

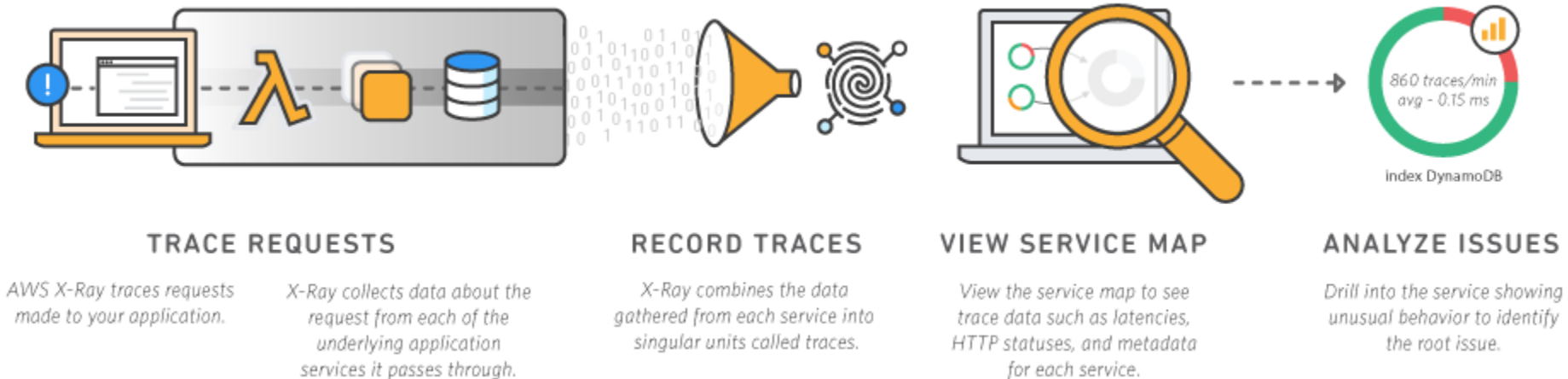
AWS – X-Ray

By

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AWS X-Ray

- AWS X-Ray makes it easy for developers to analyze the behavior of their distributed applications by providing request tracing, exception collection, and profiling capabilities.

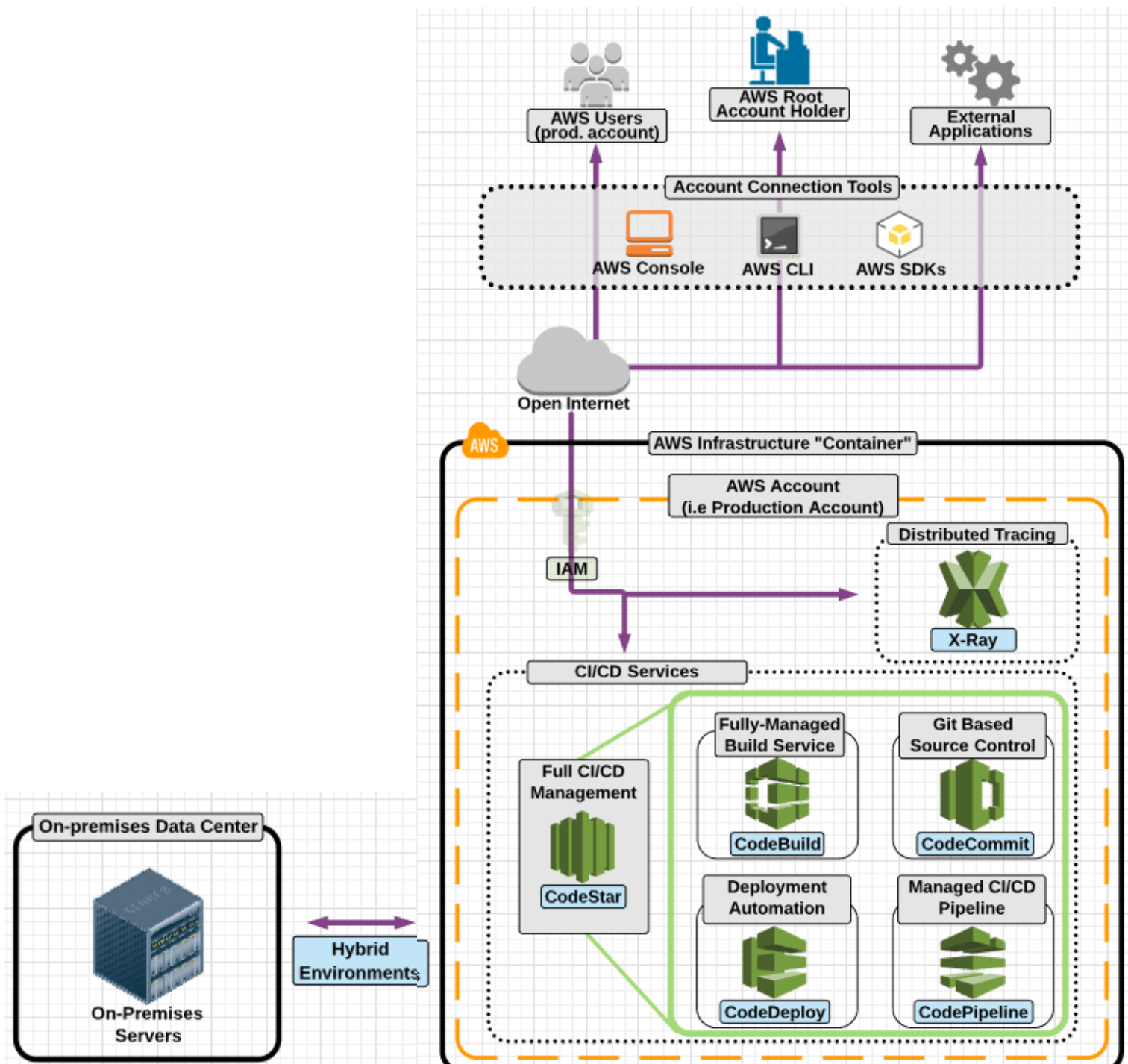


- AWS X-Ray traces requests as they move through your applications.
- It collects data and makes it available to view, filter, and sort.
- You can then use the data to gain insights and identify potential optimizations to make inside your application.



- **X-Ray concepts:**

- a. Segments - Data about the work done by your application(Can include data on: the request, the response, subsegments, and issues)
- b. Subsegments - A more granular view of data inside of segments
- c. Service Graph - A JSON document that contains information about how your application's services and resources interact(this can create a visualized service map)
- d. Traces - Trace ID's track requests as they go through your applications:
 - a. The first X-Ray supported service to interact with a request adds an HTTPS trace ID header
 - b. The trace ID header propagates downstream to track the request as it moves through the system

- e. Sampling - X-Ray applies an algorithm to sample request data but you can configure the frequency of sampling(e.g. to reduce it on high-volume or lower-volume requests)
- f. Tracing Header - Examples : X-Amzn-Trace-id: Root=1-.5759e988;Sampled=1
- g. Filter Expressions - used in the X-Ray console to search through your traces by different characteristics(e.g. Specific trace ids, partial URL paths, annotations)
- h. Annotations and Metadata - Additional way to store searchable annotations and non-searchable metadata data about traces.
- i. Errors, Faults, and Exceptions - X-Ray tracks application errors and categorizes them as:
 - a. Error - Client errors(400 series errors)
 - b. Fault - Server faults(500 series errors)
 - c. Throttle - Throttling errors(429 too many requests)



Step by Step X-Ray Service Practical Steps

 Services ▾ Resource Groups ▾ 

Getting started with AWS X-Ray

Step 1: Options

Step 2: Language

Step 3: Implementation

Select sample or your own application

☐ Launch a sample application (Node.js)

☐ Instrument your application

Cancel

Next

Click on “Launch Sample Application”

Getting started with AWS X-Ray

Step 1: Options

Step 2: Language

Step 3: Implementation

Launch the sample application

The sample application uses AWS CloudFormation to create an Elastic Beanstalk application that generates sample data for you to view in the AWS X-Ray console. [Click here to learn more about the sample application and view the source code.](#)

1. Choose **Launch sample application** to open the template in the CloudFormation console.
2. Choose **Next**.
3. Optionally, edit the **Stack name**. Choose **Next**.
4. Optionally, add tags to the sample stack. Choose **Next**.
5. Confirm that IAM resources will be created, and then choose **Create**.
6. It takes a few minutes for CloudFormation to create the resources used in the sample. When the status of your stack transitions to **CREATE_COMPLETE**, select it from the list and choose the **Output** tab.
7. Find the **ElasticBeanstalkEnvironmentURL** key. Copy the value into your web browser to visit the sample application.
8. Return to this page and choose **Done** to proceed to the service map.

Cleaning up

To delete the resources created in this sample, open the CloudFormation console, select the sample stack from the list, and then for **Actions**, choose **Delete Stack**.

Cancel

Previous

Launch sample application

Click on “Next”



Create stack

Select Template

[Specify Details](#)

[Options](#)

[Review](#)

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. [Learn more.](#)

Design template

Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. [Learn more.](#)

☐ Select a sample template

☐ Upload a template to Amazon S3

Choose File No file chosen

☒ Specify an Amazon S3 template URL

[View/Edit template in Designer](#)

Click on “Next”

CloudFormation ▾ Stacks > Create Stack

Create stack

[Select Template](#)

Specify Details

[Options](#)

[Review](#)

Specify Details

Specify a stack name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template. [Learn more.](#)

Stack name xray-sample

Parameters

Subnet subnet-0774044a (172.31.0.0/20) ▾

The ID for the Subnet in which the EC2 instance will be launched.

VPC vpc-1ae5d673 (172.31.0.0/16) ▾

The ID for the VPC in which the EC2 instance will be launched.

[Cancel](#)

[Previous](#)

[Next](#)

Review

CloudFormation

Stacks

Create Stack

Create stack

Select Template

Specify Details

Options

Review

Review

Template

Details

Options

Template URL	https://s3.amazonaws.com/aws-xray-assets.ap-south-1/samples/aws-xray-sample-template.yaml
Description	
Estimate cost	Link is not available

Stack name:

xray-sample

Subnet

VPC

subnet-0774044a

vpc-1ae5d673

Tags

No tags provided

Rollback Triggers

No monitoring time provided

No rollback triggers provided

Click on “Create”

Rollback Triggers

No monitoring time provided

No rollback triggers provided

Advanced

Notification	
Termination Protection	Disabled
Timeout	none
Rollback on failure	Yes

Capabilities



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

This template contains Identity and Access Management (IAM) resources that might provide entities 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.

[Quick Create Stack](#) (Create stacks similar to this one, with most details auto-populated)

Cancel

Previous

Create

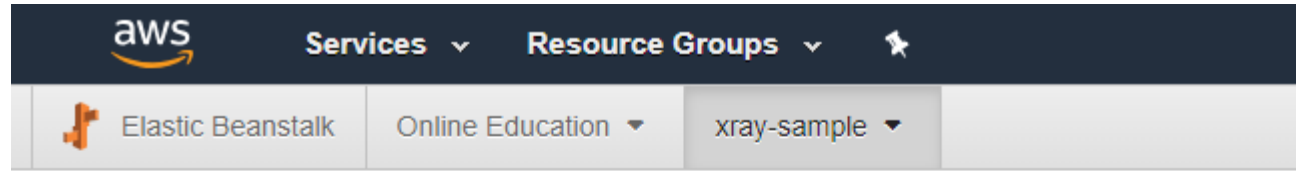
It has created two cloudFormation stacks

The screenshot shows the AWS CloudFormation console interface. At the top, the navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information (Keshav Kumari, Mumbai). The 'CloudFormation' service is selected, and the 'Stacks' view is active. Below the navigation bar, there are buttons for 'Create Stack', 'Actions', and 'Design template'. A filter dropdown is set to 'Active', and a search box contains 'By Stack Name'. The text 'Showing 2 stacks' is displayed on the right. A table lists the stacks:

	Stack Name	Created Time	Status	Description
<input type="checkbox"/>	awseb-e-yrpn3jibiz-stack	2018-07-06 15:28:00 UTC+0550	CREATE_COMPLETE	AWS Elastic Beanstalk environment (Name: 'xray-sample' Id: 'e-yrpn3jibiz')
<input type="checkbox"/>	xray-sample	2018-07-06 15:25:17 UTC+0550	CREATE_COMPLETE	

Below the table, there is a tabbed interface with 'Overview' selected. Other tabs include 'Outputs', 'Resources', 'Events', 'Template', 'Parameters', 'Tags', 'Stack Policy', 'Change Sets', and 'Rollback Triggers'. The main content area displays 'Select a stack'.

Go to >> Elastic Beanstalk and check Xray Sample Application is created



[All Applications](#) > xray-sample

Environments

Application versions

Saved configurations

xray-sample

Environment tier: Web Server

Platform: Node.js running on 64bit Amazon Linux/4.5.1

Running versions:

Last modified: 2018-07-06 15:28:00 UTC+0530

URL:

Click on “URL: xray-sample.fjmpmkahga.ap-south-1.elasticbeanstalk.com”



All Applications > xray-sample > xray-sample (Environment ID: e-yrpn3jibiz, URL: xray-sample.fjmpmkahga.ap-south-1.elasticbeanstalk.com)



Creating xray-sample

This will take a few minutes....

3:30pm Added instance [i-0f83e8c3a27cb6264] to your environment.

3:29pm Waiting for EC2 instances to launch. This may take a few minutes.

3:28pm Created EIP: 13.232.159.196

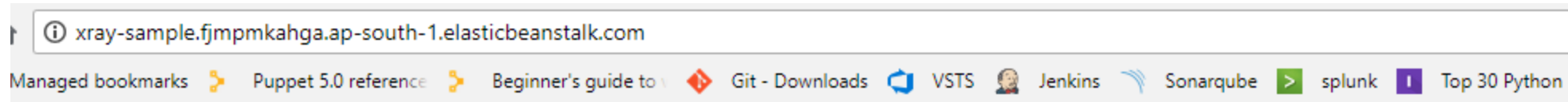
3:28pm Created security group named:
sg-a104fccb

3:28pm Environment health has transitioned to Pending. Initialization in progress (running for 2 seconds). There are no instances.

3:27pm Using elasticbeanstalk-ap-south-1-727203166843 as Amazon S3 storage bucket for environment data.

3:27pm createEnvironment is starting.

Click on “Start” button



A New Startup

Home

About

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Press

AWS X-Ray Sample Application

Aww yeah, you've successfully launched the AWS X-Ray sample application. Use the start/stop buttons below to control the generation of signup requests. The application will generate up to 10 signup requests per minute with a duplicate signup each minute. Alternatively, you can use the form below to manually generate signup requests. Once you've generated a few requests, go to the [AWS X-Ray Console](#) to view the service map and traces.

Start

Stop

Status: request #1, signing up dinubenga@example.com

“nodejs” application has been deployed

All Applications > xray-sample > xray-sample (Environment ID: e-yrpn3jibiz, URL: xray-sample.fjpmkahga.ap-south-1.elasticbeanstalk.com)

Actions ▾

Dashboard

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags

Overview

Refresh



Health

Ok

Causes

Running Version

xray-sample-
elasticbeanstalkapplicationversion
-1s3lfy2p1u4fb

Upload and Deploy



Configuration

Node.js running on 64bit Amazon
Linux/4.5.1



Change


Recent Events

Show All

Time	Type	Details
2018-07-06 15:31:25 UTC+0530	INFO	Successfully launched environment: xray-sample
2018-07-06 15:31:08 UTC+0530	INFO	Environment health has transitioned from Pending to Ok. Initialization completed 44 seconds ago and took 2 minutes.
2018-07-06 15:30:09 UTC+0530	INFO	Added instance [i-0f83e8c3a27cb6264] to your environment.
2018-07-06 15:29:36 UTC+0530	INFO	Waiting for EC2 instances to launch. This may take a few minutes.
2018-07-06 15:28:31 UTC+0530	INFO	Created EIP: 13.232.159.196



Check the Service Map


 **Services** ▾ **Resource Groups** ▾ 

 Keshav Kumari ▾ Mumbai ▾ Support ▾

AWS X-Ray

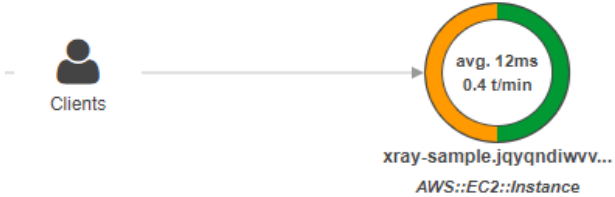
- Getting started
- Service map**
- Traces
- Configuration
- Encryption



Last 5 minutes ▾  ▾

Service map

Updated on 2018/07/06 04:04:00 (UTC +05:30)



Clients → **xray-sample.jqyqndiwwv...**
AWS::EC2::Instance

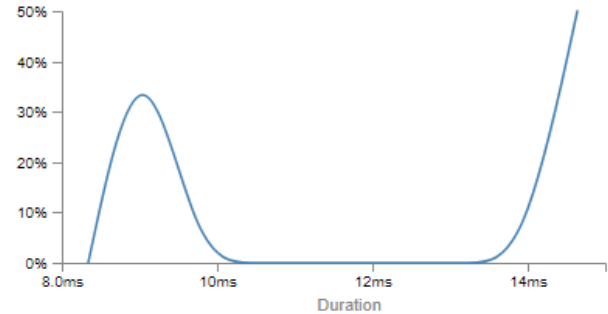
avg. 12ms
0.4 t/min

Service details ?

Name: xray-sample.jqyqndiwwv.ap-south-1.elasticbeanstalk.com
Type: AWS::EC2::Instance

Response distribution



Click and drag to select an area to zoom in on or use as a latency filter when viewing traces.



50%
40%
30%
20%
10%
0%
8.0ms 10ms 12ms 14ms
Duration



Response status


Choose response statuses to add to the filter when viewing traces.

☐  OK: 50% ☐  Error: 50%

Close View traces >

Click on “Traces” and cross check the trace info

 Services ▾ Resource Groups ▾ 

 Keshav Kumari ▾ Mumbai ▾ Support ▾

AWS X-Ray

Getting started


Service map

Traces


Configuration

Encryption

◀



2018/07/06 10:33 - 2018/07/06 10:33 ▾



Trace overview

Group by:

URL ▾

Done **100%** scanned (found 2 traces)

URL ▾	Avg response time ▾	% of Traces ▾	Response ▾
http://xray-sample.jqyqndiwwv.ap-south-1.elasticbeanstalk.com/	15.0 ms	50.00%	1 OK, 0 Throttled, 0 Errors, 0 Faults
http://xray-sample.jqyqndiwwv.ap-south-1.elasticbeanstalk.com/favicon.ico	9.0 ms	50.00%	0 OK, 0 Throttled, 1 Errors, 0 Faults

Trace list

ID ▾	Age ▾	Method ▾	Response ▾	Response time ▾	URL ▾	Client IP ▾	Annotations ▾
...448c5e3d	1.6 min	GET	404	9.0 ms	http://xray-sample.j...	123.242.242.16	0
...4c343c0e	1.7 min	GET	200	15.0 ms	http://xray-sample.j...	123.242.242.16	0

Thank you so much