**AWS GameDay**

# Introduction

Congratulations on getting a role at the hottest start-up in the Rainbow Valley, Unicorn Rentals. We are looking forward to welcoming you soon but in the meanwhile, being our favourite new hire, we wanted to give you a head-start over all the other employees. This document lists out the main services that will form part of your experience at Unicorn Rentals and it might pay, err, dividends to familiarise yourself with these ahead of time.

# Amazon S3

Amazon Simple Storage Service (S3) is storage for the Internet. It is designed to make web-scale computing easier for developers. Amazon S3 has a simple HTTP interface that you can use to store and retrieve any amount of data, at any time, from anywhere on the web. It gives any developer access to the same highly scalable, reliable, fast, inexpensive data storage infrastructure that Amazon uses to run its own global network of web sites. The service aims to maximise benefits of scale and to pass those benefits on to developers.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Buckets](https://docs.aws.amazon.com/AmazonS3/latest/dev/Introduction.html#BasicsBucket)
* [Objects](https://docs.aws.amazon.com/AmazonS3/latest/dev/Introduction.html#BasicsObjects)
* [Keys](https://docs.aws.amazon.com/AmazonS3/latest/dev/Introduction.html#BasicsKeys)
* [Create a Bucket](https://docs.aws.amazon.com/AmazonS3/latest/user-guide/create-bucket.html)
* [Upload S3 Objects](https://docs.aws.amazon.com/AmazonS3/latest/user-guide/upload-objects.html)
* [Download S3 Objects](https://docs.aws.amazon.com/AmazonS3/latest/user-guide/download-objects.html)

# AWS CloudFormation

AWS CloudFormation is a service that helps you model and set up your AWS resources so that you can spend less time managing those resources and more time focusing on your applications that run in AWS. You create a template that describes all the AWS resources that you want (like Amazon EC2 instances or Amazon RDS DB instances), and AWS CloudFormation takes care of provisioning and configuring those resources for you. You don't need to individually create and configure AWS resources and figure out what's dependent on what; AWS CloudFormation handles all of that.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Templates](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/cfn-whatis-concepts.html#w2ab1b5c15b7)
* [Template anatomy](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/template-anatomy.html)
* [Stacks](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/cfn-whatis-concepts.html#w2ab1b5c15b9)
* [How does AWS CloudFormation work](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/cfn-whatis-howdoesitwork.html)
* [Create a Stack](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/cfn-console-create-stack.html)

# Amazon ECS

Amazon Elastic Container Service (Amazon ECS) is a highly scalable, fast, container management service that makes it easy to run, stop, and manage Docker containers on a cluster. You can host your cluster on a serverless infrastructure that is managed by Amazon ECS by launching your services or tasks using the Fargate launch type. For more control you can host your tasks on a cluster of Amazon Elastic Compute Cloud (Amazon EC2) instances that you manage by using the EC2 launch type.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Clusters](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/clusters.html)
* [Task definitions](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/task_definitions.html)
* [Run a task using Fargate launch type](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ecs_run_task_fargate.html)

# AWS Elastic Beanstalk

AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS. With Elastic Beanstalk, you can quickly deploy and manage applications in the AWS Cloud without having to learn about the infrastructure that runs those applications. Elastic Beanstalk reduces management complexity without restricting choice or control. You simply upload your application, and Elastic Beanstalk automatically handles the details of capacity provisioning, load balancing, scaling, and application health monitoring.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Application](https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/concepts.html)
* [Web Server Environments](https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/concepts-webserver.html)
* [Creating environments](https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/using-features.environments.html)
* [Configuring environments](https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/customize-containers.html)

# Amazon VPC

Amazon Virtual Private Cloud (Amazon VPC) enables you to launch AWS resources into a virtual network that you've defined. This virtual network closely resembles a traditional network that you'd operate in your own data centre, with the benefits of using the scalable infrastructure of AWS.

Familiarity with the following concepts can be advantageous during the GameDay.

* [VPCs and subnets](https://docs.aws.amazon.com/vpc/latest/userguide/how-it-works.html#how-it-works-subnet)
* [Default and nondefault VPCs](https://docs.aws.amazon.com/vpc/latest/userguide/how-it-works.html#what-is-default-nondefault)
* [Accessing the internet](https://docs.aws.amazon.com/vpc/latest/userguide/how-it-works.html#what-is-connectivity)
* [Security Groups](https://docs.aws.amazon.com/vpc/latest/userguide/VPC_SecurityGroups.html)
* [Route Tables](https://docs.aws.amazon.com/vpc/latest/userguide/VPC_Route_Tables.html)
* [Create a Security Group](https://docs.aws.amazon.com/vpc/latest/userguide/getting-started-ipv4.html#getting-started-create-security-group)

# Amazon CloudWatch

Amazon CloudWatch monitors your Amazon Web Services (AWS) resources and the applications you run on AWS in real time. You can use CloudWatch to collect and track metrics, which are variables you can measure for your resources and applications. The CloudWatch home page automatically displays metrics about every AWS service you use. You can additionally create custom dashboards to display metrics about your custom applications, and display custom collections of metrics that you choose. You can create alarms which watch metrics and send notifications or automatically make changes to the resources you are monitoring when a threshold is breached.

Familiarity with the following concepts can be advantageous during the GameDay.

* [How CloudWatch works](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/cloudwatch_architecture.html)
* [CloudWatch Logs](https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/WhatIsCloudWatchLogs.html)
* [CloudWatch Logs terminology](https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/CloudWatchLogsConcepts.html)
* [CloudWatch Logs Insights](https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/AnalyzingLogData.html)
* [Run and modify a CloudWatch Logs Insights query](https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/CWL_AnalyzeLogData_RunSampleQuery.html)
* [Graph a CloudWatch metric](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/graph_a_metric.html)

# Amazon EC2

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Instances and AMIs](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instances-and-amis.html)
* [Instance types](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/instance-types.html)
* [Instance lifecycle](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instance-lifecycle.html)
* [Launch Configurations](https://docs.aws.amazon.com/autoscaling/ec2/userguide/LaunchConfiguration.html)
* [Auto Scaling Groups](https://docs.aws.amazon.com/autoscaling/ec2/userguide/AutoScalingGroup.html)
* [Auto Scaling Groups - Lifecycle Hooks](https://docs.aws.amazon.com/autoscaling/ec2/userguide/lifecycle-hooks.html)
* [Application Load Balancer](https://docs.aws.amazon.com/elasticloadbalancing/latest/application/introduction.html)
* [Target Groups](https://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-target-groups.html)
* [IAM roles for EC2](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html)
* [Launch an instance using Launch Instance Wizard](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/launching-instance.html)
* [Create a Launch Configuration](https://docs.aws.amazon.com/autoscaling/ec2/userguide/create-launch-config.html)
* [Create an Application Load Balancer](https://docs.aws.amazon.com/elasticloadbalancing/latest/application/create-application-load-balancer.html)
* [Create a Target Group](https://docs.aws.amazon.com/elasticloadbalancing/latest/application/create-target-group.html)
* [Register Targets](https://docs.aws.amazon.com/elasticloadbalancing/latest/application/target-group-register-targets.html)
* [Attach an IAM role to an instance](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html#attach-iam-role)

# AWS Lambda

AWS Lambda is a compute service that lets you run code without provisioning or managing servers. AWS Lambda executes your code only when needed and scales automatically, from a few requests per day to thousands per second. You pay only for the compute time you consume - there is no charge when your code is not running. With AWS Lambda, you can run code for virtually any type of application or backend service - all with zero administration. AWS Lambda runs your code on a high-availability compute infrastructure and performs all of the administration of the compute resources, including server and operating system maintenance, capacity provisioning and automatic scaling, code monitoring and logging. All you need to do is supply your code in one of the [languages that AWS Lambda supports](https://docs.aws.amazon.com/lambda/latest/dg/lambda-runtimes.html).

Familiarity with the following concepts can be advantageous during the GameDay.

* [Function](https://docs.aws.amazon.com/lambda/latest/dg/gettingstarted-concepts.html#gettingstarted-concepts-function)
* [Runtime](https://docs.aws.amazon.com/lambda/latest/dg/gettingstarted-concepts.html#gettingstarted-concepts-runtimes)
* [Event](https://docs.aws.amazon.com/lambda/latest/dg/gettingstarted-concepts.html#gettingstarted-concepts-event)
* [Trigger](https://docs.aws.amazon.com/lambda/latest/dg/gettingstarted-concepts.html#gettingstarted-concepts-trigger)
* [Function settings](https://docs.aws.amazon.com/lambda/latest/dg/configuration-console.html)
* [Create a lambda function](https://docs.aws.amazon.com/lambda/latest/dg/getting-started-create-function.html)

# Web Application Firewall

AWS WAF is a web application firewall that lets you monitor the HTTP(S) requests that are forwarded to an Amazon CloudFront distribution, an Amazon API Gateway API, or an Application Load Balancer. AWS WAF also lets you control access to your content. Based on conditions that you specify, such as the IP addresses that requests originate from or the values of query strings, an Amazon CloudFront distribution, an Amazon API Gateway API, or an Application Load Balancer responds to requests either with the requested content or with an HTTP 403 status code (Forbidden).

Familiarity with the following concepts can be advantageous during the GameDay.

* [How WAF works](https://docs.aws.amazon.com/waf/latest/developerguide/how-aws-waf-works.html)
* [What is Web ACL](https://docs.aws.amazon.com/waf/latest/developerguide/web-acl.html)
* [How WAF processes Web ACL](https://docs.aws.amazon.com/waf/latest/developerguide/web-acl-processing.html)
* [AWS WAF Rules](https://docs.aws.amazon.com/waf/latest/developerguide/waf-rules.html)
* [Create Web ACL](https://docs.aws.amazon.com/waf/latest/developerguide/web-acl-creating.html)
* [Associate Web ACL with ALB](https://docs.aws.amazon.com/waf/latest/developerguide/web-acl-associating-aws-resource.html)

# AWS Systems Manager

AWS Systems Manager is an AWS service that you can use to view and control your infrastructure on AWS. Using the Systems Manager console, you can view operational data from multiple AWS services and automate operational tasks across your AWS resources. Systems Manager helps you maintain security and compliance by scanning your managed instances and reporting on (or taking corrective action on) any policy violations it detects.  
A managed instance is a machine that has been configured for use with Systems Manager. Systems Manager also helps you configure and maintain your managed instances. Supported machine types include EC2 instances, on-premises servers, and virtual machines (VMs), including VMs in other cloud environments. Supported operating system types include Windows Server, multiple distributions of Linux, and Raspbian.

Familiarity with the following concepts can be advantageous during the GameDay.

* [AWS Systems Manager Session Manager](https://docs.aws.amazon.com/systems-manager/latest/userguide/session-manager.html)
* [Start a System Manager session](https://docs.aws.amazon.com/systems-manager/latest/userguide/session-manager-working-with-sessions-start.html#start-sys-console)

# AWS X-Ray

AWS X-Ray is a service that collects data about requests that your application serves, and provides tools you can use to view, filter, and gain insights into that data to identify issues and opportunities for optimization. For any traced request to your application, you can see detailed information not only about the request and response, but also about calls that your application makes to downstream AWS resources, microservices, databases and HTTP web APIs.

Familiarity with the following concepts can be advantageous during the GameDay.

* [Segments](https://docs.aws.amazon.com/xray/latest/devguide/xray-concepts.html#xray-concepts-segments)
* [Subsegments](https://docs.aws.amazon.com/xray/latest/devguide/xray-concepts.html#xray-concepts-subsegments)
* [Service graph](https://docs.aws.amazon.com/xray/latest/devguide/xray-concepts.html#xray-concepts-servicegraph)
* [Traces](https://docs.aws.amazon.com/xray/latest/devguide/xray-concepts.html#xray-concepts-traces)

# Amazon DynamoDB

Amazon DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability. DynamoDB lets you offload the administrative burdens of operating and scaling a distributed database so that you don't have to worry about hardware provisioning, setup and configuration, replication, software patching, or cluster scaling. DynamoDB also offers encryption at rest, which eliminates the operational burden and complexity involved in protecting sensitive data.

Familiarity with the following concepts will help you during the GameDay.

* [Tables, Items and Attributes](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/HowItWorks.CoreComponents.html#HowItWorks.CoreComponents.TablesItemsAttributes)
* [Provisioned Capacity Tables](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/ProvisionedThroughput.html)
* [Write data to DynamoDB table](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/getting-started-step-2.html)