



## What is 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.



X-Ray

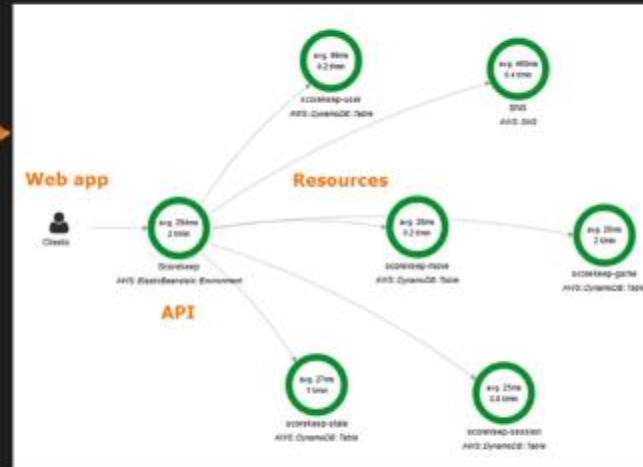
# X-Ray Architecture



X-Ray Daemon



X-Ray API



X-Ray Console



X-Ray SDK



Scripts & Tools

The X-Ray SDK provides:

- Interceptors to add to your code to trace incoming HTTP requests
- Client handlers to instrument AWS SDK clients that your application uses to call other AWS services
- An HTTP client to use to instrument calls to other internal and external HTTP web services

## X-Ray Integration

The X-Ray Integrates with the following AWS services:

- Elastic Load Balancing
- AWS Lambda
- Amazon API Gateway
- Amazon Elastic Compute Cloud
- AWS Elastic Beanstalk

X-Ray

## X-Ray Languages

### X-Ray Supported Languages:

- Java
- Go
- Node.js
- Python
- Ruby
- .Net

X-Ray Lab

<https://console.aws.amazon.com/elasticbeanstalk/#/newApplication?applicationName=scorekeep&solutionStackName=Java>

A CLOUD GURU

aws Services Resource Groups

Elastic Beanstalk

### Create a web app

Create a new application and environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf. [Learn more](#)

Application information

Application name:

Up to 100 Unicode characters, not including forward slash (/).

Environment information

Choose the name, subdomain, and description for your environment. These cannot be changed later.

Environment name:

Domain:

Description:

Base configuration

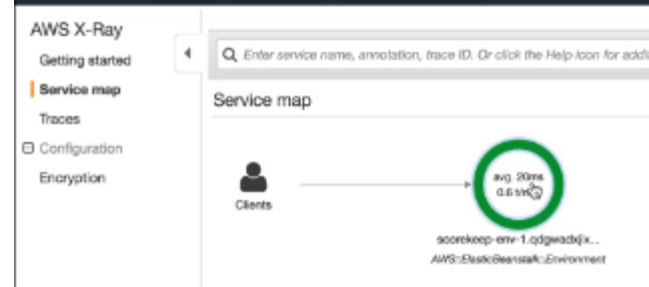
Platform: ☒ Preconfigured platform

Platforms published and maintained by AWS Elastic Beanstalk.

☐ Custom platform [new](#)

Platforms created and owned by you. [Learn more](#)

Create application



## Congratulations

Your first AWS Elastic Beanstalk Java application is now running on your own dedicated environment in the AWS Cloud

### What's Next?

- [AWS Elastic Beanstalk overview](#)
- [AWS Elastic Beanstalk concepts](#)
- [Using the AWS Elastic Beanstalk Java SE Platform](#)
- [Working with Logs](#)

### AWS X-Ray

AWS X-Ray helps developers analyze and debug distributed applications. With X-Ray, you can understand how your application and its underlying services are performing to identify and troubleshoot the root cause of performance issues and errors.

[Learn More](#)

Choose [Generate sample traffic](#) to create data that you can view in the X-Ray console.

[Generate Sample Traffic](#)

[Open the AWS X-Ray Console](#)

aws Services Resource Groups

Elastic Beanstalk scorekeep

Create New Application

All Applications > scorekeep > **Scorekeep-env-1** (Environment ID: e-vcmt4yflte, URL: Scorekeep-env-1.qjgwadix.us-east-1.elasticbeanstalk.com)

Actions

Dashboard

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags

Overview

Health: ☒ Ok

Running Version: Sample Application

Configuration: Java 8 running on 64bit Amazon Linux/2.7.1

Recent Events

Time	Type	Details
2018-06-13 12:12:18 UTC-0100	INFO	Environment health has transitioned from Pending to Ok. Initialization completed 44 seconds ago and took 3 minutes.
2018-06-13 12:12:08 UTC-0100	INFO	Successfully launched environment: Scorekeep-env-1
2018-06-13 12:10:18 UTC-0100	INFO	Added instance [i-022340ec14828a28] to your environment.
2018-06-13 12:09:10 UTC-0100	INFO	Waiting for EC2 instances to launch. This may take a few minutes.
2018-06-13 12:08:20 UTC-0100	INFO	Created EIP: 18.264.193.27

Show All

- Search IAM
- Dashboard
- Groups
- Users
- Roles**
- Policies
- Identity providers
- Account settings
- Credential report
- Encryption keys

Roles > aws-elasticbeanstalk-ec2-role

## Summary

Delete role

**Role ARN** `arn:aws:iam::673164704829:role/aws-elasticbeanstalk-ec2-role`

**Role description** [Edit](#)

**Instance Profile ARNs** `arn:aws:iam::673164704829:instance-profile/aws-elasticbeanstalk-ec2-role`

**Path** /

**Creation time** 2018-06-13 10:31 UTC+0100

**Maximum CLI/API session duration** 1 hour (3,600 seconds) [Edit](#)

Permissions Trust relationships Access Advisor Revoke sessions

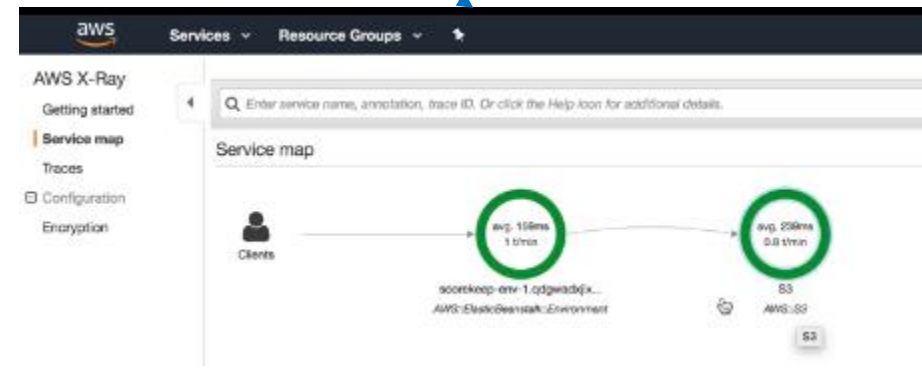
Attach policy

Attached policies: 6

Policy name	Policy type
AmazonS3FullAccess	AWS managed policy
AmazonDynamoDBFullAccess	AWS managed policy
AWS ElasticBeanstalkWebTier	AWS managed policy
AWS ElasticBeanstalkMultiContainerDocker	AWS managed policy
AWSXrayFullAccess	AWS managed policy
AWS ElasticBeanstalkWorkerTier	AWS managed policy

[Add inline policy](#)

Got to IAM → Roles → attach three roles





Elastic Beanstalk | scorekeep

All Applications > scorekeep > Scorekeep-env-1 (Environment ID: e-vum4byf8e, URL: Scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com)

Dashboard  
Configuration  
Logs  
Health  
Monitoring  
Alarms  
Managed Updates  
Events  
Tags

Elastic Beanstalk is updating your environment.  
To cancel this operation select **Abort Current Operation** from the Actions dropdown.  
[View Events](#)

Overview

Health: Grey  
[Causes](#)

Running Version  
eb-java-scorekeep-xray-gettingstarted-v1.3  
[Upload and Deploy](#)

Configuration  
Java 8 running on 64-bit Amazon Linux2.7.1  
[Change](#)

Recent Events

Time	Type	Details
2018-06-13 12:18:57 UTC+0100	INFO	Environment update is starting.
2018-06-13 12:12:18 UTC+0100	INFO	Environment health has transitioned from Pending to OK. Initialization completed 44 seconds ago and took 3 minutes.
2018-06-13 12:12:06 UTC+0100	INFO	Successfully launched environment: Scorekeep-env-1
2018-06-13 12:10:18 UTC+0100	INFO	Added instance [i-0f22340ac14628a38] to your environment.
2018-06-13 12:09:10 UTC+0100	INFO	Waiting for EC2 instances to launch. This may take a few minutes.

## Scorekeep

Instructions Powered by AWS X-Ray

**Username**  
hellocloudguru

**Session**  
games  
session ID  
[Create](#)  
[Join](#)

## Scorekeep

Instructions Powered by AWS X-Ray

games  
Session ID: KGAGK0L0

Create a game  
Cloud Guru  
Rules: Tic Tac Toe  
[Create](#)

Games  
x Cloud Guru  
[Play](#)

[View traces for this session](#)

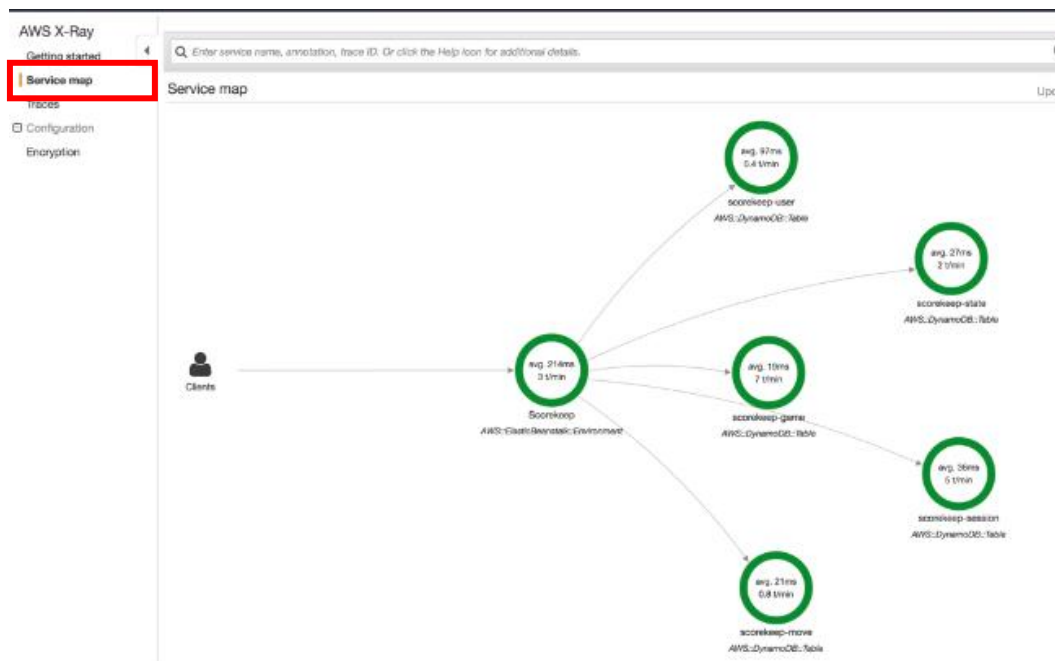
## Scorekeep

Instructions Powered by AWS X-Ray

Cloud Guru  
hellocloudguru

O		X
	O	
X		X

[View traces for this game](#)  
[View service map](#)



AWS X-Ray

Getting started  
Service map  
**Traces**  
Configuration  
Encryption

Trace overview

Group by: URL

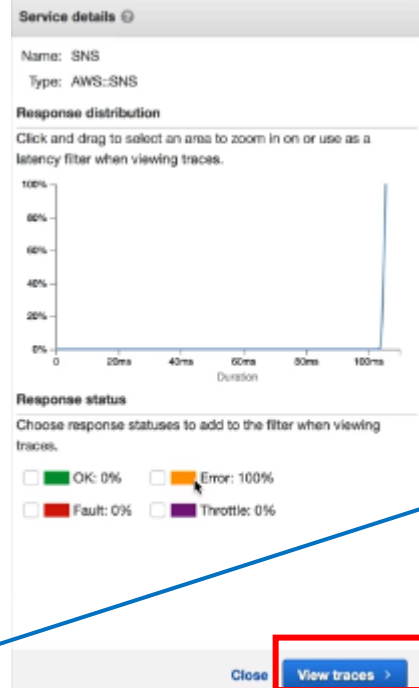
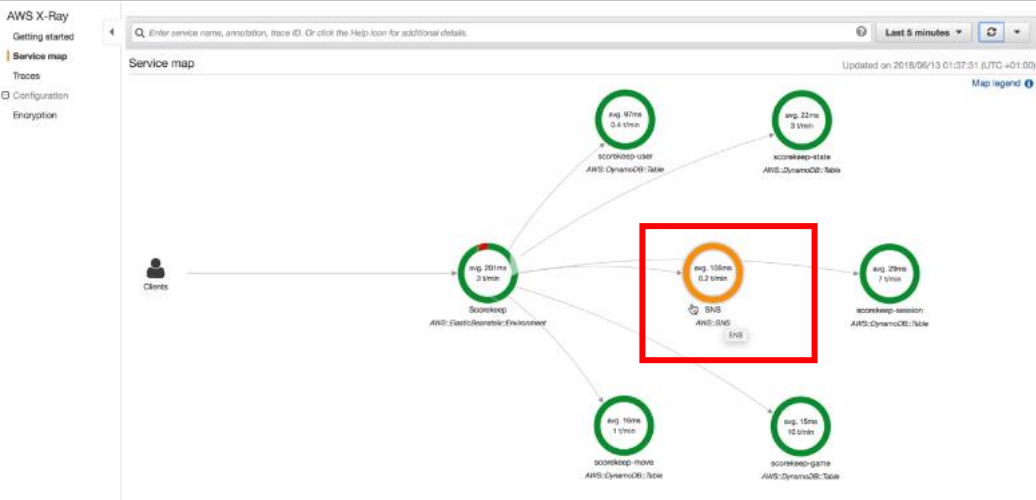
Done 100% scanned (found 11 traces)

URL	Avg response time	% of Traces	Response
http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/move/KGAGK0L0...	217 ms	63.64%	0 OK, 0 Throttled, 0 Errors, 1 Faults
http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	178 ms	9.09%	1 OK, 0 Throttled, 0 Errors, 0 Faults
http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	317 ms	9.09%	1 OK, 0 Throttled, 0 Errors, 0 Faults
http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/state/KGAGK0L0...	14.0 ms	9.09%	1 OK, 0 Throttled, 0 Errors, 0 Faults
http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	62.0 ms	9.09%	1 OK, 0 Throttled, 0 Errors, 0 Faults

Trace list

ID	Age	Method	Response	Response time	URL	Client IP	Annotations
...1ac4f0e0	7.6 sec	POST	200	126 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/move/KGAGK0L0...	90.152.124.231	0
...2506926f	15.6 sec	POST	200	144 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...963627ba	1.1 min	POST	200	62.0 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...db367a82	37.6 sec	GET	200	14.0 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/state/KGAGK0L0...	90.152.124.231	0
...86c3e0f0	56.6 sec	POST	200	778 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...990c9d02	6.6 sec	POST	200	147 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...8606e3d3	13.6 sec	POST	200	106 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...cd028c7	12.6 sec	POST	200	96.0 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...599c3d7a	1.1 min	PUT	200	317 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/move/KGAGK0L0...	90.152.124.231	0
...270411ac	1.2 min	PUT	200	178 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0
...9430b6a0	11.6 sec	POST	200	123 ms	http://scorekeep-env-1.qdgdwajk.us-east-1.elasticbeanstalk.com/api/game/KGAGK0L0...	90.152.124.231	0





AWS X-Ray

Getting started

Service map

Traces

Configuration

Encryption

Trace overview

Group by: URL

Done 100% scanned (found 1 traces)

URL	Avg response time	% of Traces	Response
http://scorekeep-env-1.adgwdkx.us-east-1.elasticbeanstalk.com/api/move/KG4K0...	147 ms	100.00%	0 OK, 0 Throttled, 0 Errors, 1 Faults

Trace list

ID	Age	Method	Response	Response time	URL	Client IP	Annotations
...990ck02	1.7 min	POST	200	147 ms	http://scorekeep-env-1.adgwdkx...	90.152.124.231	0

AWS X-Ray

Getting started

Service map

Traces

Configuration

Encryption

Traces > Details

Timeline Raw data

Method	Response	Duration	Age	ID
POST	200	147 ms	1.9 min (2018-06-13 12:38:15 UTC)	1-5b210bf1-26a7b2d3-11562f00990d9d02

Name	Res.	Duration	Status	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms
▼ Scorekeep AWS::ElasticBeanstalk::Environment														
Scorekeep	200	147 ms	🔴	POST scorekeep-env-1.adgwdkx.us-east-1.elastic...										
DynamoDB	200	8.0 ms	🟢	GetItem: scorekeep-gene										
DynamoDB	200	4.0 ms	🟢	GetItem: scorekeep-state										
SNS	403	106 ms	🔴	Publish										
► DynamoDB AWS::DynamoDB::Table (Client Response)														
► SNS AWS::SNS (Client Response)														

Subsegment - SNS

Overview Resources Annotations Metadata Exceptions

Working directory /var/app/current

Python --

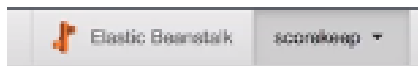
Message User: am:aws:sts:673164704829:assumed-role/elasticbeanstalk-ec2-role/1-022340ac1482ba36 is not authorized to perform: SNS:Publish on resource: am:aws:sns:us-east-1:573164704829:aws-eb-vbm49y8he-stack-NotificationTopic-GDOHRCNFGEB6

Cause

```
com.amazonaws.services.sns.model.AuthorizationErrorException: User: am:aws:sts:673164704829:assumed-role/elasticbeanstalk-ec2-role/1-022340ac1482ba36 is not authorized to perform: SNS:Publish on resource: am:aws:sns:us-east-1:573164704829:aws-eb-vbm49y8he-stack-NotificationTopic-GDOHRCNFGEB6 (Service: AmazonSNS; Status Code: 403; Error Code: AuthorizationError; Request ID: f99a286-d7ba-5945-867d-f11dc05489d)
```

at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.handleErrorResponse (AmazonHttpClient.java:1640)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.executeOneRequest (AmazonHttpClient.java:1304)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.executeHelper (AmazonHttpClient.java:1058)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.execute (AmazonHttpClient.java:743)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.executeWithTimer (AmazonHttpClient.java:717)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.execute (AmazonHttpClient.java:696)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.access\$500 (AmazonHttpClient.java:667)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor\$InnerInvoke.execute (AmazonHttpClient.java:649)  
at com.amazonaws.http.AmazonHttpClient\$RequestExecutor.execute (AmazonHttpClient.java:613)  
at com.amazonaws.services.sns.AmazonSNSClient.doInvoke (AmazonSNSClient.java:2003)  
at com.amazonaws.services.sns.AmazonSNSClient.invoke (AmazonSNSClient.java:1979)  
at com.amazonaws.services.sns.AmazonSNSClient.publish (AmazonSNSClient.java:1499)  
at scorekeep.SnsSendNotification (Sns.java:21)  
at scorekeep.MoveFactory.newMove (MoveFactory.java:61)  
at scorekeep.MoveController.newMove (MoveController.java:31)  
at sun.reflect.NativeMethodAccessorImpl.invoke0 (NativeMethodAccessorImpl.java:-2)  
at sun.reflect.NativeMethodAccessorImpl.invoke (NativeMethodAccessorImpl.java:62)  
at sun.reflect.DelegatingMethodAccessorImpl.invoke (DelegatingMethodAccessorImpl.java:43)  
at java.lang.reflect.Method.invoke (Method.java:498)

Close



configuration

### Environment properties

The following properties are passed in the application as environment properties. [Learn more](#)

Name	Value
AWS_REGION	<input type="text" value='["Ref" : "AWS::Region"]'/> ✕
GRADLE_HOME	<input type="text" value="/usr/local/gradle"/> ✕
JAVA_HOME	<input type="text" value="/usr/lib/jvm/java"/> ✕
M2	<input type="text" value="/usr/local/apache-maven/bin"/> ✕
M2_HOME	<input type="text" value="/usr/local/apache-maven"/> ✕
NOTIFICATION_EMAIL	<input type="text" value='["Ref" : "EmailAddress"]'/> ✕
NOTIFICATION_TOPIC	<input type="text" value='["Ref" : "NotificationTopic"]'/> ✕
<input type="text"/>	<input type="text"/>

Add email

[Cancel](#) [Continue](#) [Apply](#)

 Elastic Beanstalk

scorekeep ▾

Create New Application

Learn More

[Get started using Elastic Beanstalk](#)  
[Modify the code](#)  
[Create and connect to a database](#)  
[Add a custom domain](#)

Featured

[Create your own custom platform](#)

Command Line Interface (v3)

[Installing the AWS EB CLI](#)  
[EB CLI Command Reference](#)

If you want to use a command line to create, manage, and scale your Elastic Beanstalk applications, please use the Elastic Beanstalk Command Line Interface (EB CLI).

Get Started

```
$ mkdir HelloWorld
$ cd HelloWorld
$ eb init -p PHP
$ echo "Hello World" > index.html
$ eb create dev-env
$ eb open
```

To deploy updates to your applications, use 'eb deploy'.

All Applications

Filter by Application Name:

scorekeep

Scorekeep-env-1

Environment tier: Web Server

Platform: Java 8 running on 64bit Amazon Linux/2.7.1

Running versions: eb-java-scorekeep-xyz-gettingstarted-v1.2

Last modified: 2018-06-13 13:41:16 UTC+0100

URL: Scorekeep-env-1.edgawdxjx.us-east-1.elasticbeanstalk...

Actions ▾

[Create environment](#)

[Delete application](#)

[View application versions](#)

[View saved configurations](#)

[Restore terminated environment](#)

# X-Ray Exam Tips



The X-Ray SDK provides:

- Interceptors to add to your code to trace incoming HTTP requests
- Client handlers to instrument AWS SDK clients that your application uses to call other AWS services
- An HTTP client to use to instrument calls to other internal and external HTTP web services

# X-Ray Exam Tips



The X-Ray Integrates with the following AWS services:

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