RSAConference2019
San Francisco | March 4–8 | Moscone Center

SESSION ID: CSV-T09

Security at the Speed of DevOps

Steve Martino
SVP, Chief Information Security Officer
Cisco

Sujata Ramamoorthy
Sr. Director, Information Security
Cisco

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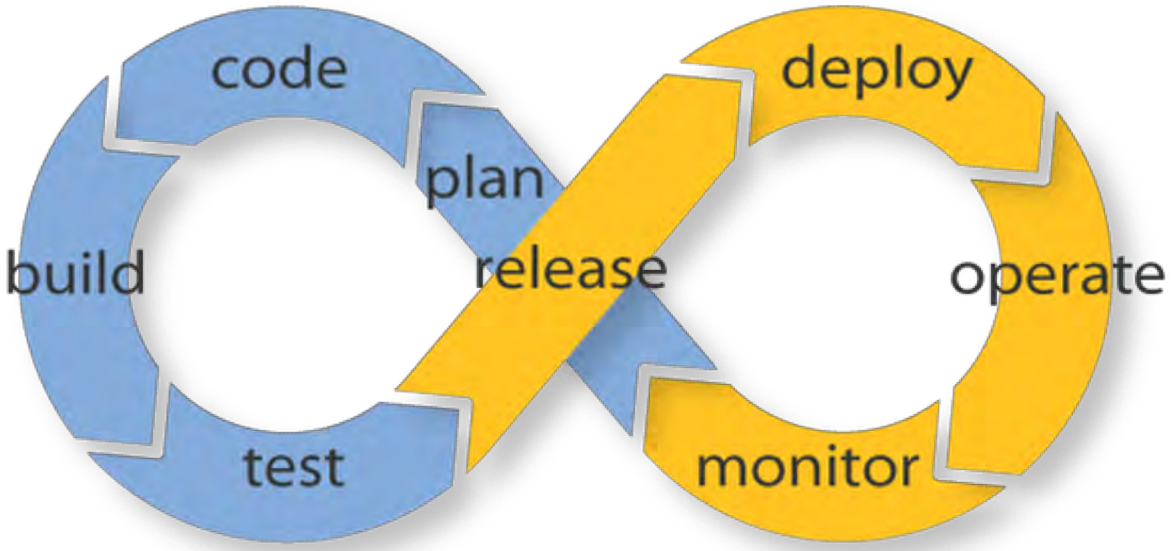
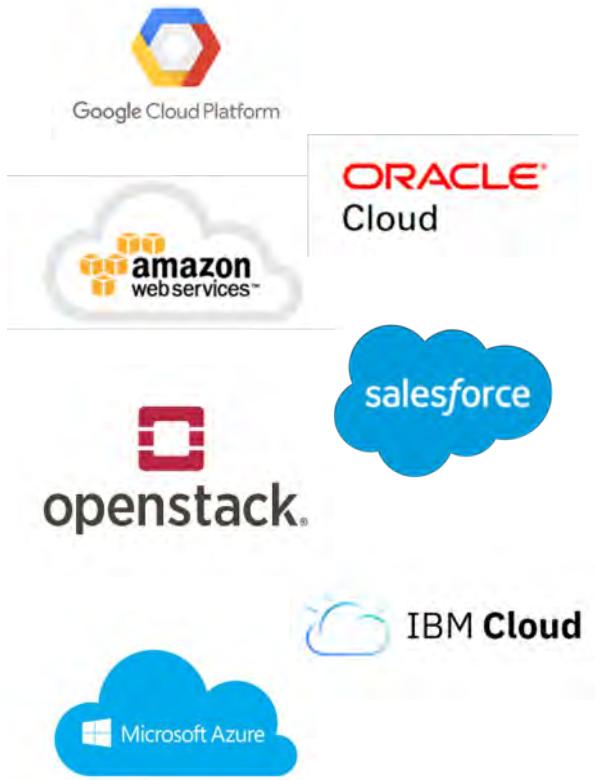
Our Move to Embed Security in DevOps

DevOps Practices Paired with Cloud Adoption

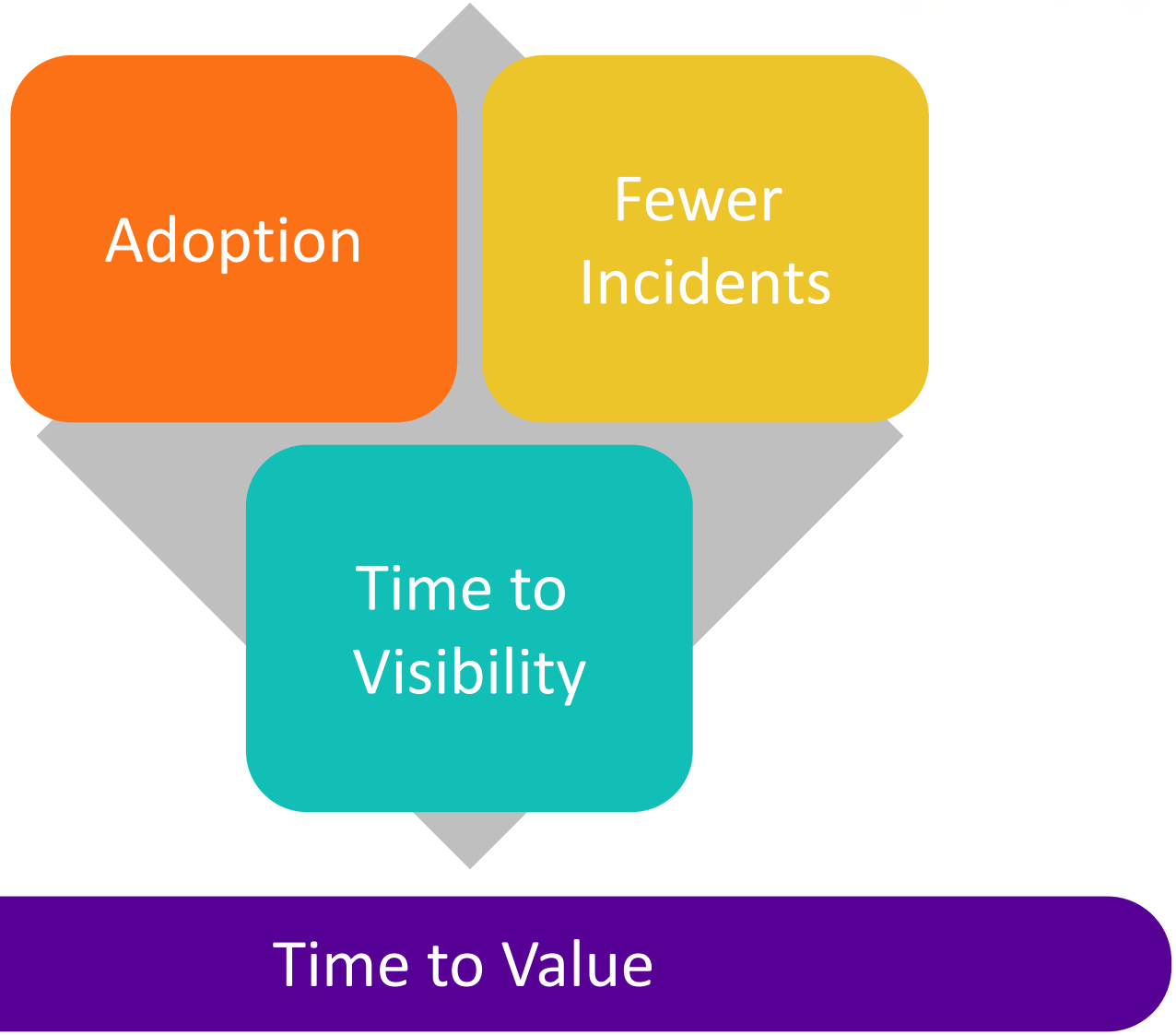




Endless Possibilities:

DevOps can create an endless loop of release and feedback for all code and deployment targets

Success Criteria



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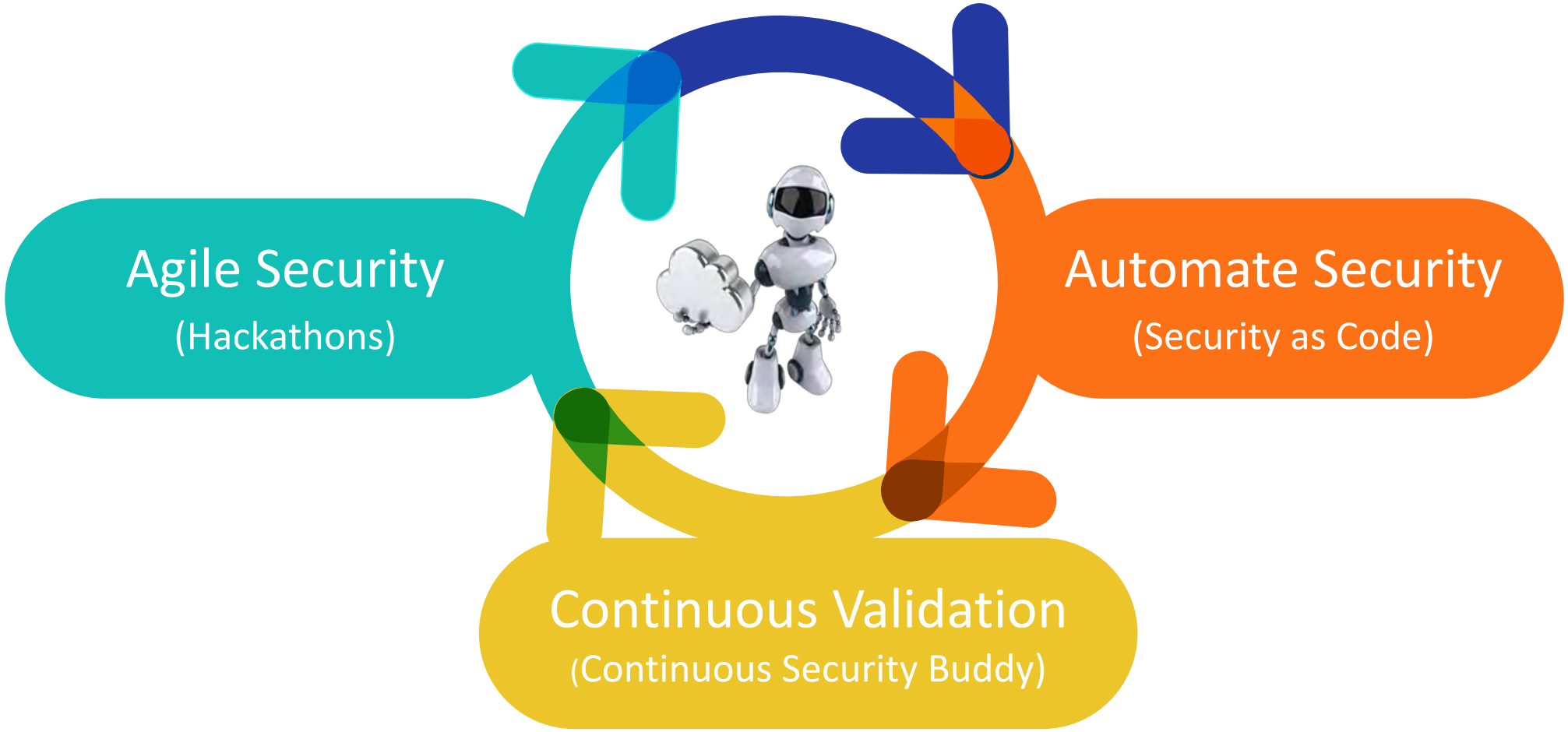
Operational Change

How Do We Drive DevSecOps?



What's a Security Hackathon?

You may think it's this:

It's more like this:

Hackathon Goals

Complete and publish top security guardrails for AWS

Pre-Work Planning

- Identify top security use cases in AWS
- Team member assignment

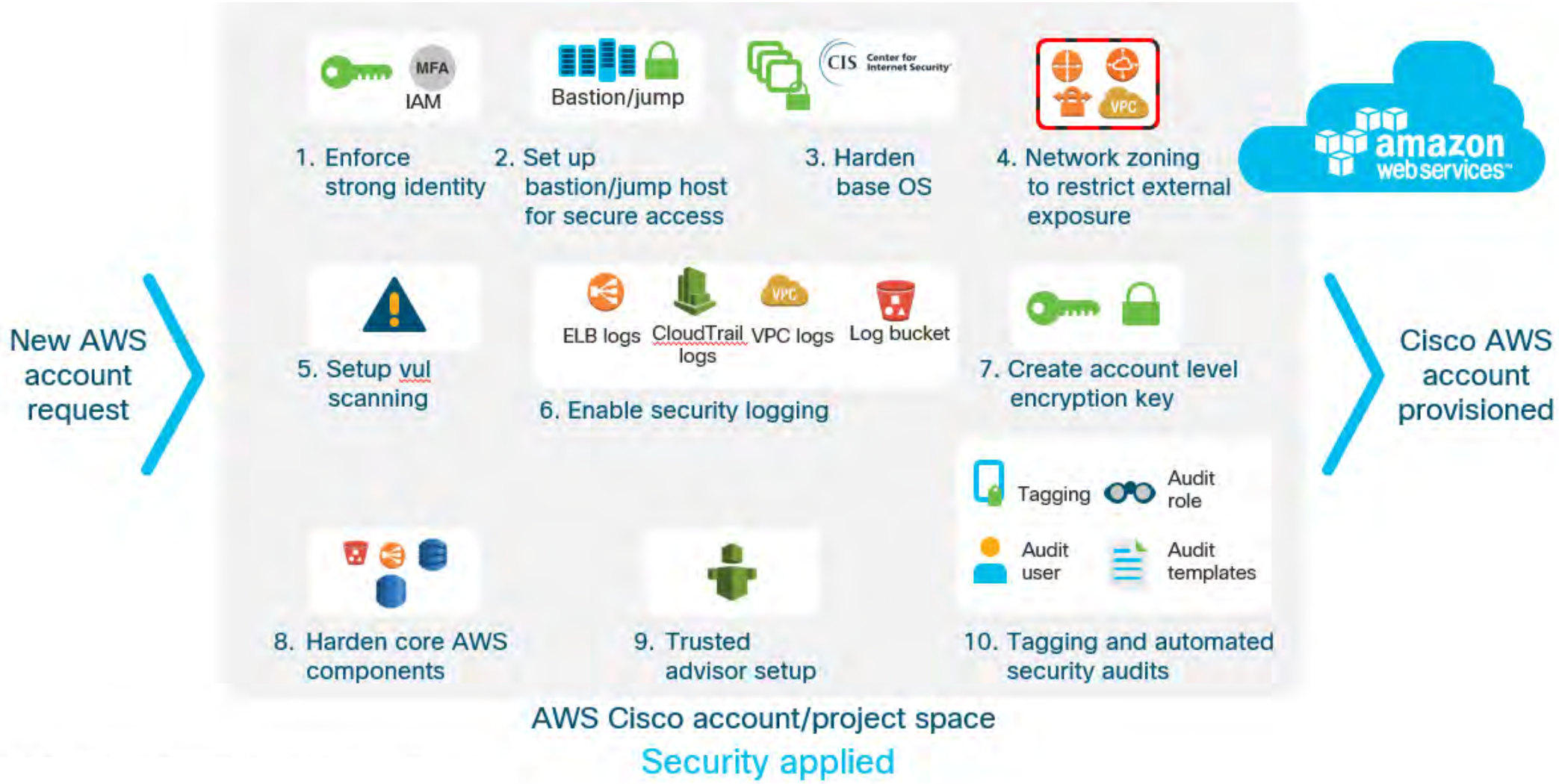
Event Logistics

- Run in sprints
- Sprint readout
- Peer reviews
- Definition of Done (DOD)
- Document Findings

Retrospective

- What worked / Didn't work
- Improvements
- Next steps

Security Guardrails for Cisco AWS Accounts



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Visual Walk-Through

Manual Account Provisioning

PRODUCTS & SERVICES

AWS Console

FAQs

RELATED LINKS

Documentation

Articles & Tutorials

Developer Tools

Public Data Sets

Amazon Machine Images (AMIs)

Videos & Webinars

What's New

Manage Your Resources

Sign In to the Console

AWS Management Console

Access and manage Amazon Web Services through a simple and intuitive web-based user interface. You can also use the AWS Console mobile app to quickly view resources on the go.

Get Started with AWS for Free

Create a Free Account

Or Sign In to the Console

Receive twelve months of access to the AWS Free Usage Tier and enjoy AWS Basic Support features including, 24x7x365 customer service, support forums, and more.

Features

Administer your AWS account

The Console facilitates cloud management for all aspects of your AWS account, including monitoring your monthly spending by service, managing security credentials, or even setting up new IAM Users.

All IaaS AWS administration, management, and access functions in the AWS Console are available in the AWS API and CLI. New AWS IaaS features and services provide full AWS Console functionality through the API and CLI at launch or within 180 days of launch

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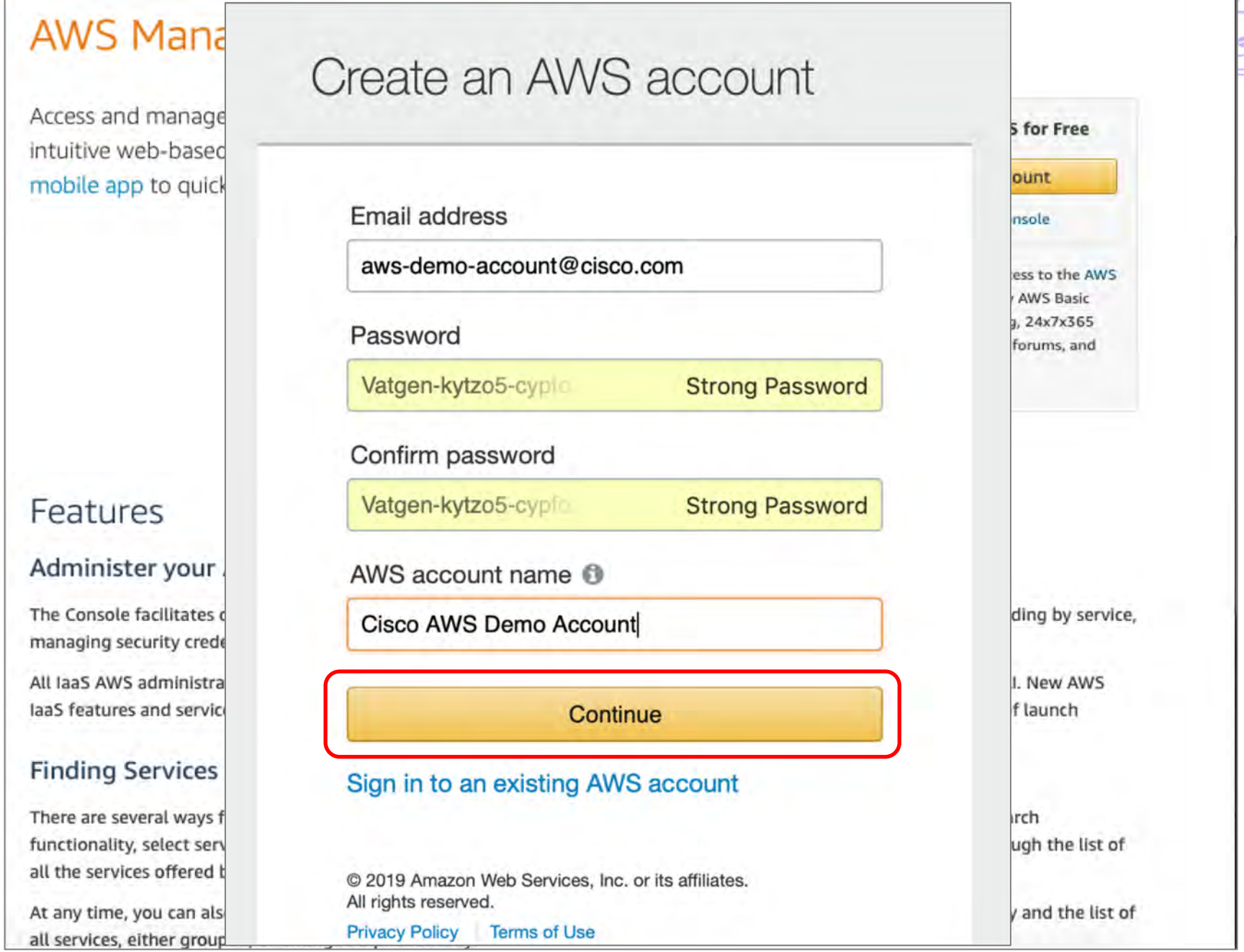
Finding Services in the AWS Console

There are several ways for you to locate and navigate to the services you need. On Console Home, you can utilize the search functionality, select services from the *Recently visited services* section, or expand the *All services* section to browse through the list of all the services offered by AWS.

At any time, you can also select the *Services* menu in the top level navigation bar, which includes the search functionality and the list of all services, either grouped, or arranged alphabetically.


AWS Mana
Access and manage
intuitive web-based
mobile app to quick
Features
Administer your
The Console facilitates
managing security crede
All IaaS AWS administra
IaaS features and servic
Finding Services
There are several ways f
functionality, select serv
all the services offered b
At any time, you can als
all services, either group
Create an AWS account
Email address
aws-demo-account@cisco.com
Password
Vatgen-kytzo5-cyp
Strong Password
Confirm password
Vatgen-kytzo5-cyp
Strong Password
AWS account name
Cisco AWS Demo Account
Continue
Sign in to an existing AWS account
© 2019 Amazon Web Services, Inc. or its affiliates.
All rights reserved.
Privacy Policy
Terms of Use
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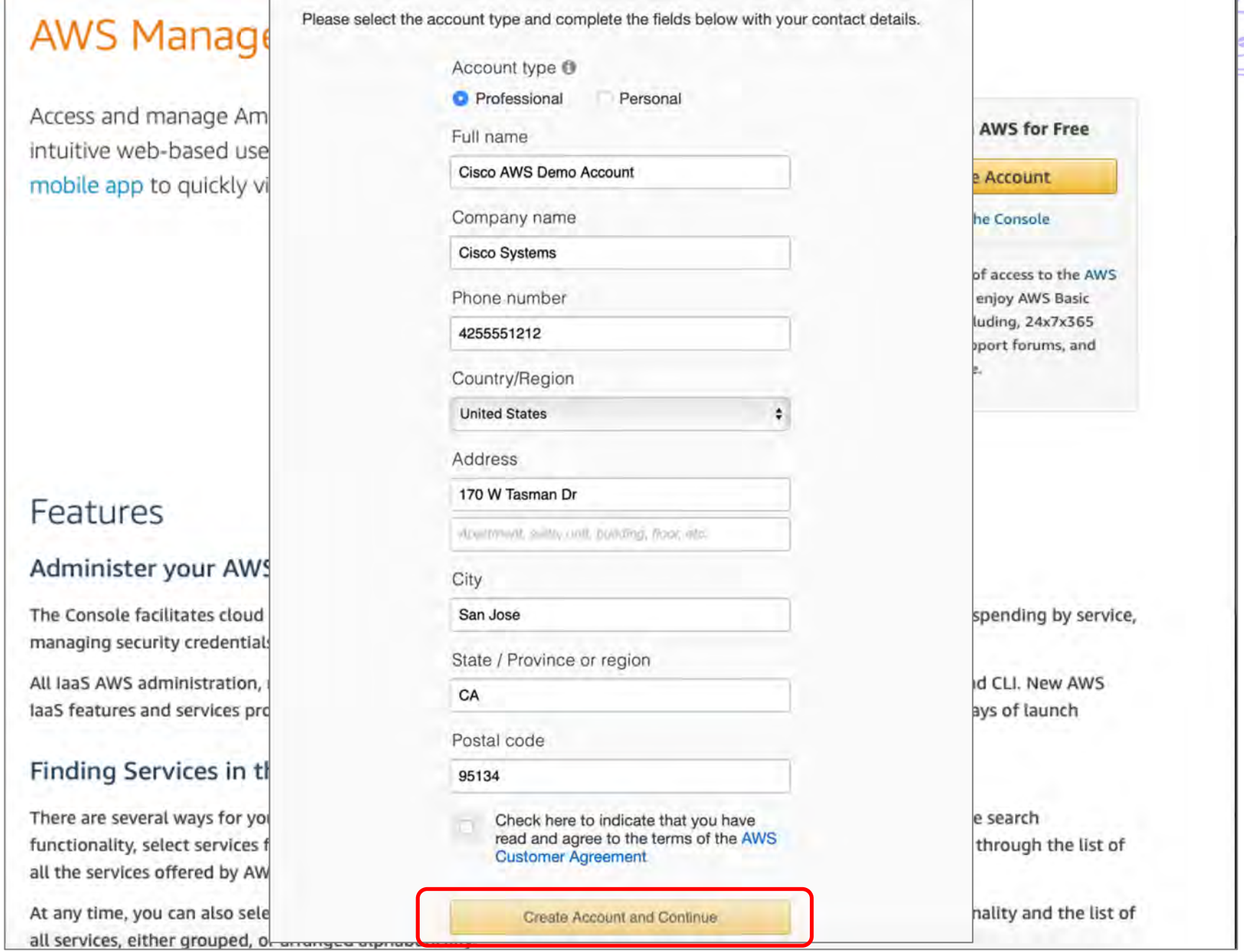
AWS Manage
Access and manage Am
intuitive web-based use
mobile app to quickly vi
Please select the account type and complete the fields below with your contact details.
Account type
Professional
Personal
Full name
Cisco AWS Demo Account
Company name
Cisco Systems
Phone number
4255551212
Country/Region
United States
Address
170 W Tasman Dr
City
San Jose
State / Province or region
CA
Postal code
95134
Check here to indicate that you have read and agree to the terms of the AWS Customer Agreement
Create Account and Continue
AWS for Free
Account
he Console
of access to the AWS
enjoy AWS Basic
luding, 24x7x365
pport forums, and
Features
Administer your AWS
The Console facilitates cloud
managing security credentials
All IaaS AWS administration,
IaaS features and services pro
spending by service,
d CLI. New AWS
ays of launch
Finding Services in th
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functionality, select services f
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At any time, you can also sele
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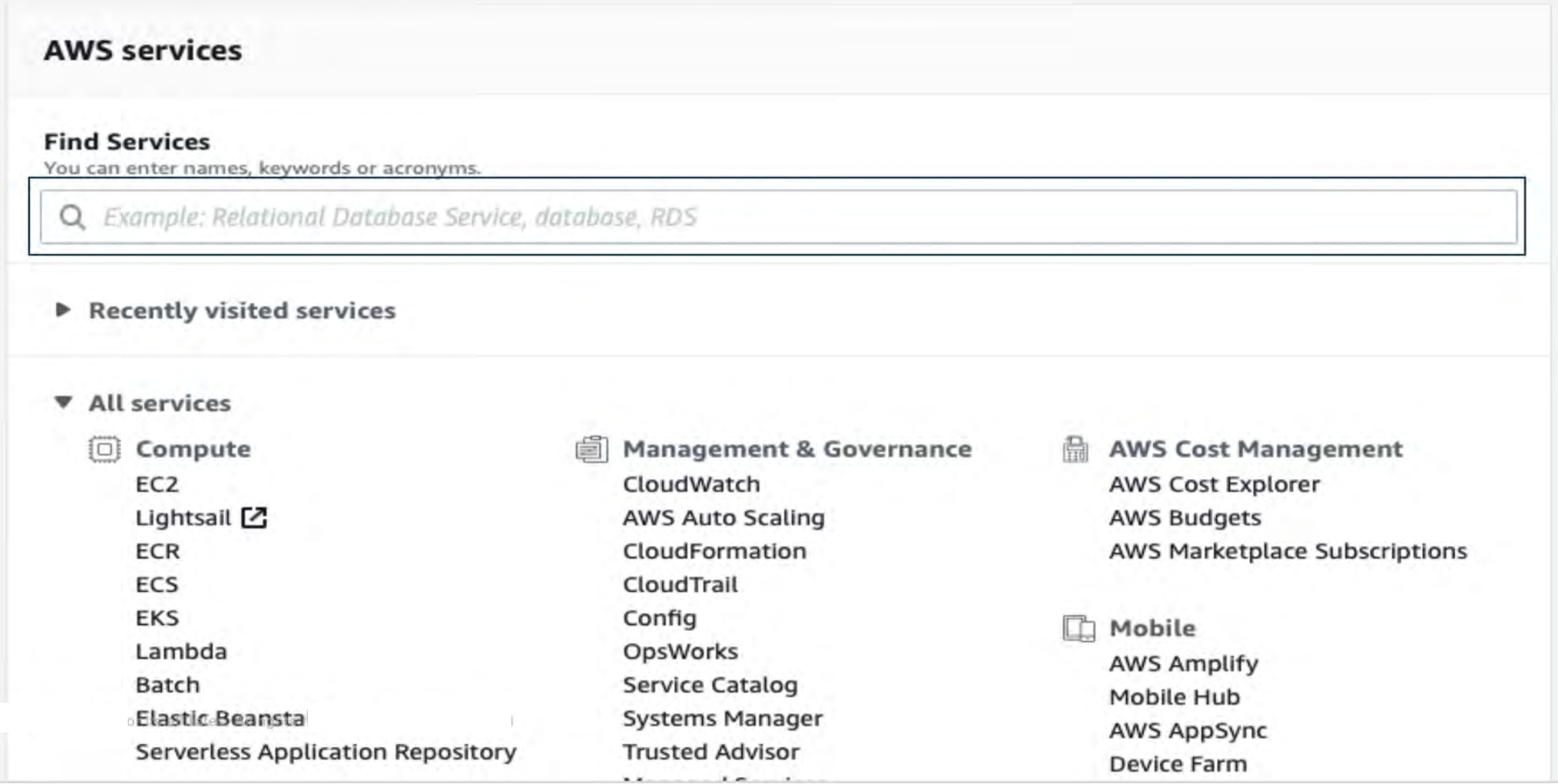
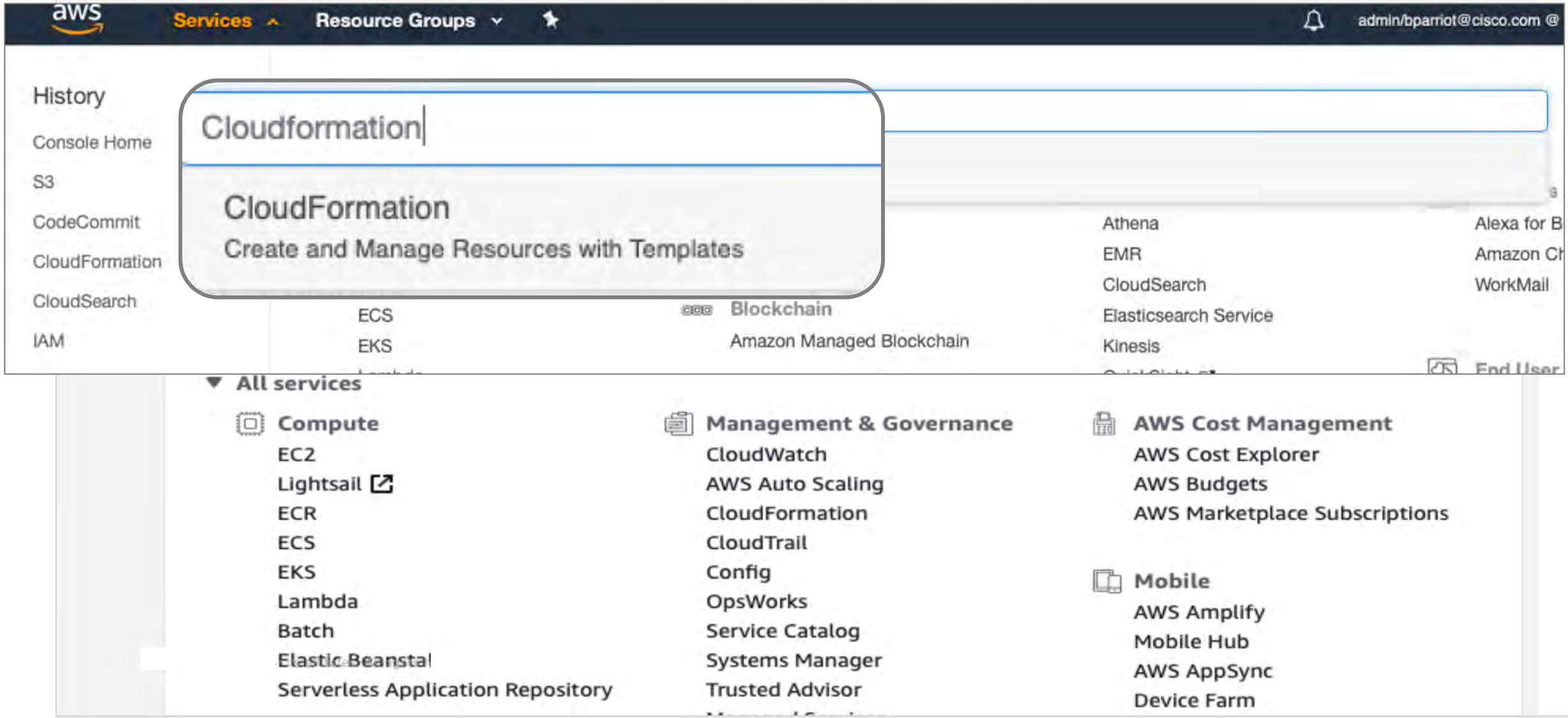
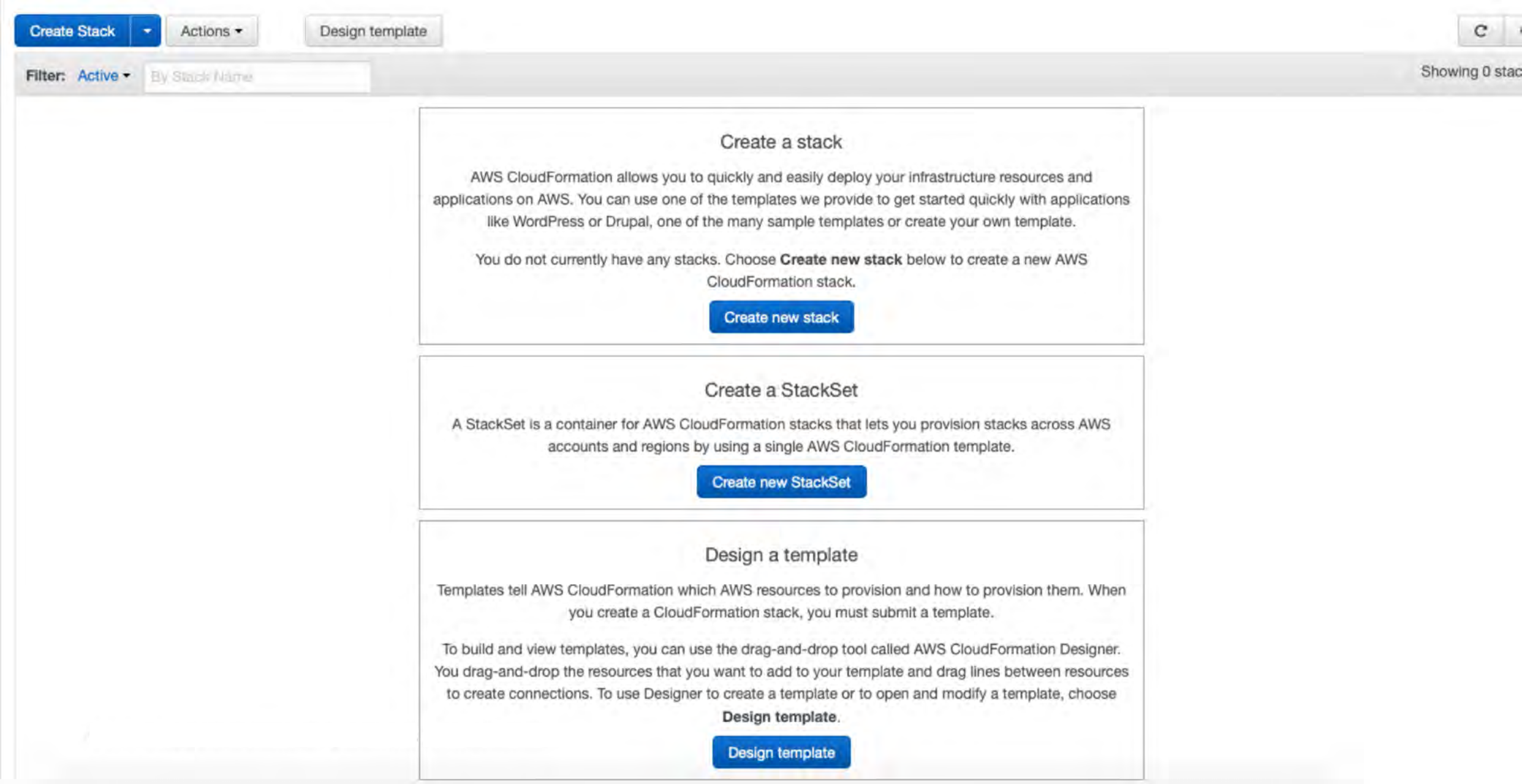
Manual CSB Install

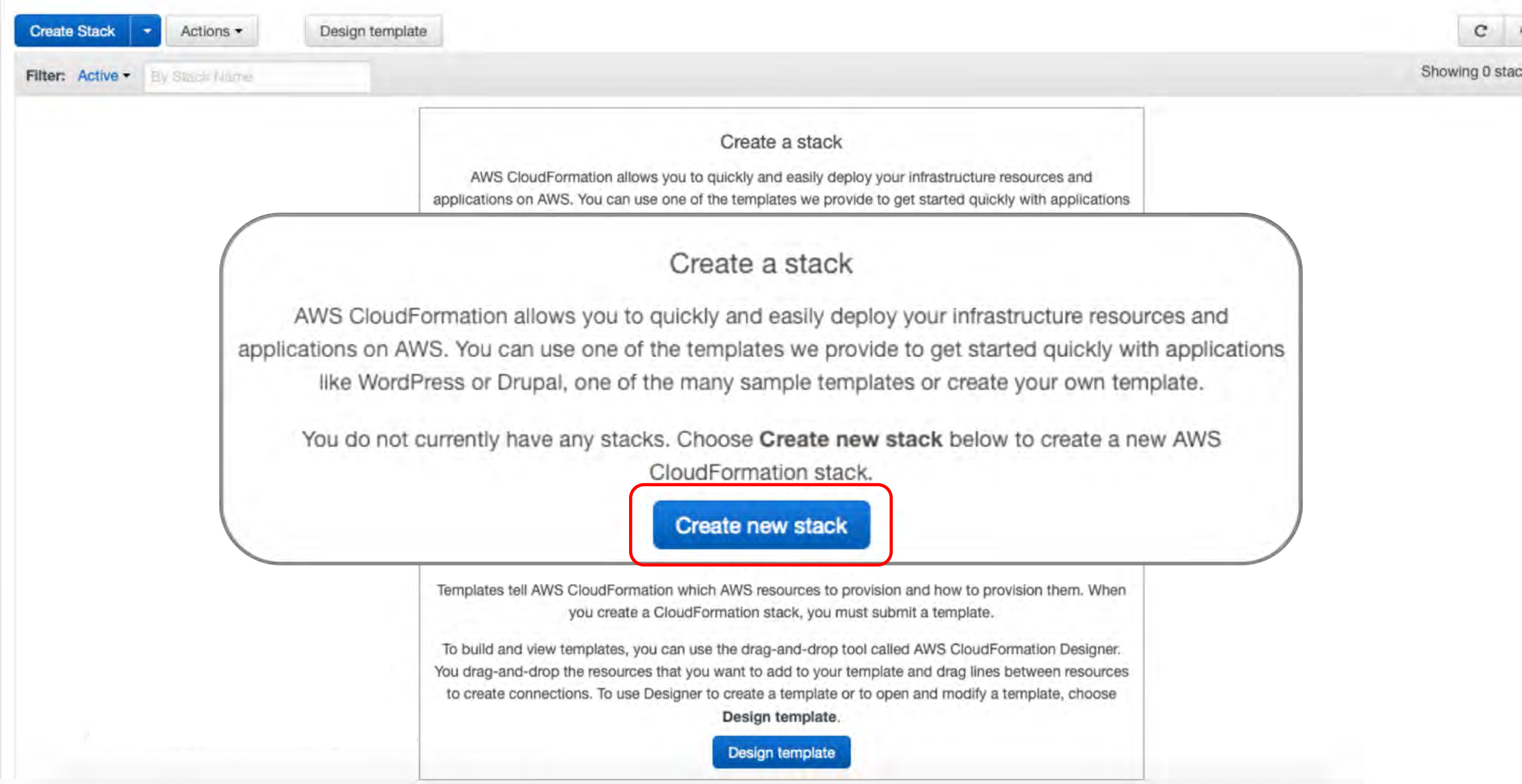
AWS Management Console



AWS Management Console




Create Stack
Actions
Design template
Filter: Active
By Stack Name
Showing 0 stac
Create a stack
AWS CloudFormation allows you to quickly and easily deploy your infrastructure resources and applications on AWS. You can use one of the templates we provide to get started quickly with applications like WordPress or Drupal, one of the many sample templates or create your own template.
You do not currently have any stacks. Choose Create new stack below to create a new AWS CloudFormation stack.
Create new stack
Create a StackSet
A StackSet is a container for AWS CloudFormation stacks that lets you provision stacks across AWS accounts and regions by using a single AWS CloudFormation template.
Create new StackSet
Design a template
Templates tell AWS CloudFormation which AWS resources to provision and how to provision them. When you create a CloudFormation stack, you must submit a template.
To build and view templates, you can use the drag-and-drop tool called AWS CloudFormation Designer. You drag-and-drop the resources that you want to add to your template and drag lines between resources to create connections. To use Designer to create a template or to open and modify a template, choose Design template.
Design template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Actions
Design template
Filter: Active
By Stack Name
Showing 0 stac
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Design template

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 selected
- ( ) Specify an Amazon S3 template URL

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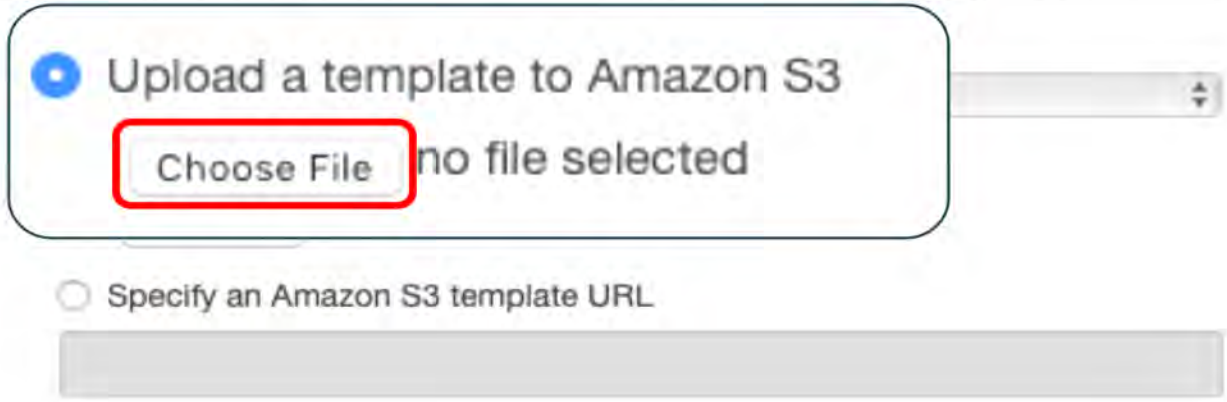

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Upload a template to Amazon S3

Choose File no file selected

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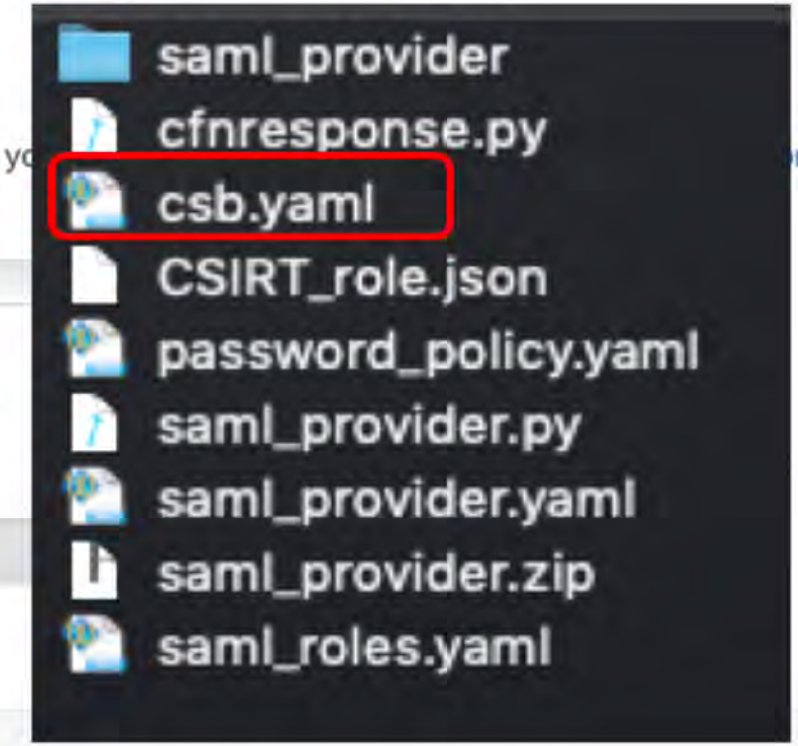


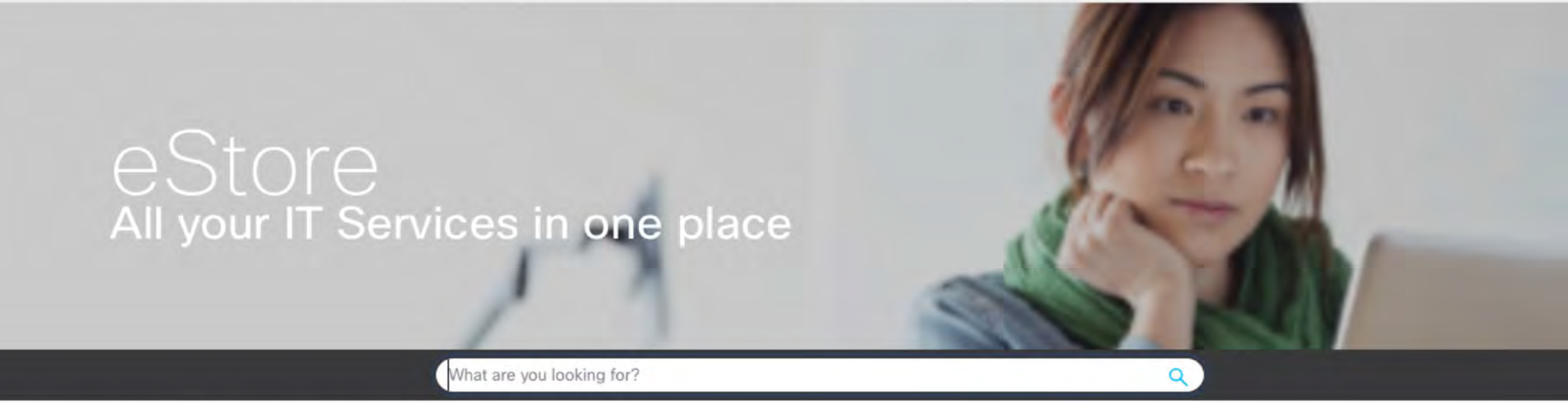
Manual CSB Installation

	File	CF Stack Name	AWS Resource Modified/Created
1	csb.yaml	InfosecAuditorRole	Lambda Role Auditor Role
2	CSIRT_role.json	InfosecCSIRTRole	Cisco Security Incident Response Role
3	password_policy.yaml	IAMPasswordRole	Password Policy
4	saml_provider.yaml	CiscoSSOSAMLProvider	Identity Provider Lambda Role
5	saml_roles.yaml	CiscoSSOSAMLRoles	admin role devops role
6	vuln_mgmt_scanner	CiscoScanner	Lambda Role Cross Account Role

Automated Provisioning

cisco eStore

Cisco Services | Finance & Travel | HR, Benefits, & Legal | IT Tools & Services | Order Management & Supply Chain | Sales & Marketing | Workplace & Safety



What are you looking for?

Explore Collections

Show

Sales Teams | Frequent Travelers | Cisco Essentials | Engineering Teams | Hiring Managers | IT Teams

cisco eStore

Cisco Services | Finance & Travel | HR, Benefits, & Legal | IT Tools & Services | Order Management & Supply Chain | Sales & Marketing | Workplace & Safety

AWS

Services

Amazon Web Services - Create Account

Oracle Business Intelligence Enterprise Edition (OBIEE) - Configuration and General Requests

Explore

Show

Sales Teams | Frequent Travelers | Cisco Essentials | Engineering Teams | Hiring Managers | IT Teams

Home / ...

Amazon Web Services - Create Account

Create an account on AWS and begin your development effort in public cloud while automatically leveraging Cisco's enterprise agreement for pricing and Infosec's Continuous Security Buddy for policy adherance. eStore will route your request for the appropriate leadership and financial approvals so that you can focus on building your application.

Specification

Order

Order for Others

Home / ...

azon Web Services - Create Account

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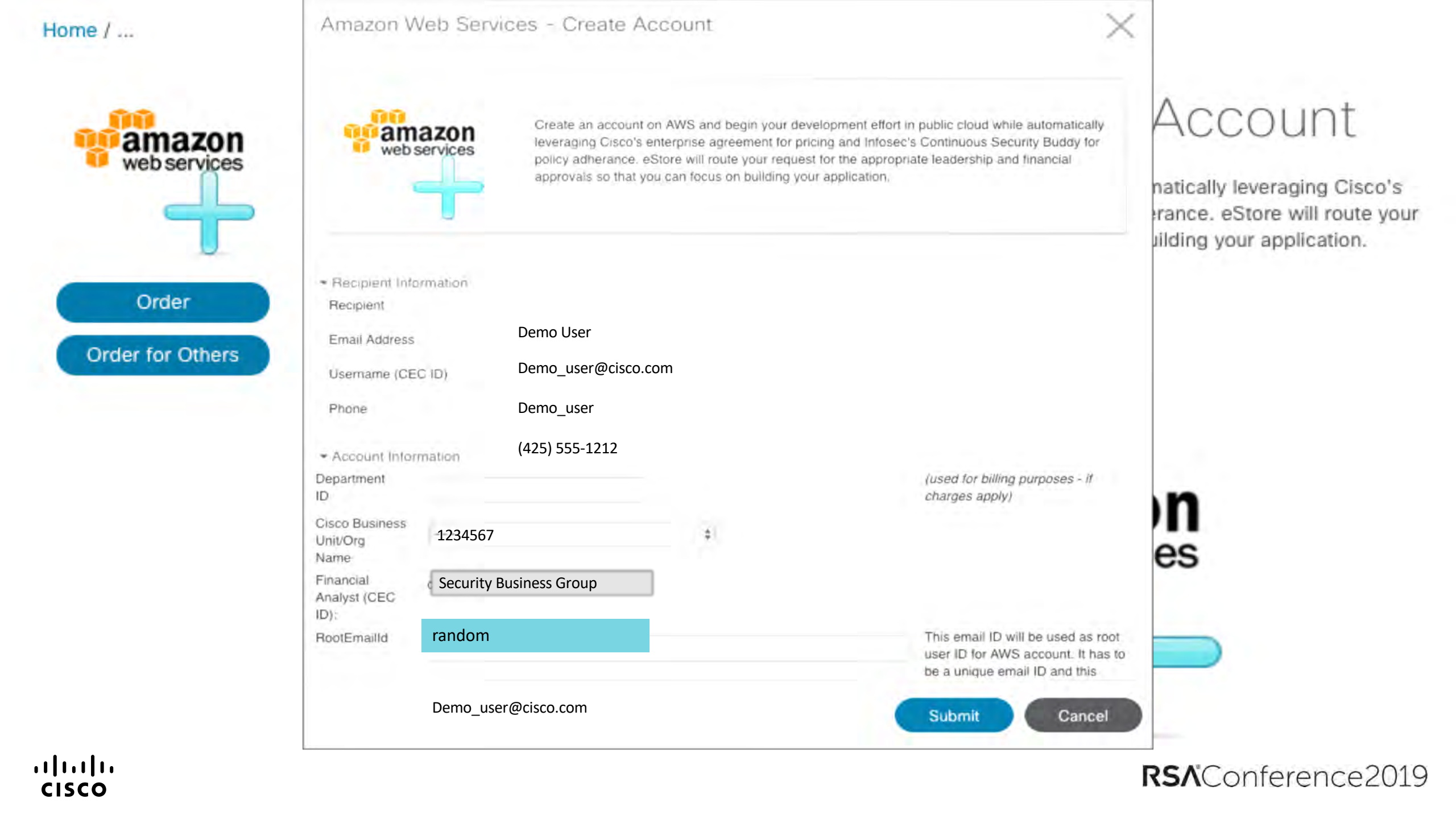
Home / ...
Order
Order for Others
Amazon Web Services - Create Account
Create an account on AWS and begin your development effort in public cloud while automatically leveraging Cisco's enterprise agreement for pricing and Infosec's Continuous Security Buddy for policy adherance. eStore will route your request for the appropriate leadership and financial approvals so that you can focus on building your application.
Recipient Information
Recipient
Demo User
Email Address
Demo_user@cisco.com
Username (CEC ID)
Demo_user
Phone
(425) 555-1212
Account Information
Department ID
(used for billing purposes - if charges apply)
Cisco Business Unit/Org Name
1234567
Financial Analyst (CEC ID):
Security Business Group
RootEmailId
random
This email ID will be used as root user ID for AWS account. It has to be a unique email ID and this
Demo_user@cisco.com
Submit
Cancel
Account
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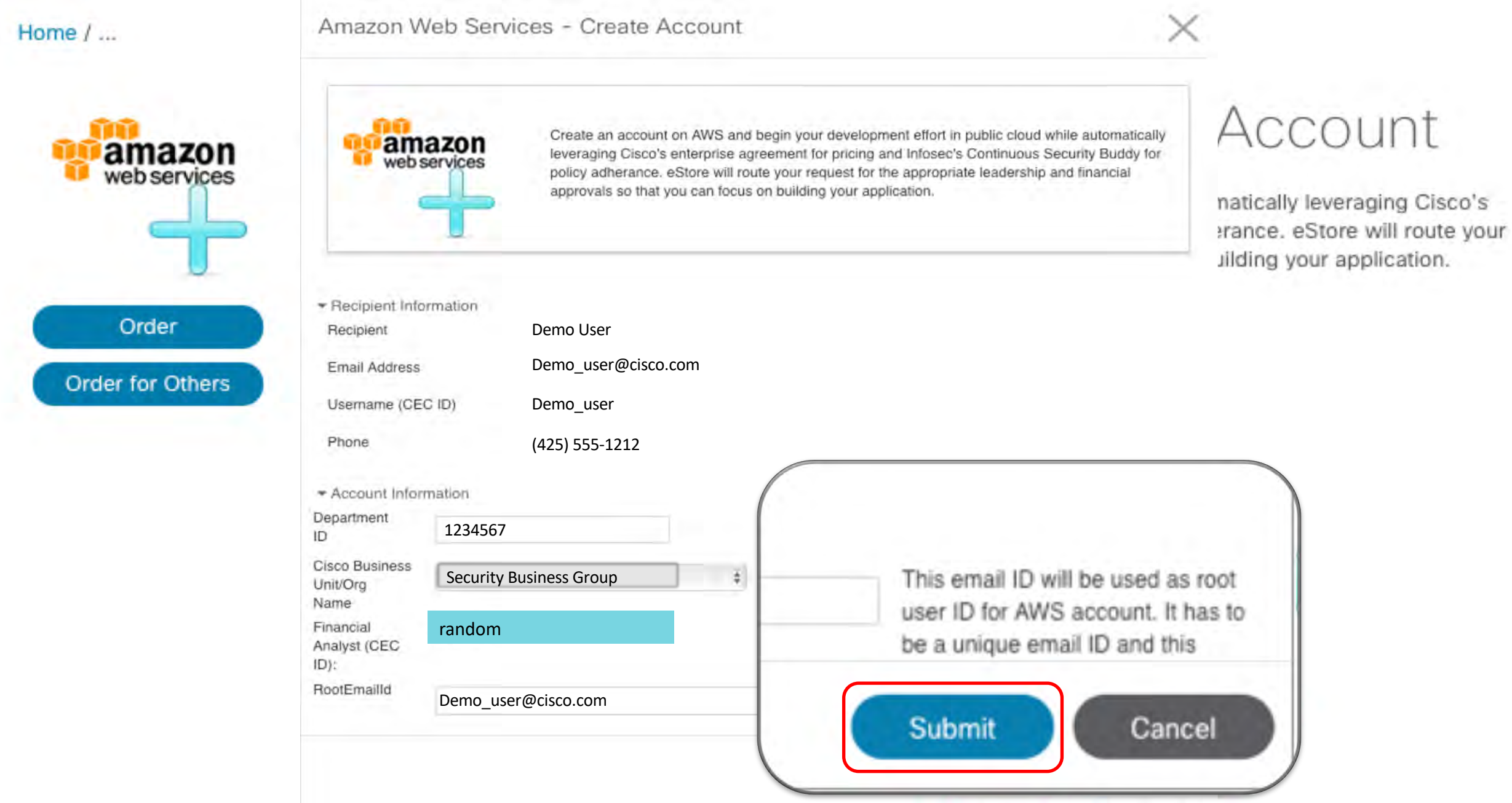
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Account
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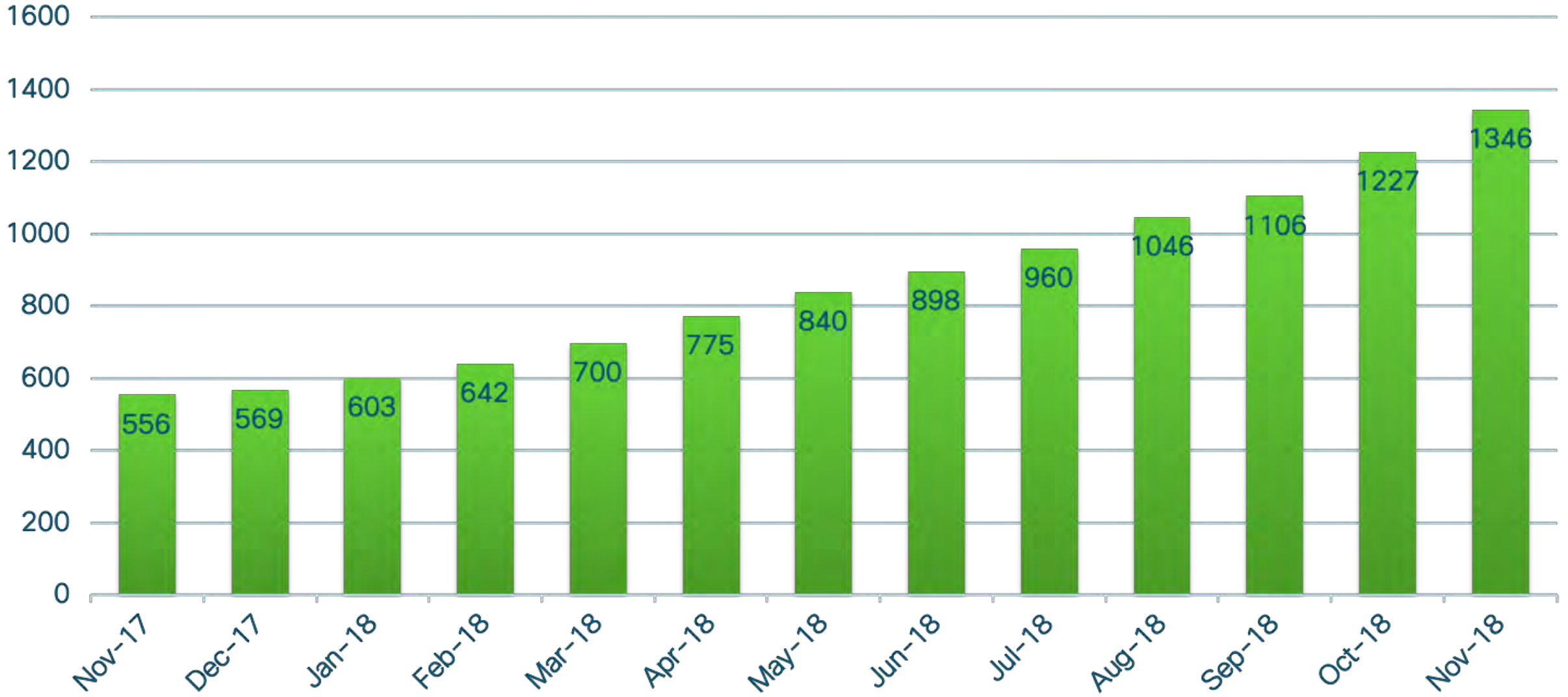
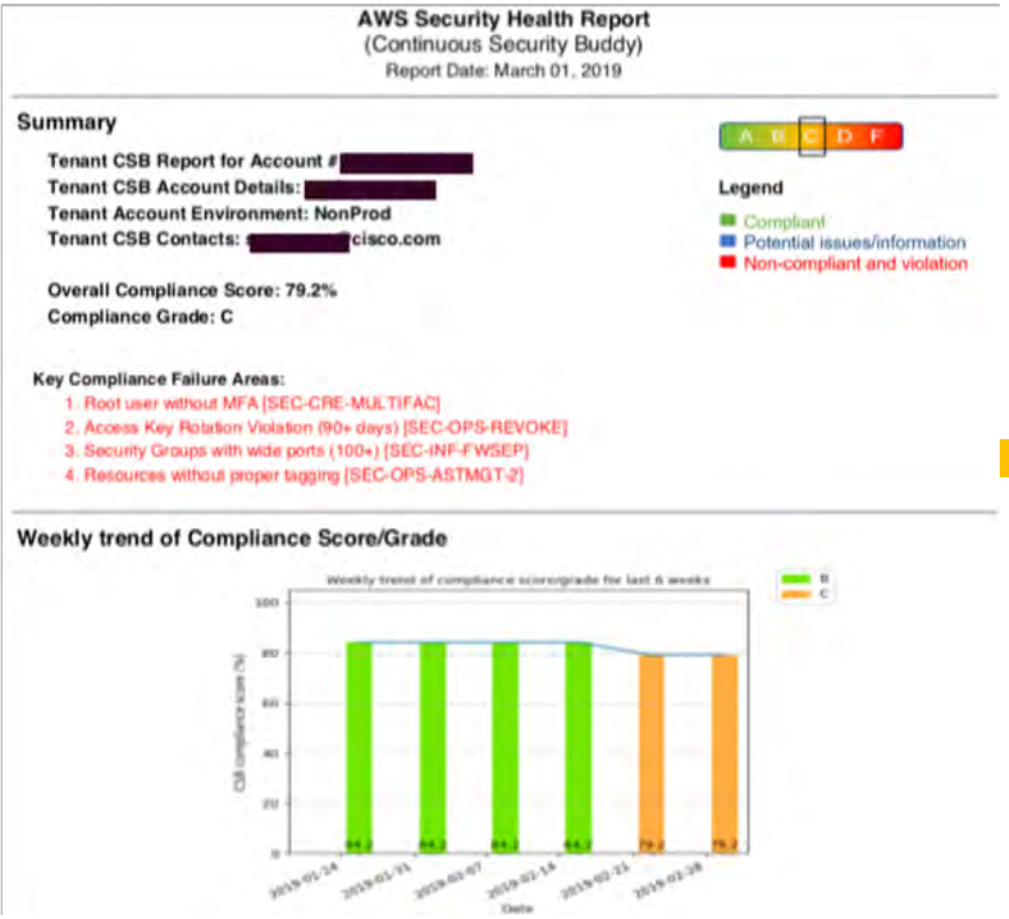
uilding your application.
Recipient Information
Recipient
Demo User
Email Address
Demo_user@cisco.com
Username (CEC ID)
Demo_user
Phone
(425) 555-1212
Account Information
Department ID
1234567
Cisco Business Unit/Org Name
Security Business Group
Financial Analyst (CEC ID):
random
RootEmailId
Demo_user@cisco.com
This email ID will be used as root user ID for AWS account. It has to be a unique email ID and this
Submit
Cancel

CSB Installed AWS Accounts



Reporting Baseline

Daily Reporting



AWS Security Health Report
(Continuous Security Buddy)
Report Date: March 01, 2019

Summary

Tenant CSB Report for Account # [redacted]
Tenant CSB Account Details: [redacted]
Tenant Account Environment: NonProd
Tenant CSB Contacts: [redacted]cisco.com

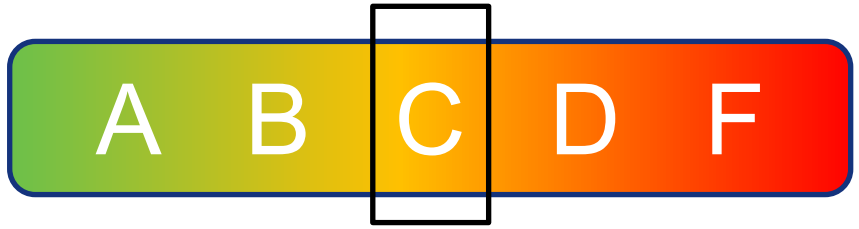
Overall Compliance Score: 79.2%
Compliance Grade: C

Legend
- Compliant
- Potential issues/information
- Non-compliant and violation

Key Compliance Failure Areas:
1. Root user without MFA [SEC-CRE-MULTIFAC]
2. Access Key Rotation Violation (90+ days) [SEC-OPS-REVOKE]
3. Security Groups with wide ports (100+) [SEC-INF-FWSEP]
4. Resources without proper tagging [SEC-OPS-ASTMGT-2]

Weekly trend of Compliance Score/Grade

Overall Risk Score:

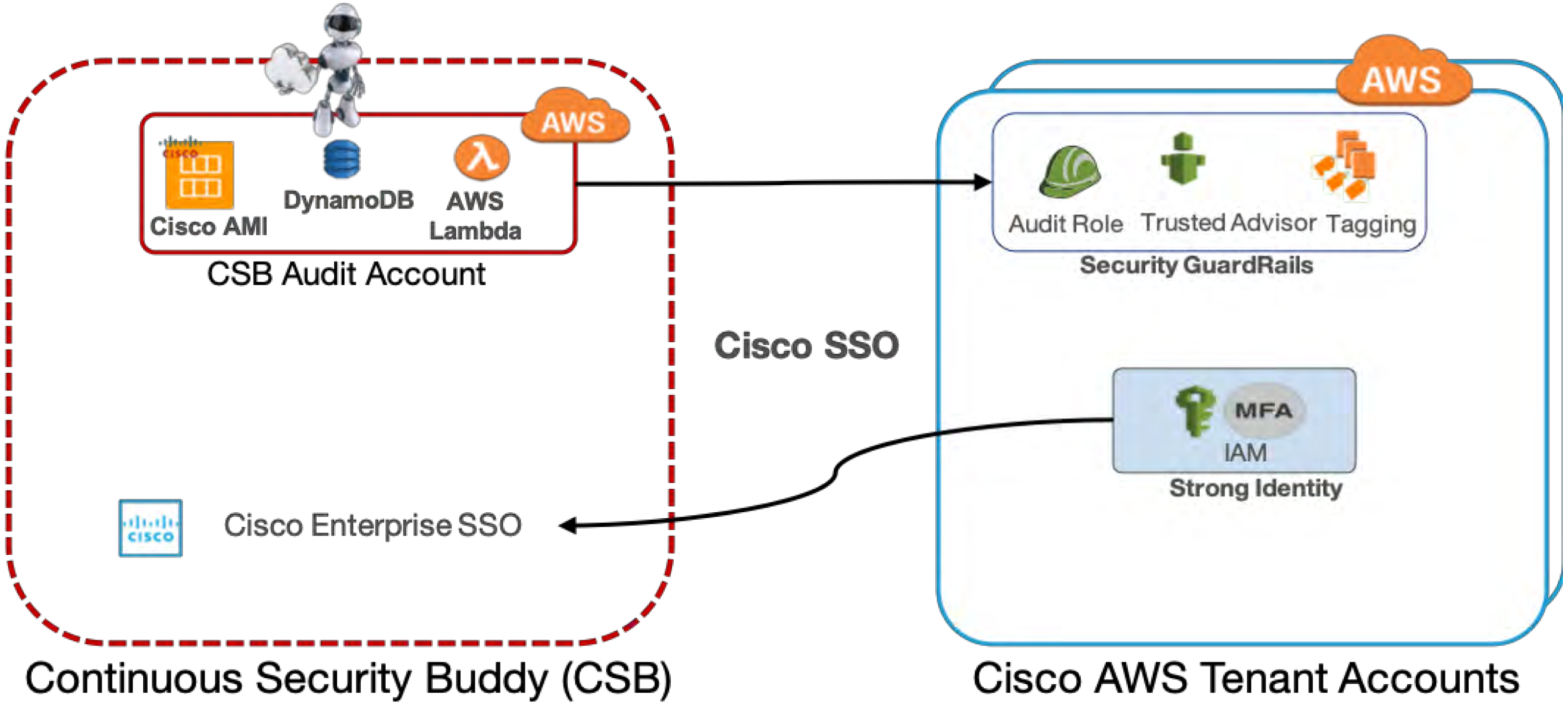


Security Metrics

Section	Section Score
1. Identity and Access Management	- 85/100
2. Network Security	- 90/100
3. Storage (S3 buckets)	- 90/100
4. Tagging	- 0/100
5. External Vulnerabilities	- 100/100
6. CIS AWS Benchmarks	- 90/100
7. Trusted Advisor Checks	- Not Scored

IAM Changes

SSO Insertion



Section 1: Identity and Access Management

Compliance Score: 85.0%

1. IAM users without MFA enabled [SEC-CRE-MULTIFAC]: [None]

2. MFA enabled on Root user? [SEC-CRE-MULTIFAC]: No

3. MFA Compliance [SEC-CRE-MULTIFAC] (0/0): 100.0%

4. Access Key Rotation Violation (90+ days) [SEC-OPS-REVOKE]: (total = 1)

    1. <root_account>

5. Cisco SSO Enabled? [SEC-CRE-SSO]: Yes

6. Login using root account (logins in last 7 days): [None]

AWS Management Console

AWS services

Find Services
You can enter names, keywords or acronyms.

Example: Relational Database Service, database, RDS

IAM

S3

CodeCommit

CloudSearch

All services

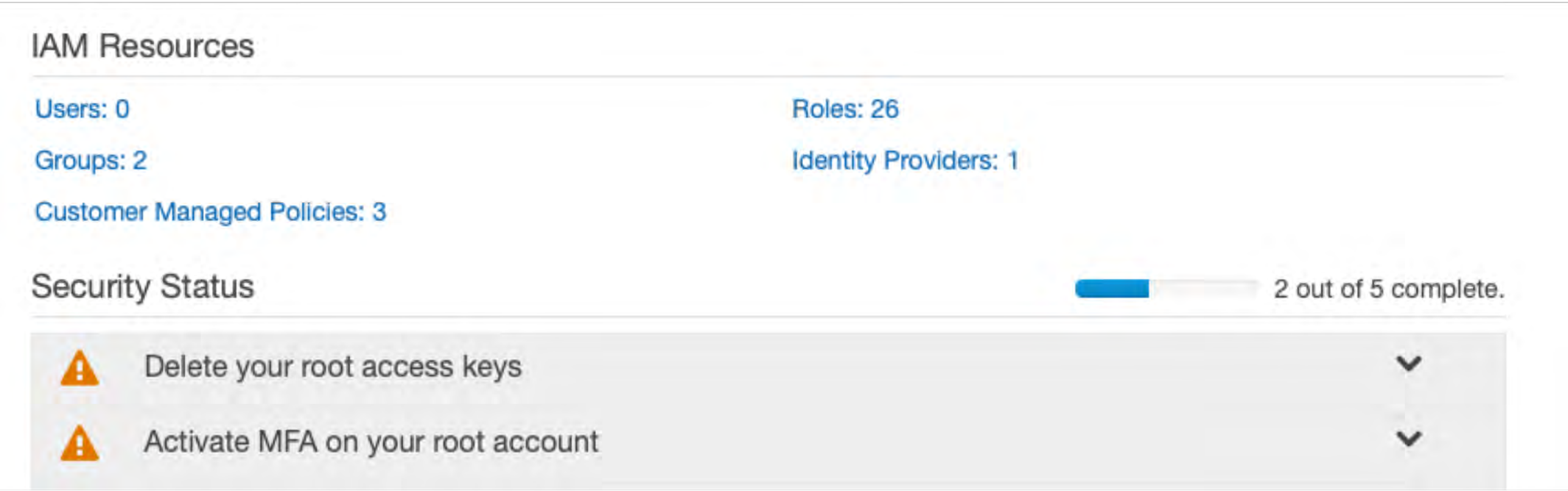
Build a solution

Get started with simple wizards and automated workflows.

Launch a virtual machine
With EC2
2-3 minutes

Build a web app
With Elastic Beanstalk
6 minutes

Build using virtual servers
With Lightsail
1-2 minutes


IAM Resources
Users: 0
Roles: 26
Groups: 2
Identity Providers: 1
Customer Managed Policies: 3
Security Status
2 out of 5 complete.
Delete your root access keys
Activate MFA on your root account

IAM Resources

Users: 0

Roles: 26

Groups: 2

Identity Providers: 1

Customer Managed Policies: 3

Security Status

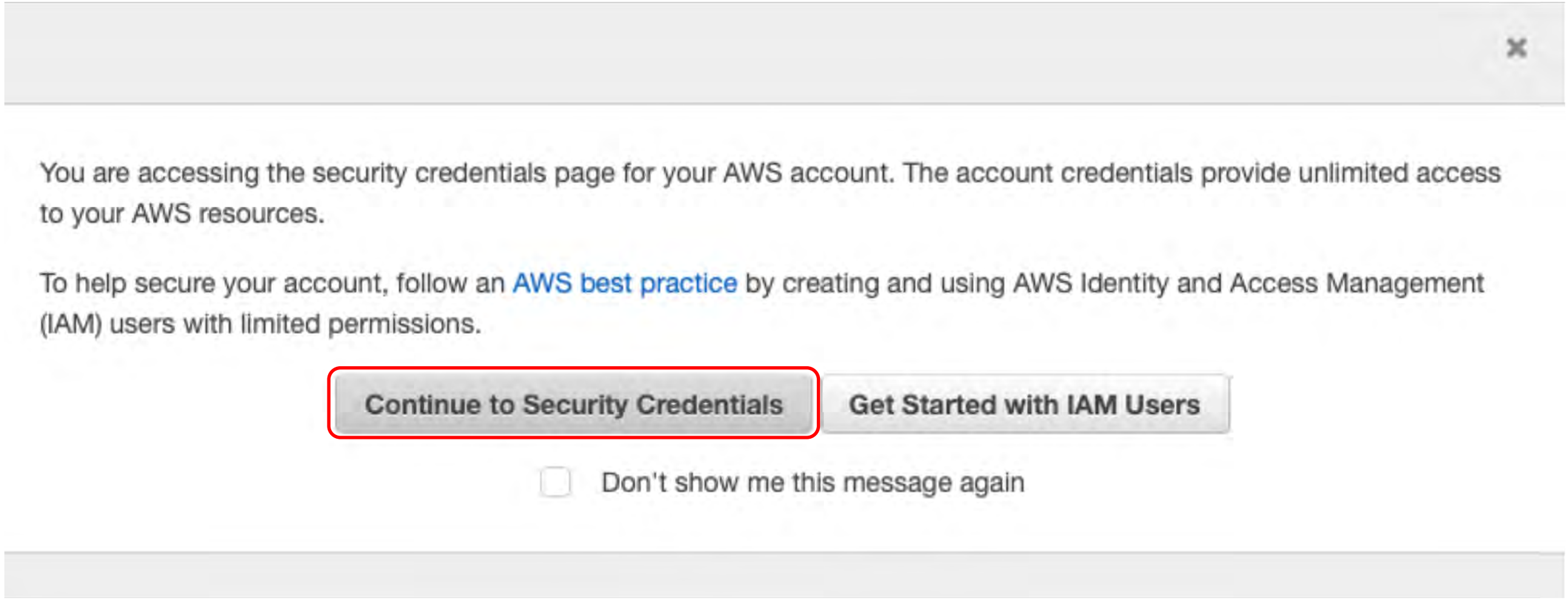
2 out of 5 complete.

Delete your root access keys

Delete your AWS root account access keys, because they provide unrestricted access to your AWS resources. Instead, use IAM user access keys or temporary security credentials. Learn More

Manage Security Credentials

Activate MFA on your root account


You are accessing the security credentials page for your AWS account. The account credentials provide unlimited access to your AWS resources.
To help secure your account, follow an AWS best practice by creating and using AWS Identity and Access Management (IAM) users with limited permissions.
Continue to Security Credentials
Get Started with IAM Users
Don't show me this message again

▲ Password

▲ Multi-factor authentication (MFA)

▼ Access keys (access key ID and secret access key)

You use access keys to sign programmatic requests to AWS services. To learn how to sign requests using your access keys, see the signing documentation . For your protection, store your access keys securely and do not share them. In addition, AWS recommends that you rotate your access keys every 90 days.

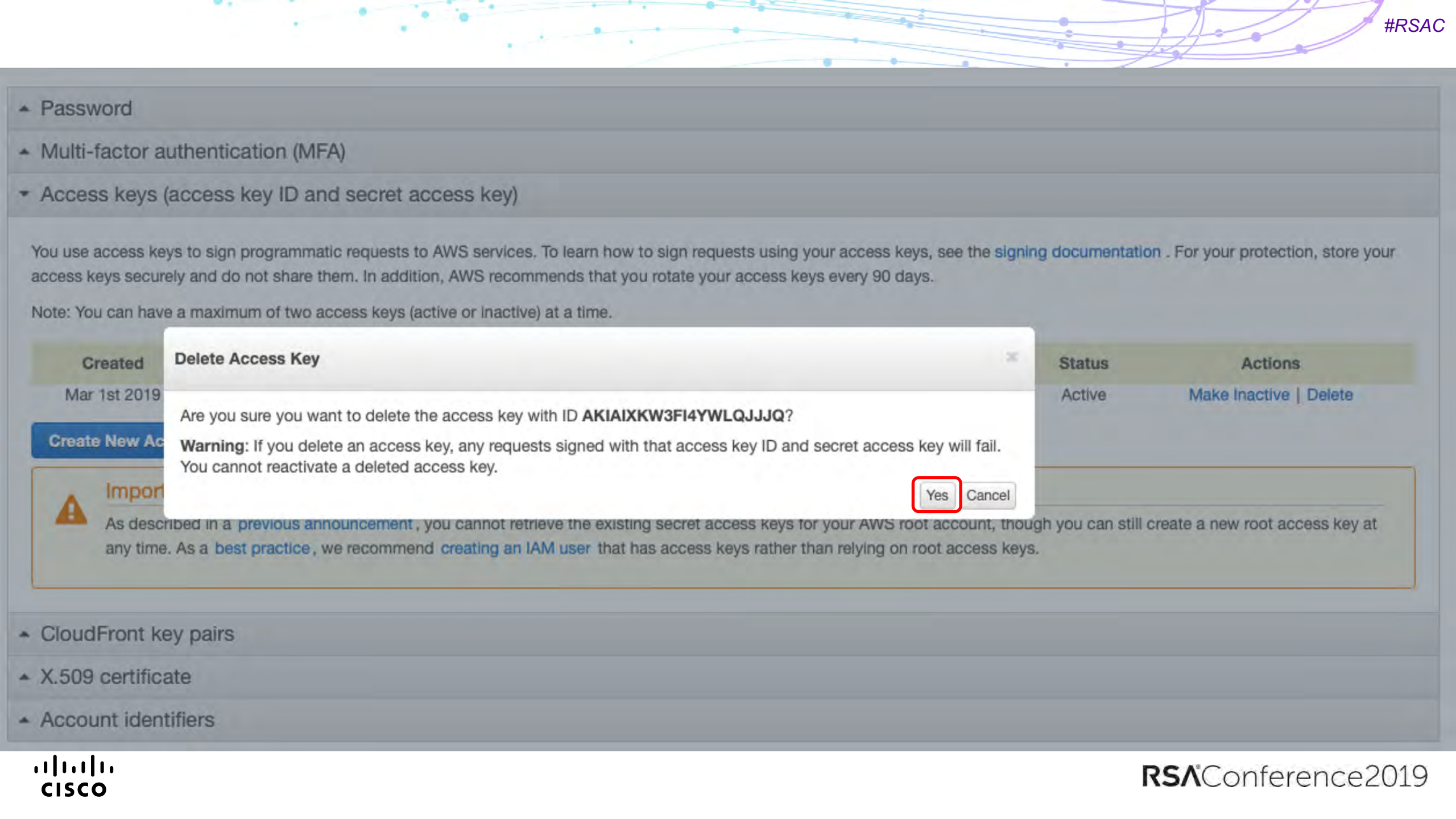
Note: You can have a maximum of two access keys (active or inactive) at a time.

Created	Deleted	Access Key ID	Last Used	Last Used Region	Last Used Service	Status	Actions
Mar 1st 2019		AKIAIXKW3FI4YWLQJJJQ	N/A	N/A	N/A	Active	Make Inactive | Delete

Create New Access Key

Important Change - Managing Your AWS Secret Access Keys

As described in a previous announcement , you cannot retrieve the existing secret access keys for your AWS root account, though you can still create a new root access key at any time. As a best practice , we recommend creating an IAM user that has access keys rather than relying on root access keys.


Password
Multi-factor authentication (MFA)
Access keys (access key ID and secret access key)
You use access keys to sign programmatic requests to AWS services. To learn how to sign requests using your access keys, see the signing documentation . For your protection, store your access keys securely and do not share them. In addition, AWS recommends that you rotate your access keys every 90 days.
Note: You can have a maximum of two access keys (active or inactive) at a time.
Created
Status
Actions
Mar 1st 2019
Active
Make Inactive | Delete
Create New Ac
Delete Access Key
Are you sure you want to delete the access key with ID AKIAIXKW3FI4YWLQJJJQ?
Warning: If you delete an access key, any requests signed with that access key ID and secret access key will fail. You cannot reactivate a deleted access key.
Yes
Cancel
Impor
As described in a previous announcement , you cannot retrieve the existing secret access keys for your AWS root account, though you can still create a new root access key at any time. As a best practice , we recommend creating an IAM user that has access keys rather than relying on root access keys.
CloudFront key pairs
X.509 certificate
Account identifiers

IAM Resources

Users: 0

Roles: 26

Groups: 2

Identity Providers: 1

Customer Managed Policies: 3

Security Status

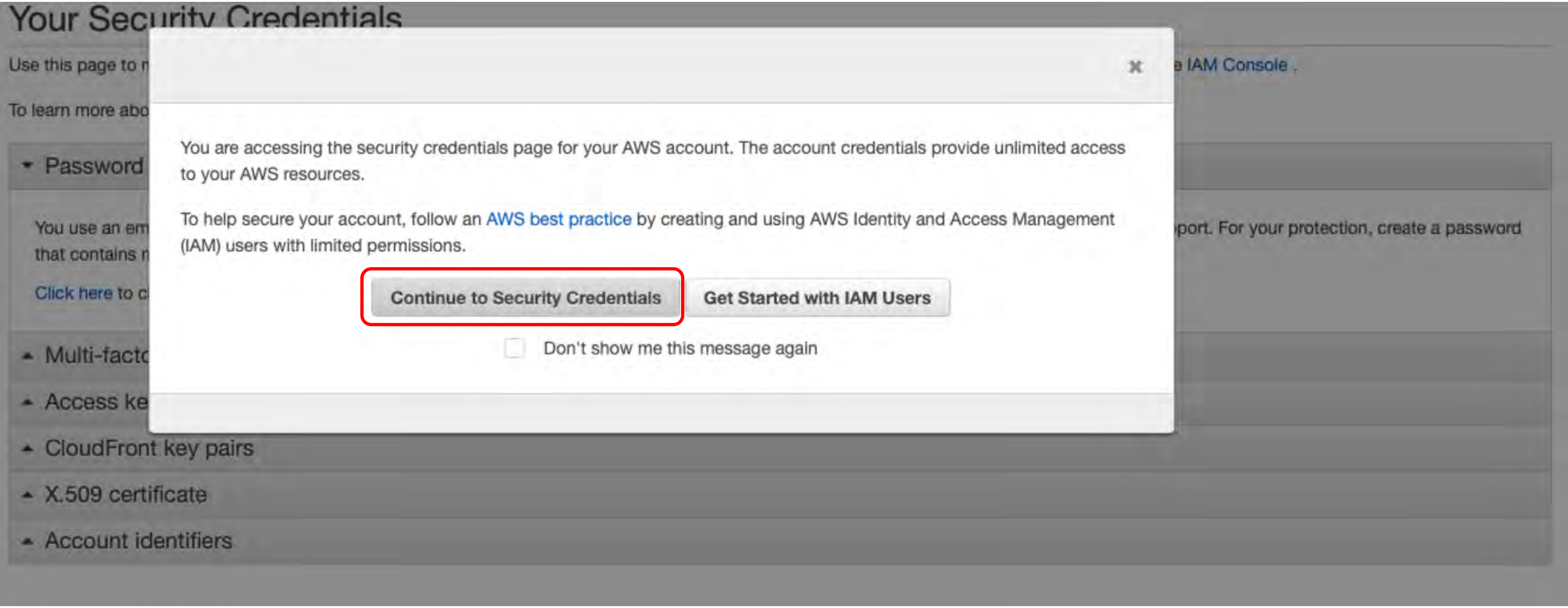
3 out of 5 complete.

Delete your root access keys

Activate MFA on your root account

Activate multi-factor authentication (MFA) on your AWS root account to add another layer of protection to help keep your account secure. Learn More

Manage MFA


Your Security Credentials
Use this page to
IAM Console .
To learn more abo
Password
You use an em
port. For your protection, create a password
that contains
Click here to c
Multi-facto
Access ke
CloudFront key pairs
X.509 certificate
Account identifiers
You are accessing the security credentials page for your AWS account. The account credentials provide unlimited access to your AWS resources.
To help secure your account, follow an AWS best practice by creating and using AWS Identity and Access Management (IAM) users with limited permissions.
Continue to Security Credentials
Get Started with IAM Users
Don't show me this message again

Your Security Credentials

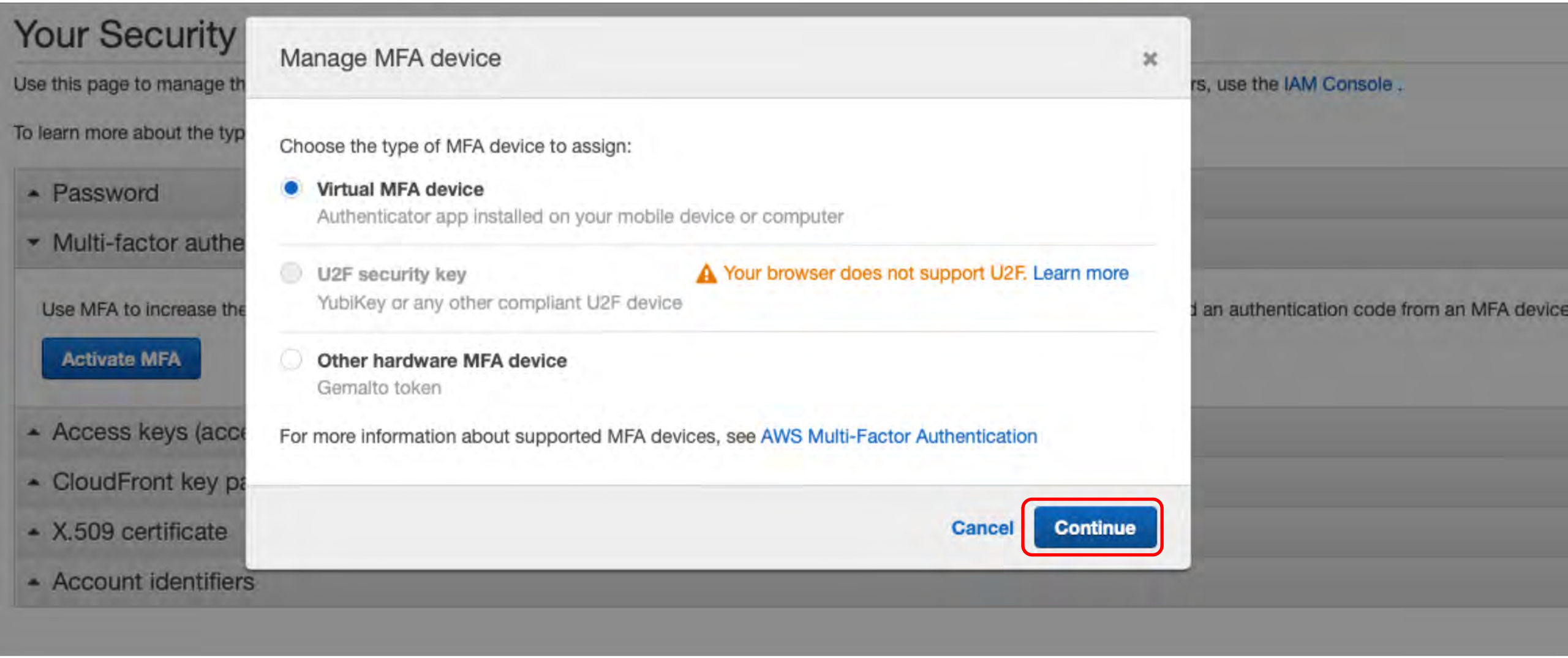
Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Management (IAM) users, use the IAM Console .

To learn more about the types of AWS credentials and how they're used, see AWS Security Credentials in AWS General Reference.

- ▲ Password
- ▼ Multi-factor authentication (MFA)

  Use MFA to increase the security of your AWS environments. Signing in to MFA-protected accounts requires a user name, password, and an authentication code from an MFA device.

  Activate MFA
- ▲ Access keys (access key ID and secret access key)
- ▲ CloudFront key pairs
- ▲ X.509 certificate
- ▲ Account identifiers


Your Security
Use this page to manage th
rs, use the IAM Console .
To learn more about the typ
Password
Multi-factor authe
Use MFA to increase the
d an authentication code from an MFA device
Activate MFA
Access keys (acce
CloudFront key pa
X.509 certificate
Account identifiers
Manage MFA device
Choose the type of MFA device to assign:
Virtual MFA device
Authenticator app installed on your mobile device or computer
U2F security key
Your browser does not support U2F. Learn more
YubiKey or any other compliant U2F device
Other hardware MFA device
Gemalto token
For more information about supported MFA devices, see AWS Multi-Factor Authentication
Cancel
Continue

Set up virtual MFA device

1. **Install a compatible app on your mobile device or computer**
   See a list of compatible applications

2. **Use your virtual MFA app and your device's camera to scan the QR code**

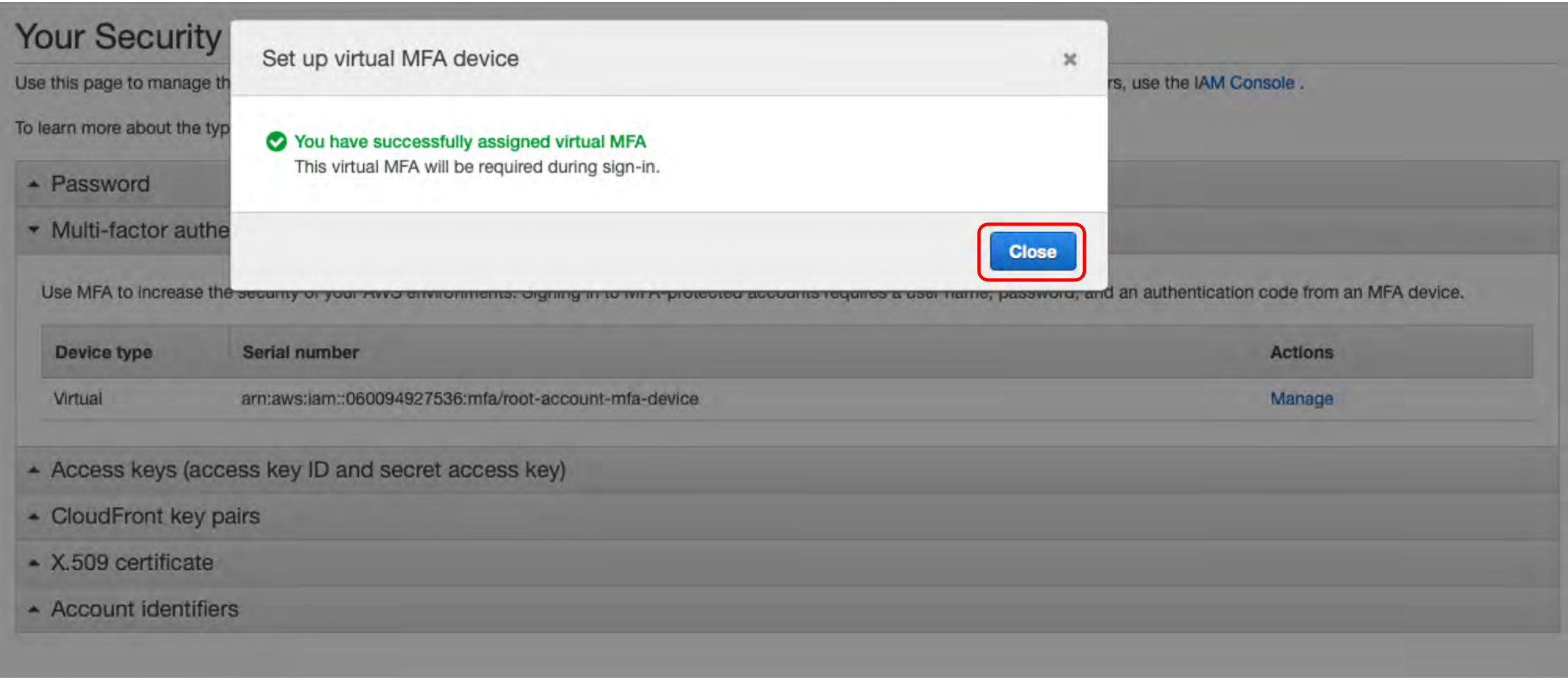
Alternatively, you can type the secret key. Show secret key

3. **Type two consecutive MFA codes below**

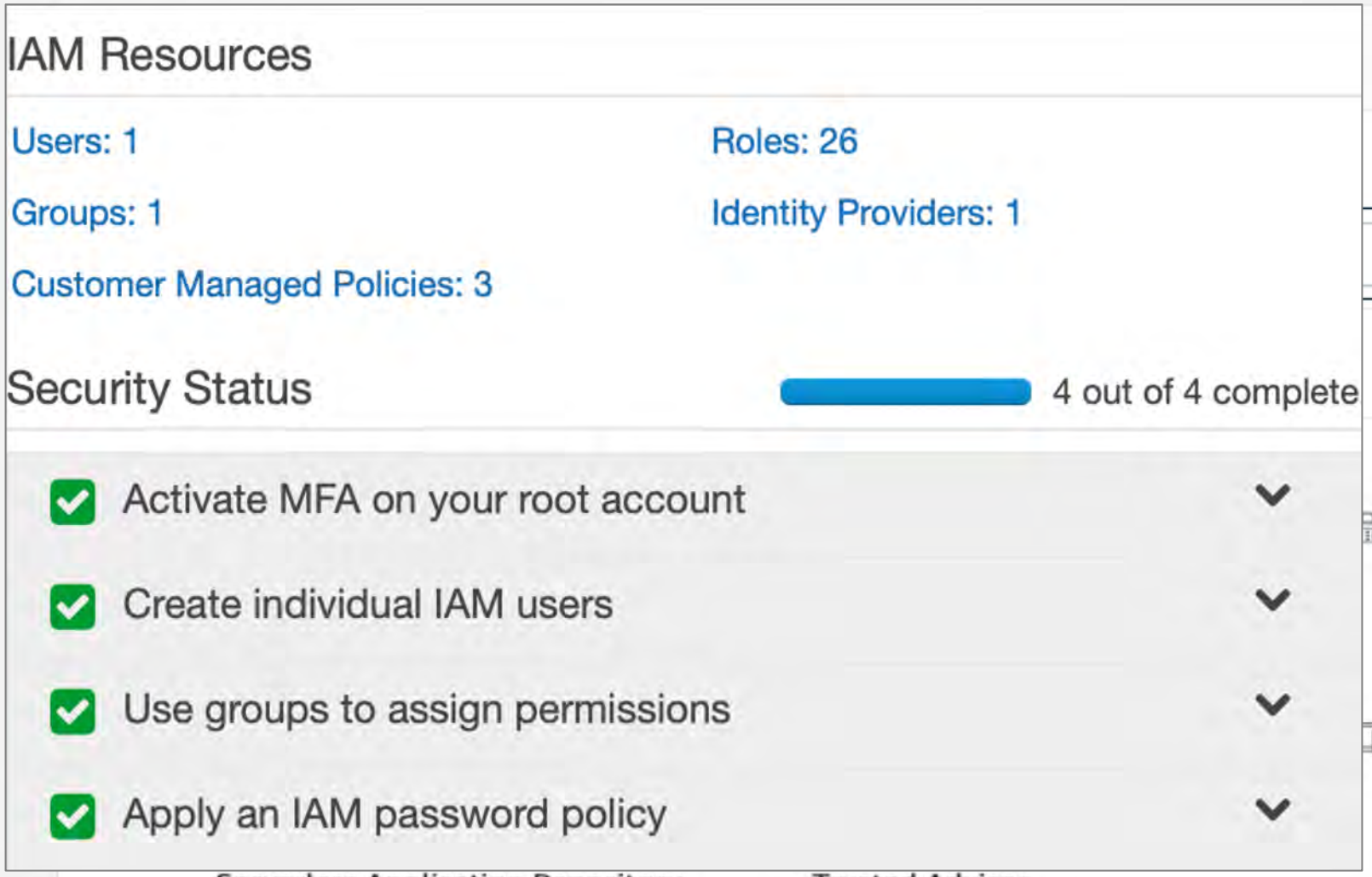
MFA code 1 590971

MFA code 2 137054

Cancel | Previous | Assign MFA


Your Security
Use this page to manage th
rs, use the IAM Console .
To learn more about the typ
Set up virtual MFA device
You have successfully assigned virtual MFA
This virtual MFA will be required during sign-in.
Close
Password
Multi-factor authe
Use MFA to increase the
and an authentication code from an MFA device.
Device type
Serial number
Actions
Virtual
arn:aws:iam::060094927536:mfa/root-account-mfa-device
Manage
Access keys (access key ID and secret access key)
CloudFront key pairs
X.509 certificate
Account identifiers

AWS Management Console



AWS Cost Management
AWS Cost Explorer
AWS Budgets
AWS Marketplace Subscriptions

Mobile
AWS Amplify
Mobile Hub
AWS AppSync
Device Farm

Serverless Application Repository
Trusted Advisor

Tagging Example

Section 4: Tagging

Compliance Score: 0.0%

1. Non-compliant Resources [SEC-OPS-ASTMGT-2]: (total = 31)

S3 Buckets: (total = 10)

1. [redacted]eu-west-1
2. [redacted]east-1
3. [redacted]
4. elasticbeanstalk-us-[redacted]
5. [redacted]

..... and 5 more

EC2 Instances: (total = 21)

1. [redacted]8e8b (us-east-1)
2. [redacted]6789 (ap-south-1)
3. [redacted]9b3c (us-east-1)
4. [redacted]05b3 (ap-south-1)

Section 4: Tagging

Compliance Score: 0.0%

1. Non-compliant Resources [SEC-OPS-ASTMGT-

S3 Buckets: (total = 10)

1. [redacted]eu-west-1
2. [redacted]east-1
3. [redacted]
4. elasticbeanstalk-us-[redacted]
5. [redacted]

..... and 5 more

EC2 Instances: (total = 21)

1. [redacted]8e8b (us-east-1)
2. [redacted]6789 (ap-south-1)
3. [redacted]9b3c (us-east-1)
4. [redacted]05b3 (ap-south-1)

fetchResources.py

```python
from xlsxwriter.utility import xl_rowcol_to_cell
import xlsxwriter
import boto3
import argparse
import json
import os, sys

regions = ['us-east-1', 'us-east-2', 'us-west-1', 'us-west-2', 'ca-central-1', 'ap-south-1', 'ap-
default_keys = ['DataClassification' ,'Environment' ,'ApplicationName', 'ResourceOwner', 'CiscoMa

def fetchResources(session):
    print ("Fetching Resources ... ")
    global default_keys
    resource_list = []
    # s3client = session.client('s3')
    s3client = session.client('s3', config= boto3.session.Config(signature_version='s3v4'))

    tags = {}
    for key in default_keys:
        tags[key] = 'DEFAULT'

    permissible_tags_with_space = ['Data Classification', 'Environment',  'Application Name', 'Re
    permissible_tags_without_space = ['DataClassification', 'Environment', 'ApplicationName', 'Re
    permissible_tags = permissible_tags_without_space+permissible_tags_with_space

    response = s3client.list_buckets()

    print ("Fetching Tags for S3 Buckets ... ")
    for bucket in response['Buckets']:
        # print ("Fetching Tags for S3 BUCKET ... "+bucket['Name'])
        resourceTags = {}
        bucketData = {}
        bucketData['resourceType'] = 'S3 Bucket'
        bucketData['resourceName'] = bucket['Name']
        try:
            response = s3client.get_bucket_tagging(Bucket=bucket['Name'])
            if "TagSet" in response:
                ## Checking if any security tags already exist for the resource. If yes,
```

Section 4: Tagging

Compliance Score: 0.0%

1. Non-compliant Resources [SEC-OPS-ASTMGT-

```
bparriot@ubuntu: ~/csb_tenant/csb/src/aws/scripts/resource_tagging
bparriot@ubuntu:~/csb_tenant/csb/src/aws/scripts/resource_tagging$ python ./fetchResources.py
Fetching Resources ...
Fetching Tags for S3 Buckets ...
Fetching Tags for EC2 Instances ...
Fetching Tags for EC2 Instances ...
Fetching Tags for EC2 Instances ...
Fetching Tags for EC2 Instances ...
Fetching Tags for EC2 Instances ...
Fetching Tags for EC2 Instances ...
```

5. [redacted]

..... and 5 more

EC2 Instances: (total = 21)

1. [redacted]8e8b (us-east-1)
2. [redacted]6789 (ap-south-1)
3. [redacted]9b3c (us-east-1)
4. [redacted]05b3 (ap-south-1)

fetchResources.py

```
1  from xlsxwriter.utility import xl_rowcol_to_cell
2  import xlsxwriter
3  import boto3
4  import argparse
5  import json
                                                                    ', 'us-west-2', 'ca-central-1', 'ap-south-1', 'ap-
                                                                    ent' ,'ApplicationName', 'ResourceOwner', 'CiscoMa
                                                                    3.session.Config(signature_version='s3v4'))
19      for key in default_keys:
20          tags[key] = 'DEFAULT'
21
22      permissible_tags_with_space = ['Data Classification', 'Environment',  'Application Name', 'Re
23      permissible_tags_without_space = ['DataClassification', 'Environment', 'ApplicationName', 'Re
24      permissible_tags = permissible_tags_without_space+permissible_tags_with_space
25
26      response = s3client.list_buckets()
27
28      print ("Fetching Tags for S3 Buckets ... ")
29      for bucket in response['Buckets']:
30          # print ("Fetching Tags for S3 BUCKET ... "+bucket['Name'])
31          resourceTags = {}
32          bucketData = {}
33          bucketData['resourceType'] = 'S3 Bucket'
34          bucketData['resourceName'] = bucket['Name']
35          try:
36              response = s3client.get_bucket_tagging(Bucket=bucket['Name'])
                if "TagSet" in response:
                    ## Checking if any security tags already exist for the resource. If yes,
```

Section 4: Tagging

Compliance Score: 0.0%

1. Non-compliant Resource

S3 Buckets: (total = 1

1. [redacted]
2. [redacted]
3. [redacted]
4. elasticbeanstalk
5. [redacted]

..... and 5 more

EC2 Instances: (total

1. [redacted]
2. [redacted]
3. [redacted]
4. [redacted]

RESOURCE NAME (RESOURCE TYPE)	RESOURCE TAG (KEY)	RESOURCE TAG (VALUE)
DEFAULT RESOURCE (DEFAULT TYPE)	**DataClassification**	**NONE**
	Environment	**NONE**
	ApplicationName	**NONE**
	ResourceOwner	**NONE**
	CiscoMailAlias	**NONE**
	DataTaxonomy	**NONE**
[redacted]testbucket (S3 Bucket)	ApplicationName	DEFAULT
	CiscoMailAlias	DEFAULT
	Environment	DEFAULT
	DataClassification	DEFAULT
	DataTaxonomy	DEFAULT
	ResourceOwner	DEFAULT
csirt-api-logs[redacted]36 (S3 Bucket)	ApplicationName	DEFAULT
	CiscoMailAlias	DEFAULT
	Environment	DEFAULT
	DataClassification	Cisco Highly Confidential
	DataTaxonomy	Telemetry Data+Cisco Oper
	ResourceOwner	DEFAULT
s3accesslogs-[redacted]us-east-1 (S3 Bucket)	ApplicationName	Logging Bucket
	CiscoMailAlias	[redacted]@cisco.com
	Environment	Sandbox
	DataClassification	Cisco Highly Confidential
	DataTaxonomy	DEFAULT
	ResourceOwner	bparriot
[redacted]b (EC2 Instance)	ApplicationName	DEFAULT
	Environment	DEFAULT
	DataClassification	DEFAULT
	DataTaxonomy	DEFAULT
	CiscoMailAlias	DEFAULT
	ResourceOwner	DEFAULT

```
us-west-2', 'ca-central-1', 'ap-south-1', 'ap-
,'ApplicationName', 'ResourceOwner', 'CiscoMa

ession.Config(signature_version='s3v4'))

tion', 'Environment',  'Application Name', 'Re
cation', 'Environment', 'ApplicationName', 'Re
ce+permissible_tags_with_space

+bucket['Name'])

Bucket=bucket['Name'])

ready exist for the resource. If yes
```

Section 4: Tagging

Compliance Score: 0.0%

1. Non-compliant Resource

S3 Buckets: (total = 1

```
bparriot@ubuntu:~/csb_tenant/csb/src/aws/scripts/resource_tagging$ python ./tagResources.py
Processing Sheet and validating Tags ...
No file errors found
Setting up default values ...
write to AWS
Creating Resource Tags ...
Creating TagSet ...
Added Tags for S3 Bucket:
Creating TagSet ...
Added Tags for S3 Bucket:
Creating TagSet ...


Creating TagSet ...
Added Tags for EC2 Instance:
```

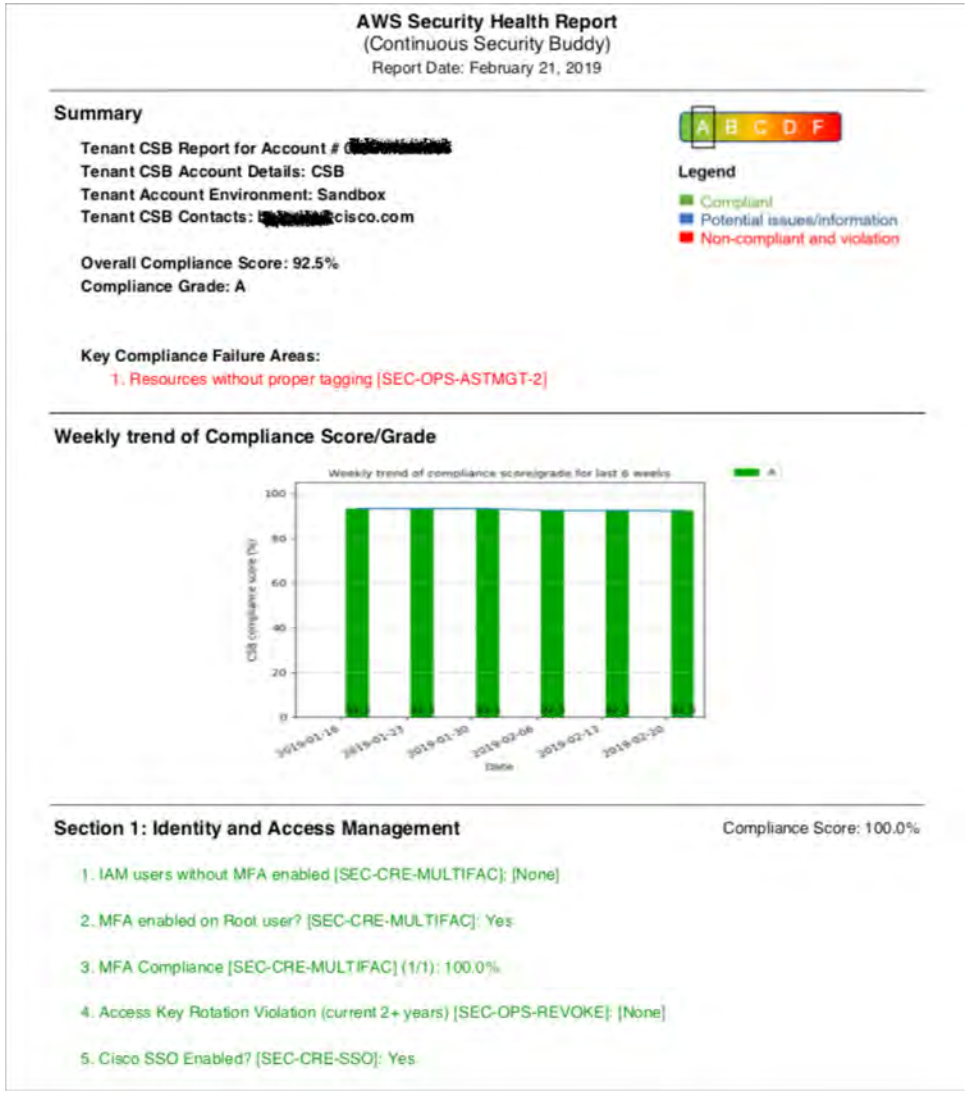
1. [redacted]
2. [redacted]
3. [redacted]
4. [redacted]

RESOURCE NAME (RESOURCE TYPE)	RESOURCE TAG (KEY)	RESOURCE TAG (VALUE)
DEFAULT RESOURCE (DEFAULT TYPE)	**DataClassification**	**NONE**
	Environment	**NONE**
	ApplicationName	**NONE**
	ResourceOwner	**NONE**
	CiscoMailAlias	**NONE**
	DataTaxonomy	**NONE**
[redacted]estbucket (S3 Bucket)	ApplicationName	DEFAULT
	Environment	Sandbox
	DataClassification	Cisco Highly Confidential
	DataTaxonomy	DEFAULT
	ResourceOwner	bparriot
[redacted]b (EC2 Instance)	ApplicationName	DEFAULT
	Environment	DEFAULT
	DataClassification	DEFAULT
	DataTaxonomy	DEFAULT
	CiscoMailAlias	DEFAULT
	ResourceOwner	DEFAULT

```
us-west-2', 'ca-central-1', 'ap-south-1', 'ap-
,'ApplicationName', 'ResourceOwner', 'CiscoMa

ession.Config(signature_version='s3v4'))

dential
sco Oper

tion', 'Environment',  'Application Name', 'Re
cation', 'Environment', 'ApplicationName', 'Re
ce+permissible_tags_with_space

m

+bucket['Name'])

Bucket=bucket['Name'])

ready exist for the resource. If yes
```

Report Post-Remediation

Daily Reporting



AWS Security Health Report
(Continuous Security Buddy)
Report Date: February 21, 2019

Summary

Tenant CSB Report for Account # [redacted]
Tenant CSB Account Details: CSB
Tenant Account Environment: Sandbox
Tenant CSB Contacts: [redacted]cisco.com

Overall Compliance Score: 92.5%
Compliance Grade: A

A B C D F

Legend
Compliant
Potential issues/information
Non-compliant and violation

Key Compliance Failure Areas:
1. Resources without proper tagging [SEC-OPS-ASTMGT-2]

Weekly trend of Compliance Score/Grade

Weekly trend of compliance score/grade for last 6 weeks

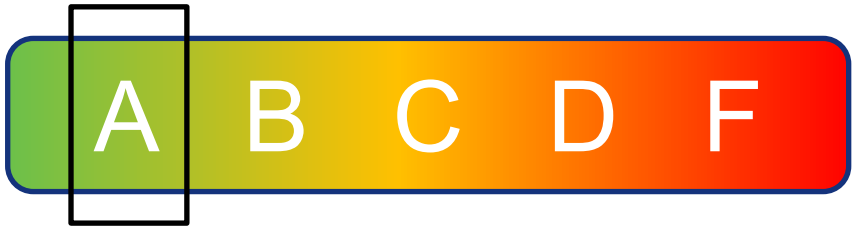
CSB compliance score (%)

Date

Section 1: Identity and Access Management Compliance Score: 100.0%

1. IAM users without MFA enabled [SEC-CRE-MULTIFAC]: [None]
2. MFA enabled on Root user? [SEC-CRE-MULTIFAC]: Yes
3. MFA Compliance [SEC-CRE-MULTIFAC] (1/1): 100.0%
4. Access Key Rotation Violation (current 2+ years) [SEC-OPS-REVOKE]: [None]
5. Cisco SSO Enabled? [SEC-CRE-SSO]: Yes

Overall Risk Score:



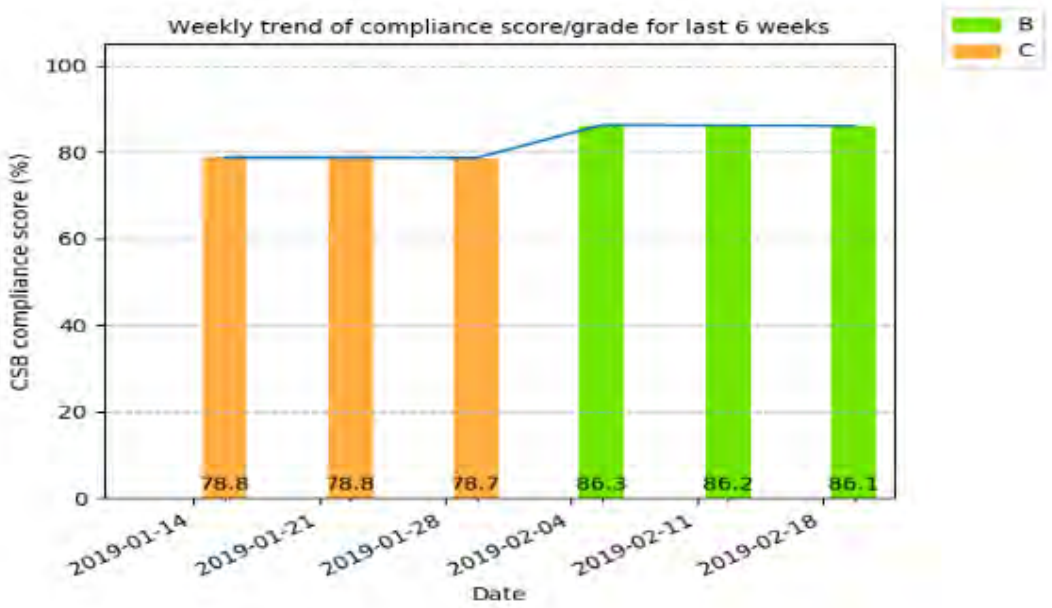
Security Metrics

Section	Section Score
1. Identity and Access Management	- 100/100
2. Network Security	- 90/100
3. Storage (S3 buckets)	- 100/100
4. Tagging	- 90/100
5. External Vulnerabilities	- 100/100
6. CIS AWS Benchmarks	- 100/100
7. Trusted Advisor Checks	- Not Scored

Benefits of CSIRT Integration with CSB

- Enables CSIRT monitoring for each tenant at the:
  - IaaS/platform level
  - NetFlow/VPC Flow level
  - VM/OS level
- Daily CSB reports encourage tenants to improve their scores, reduce their risk of compromise
- When security incidents do occur, CSB provides CSIRT with:
  - Ability to track down owners of Cisco's cloud tenants quickly
  - Quick view into known tenant security gaps
  - Investigator capability in tenant environment
  - Simplifies incident reporting automation
- MTTD improved by automated play runs and case creation
- MTTC improved by automated tenant attribution

Weekly trend of Compliance Score/Grade



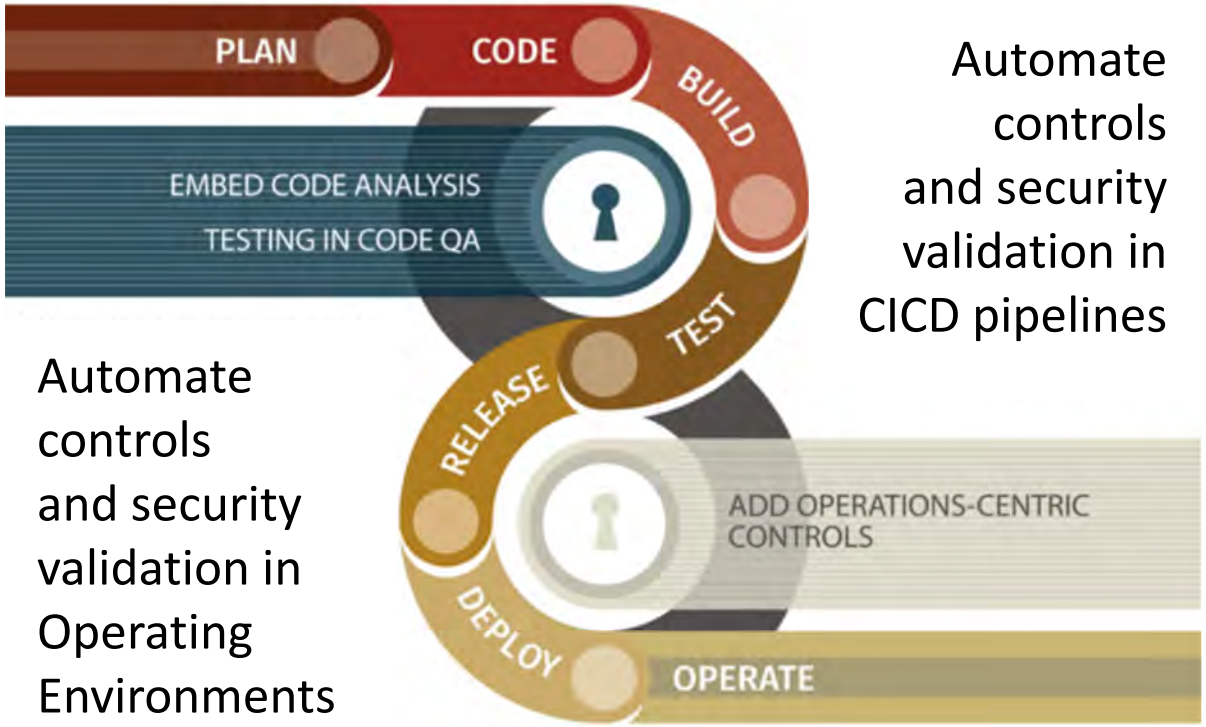
Good Security Posture Requires Continuous Security Monitoring

- *March/April 2018*: Tenant installs CSB, CSB reports many security best practice violations
- *April 2018:* Tenant has a case for EC2 instances compromised
- *May 2018*: Bad security behavior continues, tenant has another case for EC2 instance compromised
- *June 2018:* Some improvement in security posture but not enough; another EC2 instance pwned
- *July-Present:* Up and down case trend continues, tenant still needs work on security posture

XaaS Offering ABC With 11 AWS Accounts

DevSecOps: Results

Delivered Continuous Security Buddy (CSB)



Automate controls and security validation in CICD pipelines

Automate controls and security validation in Operating Environments

Speed: Consistently Implementing Security in Cloud Tenants

3 Weeks -> 4 hours

Scale: Adoption Rate

Offers with CSB
35% at 3 months
72% in 9 months
89% <12 months

Value: Issues Identified and Remediated via Automation

97% of Cisco Cloud Service Offerings have on average 'A' or 'B' Security Report Grade

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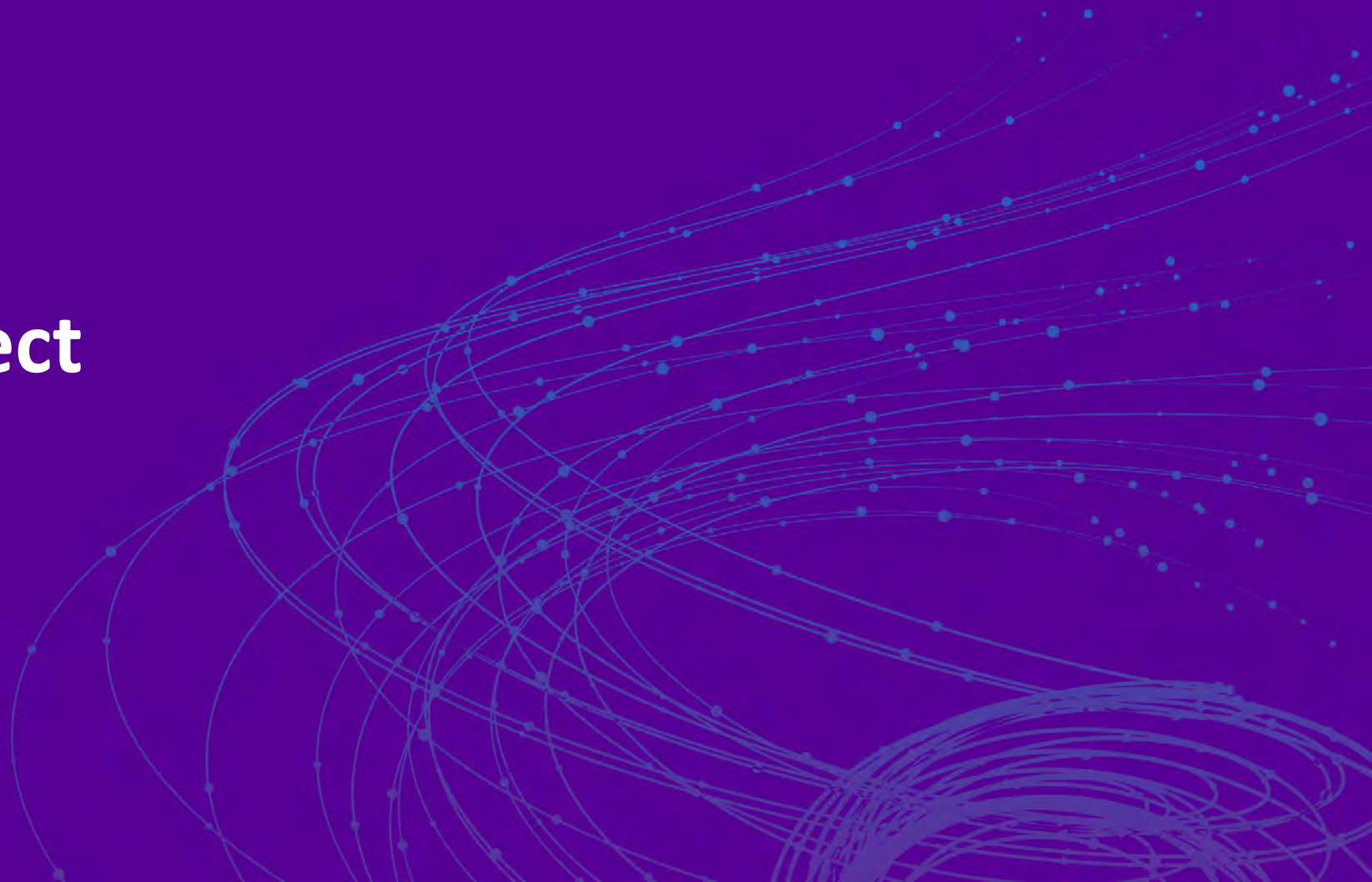
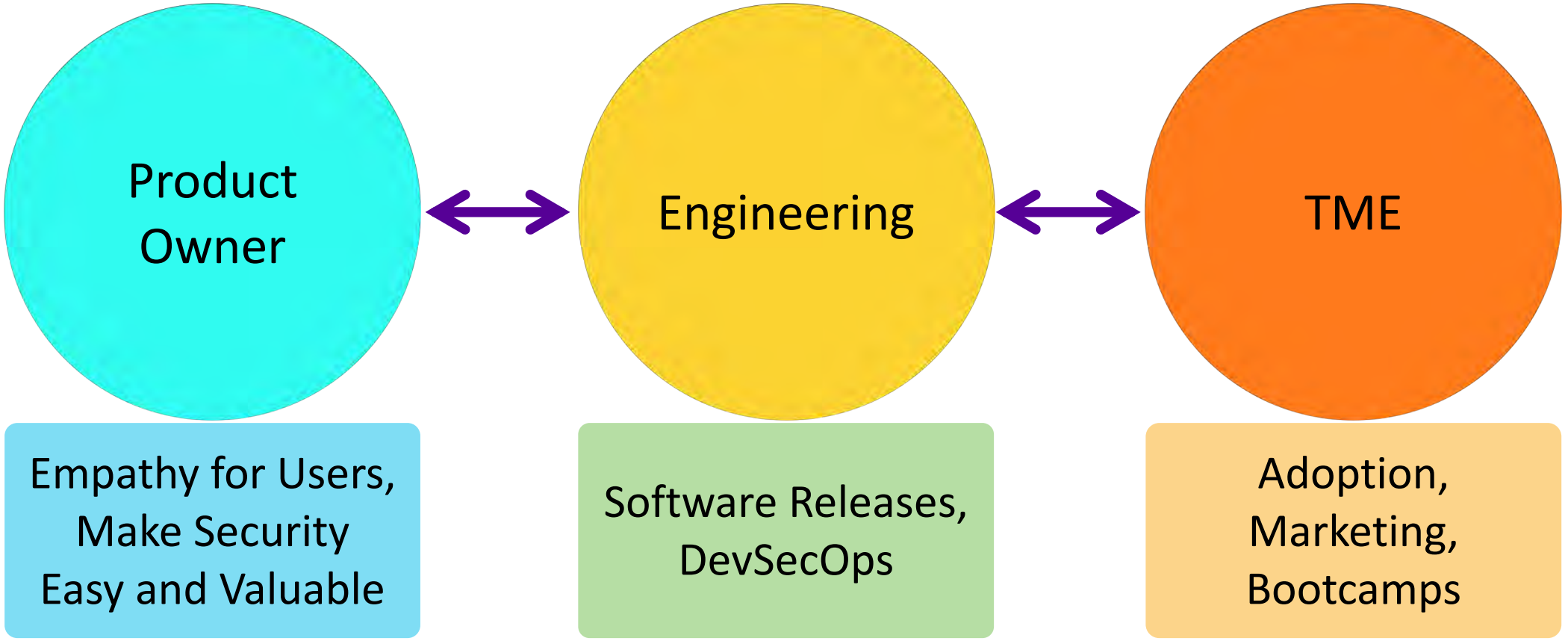
Cultural Effect



Operating as a Product Team



Better Together

Collaboration with Engineering Business Units

"I easily saved 40 hours during each CATO project associated to defining what was wrong and how to fix it. This along with internal lessons learned is what enabled me to shave a full month off the second CATO effort."

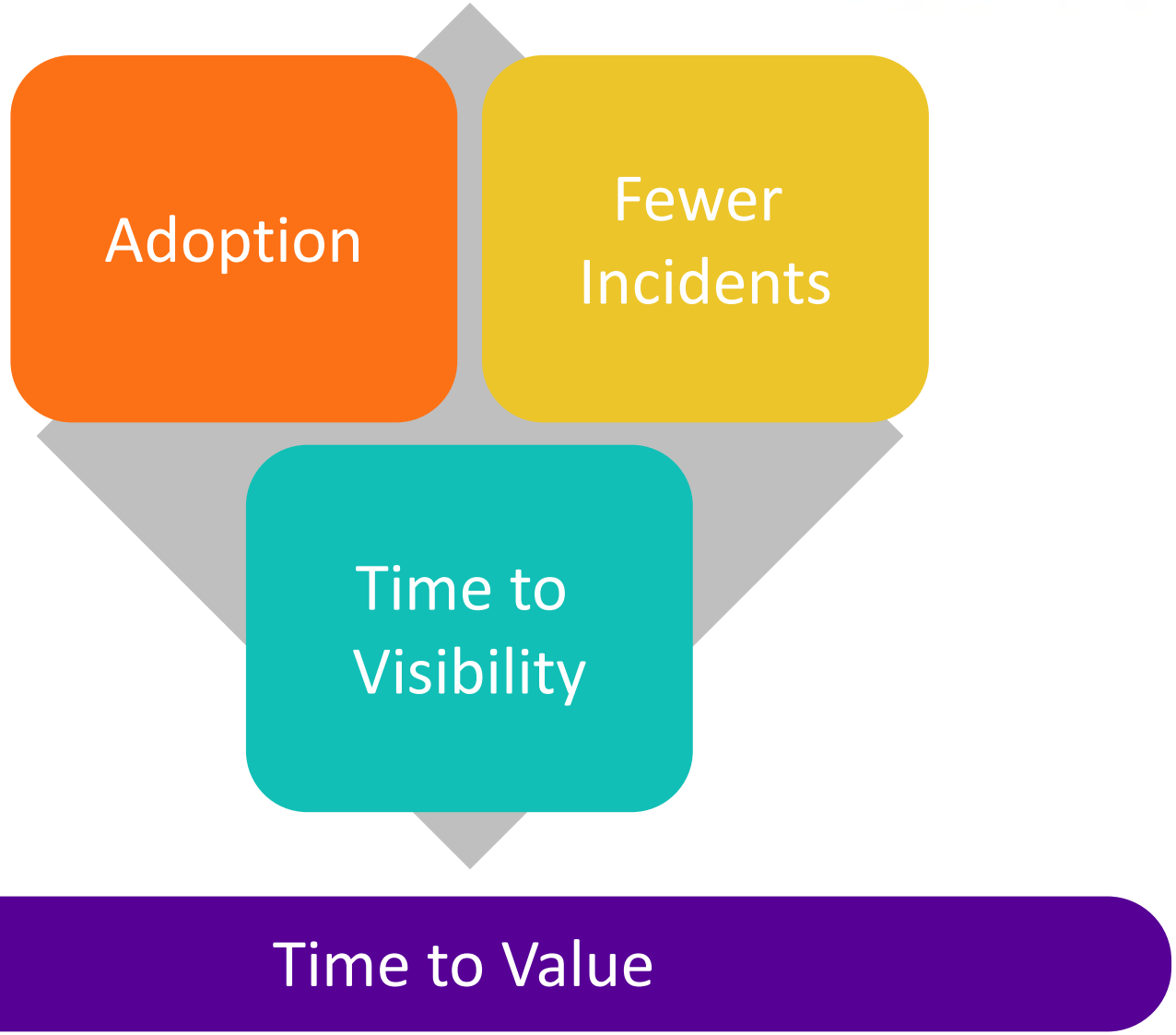
~ Software Engineer

InfoSec Operations Effectiveness

"CSB was instrumental in investigating a customer-impacting incident. Had the team done one of the top 3 CSB findings, the incident could have been avoided."

~ CSIRT Manager

Success Criteria



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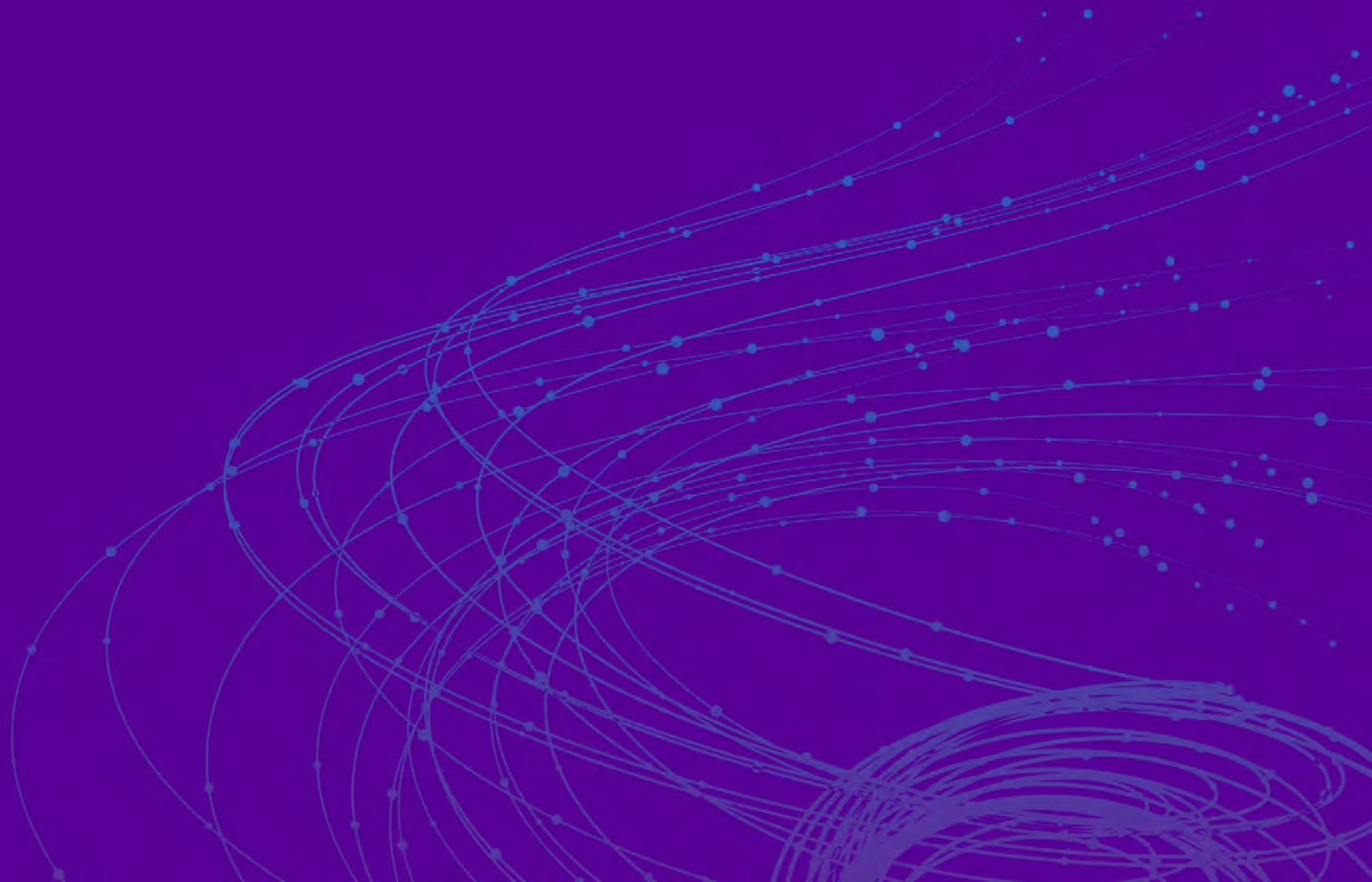
Next Steps



Progress

- Rinse and repeat with other cloud platforms
- Move up the stack
- Integrating in to CI/CD pipelines
- Programmable Network access policies based on Posture
- Infosec DevSecOps team as Customer Zero

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Lessons Learned

Key Takeaways

- Start on this journey… don’t wait!
- Everything is code
- Collaborative Approach: Dev + Sec + Ops
- Only way to achieve speed and scale
- Get a win and keep going

Learn More

DevSecOps: Win-Win for All
https://blogs.cisco.com/security/devsecops-win-win-for-all

DevSecOps: Security at the Speed of Business
https://blogs.cisco.com/security/devsecops-security-at-the-speed-of-business

DevSecOps: Automation for Assurance
https://blogs.cisco.com/security/devsecops-automation-for-assurance

DevSecOps: Lessons Learned
https://blogs.cisco.com/security/devsecops-lessons-learned

Apply What You Have Learned Today

- Next week:
  - Identify where to start your DevSecOps Practice
- Within 3 months:
  - Prioritize use-cases and hold a Hackathon
  - Publish Security Guardrails
- Within 6 months:
  - Automate few of the Guardrails (MVP)
  - Embed automation in the appropriate systems to drive adoption
  - Start a feedback loop with users and iterate

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Thank you!

@CiscoSecurity

trust.cisco.com