

Secure Starter Kit Cloud Connect Quick Start Guide

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FINAL



The Solutions People



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1 INTRODUCTION

1.1 Purpose of the Document

The Cloud Connect Quick Start Guide provides an overview of How to Provision/Create and configure EC2 instance, RDS, S3 buckets and IAM User. This AWS services required to run the demo's provided in the Security Starter Quick Start Guides, as well as detailed instructions to setup and configure those required services. Each of these services **MUST** be setup and configured (only once), prior to running the demo's outlined in the Security Starter Quick Start Guides.

1.2 AWS Cloud Services Descriptions and its background information

For AWS Cloud Services descriptions and its background information, follow the [SSK Cloud Connect Installation Setup Guide v1.0 - FINAL](#)

2 AWS ACCOUNT CREATION

2.1 Login or Create your AWS Account

Note: If the User does not have an AWS Account, you will need to create one and this is used as the basis for the configuration of the other services required to run the demo's provided in the Security Starter Kits.

Login URL: <https://aws.amazon.com/console/>

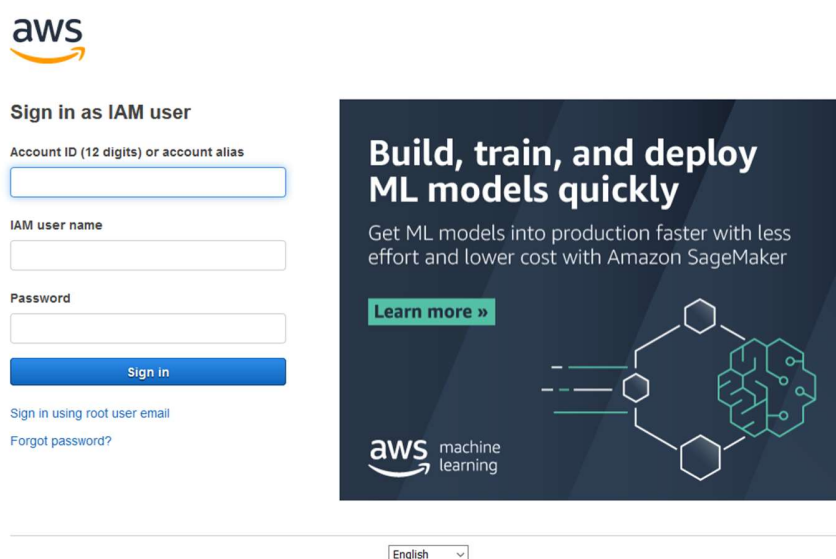


Figure 1: Login page

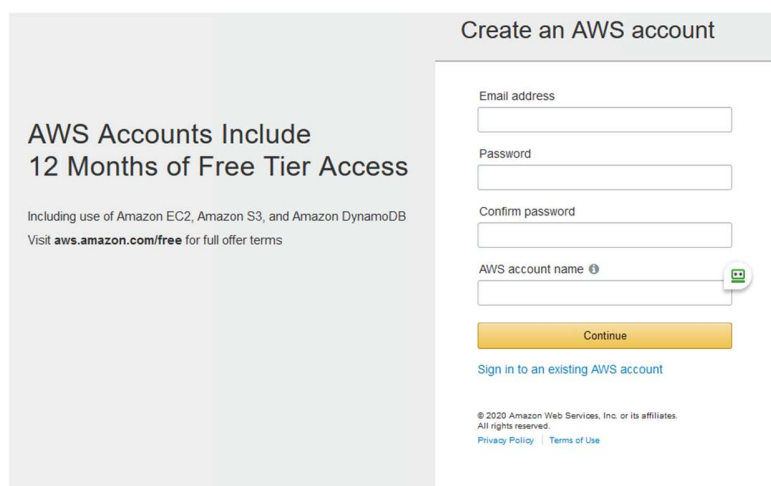


Figure 2: Create New Account page

2.2 Create New Key Pair to enable SSH access to the EC2 instance

1. Please choose **AWS Console** >> **Services** >> Select **EC2** (Under Compute section) >> **Network & Security** >> **Select Key Pairs**
2. Click on “**Create key pair**” as shown in below image

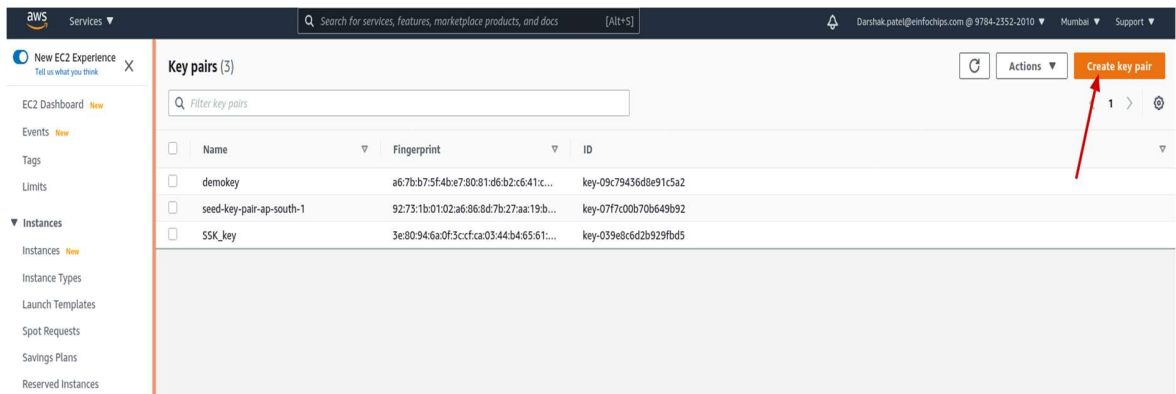


Figure 1: Create Key Pair page

3. Follow the below instructions as depicted in screenshot:
 - Insert the Name of the key pair
 - Select appropriate file format (.pem for **Linux users** and .ppk for **Windows user**) to download private key
 - Add tags (Optional)
 - Click on Create key pair

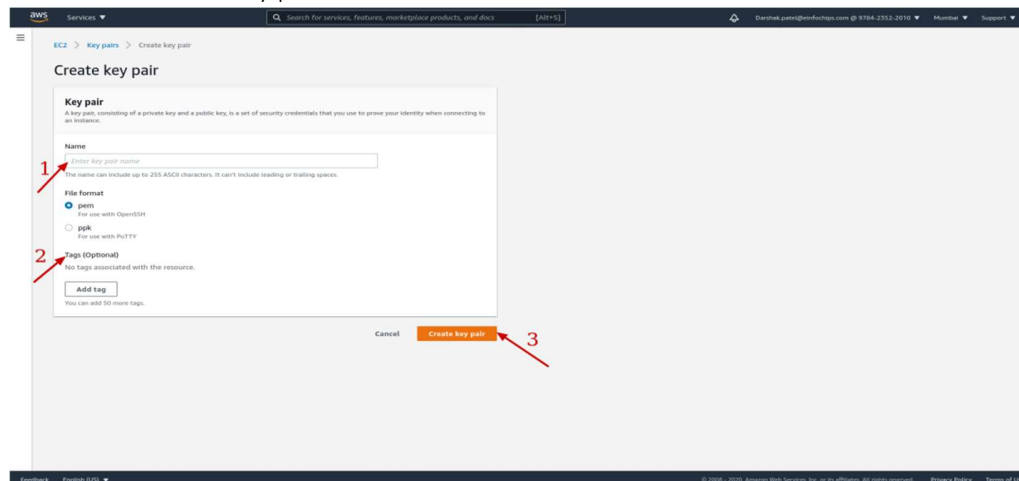


Figure 2: Creating Key Pair page

- It will Download key pair as per the file format you have selected (To Connect EC2 Instance)

Note: Keep key file at secure place, which will be used to connect Ec2 instance.

3 CLOUDFORMATION CODE EXECUTION

1. Go to the AWS console and search for the S3 services and click on it to launch as shown in the below image:

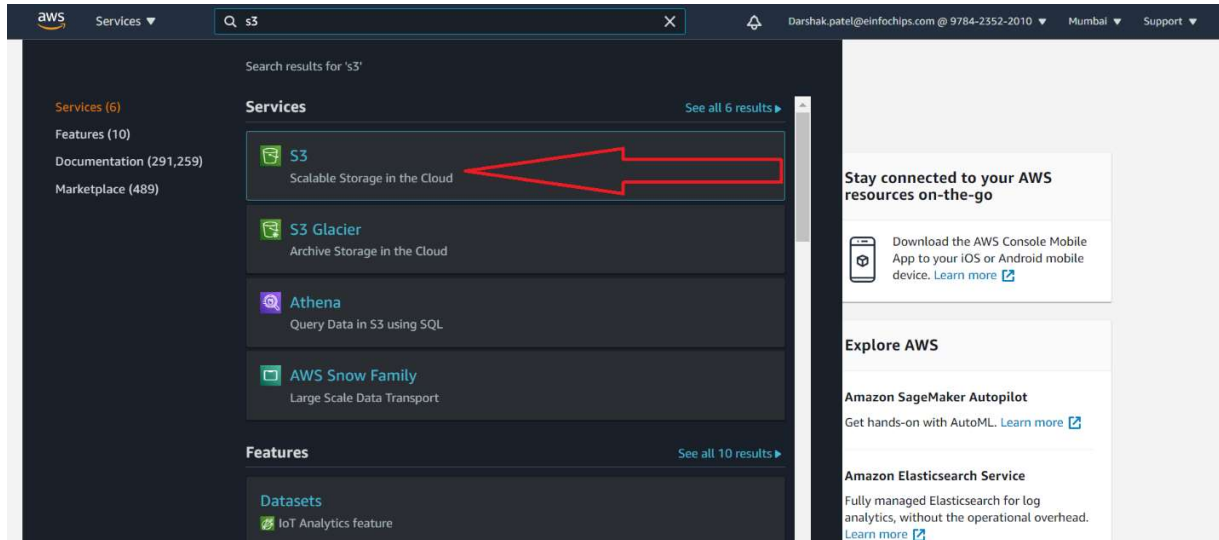


Figure 1: Searching for S3 service in Home Page

2. Click on create bucket as shown in figure below:

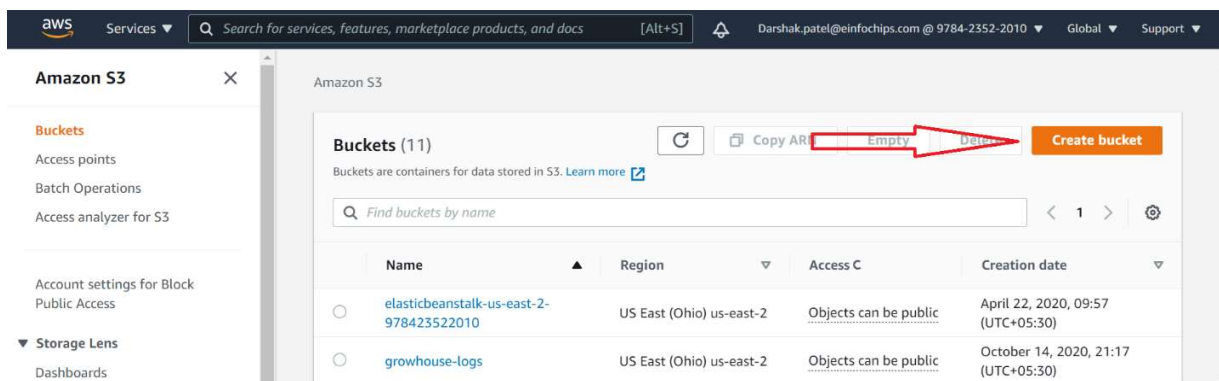


Figure 2: Create bucket

3. Enter unique bucket name after create bucket page is launched as shown below and then click on create bucket option provided at the end of the page and this will create your S3 bucket with unique

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name you provided.

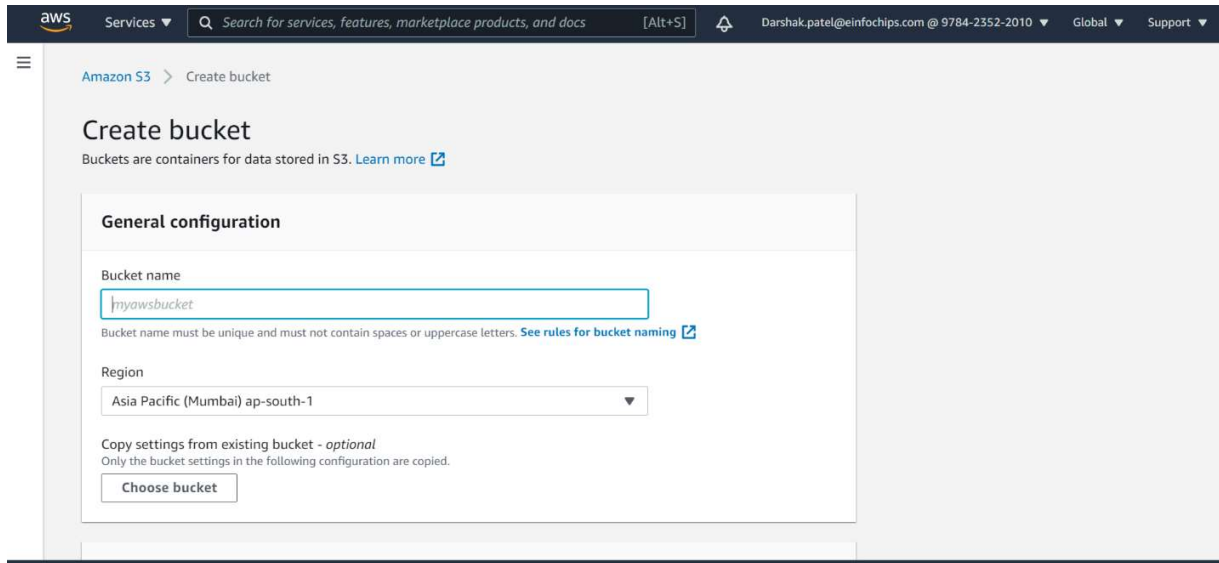


Figure 3: Creating S3 bucket

4. After creating bucket successfully, download the provided SSK_Database.zip from the SSK_Cloud_Connect folder to attach files in newly created S3 bucket.
5. Unzip the SSK_Database.zip and you will find below contents:











Name	Status	Date modified	Type	Size
 ec2.yaml		12/17/2020 12:08 PM	YAML File	17 KB
 iam.yaml		12/17/2020 12:10 PM	YAML File	2 KB
 rds.yaml		12/16/2020 1:59 PM	YAML File	2 KB
 root.yaml		12/17/2020 10:51 AM	YAML File	7 KB
 s3bucket.yaml		12/16/2020 1:56 PM	YAML File	1 KB

Figure 4: Extracting Contents of SSK_Database.zip

6. Open the newly created S3 Bucket and choose “upload” option as shown below:

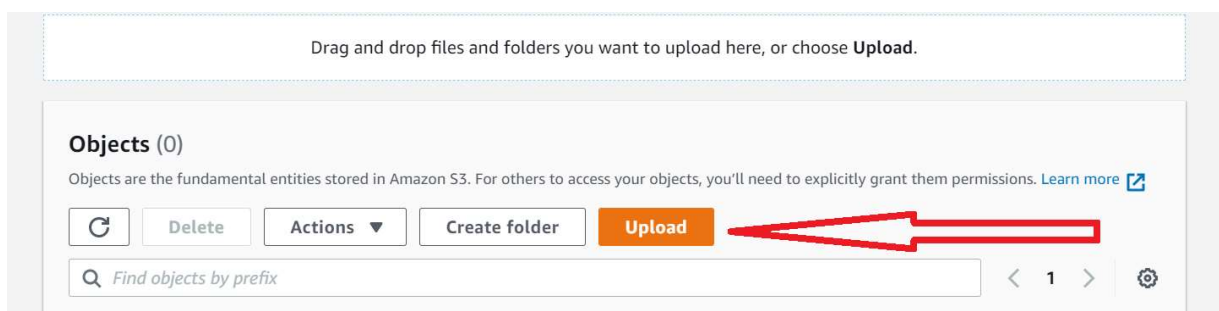


Figure 5: To upload files in S3 bucket

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7. Choose the “Add files” option provided in your S3 bucket and select all files except “root.yaml” from provided folder “SSK_Database”, then click on “upload” and this will upload files like shown below:

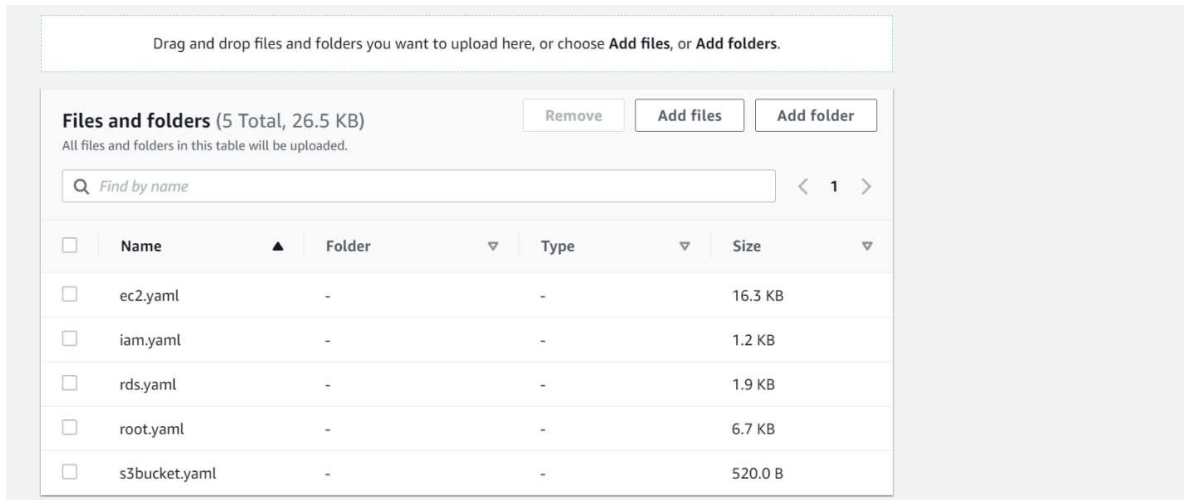


Figure 6: Uploading files in S3 bucket

8. Select each of the “.yaml” files as depicted below to copy the object URL , so to modify into the “root.yaml” as per your new s3-bucket name, repeat the same for other “.yaml” files.

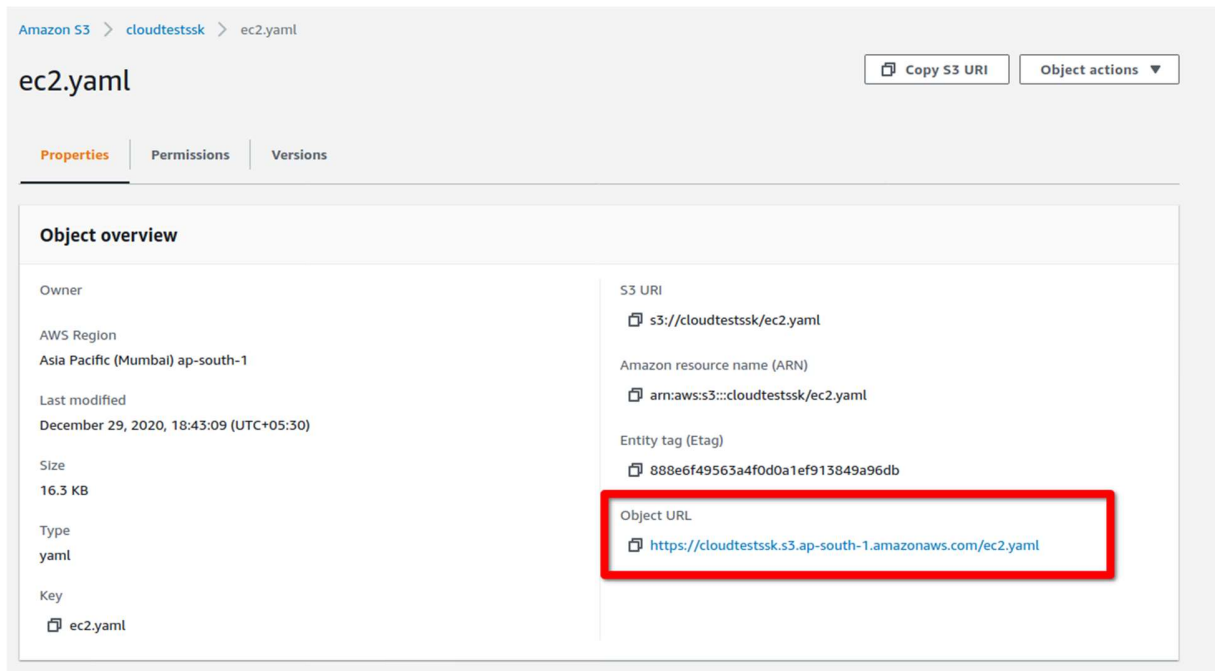


Figure 7: copying object URL

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9. Please update the root.yaml file based upon the copied Object URL from above steps.

```
127 Type: AWS::CloudFormation::Stack
128 Properties:
129   TemplateURL: "https://cloudtestssk.s3.ap-south-1.amazonaws.com/rds.yaml"
130 Parameters:
131   DBInstanceID: !Ref DBInstanceID
132   DBName: !Ref DBName
133   DBInstanceClass: !Ref DBInstanceClass
134   DBAllocatedStorage: !Ref DBAllocatedStorage
135   DBUsername: !Ref DBUsername
136   DBPassword: !Ref DBPassword
137   ProjectName: !Ref ProjectName
138 # Create webserver (Ec2 instance)
139 ServerStack:
140   Type: AWS::CloudFormation::Stack
141   DependsOn: ['DatabaseStack', 'IAMStack']
142   Properties:
143     TemplateURL: "https://cloudtestssk.s3.ap-south-1.amazonaws.com/ec2.yaml"
144     Parameters:
145       AWSIoTCoreEndpoint: !Ref AWSIoTCoreEndpoint
146       InstanceType: !Ref InstanceType
147       KeyName: !Ref KeyName
148       S3Location: !Ref S3Location
149       DBUsername: !GetAtt DatabaseStack.Outputs.DBUsername
150       DBPassword: !GetAtt DatabaseStack.Outputs.DBPassword
151       DBName: !GetAtt DatabaseStack.Outputs.DBName
152       DBHost: !GetAtt DatabaseStack.Outputs.DBEndpointAddress
153       IAMUserID: !GetAtt IAMStack.Outputs.UserID
154       IAMUserName: !Ref IAMUserName
155       IAMAccessKey: !GetAtt IAMStack.Outputs.AccessKey
156       IAMSecretKey: !GetAtt IAMStack.Outputs.SecretKey
157       DockerHubUsername: !Ref DockerHubUsername
158       DockerHubPassword: !Ref DockerHubPassword
159       OTABucketName: !GetAtt S3BucketStack.Outputs.OTABucketName
160       LogBucketName: !GetAtt S3BucketStack.Outputs.LogBucketName
161 # Create IAM Group and User
162 IAMStack:
163   Type: AWS::CloudFormation::Stack
164   Properties:
165     TemplateURL: "https://cloudtestssk.s3.ap-south-1.amazonaws.com/iam.yaml"
166     Parameters:
167       IAMUserName: !Ref IAMUserName
168       ProjectName: !Ref ProjectName
169 # Create S3 Bucket
170 S3BucketStack:
171   Type: AWS::CloudFormation::Stack
172   Properties:
173     TemplateURL: "https://cloudtestssk.s3.ap-south-1.amazonaws.com/s3bucket.yaml"
174     Parameters:
175       ProjectName: !Ref ProjectName
```

Figure 8: Updating object URL into the “root.yaml”.

10. Upload the root.yaml to you s3-bucket,after successfully uploading above file, click on “root.yaml” file.

Files and folders									
Configuration									
Files and folders (5 Total, 26.5 KB)									
Find by name									
< 1 >									
Name	▲	Folder	▼	Type	▼	Size	▼	Status	▼
ec2.yaml		-		-		16.3 KB		✓ Succeeded	-
iam.yaml		-		-		1.2 KB		✓ Succeeded	-
rds.yaml		-		-		1.9 KB		✓ Succeeded	-
root.yaml		-		-		6.7 KB		✓ Succeeded	-
s3bucket.yaml		-		-		520.0 B		✓ Succeeded	-

Figure 9: Launching root.yaml page

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11. Once **root.yaml** page is launched, copy **object URL** for further use in step 14 as shown below.

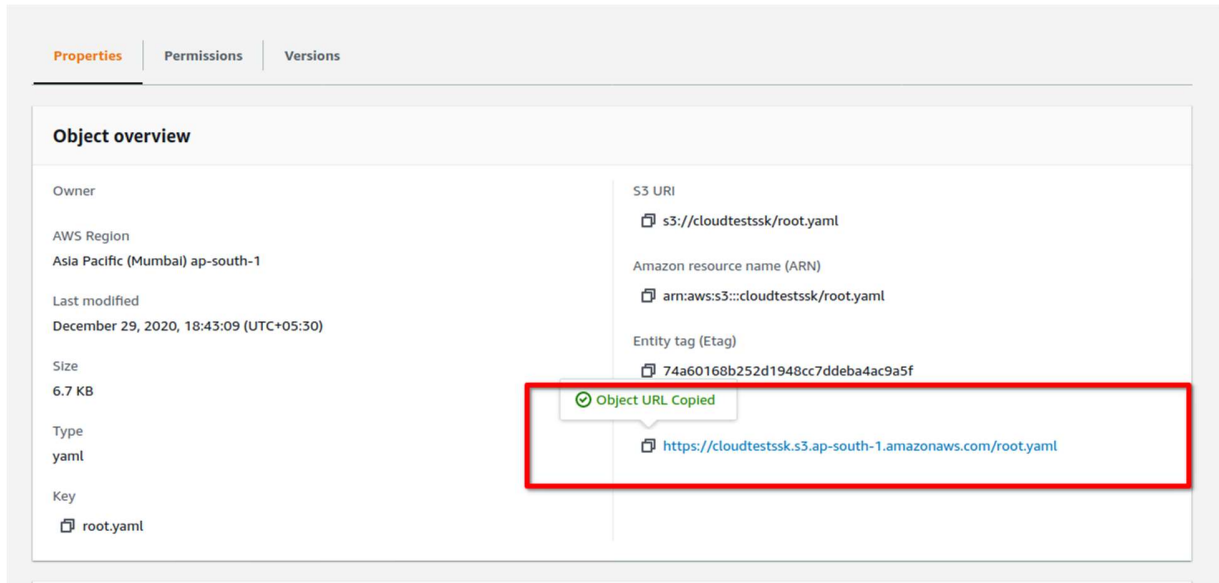


Figure 10: Copying Object URL

12. Now search for the **CloudFormation** service as shown in the below image and click on it.

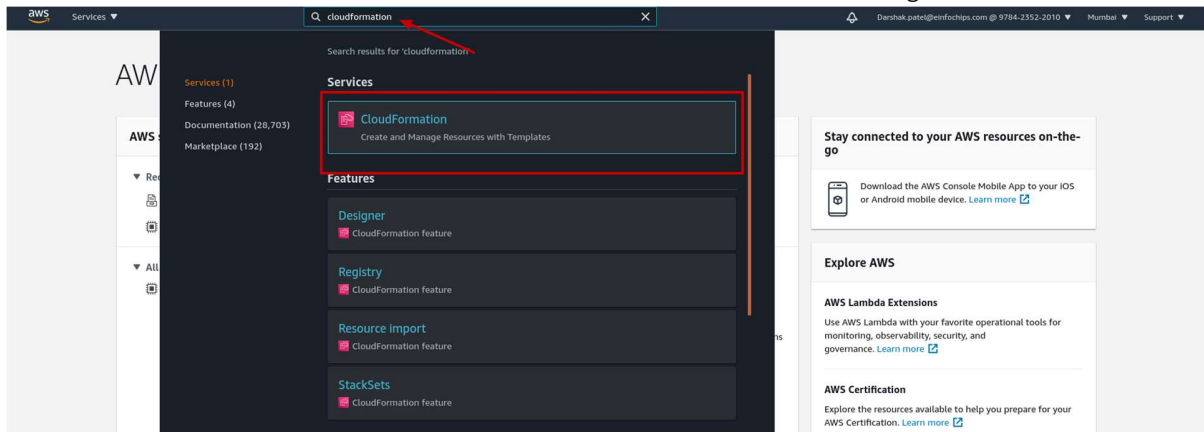


Figure 11: Searching for CloudFormation in Home Page

13. It will display page as shown below, Click on Create Stack button.

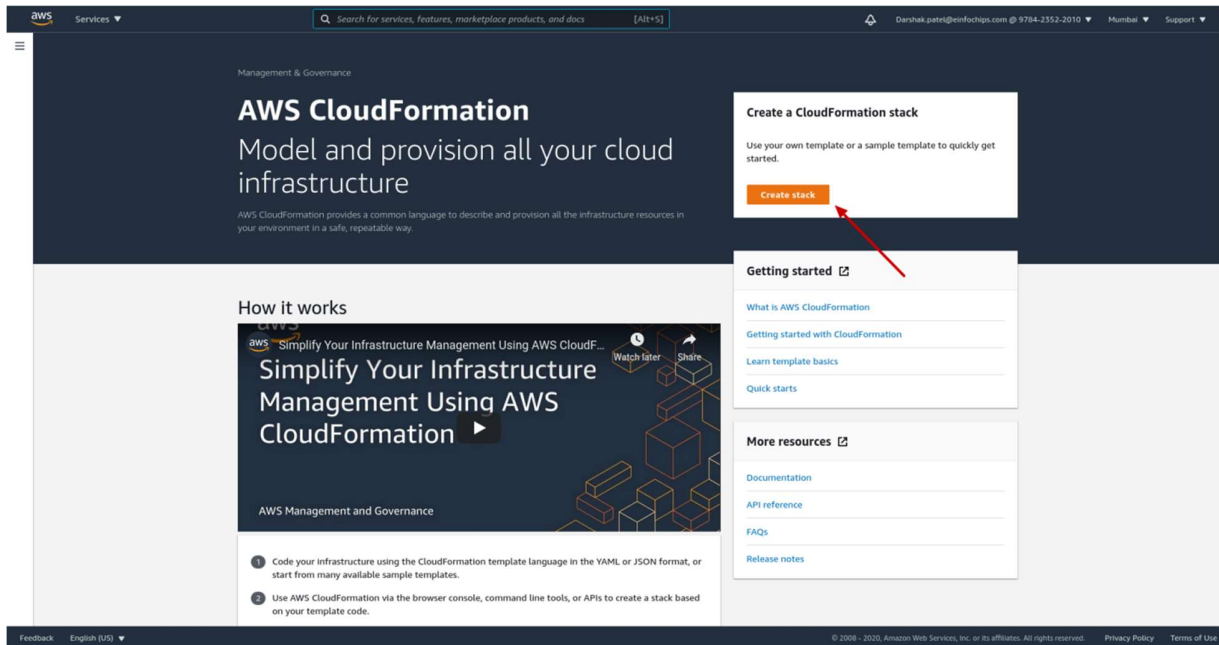


Figure 12: Create Stack

14. Enter the Object URL which you have copied from step 11 in Amazon S3 URL and click on **Next** Button.

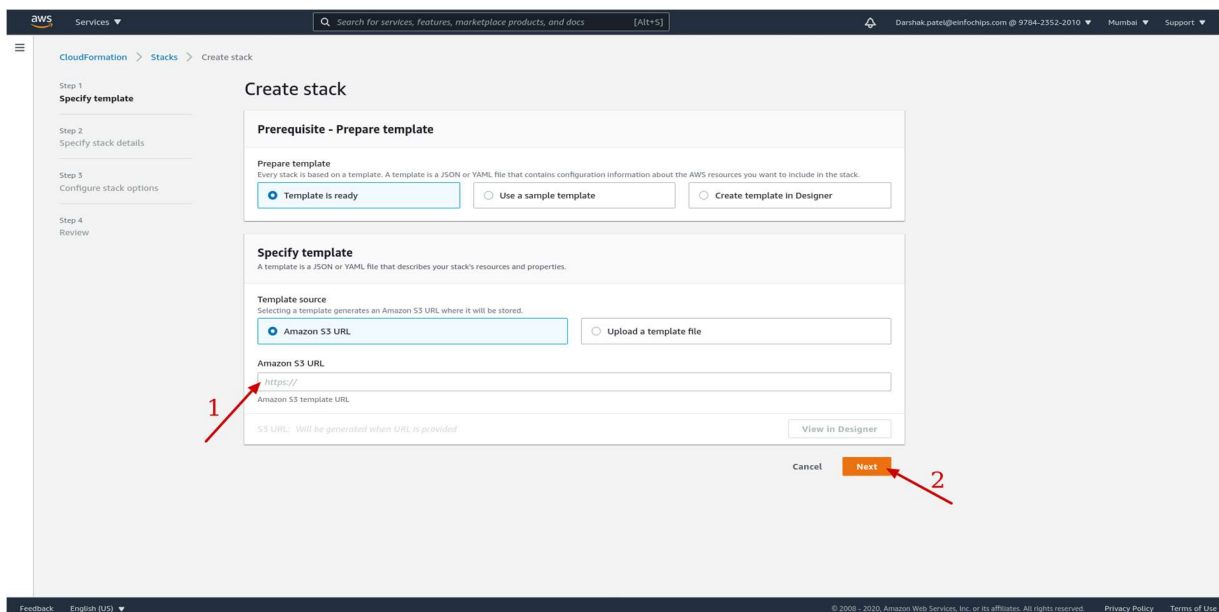


Figure 13: Creating Stack step1

15. Enter the **unique** stack **name** and fill the required parameters in the page while keeping in mind the below rules:

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- In **KeyName** parameter, need to select **keypair** name which we have created in section 2.2.
- For **DBUsername** parameter, username should not contain any special characters.
- Enter **unique IAMUserName** and **ProjectName** here. Remember-repeat use of IAMUsername and ProjectName can create problem while creating stack.
- For Dockerhub username and Password, please provide below credentials:
 - **Dockerhub ID:** arrowelectronics
 - **Password:** Arrow1234
- After filling all the details click next.

Example:

AWSIoTCoreEndpoint	xxxxxx-ats.iot.ap-south-1.amazonaws.com
DBAllocatedStorage	20
DBInstanceClass	db.t2.micro
DBInstanceID	sskdbinstance
DBPassword	einfochips123 (should be alpha-numeric)
DBUsername	admin
DockerHubPassword	Arrow1234
DockerHubUserName	arrowelectronics
IAMUserName	testusr (should be unique)
InstanceType	t2.micro
KeyName	SSK_Test
ProjectName	abcseed (should be unique)

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The screenshot shows the AWS CloudFormation console interface for creating a new stack. The breadcrumb navigation at the top indicates the path: CloudFormation > Stacks > Create stack. On the left, a sidebar shows the progress through four steps: Step 1: Specify template, Step 2: Specify stack details (current step), Step 3: Configure stack options, and Step 4: Review. The main content area is titled 'Specify stack details' and contains several sections:

- Stack name:** A text input field with a placeholder 'Enter a stack name'. Below it, a note states: 'Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-)'.
- Parameters:** A section titled 'Parameters are defined in your template and allow you to input custom values when you create or update a stack.' containing the following fields:
 - AWSIoTCoreEndpoint:** A text input field with a placeholder 'Enter AWS IoT Core Endpoint'.
 - DBAllocatedStorage:** A text input field with a value of '20'. A note below it says 'The size of the database (GiB)'.
 - DBInstanceClass:** A dropdown menu with 'db.t2.micro' selected. A note below it says 'DB instance class'.
 - DBInstanceID:** A text input field with a value of 'sksdbinstance'. A note below it says 'SSK database instance name, use lowercase letters'.
 - DBName:** A text input field with a value of 'sksdatabase'. A note below it says 'SSK database name'.
 - DBPassword:** A text input field. A note below it says 'Password MySQL database access'.
 - DBUsername:** A text input field. A note below it says 'Username for MySQL database access'.
 - DockerHubPassword:** A text input field. A note below it says 'Docker hub User Password'.
 - DockerHubUserName:** A text input field. A note below it says 'Docker hub Username'.
 - IAMUserName:** A text input field. A note below it says 'IAM User Name to create'.
 - InstanceType:** A dropdown menu with 't2.micro' selected. A note below it says 'WebServer EC2 instance type'.
 - KeyName:** A dropdown menu. A note below it says 'Name of an existing EC2 KeyPair to enable SSH access to the instances'.
 - ProjectName:** A text input field. A note below it says 'Enter prefix for s3 bucket name, use lowercase letters'.
 - SSHLocation:** A text input field with a value of '0.0.0.0/0'. A note below it says 'The IP address range that can be used to SSH to the EC2 instances'.

At the bottom of the form, there are three buttons: 'Cancel', 'Previous', and 'Next'. A red arrow points to the 'Next' button. The footer of the console shows 'Feedback', 'English (US)', and copyright information: '© 2008 - 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use'.

Figure 14: Creating Stack step2

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16. On next page, Add the tags if any (Tags are used for billing/cost management). Click on **Next** Button.

The screenshot shows the AWS CloudFormation console's 'Configure stack options' page. The page is divided into several sections: 'Tags', 'Permissions', and 'Advanced options'. The 'Tags' section contains a table with columns for 'Key' and 'Value', and a 'Remove' button. Below this is an 'Add tag' button. The 'Permissions' section has a heading 'IAM role - optional' and a dropdown menu for selecting an IAM role. The 'Advanced options' section includes four expandable sections: 'Stack policy', 'Rollback configuration', 'Notification options', and 'Stack creation options'. At the bottom right, there are three buttons: 'Cancel', 'Previous', and 'Next'. A red arrow points to the 'Next' button.

Figure 15: Creating Stack step3

17. Review the stack details (for parameters value and tags value). Then select the check-box for acknowledgment as shown in below image and Click on **Create Stack** Button.

Services

CloudFormation > Stacks > Create stack

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Review demo

Step 1: Specify template

Template

Template URL
https://s3.amazonaws.com/stack-templates-us-east-1-1.amazonaws.com/root.yaml

Stack description
This AWS CloudFormation Template invokes EC2, RDS, S3 and IAM templates.

Estimate cost

Step 2: Specify stack details

Parameters (14)

Key	Value
AWSIoTCoreEndpoint	a3m3zunaczkgk-ats.iot.us-east-2.amazonaws.com
DBAllocatedStorage	20
DBInstanceClass	db.t2.micro
DBInstanceId	s3kdbinstance
DBName	s3kdatabase
DBPassword	*****
DBUsername	****
DockerHubPassword	*****
DockerHubUserName	arowelectronics
IAMUserName	test1
InstanceType	t2.micro
KeyName	demokey
ProjectName	abcseed
SSHLocation	0.0.0.0/0

Step 3: Configure stack options

Tags (1)

Key	Value
purpose	demo

Permissions

No permissions
There is no IAM role associated with this stack

Stack policy

No stack policy
There is no stack policy defined

Rollback configuration

Monitoring time
-
CloudWatch alarm ARN
-

Notification options

No notification options
There are no notification options defined

Stack creation options

Rollback on failure
Enabled
Timeout
-
Termination protection
Disabled

Quick-create link

Capabilities

The following resource(s) require capabilities: [AWS::CloudFormation::Stack]

This template contains Identity and Access Management (IAM) resources. Check that you want to create each of these resources and that they have the minimum required permissions. In addition, they have custom names. Check that the custom names are unique within your AWS account. [Learn more](#)

For this template, AWS CloudFormation might require an unrecognized capability: CAPABILITY_AUTO_EXPAND. Check the capabilities of these resources.

☐ I acknowledge that AWS CloudFormation might create IAM resources with custom names.

☐ I acknowledge that AWS CloudFormation might require the following capability: CAPABILITY_AUTO_EXPAND

Cancel

Previous

Create change set

Create stack

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18. It will start creating stacks for IAM User, RDS, EC2 instance and S3 Bucket. You can see the stack status and refresh the events as shown in below image.

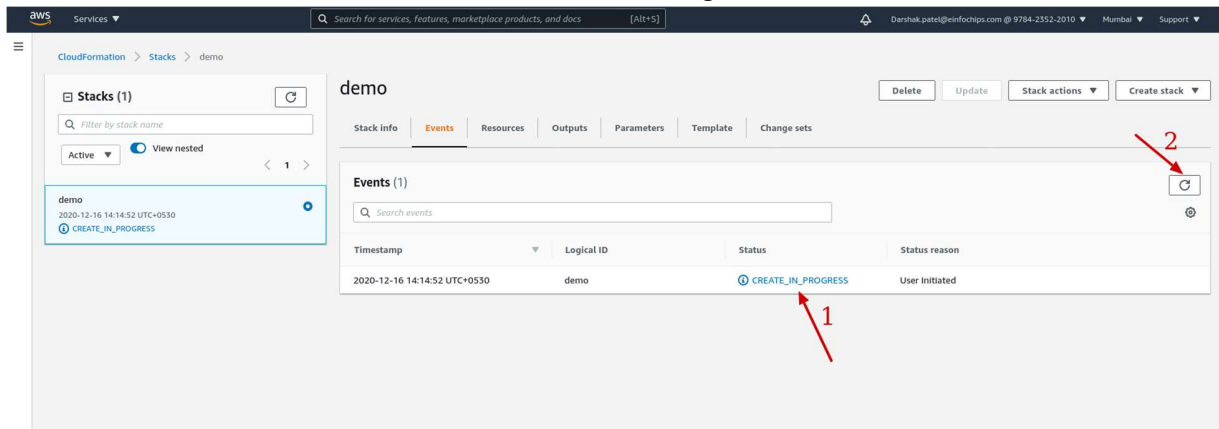


Figure 17: Stack Creation event/status page

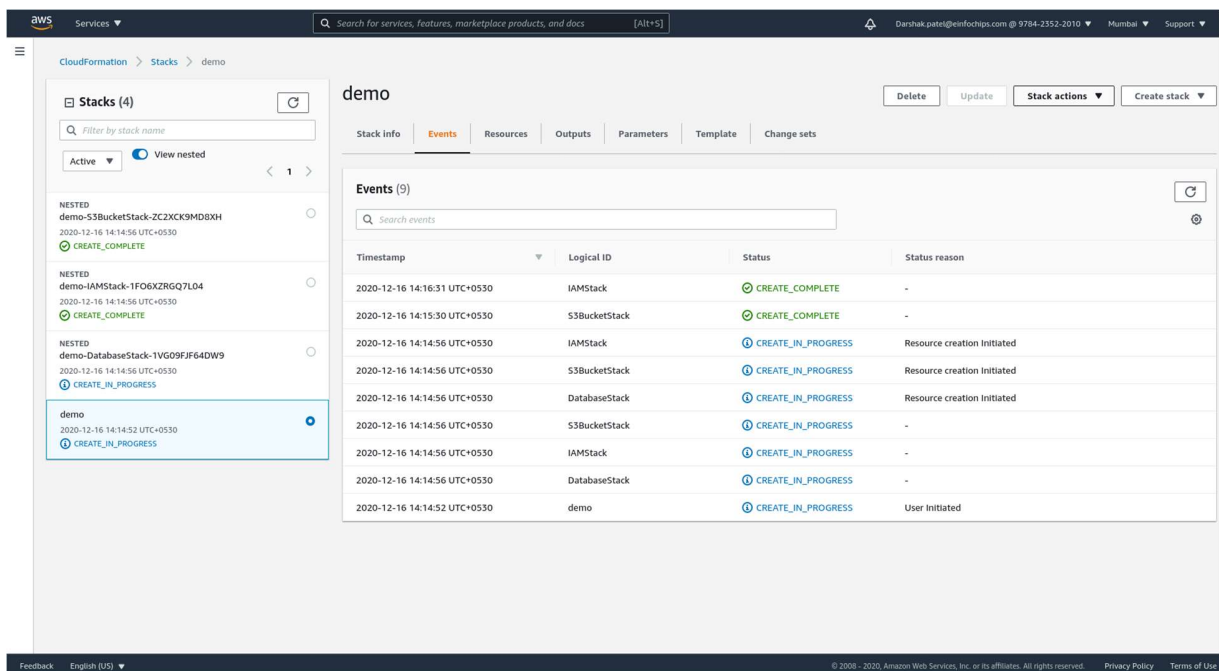
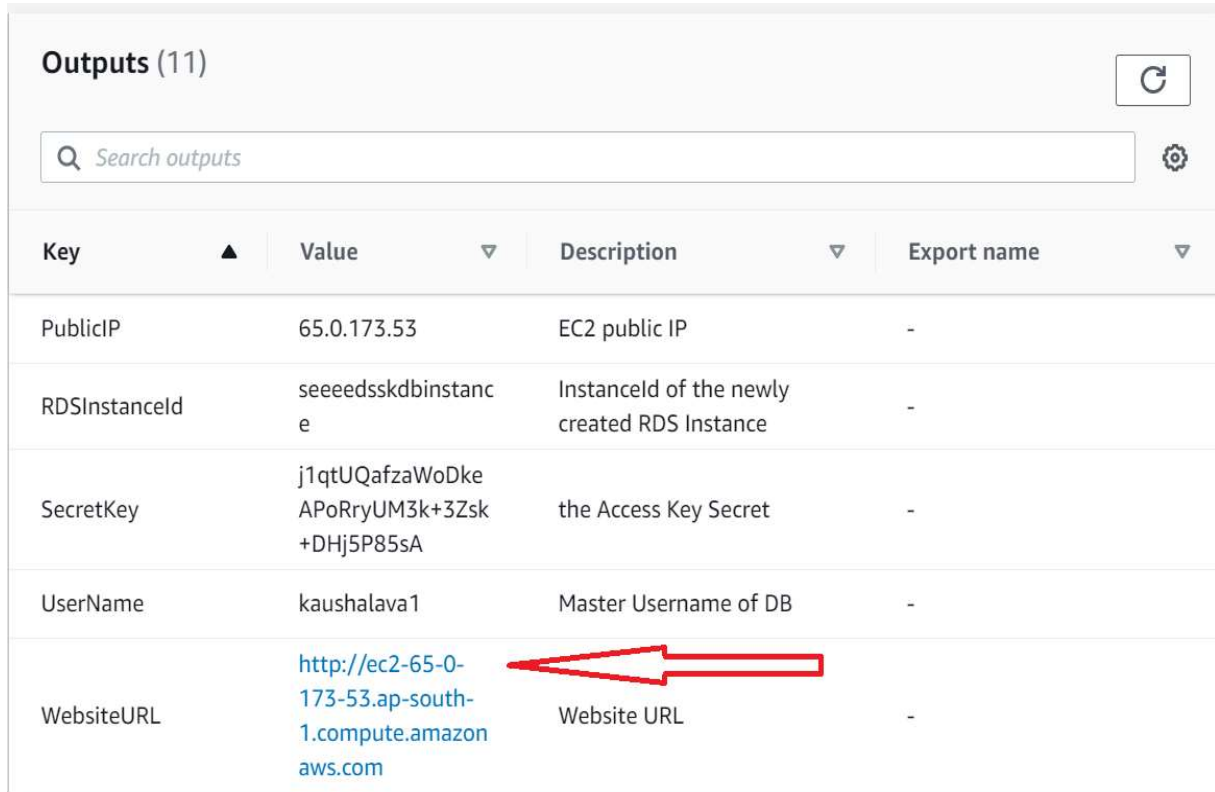


Figure 18: Stack Creation event/status page

19. After Stack creation, you can check for website URL in the last row of Output section.



Key	Value	Description	Export name
PublicIP	65.0.173.53	EC2 public IP	-
RDSInstanceID	seeedsskdbinstance	InstanceID of the newly created RDS Instance	-
SecretKey	j1qtUQafzaWoDkeAPoRryUM3k+3Zsk+DHj5P85sA	the Access Key Secret	-
UserName	kaushalava1	Master Username of DB	-
WebsiteURL	http://ec2-65-0-173-53.ap-south-1.compute.amazonaws.com	Website URL	-

Figure 19: Checking Website URL in output tab after Stack Creation

Note:

[Please login once with the below api link in order to provide access

<http://<ec2 domain name>/api/v1/aws/thing/configthingtypeandbucket>

i.e.

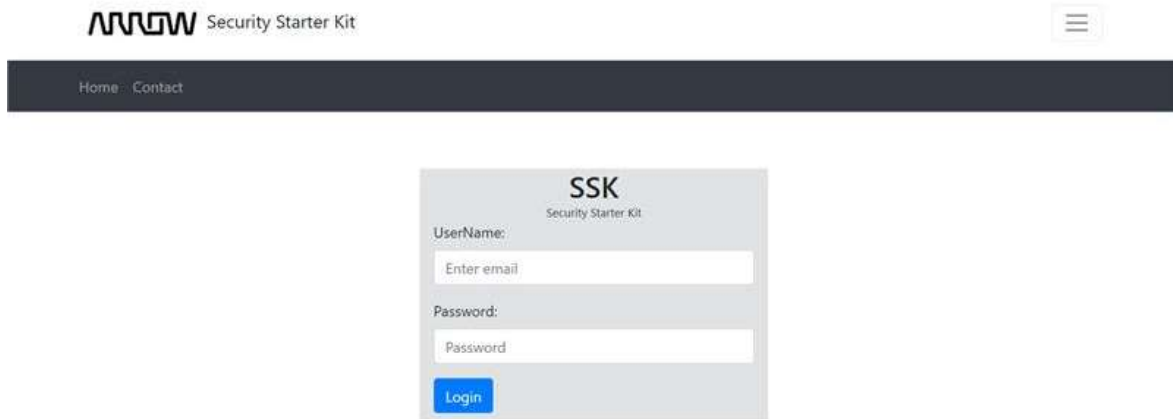
<http://ec2-xx-xxx-xxx-xx.ap-south-1.compute.amazonaws.com/api/v1/aws/thing/configthingtypeandbucket>]

User will be able to check the thing created successful page as per below.

JSON	Raw Data	Headers
Save	Copy	Collapse All Expand All Filter JSON
<pre>success: true message: "Thing Type & S3 Bucket created successfully" result: null</pre>		

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20. Double clicking on above **website URL**, user will be launched to the login SSK Cloud Connect Portal as shown below:

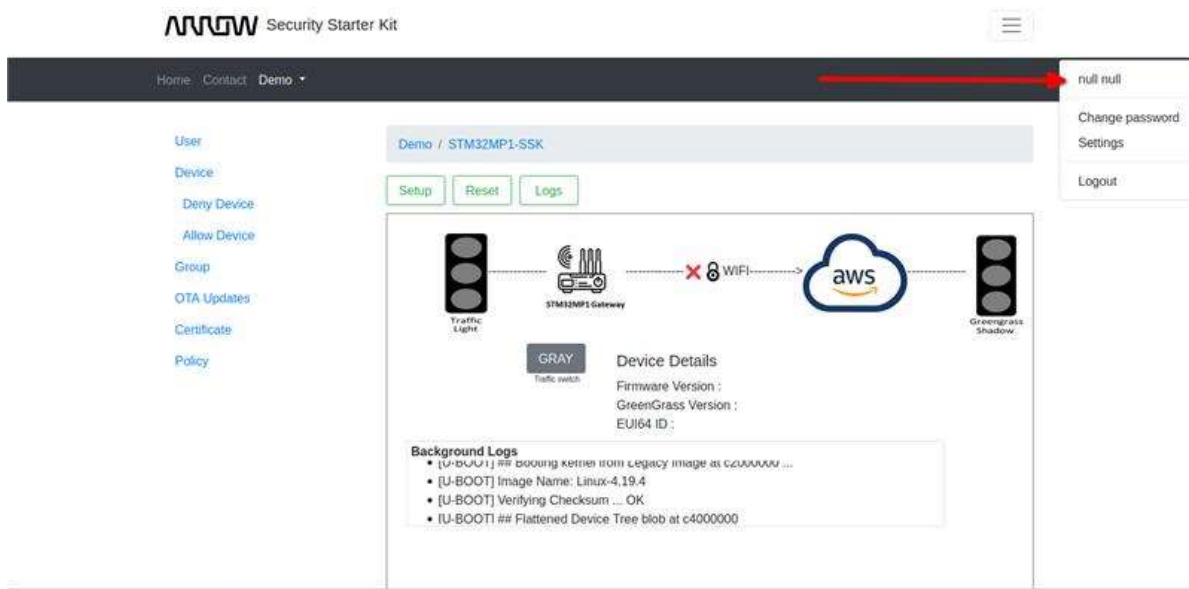


The image shows the SSK (Security Starter Kit) login page. At the top, there is a header with the Arrow logo and the text "Security Starter Kit". Below the header is a navigation bar with "Home" and "Contact" links. The main content area features a login form with the title "SSK Security Starter Kit". The form includes a "UserName:" label, a text input field with the placeholder "Enter email", a "Password:" label, a text input field with the placeholder "Password", and a blue "Login" button.

Figure 20: SSK Login page

Note: Username: IAMUsername (User entered while creating Cloud Stack)
Password: ArrowSSKportal@2020 (Created for Temporary use only)

21. After logging in, user can also edit default username “null null” with their desired name.



The image shows the SSK Home page after login. The header includes the Arrow logo and "Security Starter Kit". The navigation bar has "Home", "Contact", and "Demo" links. A red arrow points to a dropdown menu in the top right corner, which contains the options: "null null", "Change password", "Settings", and "Logout". The main content area is titled "Demo / STM32MP1-SSK" and includes "Setup", "Reset", and "Logs" buttons. Below these buttons is a diagram showing a "Traffic Light" connected to a "STM32MP1 Gateway", which is connected to "WiFi" (with a red X over the icon) and then to "aws". To the right of the diagram is a "GreenGrass Shadow" icon. Below the diagram is a "Device Details" section with fields for "Firmware Version", "GreenGrass Version", and "EU64 ID". At the bottom is a "Background Logs" section with a list of logs: "[U-BOOT] ## booting kernel from legacy image as c2000000 ...", "[U-BOOT] Image Name: Linux-4.19.4", "[U-BOOT] Verifying Checksum ... OK", and "[U-BOOT] ## Flattened Device Tree blob at c4000000".

Figure 21: SSK Home page

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22. By clicking on “null null”, the below screen would display for user to change the details as per they want it to display.

The screenshot displays the 'Home / Edit Profile' page. On the left is a sidebar with links: User, Device, Deny Device, Allow Device, Group, OTA Updates, Certificate, and Policy. The main area has a header 'Home / Edit Profile' and a form with fields for First Name, Last Name, User Name (containing 'kaaaushaaa'), Email Id, and Mobile Number. Below the form are 'Cancel' and 'Update' buttons. On the right, a vertical menu contains 'Change password', 'Settings', and 'Logout'.

Figure 22: SSK Home/Edit profile page

23. User needs to Login into the AWS Console Account. Now search for **IoT Greengrass>>Settings>>Greengrass service role**
Now select Attach role option available there.

The screenshot shows the AWS IAM console. The left sidebar has a 'Settings' link highlighted under the 'Software' section, marked with a red circle and the number 1. The main content area is titled 'Choose the Greengrass service role'. It contains a search bar and a list of roles. The role 'Greengrass_ServiceRole' is selected, marked with a red circle and the number 2. At the bottom right, there is a 'Save' button, marked with a red circle and the number 3.

As we have successfully installed the cloud connect portal, please refer SSK Quick Start Guides to ensure performance of SSK Demos.