW1_Connection##
DSW2(config-if)#no switchport
DSW2(config-if)#ip add 10.10.100.10 255.255.255.252
DSW2(config-if)#no shutdown
DSW2(config-if)#exit
```

- RSTP 설정

```
DSW2(config)#spanning-tree vlan 40 priority 4096
```

- Routing 구간 RIP 설정

```
DSW2(config)#router rip
DSW2(config-router)#version 2
DSW2(config-router)#no auto-summary
DSW2(config-router)#network 10.0.0.0
DSW2(config-router)#exit
DSW2(config)#no ip cef
DSW2(config)#end
DSW2#wr
```

4) CE 장비 설정 (Router)

- 기본설정

```
R1#configure terminal
R1(config)#hostname CE
CE(config)#no ip domain lookup
CE(config)#enable secret kgb3
CE(config)#line console 0
CE(config-line)#exec-timeout 5 0
CE(config-line)#logging synchronous
CE(config-line)#password kggame123
CE(config-line)#login
CE(config-line)#exit
```

- interface 설정

▶ DSW Connection

```
CE(config)#interface f0/0
CE(config-if)#desc ##DSW1_Connection##
CE(config-if)#ip add 10.10.100.1 255.255.255.252
CE(config-if)#duplex full
CE(config-if)#no shutdown
CE(config-if)#exit
```

▶ ISP Connection

```
CE(config)#interface f1/0
CE(config-if)#desc ##ISP_Connection##
CE(config-if)#ip add dhcp
CE(config-if)#no shutdown
CE(config-if)#exit
```

- Routing RIP 설정

```
CE(config)#router rip
CE(config-router)#version 2
CE(config-router)#no auto-summary
CE(config-router)#network 10.0.0.0
CE(config-router)#default-information originate
CE(config-router)#exit
CE(config)#no ip cef
```

- NAT 설정

▶ VLAN 10, 20, 30, 40

```
CE(config)#ip nat pool HR 192.10.10.1 192.10.10.25 netmask 255.255.255.0
CE(config)#access-list 10 permit 10.10.10.0 0.0.0.255
CE(config)#ip nat inside source list 10 pool HR overload
CE(config)#ip nat pool Tech 192.10.10.26 192.10.10.50 netmask 255.255.255.0
CE(config)#access-list 20 permit 10.10.20.0 0.0.0.255
CE(config)#ip nat inside source list 20 pool Tech overload
CE(config)#ip nat pool UI 192.10.10.51 192.10.10.75 netmask 255.255.255.0
CE(config)#access-list 30 permit 10.10.30.0 0.0.0.255
CE(config)#ip nat inside source list 30 pool UI overload
CE(config)#ip nat pool Ope 192.10.10.76 192.10.10.99 netmask 255.255.255.0
CE(config)#access-list 40 permit 10.10.40.0 0.0.0.255
CE(config)#ip nat inside source list 40 pool Ope overload
```

▶ NAT Interface 적용

```
CE(config)#interface f0/0-1
CE(config-if)#ip nat inside
CE(config-if)#exit
CE(config)#interface f1/0
CE(config-if)#ip nat outside
CE(config-if)#exit
CE(config)#end
CE#wr
```



THANK YOU

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