

KG GAME
CLOUD 구축
기술문서



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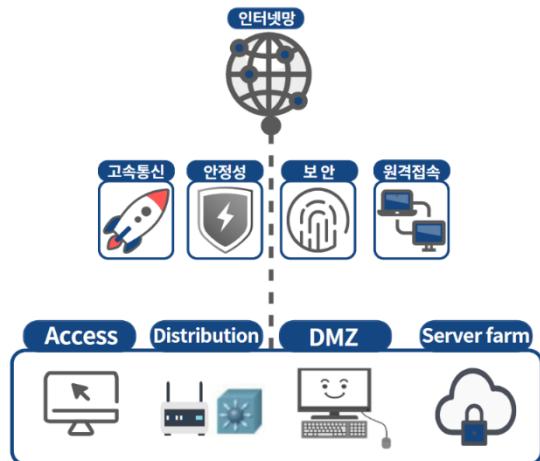
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I. 사업 개요

1. 사업명 : KG GAME Cloud 이전 사업

2. 사업 목적



KG Game은 신작 게임을 정식 발매하기에 앞서, 베타 테스트를 진행하였고 사용자들의 반응은 매우 폭발적이었다. 회사는 서비스 유지를 위해 기존 인프라의 모든 리소스를 사용하였으나 정식 발매 시에는 서버 증설이 반드시 필요하다는 점을 인지하게 되었다.

하지만, 정식 발매까지 남은 시간이 많지 않은 상태이며 현재로써는 정식 발매 시의 동시접속자의 수를 짐작하기가 어려운 상황이다. 더불어, 회사는 폭발적인 반응이 만약 일시적인 현상일 경우, 서버 증설에 대한 비용 손해는 막대할 것이다. 회사의 바람대로 신작 게임이 흥행에 성공하게 되었을 경우 회사는 전 세계로 게임을 런칭 하는 것 또한 고려하고 있다.

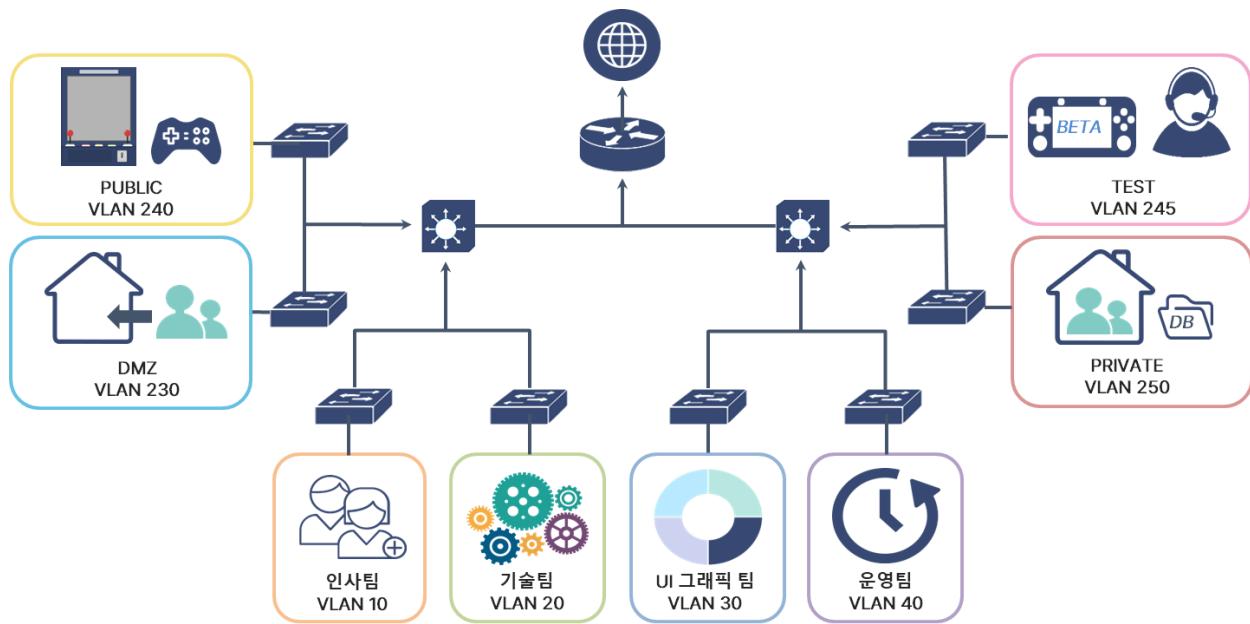
그러나, 현재 회사의 인프라는 국내에 한정되어 있는 상황이며 빠른 시간 내에 서버를 이전할 수 있고 게임에 대한 반응이 일시적일 수도 있음을 고려하여 유연하고 탄력적인 서버운영이 가능한 클라우드로 마이그레이션을 고려하고 있다.

3. 제안요구 사항

- 1) 기존 장비를 활용할 수 있었으면 합니다.
- 2) 트래픽이 폭주해도 서비스가 끊기지 않기를 원합니다.
- 3) 유저들의 접속량에 따라 게임서버를 확장, 축소할 수 있었으면 합니다.
- 4) 웹사이트, 게임서버, 개발 서버별 네트워크를 따로 만들기를 원합니다.
- 5) 편리하게 리소스를 모니터링할 수 있었으면 합니다.
- 6) 빠른 시일 내에 해외를 진출할 수 있기를 원합니다.

II. Cloud 환경

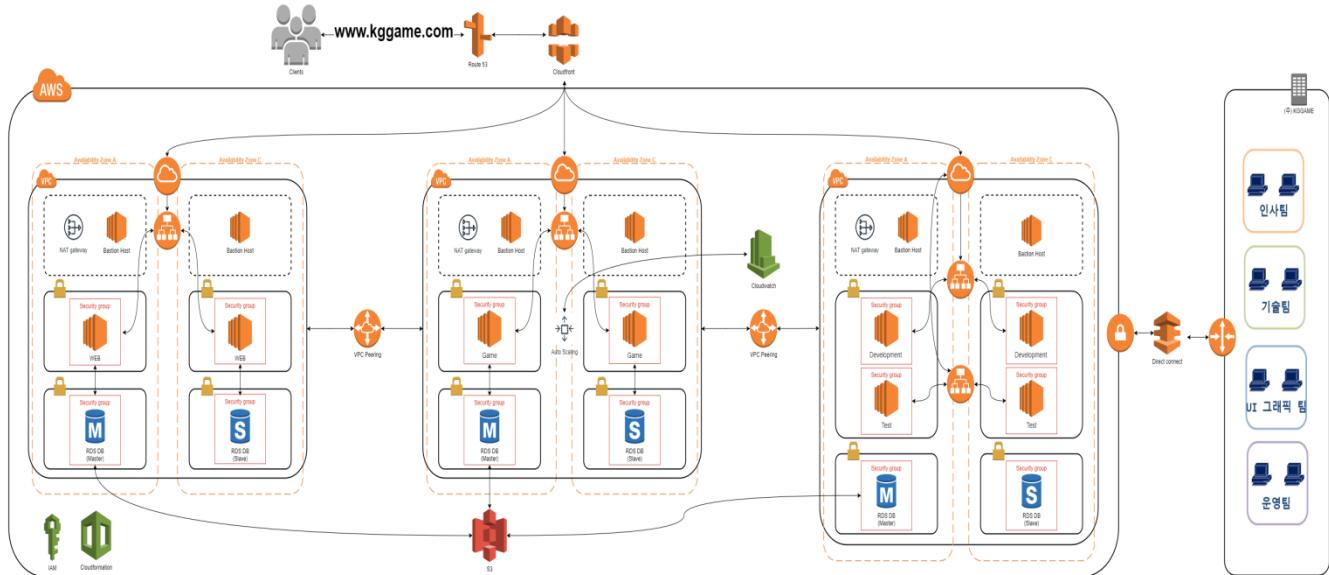
1. 기존 On-Premise 환경



2. KG GAME의 Solution

- 1) 회사 내부의 부서들은 on-premise, 나머지 Serverfarm과 DMZ영역은 Hybrid Cloud로 인프라 구축
- 2) AWS ELB 서비스를 이용하여 트래픽 배분
- 3) AWS AutoScaling 서비스를 사용하여 일정 기준이상 트래픽이 변동 시 서버 확장 및 축소
- 4) VPC Peering 서비스를 사용하여 용도별 VPC 구축 후 연결
- 5) Cloudwatch를 이용한 리소스 모니터링 및 SNS 서비스를 통한 경보 알림 이메일 생성
- 6) Cloudformation을 이용하여 클릭 몇번으로 인프라 환경 구축 가능

3. Hybrid Cloud 토플로지



4. IP 및 네트워크 대역

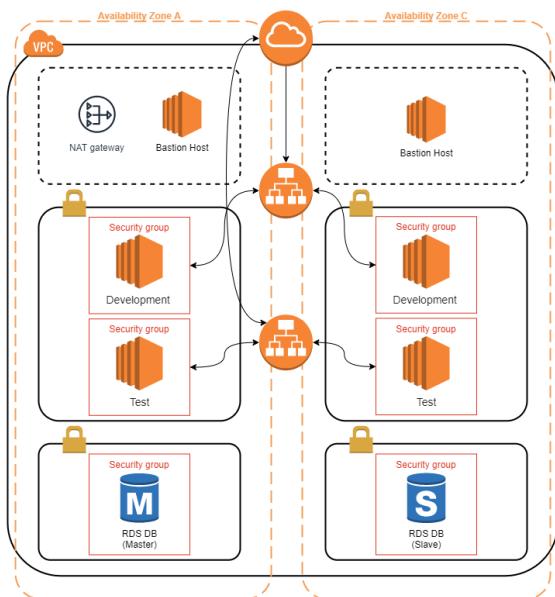
WEB VPC	Net	10.0.0.0 / 16
	Public Subnet a	10.0.1.0 / 24
	Public Subnet b	10.0.2.0 / 24
	Private Subnet a1	10.0.10.0 / 24
	Private Subnet c1	10.0.20.0 / 24
	Private Subnet a2	10.0.30.0 / 24
	Private Subnet c2	10.0.40.0 / 24

GAME VPC	Net	20.0.0.0 / 16
	Public Subnet a	20.0.1.0 / 24
	Public Subnet b	20.0.2.0 / 24
	Private Subnet a1	20.0.10.0 / 24
	Private Subnet c1	20.0.20.0 / 24
	Private Subnet a2	20.0.30.0 / 24
	Private Subnet c2	20.0.40.0 / 24

TEST Develop VPC	Net	30.0.0.0 / 16
	Public Subnet a	30.0.1.0 / 24
	Public Subnet b	30.0.2.0 / 24
	Private Subnet a1	30.0.10.0 / 24
	Private Subnet c1	30.0.20.0 / 24
	Private Subnet a2	30.0.30.0 / 24
	Private Subnet c2	30.0.40.0 / 24

III. AWS 서비스 구축

1. TEST/Develop VPC



1) TEST/Develop-Cloudformation Stack 생성

2) TEST/Develop Cloudformation 결과 확인

해당 VPC와 구성요소들이 정상적으로 만들어졌는지 확인한다

This composite screenshot displays several AWS service dashboards:

- CloudFormation:** Shows the "TEST-Develop-Cloudformation" stack with 2 resources: "TEST-Develop-Cloudformation" (Status: CREATE_COMPLETE) and "TEST-Develop-Cloudformation" (Status: CREATE_IN_PROGRESS).
- VPC Subnets:** Lists subnets under the "TEST Public sub-C" VPC, including "TEST Private sub-A1" which is highlighted.
- Route Tables:** Shows route tables for the "Public-TEST" and "Private-TEST" subnets. The "Private-TEST" route table has a route to "0.0.0.0/0" via "igw-00b44404" (Status: Active).
- EC2 Instances:** Displays multiple EC2 instances across various subnets, including "TEST Server-A", "TEST Server-B", "TEST Server-C", "TEST/Develop Bastion-A", "TEST/Develop Bastion-B", and "TEST/Develop Bastion-C".
- Security Groups:** Shows security groups for the instances, such as "TEST-SG" and "Develop-SG".

Bastion Host에서 Private Subnet에 위치한 서버로 연결되는지 확인한다.

3) TEST/Develop Load Balancer

[Target Group 생성]

TEST-TG

Specify group details

Your load balancer makes 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
Creates load balancing to instances within a specific VPC.

IP addresses
Creates load balancing to IP addresses and associates routes.
Can handle requests to multiple IP addresses and associate them on the same instance.
Offers healthy with new routes instead of reboots, implying zero application downtime.

Lambda functions
Creates load balancing to single Lambda function.
Available in Application Load Balancers only.

Application Load Balancer
Offers the flexibility for an Application Load Balancer to accept and route TCP requests onto a specific VPC.
Can handle requests to IP addresses and DNS records with no duplication load balancing.

Target group name
`TASKS-TLB`
A maximum of 32 characters is allowed, including hyphens, but the name must not begin and end with a slash.

Protocol `HTTP` **Port** `80`

VPC
Associate this VPC with the resources that you want to include in the target group.
`tasksvpc`
sg-054d4640c205fb6
arn:aws:lambda:us-east-1:123456789012:function:tasksvpc

Protocol version

- HTTP/1.1**
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.
- HTTP/2**
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 new target group will periodically send requests, per the settings below, to the registered targets to test their status.

Step 1

Configure health checks

Health check settings

Port
The port on which the load balancer uses when performing health checks on targets. The default is the port on which each target receives traffic from the traffic port.

HTTP

HTTPS

Custom TCP port

Override

Health threshold
The number of consecutive health checks required before classifying an unhealthy target as healthy.

Unhealthy threshold
The number of consecutive health check failures required before classifying a target as unhealthy.

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

seconds

(1-100)

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

seconds

(1-300)

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, 200-209).

Step 2

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)

Filter results by property or value

Instance ID	IP	Name	State	Security groups	Zone	Subnet ID
<input type="checkbox"/> i-03226d61746e59db7	192.168.1.10	TEST Router-A	running	TEST Router SG	ap-northeast-2a	subnet-00946c2895f912d9
<input type="checkbox"/> i-0328720910e9fb9a8	192.168.1.11	Developer Server-A	running	Developer SG	ap-northeast-2a	subnet-00946c2895f912d9
<input checked="" type="checkbox"/> i-0791332099180750e	192.168.1.12	TEST Server-A	running	TEST SG	ap-northeast-2a	subnet-00946c2895f912d9
<input type="checkbox"/> i-03f5ee51175f6a1	192.168.1.13	TEST NAT-A	running	TEST NAT SG	ap-northeast-2a	subnet-00946c2895f912d9
<input type="checkbox"/> i-03014a04b14007c	192.168.1.14	TEST NAT-B	running	TEST NAT SG	ap-northeast-2a	subnet-00946c2895f912d9
<input type="checkbox"/> i-03a5475f510a06ef	192.168.1.15	Developer Server-C	running	Developer SG	ap-northeast-2c	subnet-00946c2895f912d9
<input checked="" type="checkbox"/> i-03ab04d4b853f0	192.168.1.16	TEST Server-C	running	TEST SG	ap-northeast-2c	subnet-00946c2895f912d9
<input type="checkbox"/> i-03996a517095a5f	192.168.1.17	TEST Router-C	running	TEST Router SG	ap-northeast-2c	subnet-00946c2895f912d9

2 selected

Ports for the selected instances
Ports for sending traffic to the selected instances

80

■ Develop-TG

This screenshot shows the AWS CloudFormation template for the Application Load Balancer (ALB). It includes sections for Target group name (Development-TG), Protocol (HTTP), Port (80), and Protocol version (HTTP). The VPC section specifies the VPC ID (vpc-0404640200be) and subnet IDs (subnet-0124a27d7f7c7f07, subnet-0124a27d7f7c7f08). The Health checks section indicates it uses a default health checker.

This screenshot shows the AWS CloudFormation template for the Application Load Balancer (ALB). It includes sections for Advanced health check settings (Port: 80, Traffic port: 80), Health threshold (5), Unhealthy threshold (2), Timeout (5 seconds), Interval (30 seconds), and Success codes (200). The Register targets section lists four target groups: TEST Section-A, TEST Server-A, TEST NAT-A, and TEST NAT-C, all marked as 'running'.

[ALB 생성]

■ TEST-ALB

This screenshot shows the AWS CloudFormation template for creating an Application Load Balancer (ALB). It includes sections for Select load balancer type (Application Load Balancer), Load balancer types (Application Load Balancer, Network Load Balancer, Gateway Load Balancer), and Create Application Load Balancer (Load balancer name: TEST-ALB).

This screenshot shows the AWS CloudFormation template for the Application Load Balancer (ALB). It includes sections for VPC (TEST-VPC), Subnet (subnet-0124a27d7f7c7f08), and Listener (Protocol: HTTP, Port: 80, Default action: Target group: TEST Section-A). The Security groups section shows a new security group named 'TEST-ALB-SG' with an inbound rule from '0.0.0.0/0' to port 80.

■ Develop ALB

[ALB 생성 - 추가 옵션]

■ Sticky Session

> ELB는 기본적으로 라운드로빈 방식으로 트래픽을 분산하는데,

이를 쿠키 또는 세션을 사용하여 트래픽을 분산하여 특정 사용자가 접속을 시도했을 때

처음 접속된 서버로 계속해서 접속되도록 트래픽을 처리하는 방식

Stickiness
The type of stickiness associated with this target group. If enabled, the load balancer binds a client's session to a specific instance within the target group.

Stickiness type

Load balancer generated cookie

Application-based cookie

Stickiness duration

1 days

4) TEST RDS

[DB Subnet Group]

> Private Subnet a2 & Private Subnet c2 선택

The screenshot shows two side-by-side panels of the AWS RDS 'Create DB Subnet Group' wizard.

Left Panel: Subnet group details

- Name:** TEST-DB-Subnet-Group
- Description:** TEST-DB-Subnet-Group
- VPC:** VPC-1 (selected)

Right Panel: Add subnets

- Availability Zone:** Choose the Availability Zones that include the subnets you want to add. Options: ap-northeast-2a, ap-northeast-2c.
- Select subnets:** Subnet-00790000000000000000000000000000 (selected), subnet-00790000000000000000000000000000 (selected).
- Subnets selected:** Subnet ID: subnet-00790000000000000000000000000000, subnet-00790000000000000000000000000000.

[Database]

The screenshot shows two side-by-side panels of the AWS RDS 'Create DB Instance' wizard.

Left Panel: Templates

- Production:** The default for high availability and performance.
- Dev/Test:** This instance is intended for development and testing applications, or spin-off an existing RDS instance.
- Free tier:** Use RDS free tier for development and testing applications, or spin-off an existing RDS instance.

Right Panel: DB instance class

- DB instance class:** Standard class (includes m class), Memory optimized class (includes r class), General purpose class (includes db class). Options: db.t2.micro, db.m4.large, db.r3.2xlarge.

The screenshot shows two side-by-side panels of the AWS RDS 'Create DB Instance' wizard.

Left Panel: Availability & durability

- MultiAZ deployment:** Create a standby instance recommended for production usage (selected).
- Connectivity:**
 - Virtual private cloud (VPC): TEST-VPC (selected).
 - After a database is created, you can't change its VPC.
 - Selected subnet: subnet-00790000000000000000000000000000 (selected).
 - Public access: No (selected).
 - Amazon RDS instances and databases inside the VPC can connect to your database. Choose to enable IP whitelisting that allows RDS instances and databases inside the VPC can connect to the database.
 - SSL will not encrypt traffic if enabled to the database. Only Amazon RDS instances and databases inside the VPC can connect to the database.

Right Panel: Storage

- Storage type:** Magnetic (selected).
- Avg. storage:** 1 GiB (selected).

The screenshot shows two side-by-side panels of the AWS RDS 'Create DB Instance' wizard.

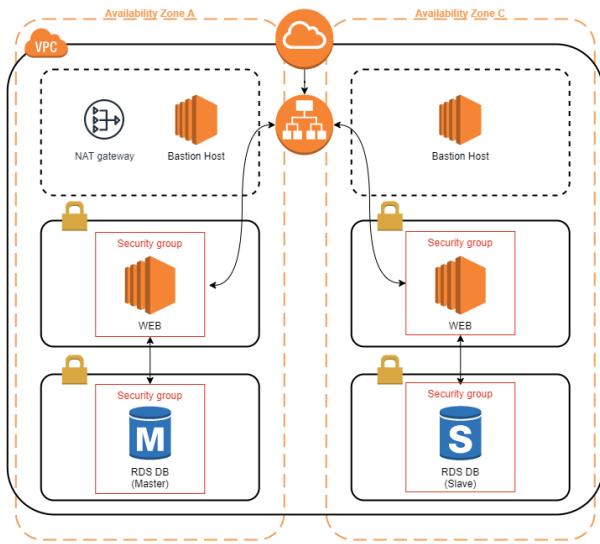
Left Panel: Additional configuration

- Database options:** Test database name: testdb (selected).
- Public parameter group:** default.ramoli05 (selected).
- Option group:** default.arnold10-1 (selected).

Right Panel: Encryption

- Enable encryption:** Yes (selected).
- AWS KMS Key:** idfa040a9fcb (selected).
- Arn:** arn:aws:kms:ap-northeast-2:920785000007:alias/testdb
- KMS key ID:** alias/testdb

2. WEB VPC



1) WEB-Cloudformation Stack 생성

The screenshot shows the AWS CloudFormation 'Create stack' wizard. It consists of four main steps:

- Step 1: Specify template**: Shows the 'Prerequisite - Prepare template' section with 'Prepare template' selected. Other options include 'Specify template details', 'Configure stack options', and 'Review'.
- Step 2: Specify template details**: Shows the 'Specify stack details' section. The 'Stack name' is set to 'WEB-Cloudformation'. The 'Template source' is set to 'Choose file' and points to 'WEB-VPC-v2.yaml'. The 'KeyName' is set to 'sgname'.
- Step 3: Configure stack options**: Shows the 'Configure stack options' section. Under 'Behavior on provisioning failure', 'Roll back all stack resources' is selected. The 'Advanced options' section includes sections for 'Stack policy', 'Rollback configuration', 'Notification options', and 'Stack creation options'.
- Step 4: Review**: Shows the 'Stack creation options' section with 'Timeout' and 'Termination protection' set to 'Disabled'. At the bottom, a checkbox 'I acknowledge that AWS CloudFormation might create IAM resources with custom names.' is checked.

2) WEB-Cloudformation 결과 확인

해당 VPC와 구성요소들이 정상적으로 만들어졌는지 확인한다.

The screenshot shows two AWS service pages. On the left, the CloudFormation console displays the 'WEB-Cloudformation' stack status as 'CREATE_COMPLETE'. The Events tab shows several successful creation events for resources like 'WebServer1', 'CommandHost1', and 'CommandHost2'. On the right, the VPC Dashboard shows a list of subnets across four Availability Zones (ap-northeast-2a, ap-northeast-2b, ap-northeast-2c, ap-northeast-2d). All subnets are in a 'Subnet' state with a 'State' of 'available'. IP ranges and VPC associations are also listed.

This screenshot shows the Route Tables section of the VPC service. It lists two route tables: 'Private-WEB' and 'Public-WEB'. The 'Private-WEB' table has one route to '10.0.0.0/16' via 'rtb-05e40d16004ef88' (local). The 'Public-WEB' table has one route to '0.0.0.0/0' via 'igw-0500d5a6705223'. Both routes are marked as 'Active'.

The screenshot shows the EC2 Instances section. It lists three instances: 'WEB Bastion-A', 'WEB Bastion-B', and 'WEB Bastion-C'. Each instance is running and assigned to the 'WEB-SG' security group. The 'Inbound rules' table for instance 'WEB Bastion-A' shows three rules: port 80 (TCP), port 22 (TCP), and port 1 (ICMP), all originating from 'WEB-SG'.

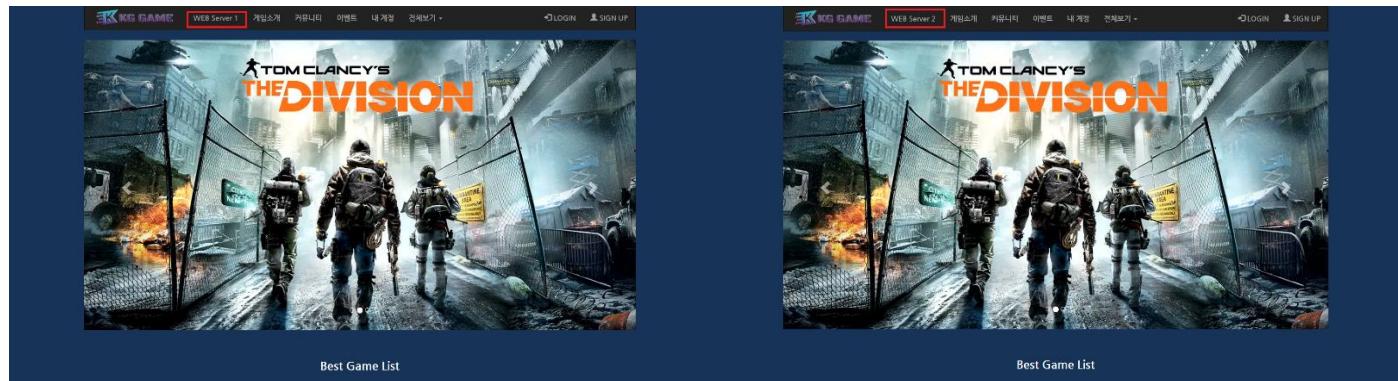
3) WEB Load Balancer

위의 TEST/Develop Load Balancer 구축 과정과 동일

구성 후, WEB-ALB의 DNS name을 복사하여 웹 페이지에 접속한다.

Name	DNS name	State	VPC ID	Availability Zones	Type
Develop-ALB	Develop-ALB-1905662878.a	Active	vpc-064d3b64020deltbe	ap-northeast-2a, ap-nor...	application
Game-ALB	Game-ALB-648073194.ap.n...	Active	vpc-054238d6c811fc4e9	ap-northeast-2a, ap-nor...	application
TEST-ALB	TEST-ALB-194141457.ap.n...	Active	vpc-054d3b64020d0de8be	ap-northeast-2a, ap-nor...	application
WEB-ALB	WEB-ALB-1765916140.ap.n...	Active	vpc-00f687709ff337935	ap-northeast-2a, ap-nor...	application

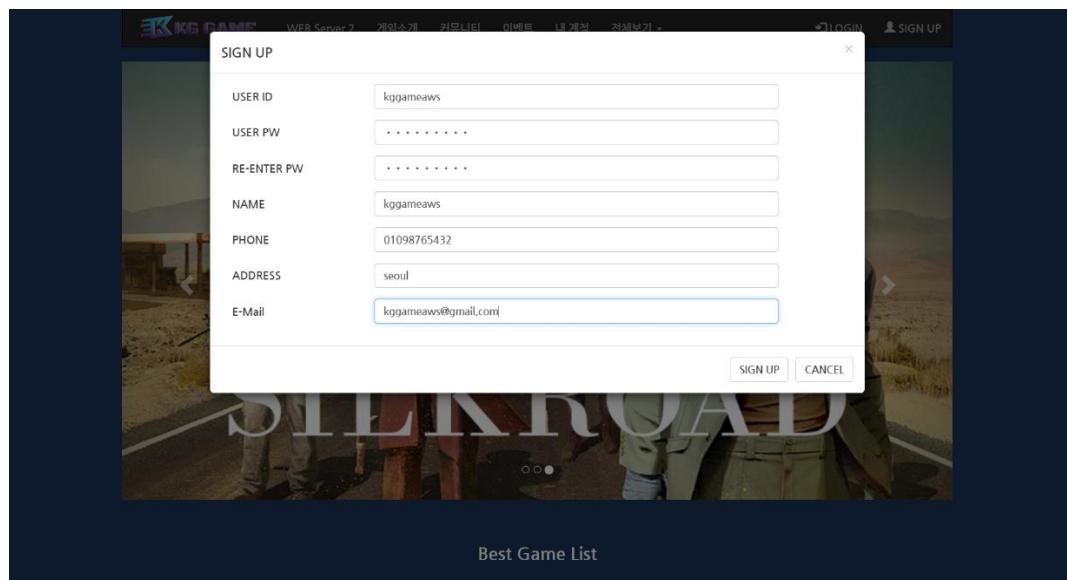
로드밸런싱이 완료 되어, 2개의 서버가 번갈아 나오는 것을 확인할 수 있다.



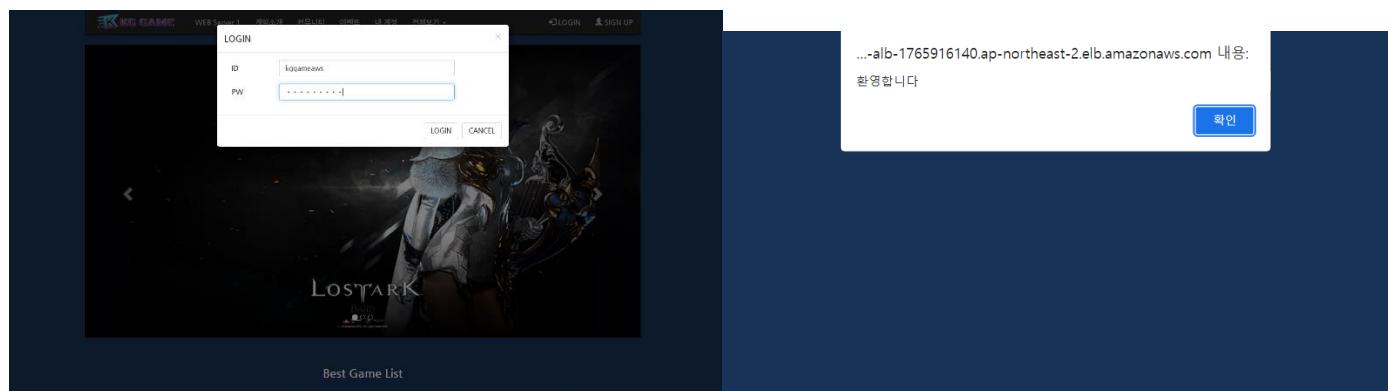
4) WEB RDS

위의 TEST RDS 구축 과정과 동일

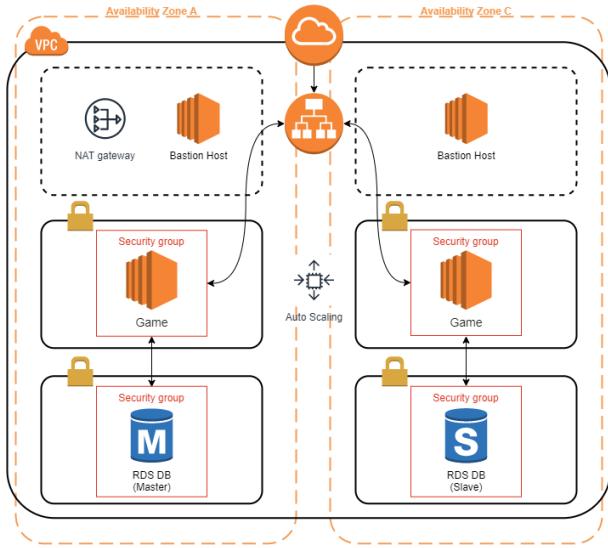
RDS 구축 완료 후, WEB Server에서 회원가입을 한다.



이후 해당 계정으로 로그인이 가능한 것을 확인할 수 있다.



3. Game VPC



1) Game-Cloudformation Stack 생성

Step 1: Specify template

Prerequisite - Prepare template

Prereq 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 Game-VPC-v1.json

S3 URL: <https://s3.ap-northeast-2.amazonaws.com/tf-templates-1416edgeperu7-ap-northeast-2/202130145V-Game-VPC-v1.json>

View in Designer

Cancel **Next**

Step 2: Specify stack details

Specify stack details

Stack name

Game-Cloudformation

Stack name must contain at least one character and can contain letters (a-z), numbers (0-9), and dashes (-).

Parameters

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

AmazonLinuxAMIID

/aws/service/ami.amazonlinux.latest/amzn2.ami.hvm.x86_64.gp2

KeyName

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

keygame

Cancel **Previous** **Next**

Step 3: Advanced options

Behavior on provisioning failure

Specify how CloudFormation handles 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.

Advanced options

You can set additional options for your stack, like notification options and a stack policy. [Learn more](#)

Stack policy

Defines the resources that you want to protect from unintentional updates during a stack update.

Rollback configuration

Specifies criteria for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back. [Learn more](#)

Notification options

Stack creation options

No notification options

There are no notification options defined.

Stack creation options

Timeout

Termination protection

Disabled

Quick-create link

Capabilities

The following resource(s) require capabilities: [AWS::IAM::InstanceProfile]

This template contains Identity and Access Management (IAM) resources that might provide external access to make changes to your AWS account. Check that you want to create each of these resources and that they have the minimum required permissions. [Learn more](#)

I acknowledge that AWS CloudFormation might create IAM resources.

Cancel **Previous** **Create change set** **Create stack**

2) Game-Cloudformation 결과 확인

AWS CloudFormation

VPC Dashboard

Route Tables

EC2 Instances

Security Groups

3) Game Load Balancer

위의 TEST/Develop Load Balancer 구축 과정과 동일

The screenshot shows two AWS CloudFormation stacks being created:

- Stack 1 (game-alb):** A Load Balancer with the following details:
 - Name: game-alb
 - Type: application
 - Scheme: Internet-facing
 - IP address type: ipv4
 - VPC: vpc-04242d0dd1f1b1e4 (selected)
 - Availability Zones: subnets-021911fe000ca1c - ap-northeast-2a (selected), subnets-021911fe000ca1c - ap-northeast-2b (selected)
- Stack 2 (game-lambda):** A Lambda function with the following details:
 - Name: game-lambda
 - Description: Game Lambda Function
 - Runtime: Node.js 14.x
 - Code Size: 10 KB
 - Handler: index.handler
 - Role: game-lambda-role
 - Memory: 128 MB
 - Timeout: 300 seconds
 - Triggers: game-alb (selected)

[ALB 생성 - 추가 옵션]

■ Connection Draining

> Autoscaling과 ELB를 함께 사용시 필요에 따라 EC2가 없어질 경우, 해당 EC2에 요청이 진행중이라면 사용 중인 세션이 피해를 볼 수 있음, 삭제되기 직전에 유회세션이 작업을 마칠 때까지 기다리는 기능

■ Sticky Session

> ELB는 기본적으로 라운드로빈 방식으로 트래픽을 분산하는데, 이를 쿠키 또는 세션을 사용하여 트래픽을 분산하여 특정 사용자가 접속을 시도했을 때 처음 접속된 서버로 계속해서 접속되도록 트래픽을 처리하는 방식

The screenshot shows the configuration for a target group named "game-lambda". It includes the following settings:

- Deregistration delay:** 600 seconds (highlighted with a red box).
- Stickiness:** Enabled (checkbox checked).
 - Stickiness type:** Load balancer generated cookie (radio button selected).
 - Stickiness duration:** 1 day (dropdown set to days).

4) Game RDS

위의 TEST/Develop RDS 구축 과정과 동일

The screenshot shows the summary of a database named "game-db":

- Summary:**
 - DB instance: game-db
 - Region: us-east-1
 - Status: Available
 - Class: db.t2.micro
- Connectivity & security:**
 - Endpoint: game-db.cjyqjv2ap.northwest.2.compute.amazonaws.com
 - Port: 3306
 - Subnet group: game-db-subnet-group
 - Network: Game-VPC (vpc-04242d0dd1f1b1e4)
 - Security groups: Game DB Security Group (sg-03505015)

5) Auto Scaling

[Auto Scaling]

> Game Server AMI 생성

EC2 > Instances > i-011a00f00e132d40a5 > Create Image

Create image [Info](#)
An image (also referred to as an AMI) defines the compute and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Instance ID [i-011a00f00e132d40a5](#) [Details](#) [Edit](#)

Image name [Info](#)
Game AMI
Maximum 128 characters. Can be repeated after creation.

Image description (optional) [Info](#)
Game AMI
Maximum 255 characters

No reboot Enable

Instance volumes

Volume type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/xvda	Create new snapshot	8	EBS General Purpose SSD	100	1000	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Add volume

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

> Launch Configuration 생성

EC2 > Launch configurations > Create launch configuration

Create launch configuration [Info](#)

Launch configuration name [Info](#)
Name GameConfiguration

Amazon machine image (AMI) [Info](#)
AMI Game AMI

Instance type [Info](#)
t2.micro (1 vCPU, 1 GiB RAM Only) Choose instance type

Additional configuration - optional

Purchasing option [Info](#)

AWS > Services > Security groups [Info](#)

Security groups [Info](#)
Assign to security group Create a new security group Select an existing security group

Search security groups Copy to new View rules

Name	VPC ID	Description
sg-055045a0101616ca	vpc-02987709f137155	Permit access from Web Security Groups, VPCs
sg-041003aa01a1a115	vpc-02987709f137155	Backend SG
sg-0505a0101616ca	vpc-044238c5f18469	Game SG
sg-0505a0101616ca	vpc-044238c5f18469	Game Backend SG
sg-0700200e01110a	vpc-044238c5f18469	Game NAT SG
sg-0700200e01110a	vpc-02987709f137155	Launch wizard-1
sg-07ff90c00e0032	vpc-044238c5f18469	default VPC security group

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.

AWS > Services > Load balancers [Info](#)

Load balancers [Info](#)
Choose from your load balancer target groups or choose from your existing load balancers.

Choose from your load balancer target groups Choose from your existing load balancers

Load balancer target groups [Info](#)
Only active target groups that can engage the same VPC as your Auto Scaling group are available for selection.

Select target groups Game-TO-HTTP Application Load Balancer Game-ALB

Key pair (login) [Info](#)
Key pair options Choose a existing key pair
Custom key pair igamme Acknowledge that I have access to the selected private key file (igamme.pem), and that I will not use this file to log in to my instance.

Create launch configuration [Cancel](#)

> Auto Scaling Groups 생성

Configure advanced options [Info](#)

Step 1: Configure template [Info](#)
Step 2: Configure settings [Info](#)
Step 3: Configure [Info](#)
Configure advanced options [Info](#)

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 set actions that give you more control over health check replacements and monitoring.

Load balancing - optional [Info](#)
Use the options below to either attach your Auto Scaling group to an existing load balancer, or to a new load balancer (that you define).
 Attach to an existing load balancer Attach to a new load balancer
Create new load balancer Attach to your existing load balancers.

Attach to an existing load balancer [Info](#)
Select the load balancer that you want to attach to your Auto Scaling group.

Choose from your load balancer target groups Choose from classic load balancers

Game-TO-HTTP Application Load Balancer Game-ALB

Health checks - optional [Info](#)
Health check type [Info](#)
Only active target groups that belong to the same VPC as your Auto Scaling group are available for selection.
Select target group Game-TO-HTTP Application Load Balancer Game-ALB

Health check group period [Info](#)
The amount of time that AWS Auto Scaling performs the first health check on new instances after they are put into service.
100 seconds

Additional settings - optional [Info](#)
Monitoring [Info](#)
 Enable group metrics collection within CloudWatch Metrics

> Cloudwatch를 통해 Autoscaling이 제대로 작동하는지 확인

Game Server에서 부하도를 올린 후,

Meta-Data	Value
InstanceId	i-02fa08d508ce12ba3
Availability Zone	ap-northeast-2a

Current CPU Load: 100%

Cloudwatch에서 알람이 바뀐 것을 확인

History (5)		
Date	Type	Description
2021-10-25 12:56:32	State update	Alarm updated from In alarm to OK
2021-10-25 12:47:32	Action	Successfully executed action arn:aws:autoscaling:ap-northeast-2:924378500107:scalingPolicy:35f94a21-1f3c-49d5-9c39-c6a30b2fd585:autoScalingGroupName/GameASGroup:policyName/Target Tracking Policy
2021-10-25 12:47:32	State update	Alarm updated from OK to In alarm
2021-10-25 12:34:32	State update	Alarm updated from Insufficient data to OK
2021-10-25 12:31:06	Configuration update	Alarm "TargetTracking-Game ASGroup-AlarmHigh-87854dd7-4db9-4a12-8700-75ac8cauebb2" created

4. 기타 서비스

1) VPC Peering

> Web/Game VPC Peering connections 생성

* Peering 해줄 VPC간의 CIDR Block이 겹치지 않도록 주의

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.

WEB/GAME-Peering

Select a local VPC to peer with
VPC ID (Requester)

vpc-00f687709ff337935 (WEB-VPC)

VPC CIDRs for vpc-00f687709ff337935 (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-064238d6c8f1fc4e9 (Game-VPC)

VPC CIDRs for vpc-064238d6c8f1fc4e9 (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
<input type="text"/> Name	<input type="text"/> WEB/GAME-Peering

Add new tag

You can add 49 more tags.

Cancel Create peering connection

> VPC Peering 연결 수락

Actions ▲ Create peering connection

View details

✓ Accept request

Reject request

Edit DNS settings

Manage tags

Delete peering connection

Requester CIDR
10.0.0.0/16

Accept VPC peering connection request [Info](#)

Are you sure you want to accept this VPC peering connection request? (pcx-08c8f3e22527dcf77 / WEB/GAME-Peering)

Requester VPC vpc-00f687709ff337935 / WEB-VPC	Acceptor VPC vpc-064238d6c8f1fc4e9 / Game-VPC	Requester CIDRs 10.0.0.0/16
Acceptor CIDRs -	Requester Region Seoul (ap-northeast-2)	Acceptor Region Seoul (ap-northeast-2)
Requester owner ID 924378500107 (This account)	Acceptor owner ID 924378500107 (This account)	

Cancel Accept request

> Routetable 추가

- WEB VPC

(Private-WEB-A Routetable)

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	eni-0eb96c03497e96757	Active	No
20.0.0.0/16	pcx-08c8f3e22527dcf77	-	No

[Add route](#)

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

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

Routes (3)

[Edit routes](#)

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
20.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No
0.0.0.0/0	eni-0eb96c03497e96757	Active	No

(Private-WEB-C Routetable)

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

Routes (3)

[Edit routes](#)

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
20.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No
0.0.0.0/0	eni-0edc13457c7a6b1d9	Active	No

- Game VPC

(Private-Game-A Routetable)

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

Routes (3)

[Edit routes](#)

Destination	Target	Status	Propagated
10.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No
20.0.0.0/16	local	Active	No
0.0.0.0/0	eni-0c9b1c7cf5f5f578c	Active	No

(Private-Game-C Routetable)

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (3)				
<input type="text" value="Filter routes"/> Both < 1 > ⚙️				
Destination	Target	Status	Propagated	
10.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No	
20.0.0.0/16	local	Active	No	
0.0.0.0/0	eni-017834e2e4efc2e27 ↗	Active	No	

> Game/TEST VPC Peering connections 생성 및 RouteTable 설정

(위와 같이 설정)

Accept VPC peering connection request [Info](#)

Are you sure you want to accept this VPC peering connection request? (pcx-02397ab66fee9628d / GAME/TEST-Peering)

Requester VPC
vpc-064238d6c8f1fc4e9 / Game-VPC

Acceptor VPC
vpc-064d3b64020de8fbe / TEST-VPC

Requester CIDRs
20.0.0.0/16

Acceptor CIDRs
-

Requester Region
Seoul (ap-northeast-2)

Acceptor Region
Seoul (ap-northeast-2)

Requester owner ID
924378500107
(This account)

Acceptor owner ID
924378500107
(This account)

Cancel

Accept request

- Game VPC

(Private-Game-A Routetable)

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (4)				
<input type="text" value="Filter routes"/> Both < 1 > ⚙️				
Destination	Target	Status	Propagated	
10.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No	
20.0.0.0/16	local	Active	No	
30.0.0.0/16	pcx-02397ab66fee9628d	Active	No	
0.0.0.0/0	eni-0c9b1c7cf5f5f578c ↗	Active	No	

(Private-Game-C Routetable)

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (4)				
<input type="text"/> Filter routes	Both	< 1 >	Edit routes	
Destination	Target	Status	Propagated	
10.0.0.0/16	pcx-08c8f3e22527dcf77	Active	No	
20.0.0.0/16	local	Active	No	
30.0.0.0/16	pcx-02397ab66fee9628d	Active	No	
0.0.0.0/0	eni-017834e2e4efc2e27	Active	No	

- Test VPC

(Private-Test-A Routetable)

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (3)				
<input type="text"/> Filter routes	Both	< 1 >	Edit routes	
Destination	Target	Status	Propagated	
20.0.0.0/16	pcx-02397ab66fee9628d	Active	No	
30.0.0.0/16	local	Active	No	
0.0.0.0/0	eni-0b69bb2a99e27ce27	Active	No	

(Private-Test-C Routetable)

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (3)				
<input type="text"/> Filter routes	Both	< 1 >	Edit routes	
Destination	Target	Status	Propagated	
20.0.0.0/16	pcx-02397ab66fee9628d	Active	No	
30.0.0.0/16	local	Active	No	
0.0.0.0/0	eni-0d77a698c69db7f44	Active	No	

> VPC Peering 결과

WEB-VPC의 WEB server A Game-VPC의 Game server A Game-VPC의 Game server A WEB-VPC의 WEB server A

```
[root@ip-10-0-10-23 bin]# ping 20.0.10.30
PING 20.0.10.30 (20.0.10.30) 56(84) bytes of data.
64 bytes from 20.0.10.30: icmp_seq=1 ttl=255 time=0.414 ms
64 bytes from 20.0.10.30: icmp_seq=2 ttl=255 time=0.565 ms
64 bytes from 20.0.10.30: icmp_seq=3 ttl=255 time=0.440 ms
64 bytes from 20.0.10.30: icmp_seq=4 ttl=255 time=0.490 ms
```

Game-VPC의 Game server A Test-VPC의 Develop server A Game-VPC의 Game server A Test-VPC의 Test server A

```
[ec2-user@ip-20-0-10-30 ~]$ ping 30.0.10.81
PING 30.0.10.81 (30.0.10.81) 56(84) bytes of data.
64 bytes from 30.0.10.81: icmp_seq=1 ttl=255 time=0.505 ms
64 bytes from 30.0.10.81: icmp_seq=2 ttl=255 time=0.503 ms
64 bytes from 30.0.10.81: icmp_seq=3 ttl=255 time=0.515 ms
64 bytes from 30.0.10.81: icmp_seq=4 ttl=255 time=0.470 ms
```

Test-VPC의 Test server A Game-VPC의 Game server A Game-VPC의 Game server A Test-VPC의 Test server A

```
[ec2-user@ip-30-0-10-30 ~]$ ping 20.0.10.30
PING 20.0.10.30 (20.0.10.30) 56(84) bytes of data.
64 bytes from 20.0.10.30: icmp_seq=1 ttl=255 time=0.445 ms
64 bytes from 20.0.10.30: icmp_seq=2 ttl=255 time=0.544 ms
64 bytes from 20.0.10.30: icmp_seq=3 ttl=255 time=0.476 ms
64 bytes from 20.0.10.30: icmp_seq=4 ttl=255 time=0.558 ms
```

```
[ec2-user@ip-20-0-10-30 ~]$ ping 10.0.10.23
PING 10.0.10.23 (10.0.10.23) 56(84) bytes of data.
64 bytes from 10.0.10.23: icmp_seq=1 ttl=255 time=0.411 ms
64 bytes from 10.0.10.23: icmp_seq=2 ttl=255 time=0.437 ms
64 bytes from 10.0.10.23: icmp_seq=3 ttl=255 time=0.613 ms
64 bytes from 10.0.10.23: icmp_seq=4 ttl=255 time=0.421 ms
64 bytes from 10.0.10.23: icmp_seq=5 ttl=255 time=0.374 ms
```

```
[ec2-user@ip-20-0-10-30 ~]$ ping 30.0.10.155
PING 30.0.10.155 (30.0.10.155) 56(84) bytes of data.
64 bytes from 30.0.10.155: icmp_seq=1 ttl=255 time=0.459 ms
64 bytes from 30.0.10.155: icmp_seq=2 ttl=255 time=0.509 ms
64 bytes from 30.0.10.155: icmp_seq=3 ttl=255 time=0.528 ms
64 bytes from 30.0.10.155: icmp_seq=4 ttl=255 time=0.492 ms
```

2) Amazon SNS

> Auto Scaling Group에 SNS 설정

SNS Topic
Choose an SNS topic to use to send notifications
Game-AS-SNS (jj680916@naver.com)
Create a topic

Event types
Notify subscribers whenever instances
 Launch
 Terminate
 Fail to launch
 Fail to terminate

Activity notifications (1)
Send to Game-AS-SNS (jj680916@naver.com)
Launch

> EC2가 Launch 된 후 E-mail로 알림

메일 검색 | 전체 메일 | 10273 / 10426 | 안읽은 메일 삭제 | [인내] 네이버페이 사용! 메일 주의

답장 전체답장 전달 | 쓰기 | 스팸신고 | 안읽음 | 이동 | ... | 번역 | 목록 ▲ ▼ |

★ Auto Scaling: launch for group "Game ASGroup" | 2021-10-29 (금) 17:16

보낸 사람: AWS Notifications <no-reply@sns.amazonaws.com>

Service: AWS Auto Scaling
Time: 2021-10-29T08:16:52,100Z
RequestID: 31af5f32c-7a44-d430-6273-123886123bbf
Event: autoscaling:EC2_INSTANCE_LAUNCH
AccountID: 924378500107
AutoScalingGroupName: Game ASGroup
AutoScalingGroupARN: arn:aws:autoscaling:ap-northeast-2:924378500107:autoScalingGroup:5398dcc6-e0-4157-a48b-7cb02244c8ff:autoScalingGroupName/Game ASGroup
ActivityId: 31af5f32c-7a44-d430-6273-123886123bbf
Description: Launching a new EC2 instance: i-0cc9aeaa4968f9c99
Cause: At 2021-10-29T08:15:48Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 0 to 1.
StartTime: 2021-10-29T08:15:50,581Z
EndTime: 2021-10-29T08:16:52,100Z
StatusCode: InProgress
StatusMessage:
Progress: 50
EC2InstanceId: i-0cc9aeaa4968f9c99
Details: {"Subnet ID": "subnet-0dc395ef418e1c78c", "Availability Zone": "ap-northeast-2a"}
Origin: EC2
Destination: AutoScalingGroup

--
If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
<https://sns.ap-northeast-2.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:ap-northeast-2:924378500107:Game-AS-SNS:a3452d2e-f64a-4185-9368-a1567976fb24&Endpoint=i680916@naver.com>

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at <https://aws.amazon.com/support>

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3) WhaTap (모니터링 도구)

> 서버 모니터링을 위한 Project 생성

The screenshot shows the WhaTap interface for creating a new project. The left sidebar has a 'Project List' section selected. The main area is titled 'Project list' and contains fields for 'Project Name' (set to 'KGgame'), 'Platform' (selected 'Server'), 'Database' (selected 'EDB'), 'Data Server Region' (selected 'AWS'), and 'Time Zone' (selected '(GMT +9:00) Seoul, Tokyo, Yakutsk'). A 'Save' button is at the bottom right.

> 라이센스를 발급받은 후 각 서버에 패키지 설치

▼ 2. Add the WhaTap Repository.

Install the configured WhaTap repository.

```
sudo rpm --import http://repo.whatap.io/centos/release.gpg
echo "[whatap]" | sudo tee /etc/yum.repos.d/whatap.repo > /dev/null
echo "name=whatap packages for enterprise linux" | sudo tee -a /etc/yum.repos.d/whatap.repo > /dev/null
echo "baseurl=http://repo.whatap.io/centos/latest/\$basearch" | sudo tee -a /etc/yum.repos.d/whatap.repo > /dev/null
echo "enabled=1" | sudo tee -a /etc/yum.repos.d/whatap.repo > /dev/null
echo "gpgcheck=0" | sudo tee -a /etc/yum.repos.d/whatap.repo > /dev/null
```

[Copy](#)

▼ 3. Install the WhaTap Server Monitor Package.

Run the install command.

```
sudo yum install whatap-infra
```

[Copy](#)

▼ 4. Run the Configure Script and Start the Server Monitor Daemon.

Run the configure script.

▼ Common Installation

```
echo "license=x4iv2235omi3b-z4vaog3qs3kl5s-x4rp3kcjqhpc5g" |sudo tee /usr/whatap/infra/conf/whatap.conf  
echo "whatap.server.host=13.124.11.223/13.209.172.35" |sudo tee -a /usr/whatap/infra/conf/whatap.conf  
echo "createdtime=`date +%s%N`" |sudo tee -a /usr/whatap/infra/conf/whatap.conf  
sudo service whatap-infra restart
```

 Copy

> 모니터링 Dashboard 확인

