AWS re:Invent

WPS316-R

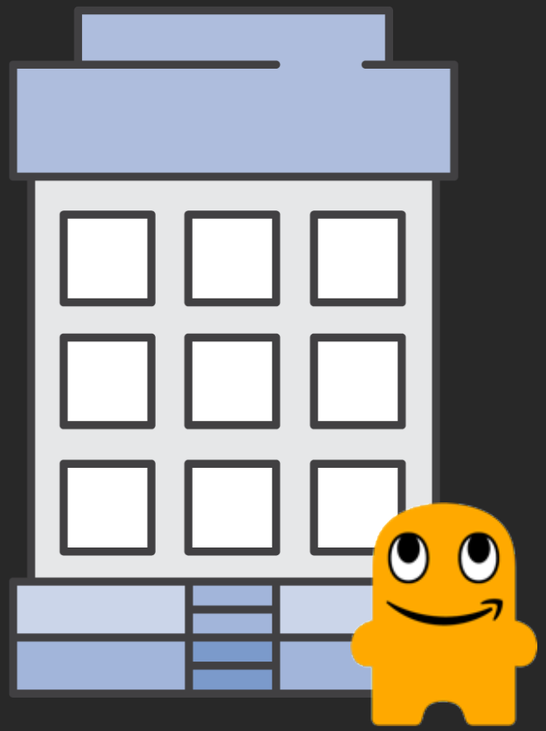
Getting started in AWS GovCloud (US)

Derek Doerr
Senior Solutions Architect
Worldwide Public Sector
Amazon Web Services

AWS re:Invent

aws

Your requirements . . .



Security

Resilience

Multi-Region

US Data Sovereignty

Scalability

FedRAMP

Database

IaaS Services

US Persons Only

Storage

Multi-AZ

ATO

ITAR

Compliance Services

PaaS Services

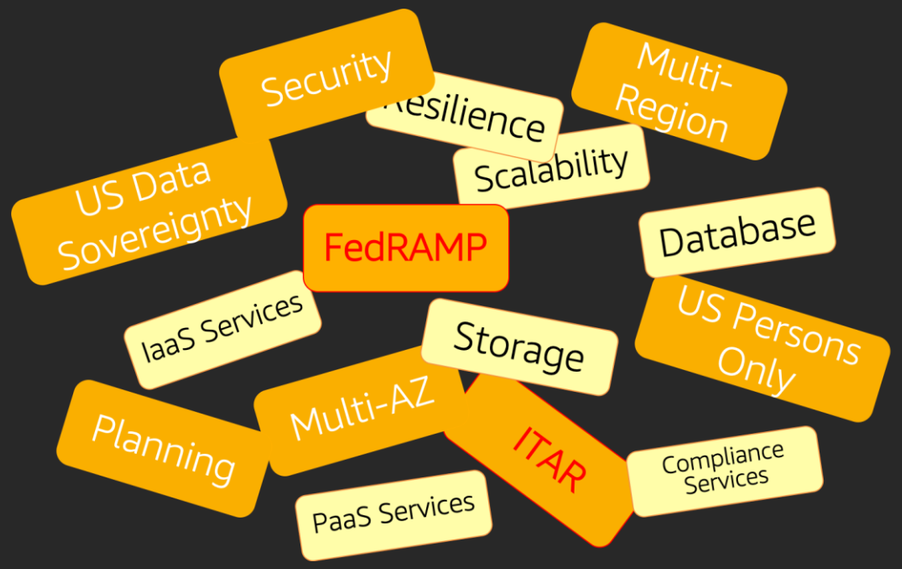
Why do we need FedRAMP?

- Mandatory per OMB for cloud services that hold federal data
- ”Do once, use many times” framework
  - Saves government cost—work smarter, not harder
  - Reduces redundant reviews
- Provides tailored set of NIST SP 800-53 security controls
  - Selected to provide protection in cloud environments
  - Subsets defined for FIPS 199 Low, Moderate, and High categorizations
- Established a Joint Authorization Board (JAB)
  - CIOs from DoD, DHS & GSA
  - Establish accreditation standards for 3rd party assessors of cloud solutions

This is how we get assurance about security OF the cloud!

How can public sector and highly regulated customers move their most sensitive workloads to the AWS Cloud?

Governance at Scale framework



Align controls to your security control matrix (SCM); accelerate security authorizations, provide continuous monitoring and configuration management, and enforce security controls

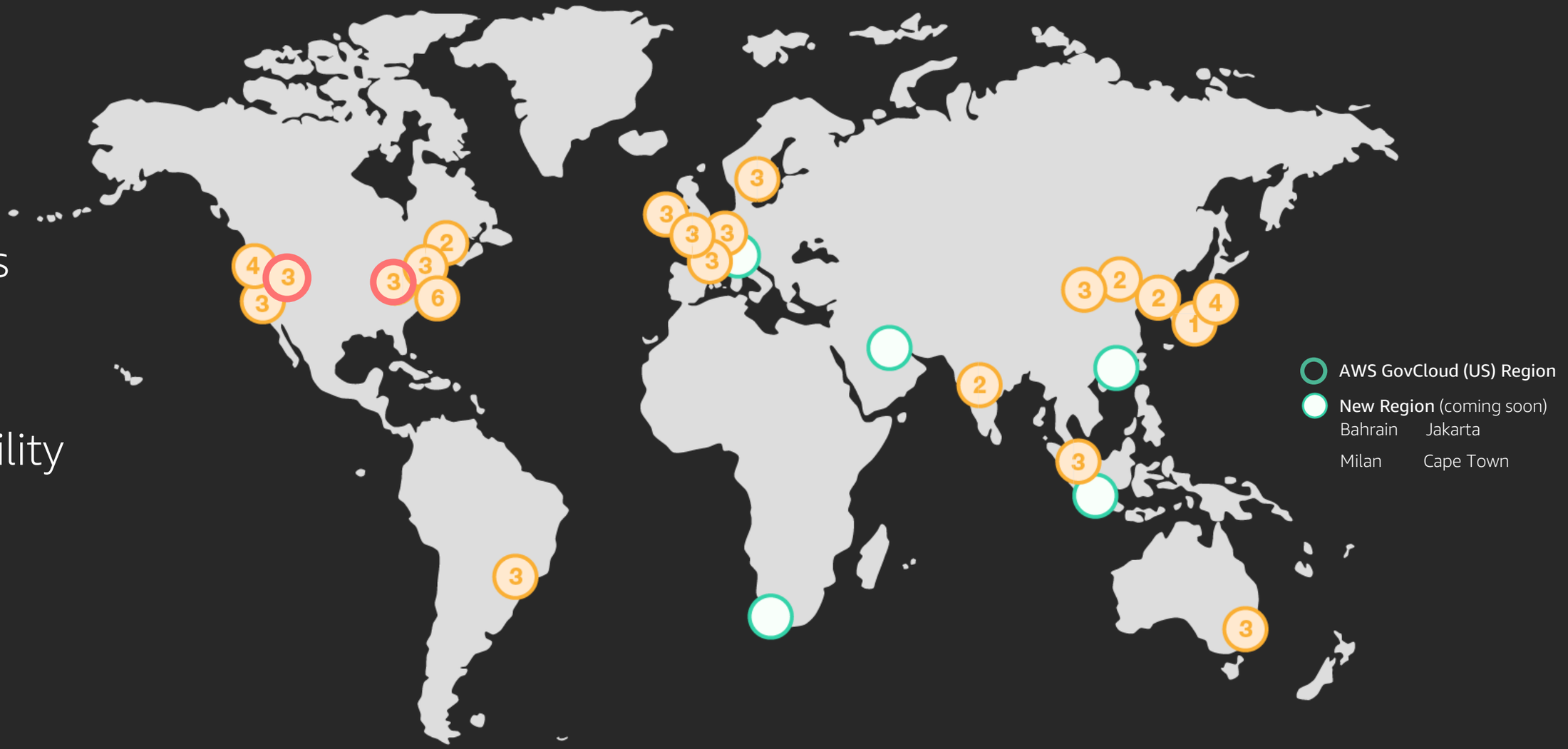
Governance at Scale

- **Account Management** — Align AWS accounts with the organization; standardize and streamline provisioning, maintenance, and access control policies for many AWS accounts and workloads
- **Cost Management** — Align funding sources; ensure AWS accounts don't exceed budget; roll-up/down; real-time
- **Compliance Automation**

AWS global infrastructure

21
Regions

66
Availability Zones



AWS GovCloud (US)

Isolated AWS infrastructure and services for customers with strict regulatory and compliance requirements and sensitive data

August 2011

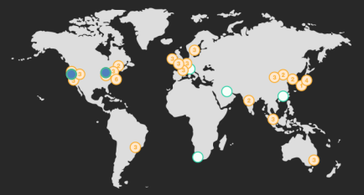
Launch of AWS GovCloud (US-West) Region

November 2018

Launch of AWS GovCloud (US-East) Region

Addresses the most stringent US Government regulations, policies, and security requirements

AWS GovCloud (US) distinguishing features

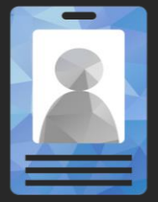


2 AWS GovCloud (US) regions

Bicoastal infrastructure and services for regulated workloads

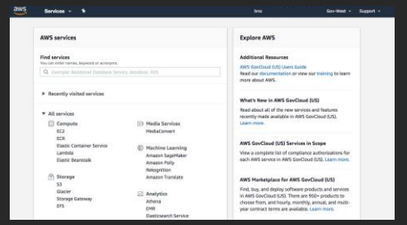
Data, network, and machine isolation

Separate AZs, endpoints



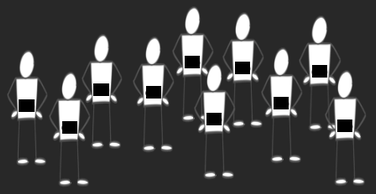
Unique authentication

Unique AWS GovCloud (US) credentials



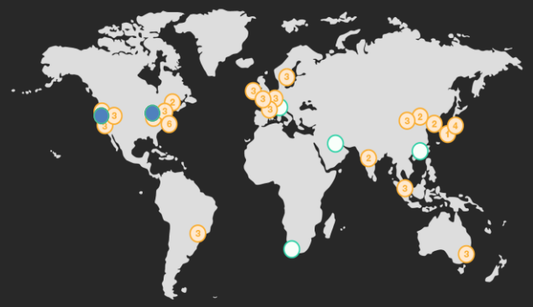
Dedicated AWS GovCloud (US) management console

Managed by US citizens on US soil



“Community Cloud” with restricted access

Key takeaways



AWS GovCloud (US)

Is it right for your workload?

NIST Accelerator

Use as a reference point for your Security Control Matrix

Pathway to ATO

Next Steps

How do I get started with architecting and migrating sensitive and regulated workloads in the cloud?

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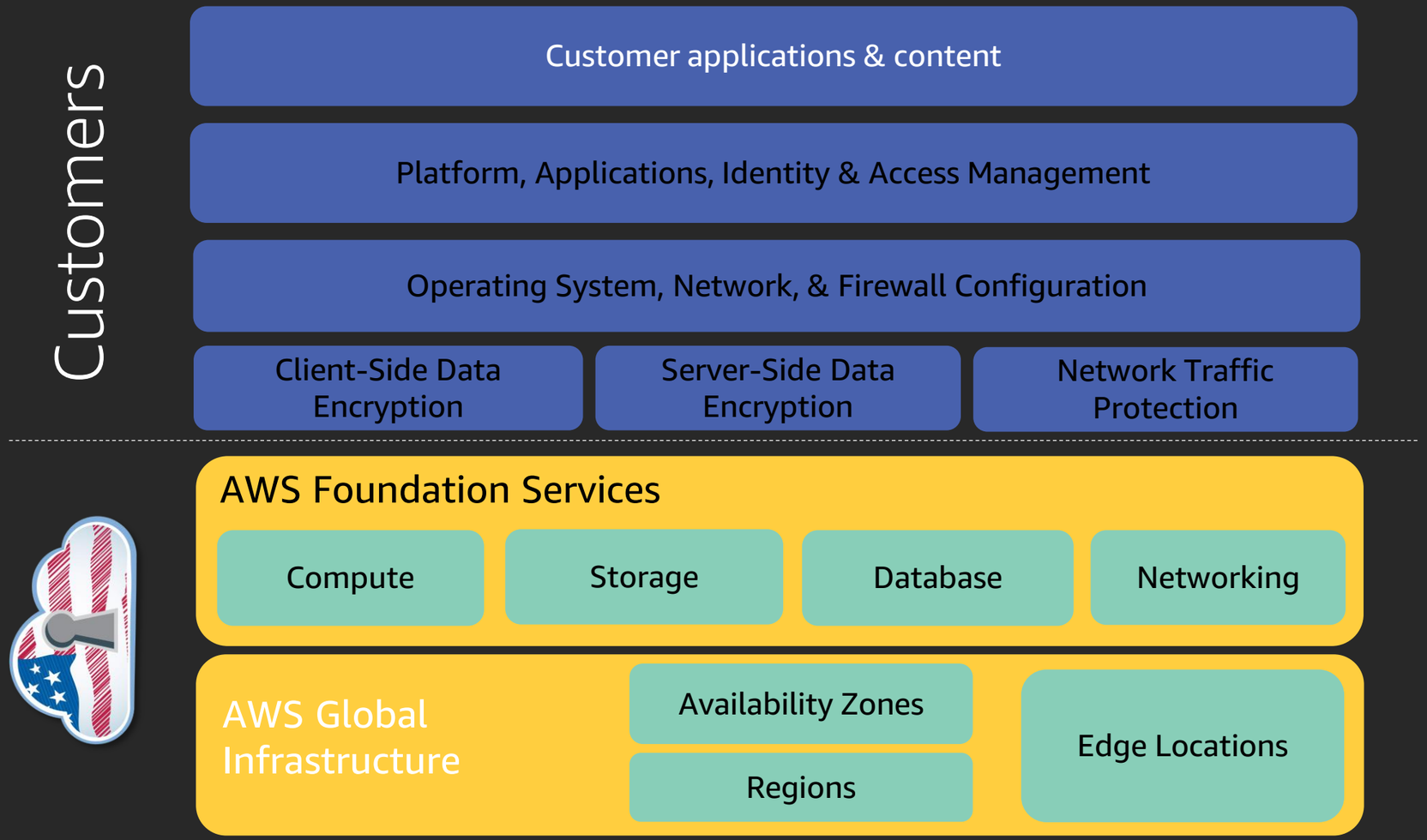
Understanding the shared responsibility of compliance



Customers choose the configurations for their security **in** the cloud

AWS is responsible for security **of** the cloud

Security control inheritance delineates responsibility

Customers

Certification, Accreditation and Security Assessment (**CA**), Awareness & Training (**AT**), Planning (**PL**), Personnel Security (**PS**), Risk Assessment (**RA**), and System & Services Acquisition (**SA**)

Access Control (**AC**), Audit & Accountability (**AU**), Configuration Management (**CM**), Maintenance (**MA**), Contingency Planning (**CP**), Identity and Authentication (**IA**), Incident Response (**IR**), Maintenance (**MA**), System and Communication Protection (**SC**), System and Information Integrity (**SI**)

Shared/hybrid and customer-implemented security controls

AWS Foundation Services

Media Protection (**MP**) and partial Maintenance (**MA**)

AWS Global Infrastructure

Physical and Environmental (**PE**) and partial Contingency Planning (**CP**)

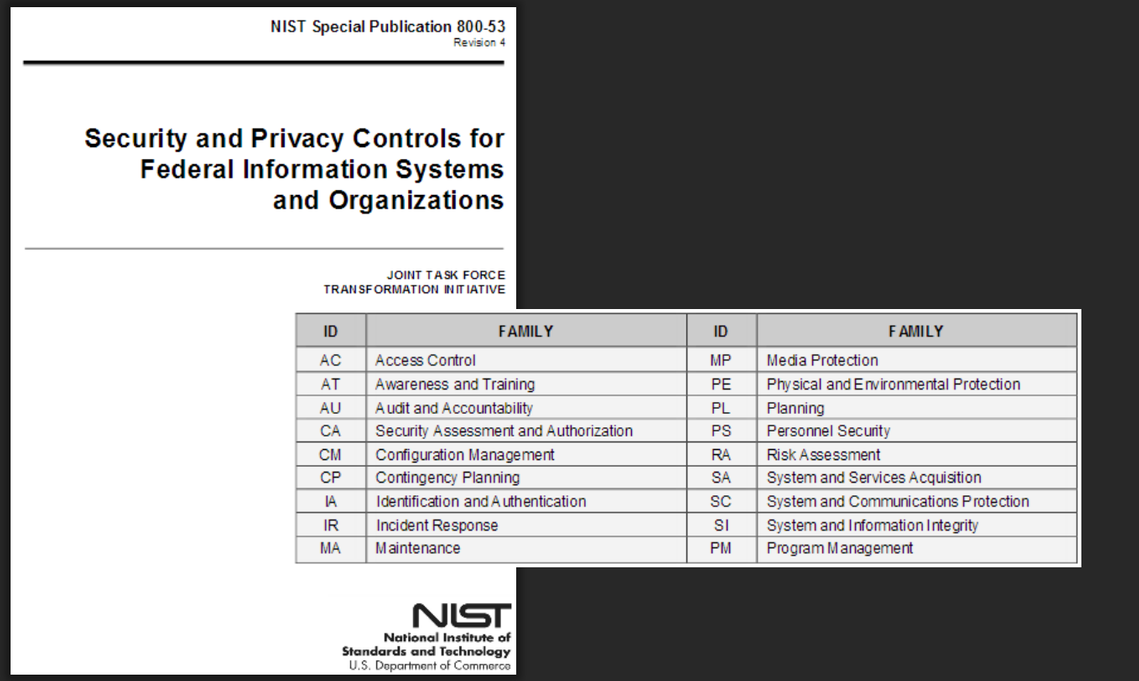
Full and partially inherited security controls

FedRAMP: Meeting FISMA requirements in the cloud

417

Security controls at high baseline

(NIST 800-53 is foundation)



NIST Special Publication 800-53
Revision 4

Security and Privacy Controls for Federal Information Systems and Organizations

JOINT TASK FORCE
TRANSFORMATION INITIATIVE

ID	FAMILY	ID	FAMILY
AC	Access Control	MP	Media Protection
AT	Awareness and Training	PE	Physical and Environmental Protection
AU	Audit and Accountability	PL	Planning
CA	Security Assessment and Authorization	PS	Personnel Security
CM	Configuration Management	RA	Risk Assessment
CP	Contingency Planning	SA	System and Services Acquisition
IA	Identification and Authentication	SC	System and Communications Protection
IR	Incident Response	SI	System and Information Integrity
MA	Maintenance	PM	Program Management

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

FedRAMP: Meeting FISMA requirements in the cloud

Tools no matter starting point

(Data/server/app migration/cloud native Quick Starts)

Compliant connectivity

(Amazon VPC/Amazon VPN, AWS Direct Connect)

Inheritance from AWS

(**44** FedRAMP High Service)

AWS gets customers at least 60% along their compliance journey in terms of security controls

NIST QuickStart accelerator (aka How do you systematically address more of the NIST controls?)

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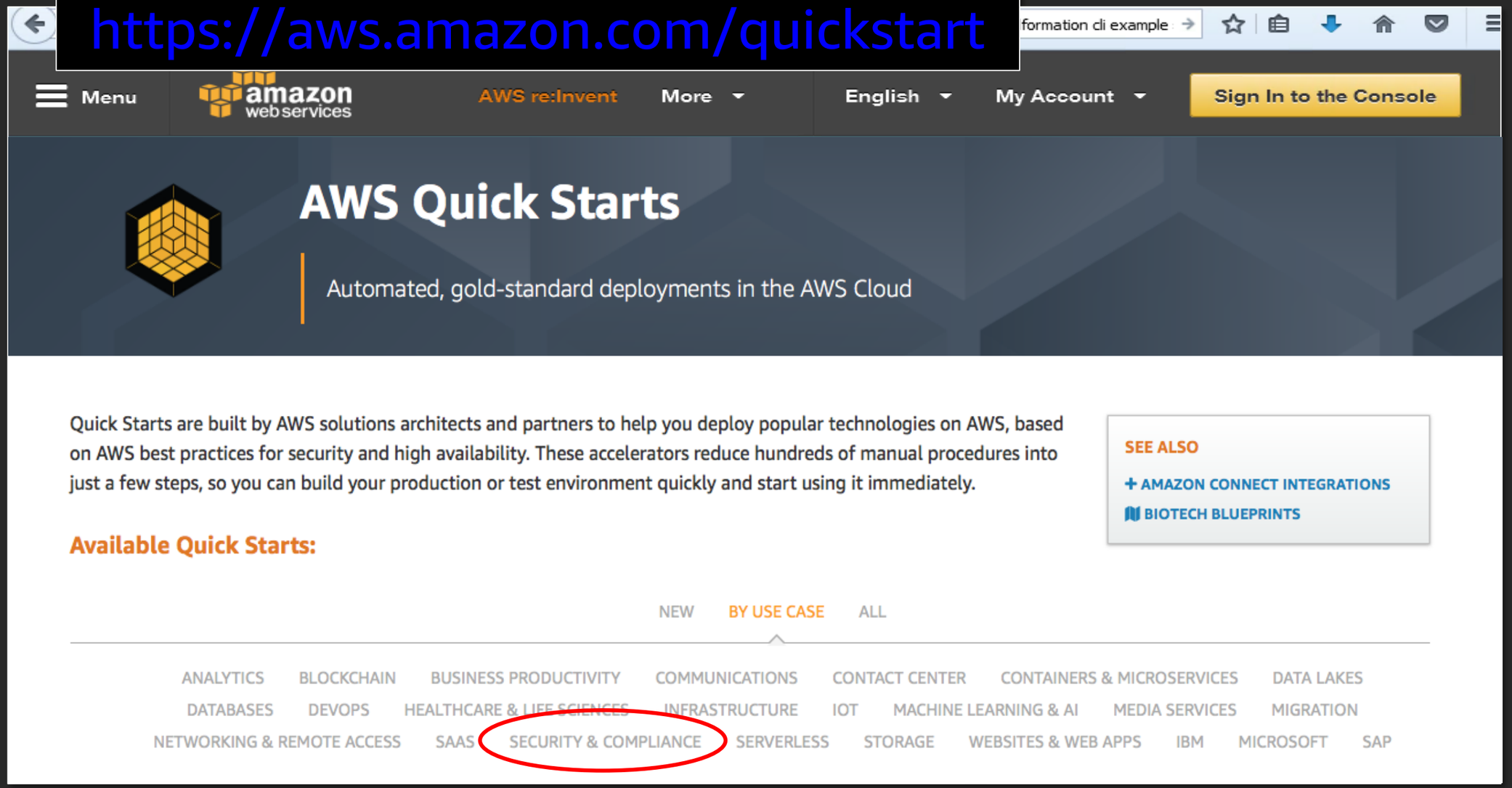
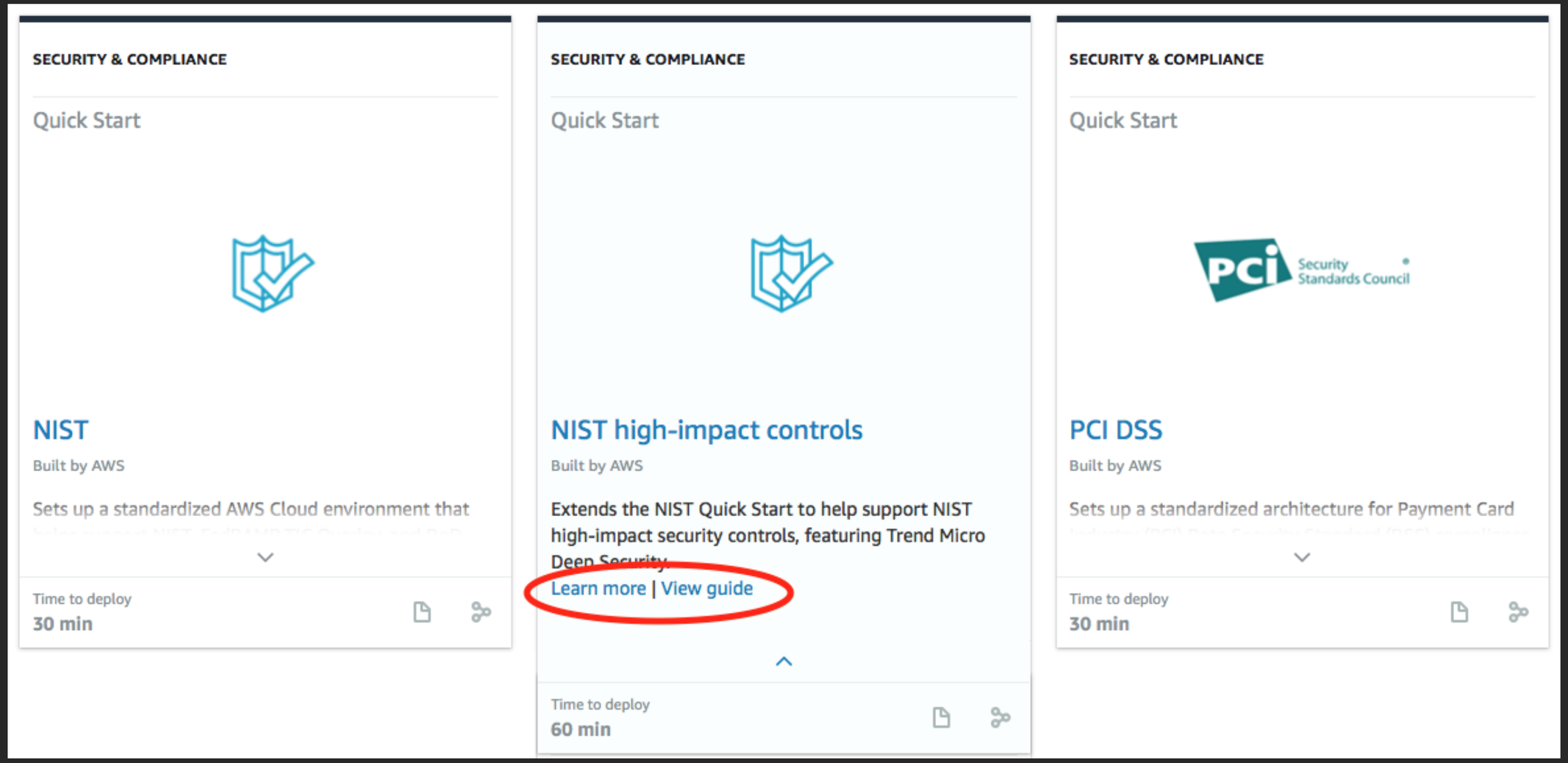
How does AWS make this easier?

The Enterprise Accelerator Compliance Quick Start

https://aws.amazon.com/quickstart



AWS Enterprise Accelerator Quick Start website



AWS Enterprise Accelerator Quick Start website

REFERENCE DEPLOYMENT

Standardized Architecture for NIST High-Impact Controls on AWS

> Deploy an AWS Cloud architecture for NIST high-impact security controls, featuring Trend Micro Deep Security

View deployment guide | View security controls matrix

This Quick Start extends the NIST Quick Start to help support:

- NIST SP 800-53 (Rev. 4) high-impact security controls baseline
- CNSS Instruction 1253
- NIST SP 800-171
- FedRAMP and TIC Overlay (pilot)
- DoD Cloud Computing SRG

The Quick Start template automatically configures the AWS resources and deploys a multi-tier, Linux-based web application in a few simple steps, in about an hour. The Quick Start features Deep Security from Trend Micro for host-based protection. The security controls matrix (Microsoft Excel spreadsheet) shows how the Quick Start components map to security requirements.

This Quick Start is part of a set of AWS compliance offerings, which provide security-focused architecture solutions to help Managed Service Providers (MSPs), cloud provisioning teams, developers, integrators, and information security teams follow strict security, compliance, and risk management controls. For additional Quick Starts in this category, see the Quick Start catalog.

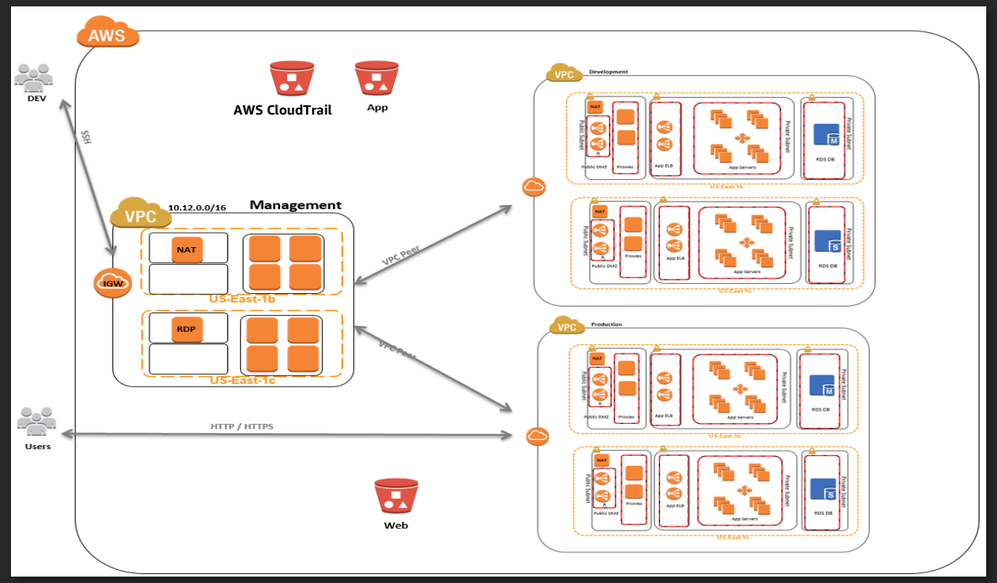
This Quick Start was developed by AWS technical consultants and solutions architects.

AWS GovCloud (US)

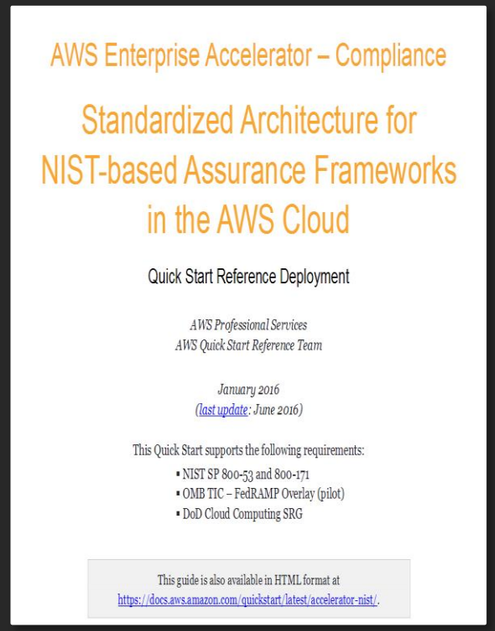
This Quick Start supports the AWS GovCloud (US) Region.

Watch this webinar to see how the Quick Start works.

What's in the box?



Reference Architecture



AWS Enterprise Accelerator – Compliance

Standardized Architecture for NIST-based Assurance Frameworks in the AWS Cloud

Quick Start Reference Deployment

AWS Professional Services
AWS Quick Start Reference Team

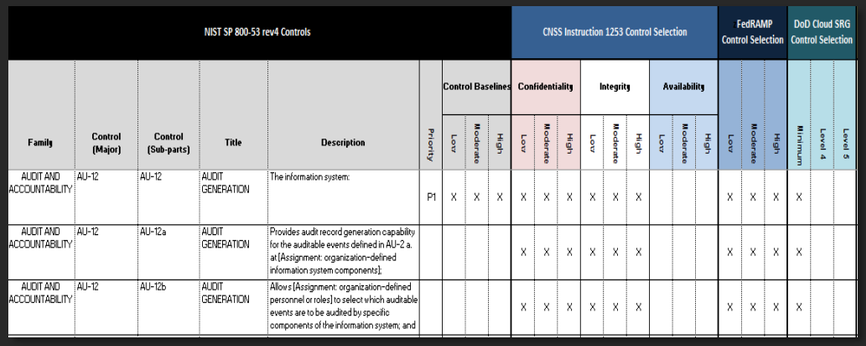
January 2016
(last update: June 2016)

This Quick Start supports the following requirements:

- NIST SP 800-53 and 800-171
- OMB TIC – FedRAMP Overlay (pilot)
- DoD Cloud Computing SRG

This guide is also available in HTML format at https://docs.aws.amazon.com/quickstart/latest/accelerator-nist/.

Deployment Guide



NIST SP 800-53 rev4 Controls						Control Baselines			CNSS Instruction 1253 Control Selection									FedRAMP Control Selection			DoD Cloud SRG Control Selection		
									Confidentiality			Integrity			Availability								
Family	Control (Major)	Control (Sub-parts)	Title	Description	Priority	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Minimum	Level 4	Level 5
AUDIT AND ACCOUNTABILITY	AU-12	AU-12	AUDIT GENERATION	The information system:	P1	X	X	X	X	X	X	X	X	X				X	X	X	X		
AUDIT AND ACCOUNTABILITY	AU-12	AU-12a	AUDIT GENERATION	Provides audit record generation capability for the auditable events defined in AU-2 a. at [Assignment: organization-defined information system components];					X	X	X	X	X	X				X	X	X	X		
AUDIT AND ACCOUNTABILITY	AU-12	AU-12b	AUDIT GENERATION	Allows [Assignment: organization-defined personnel or roles] to select which auditable events are to be audited by specific components of the information system; and					X	X	X	X	X	X				X	X	X	X		

Security Controls Matrix (SCM)

AWS CloudFormation Templates

Demo

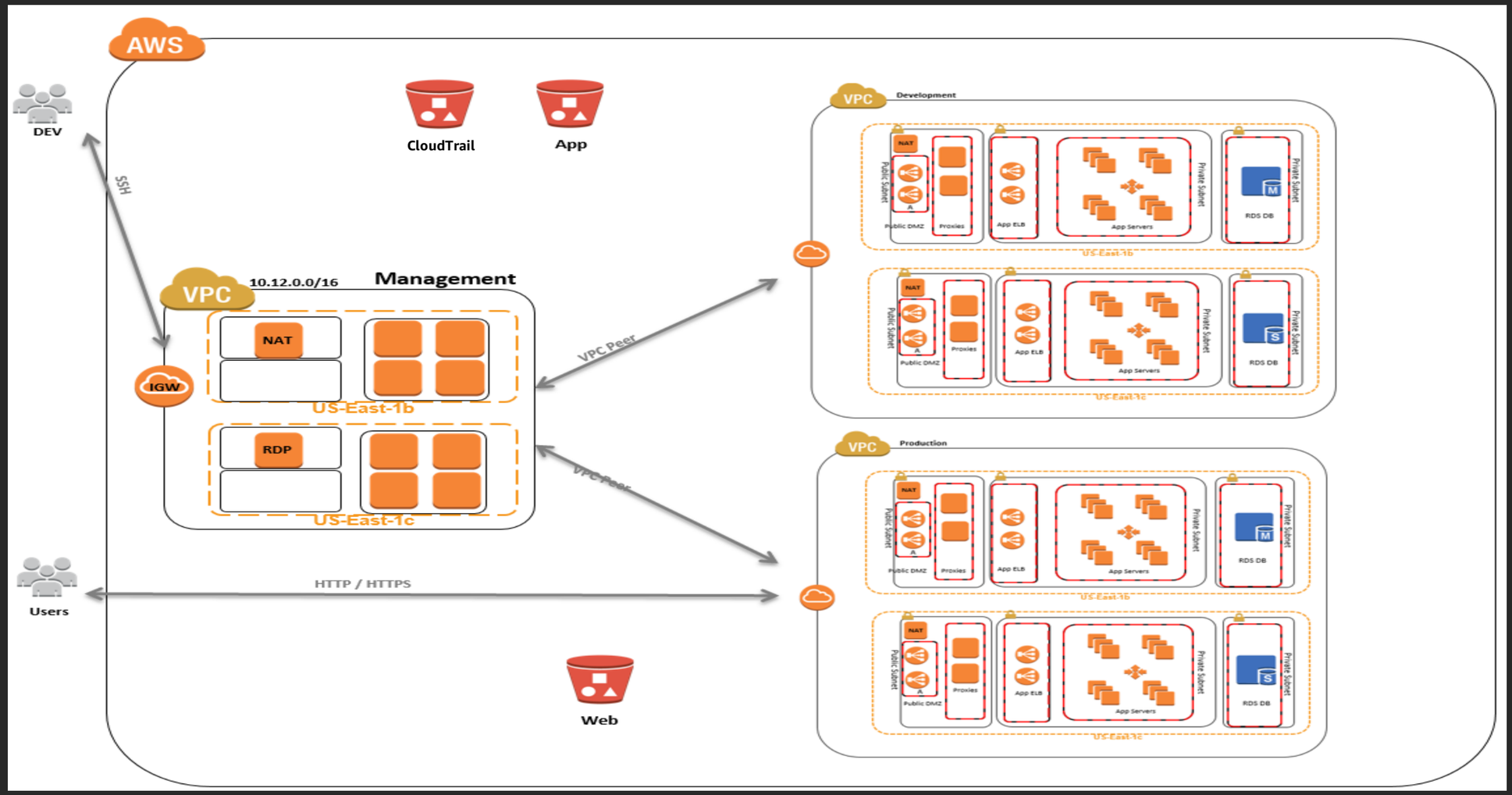
Customizable reference architecture

Example Reference Architecture

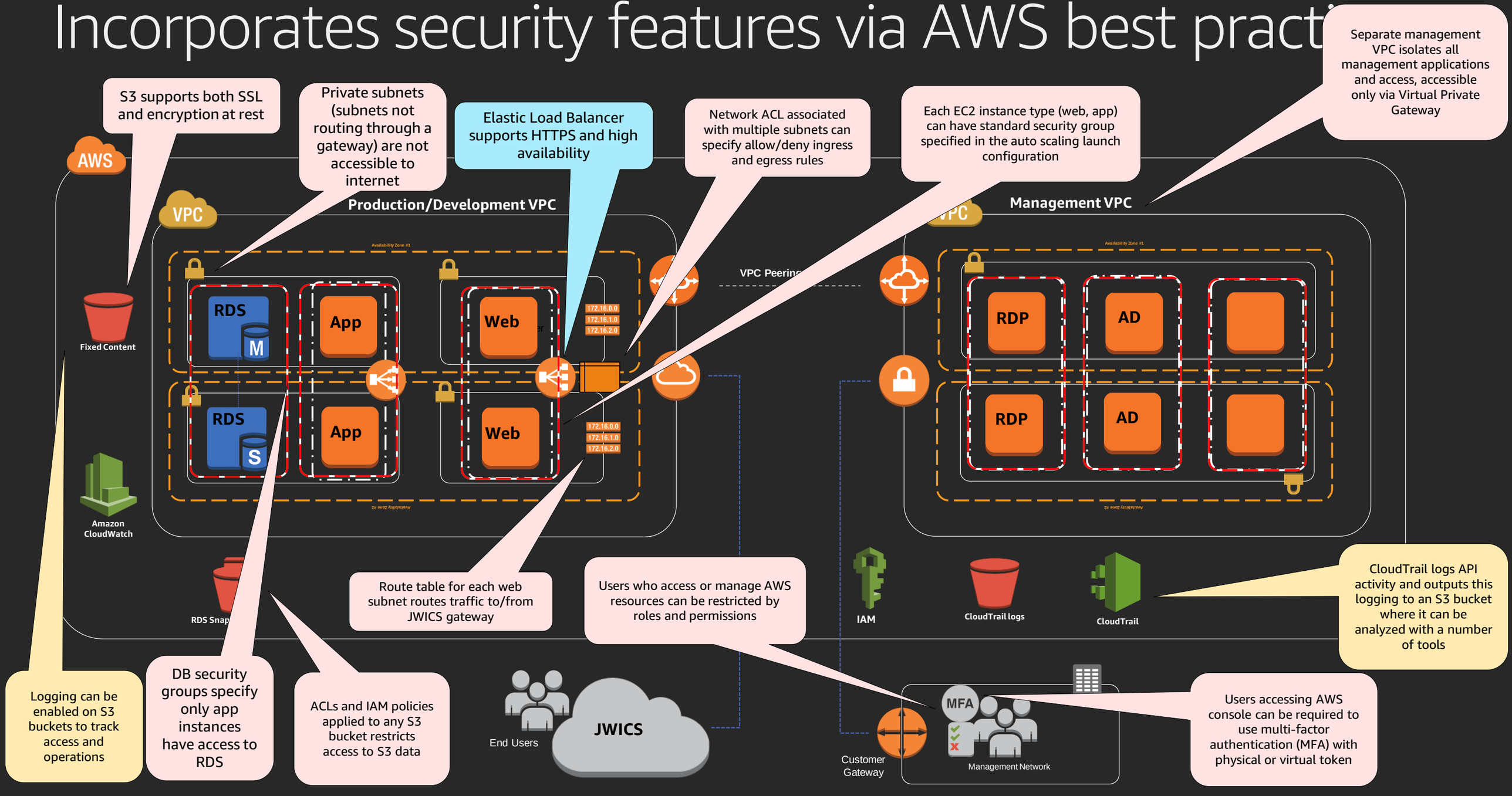
- Customizable
- Employs AWS architecture best practices

NOTES:

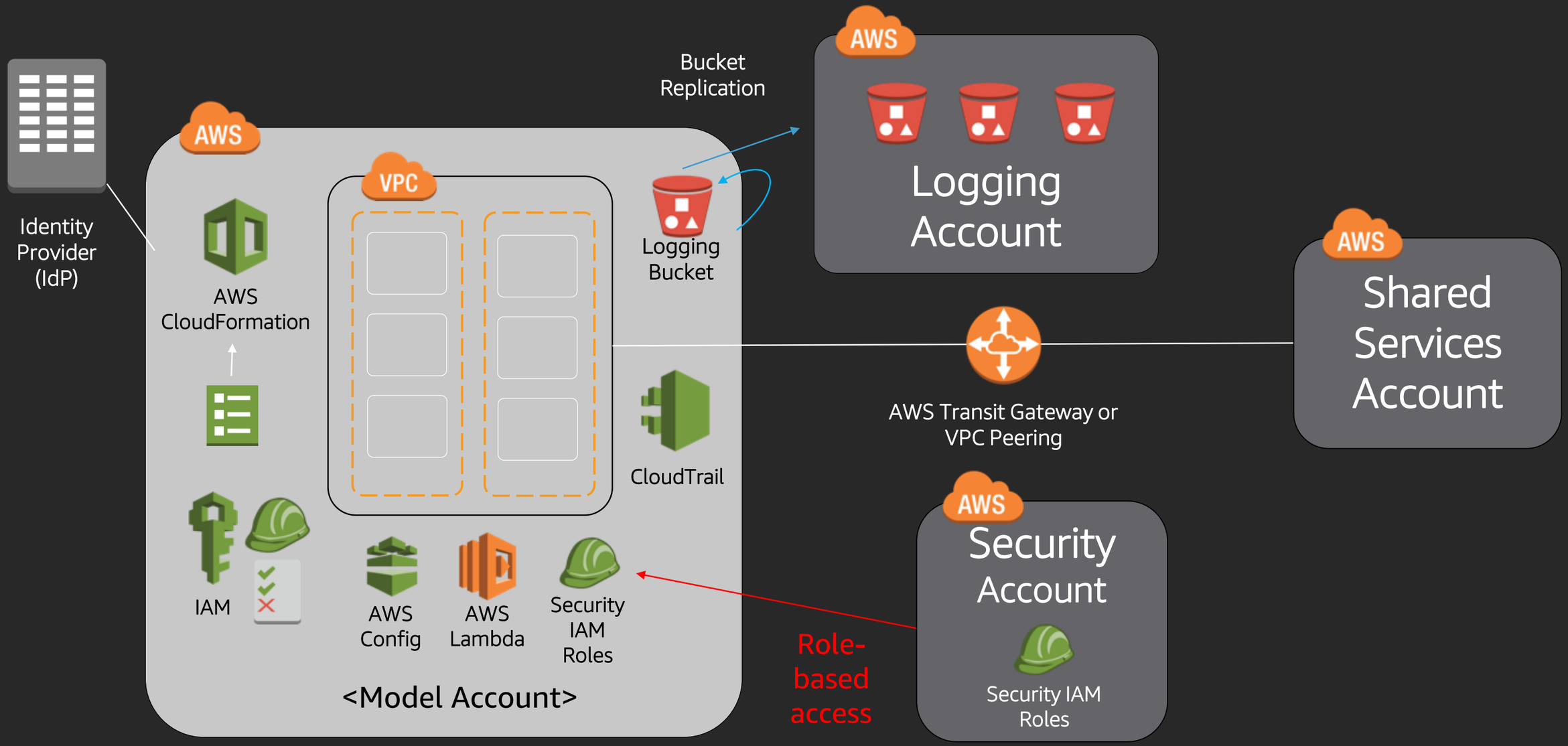
- Circa 2016!
- Missing multi-account, missing AWS Organizations, etc.



Incorporates security features via AWS best practi



A more generalized reference architecture



What did we just do?

Customers

Certification, Accreditation and Security Assessment (**CA**), Awareness & Training (**AT**), Planning (**PL**), Personnel Security (**PS**), Risk Assessment (**RA**), and System & Services Acquisition (**SA**)

Access Control (**AC**), Audit & Accountability (**AU**), Configuration Management (**CM**), Maintenance (**MA**), Contingency Planning (**CP**), Identity and Authentication (**IA**), Incident Response (**IR**), Maintenance (**MA**), System and Communication Protection (**SC**), System and Information Integrity (**SI**)

Shared/hybrid and customer-implemented security controls

AWS Foundation Services

Media Protection (**MP**) and partial Maintenance (**MA**)

AWS Global Infrastructure

Physical and Environmental (**PE**) and partial Contingency Planning (**CP**)

Full and partially inherited security controls

Environment governance controls versus application controls

Customers

Application-Specific Controls

Certification, Accreditation and Security Assessment (**CA**), Awareness & Training (**AT**), Planning (**PL**), Personnel Security (**PS**), Risk Assessment (**RA**), System & Services Acquisition (**SA**), Access Control (**AC**), Audit & Accountability (**AU**), Configuration Management (**CM**), Maintenance (**MA**), Contingency Planning (**CP**), Identity and Authentication (**IA**), Incident Response (**IR**), Maintenance (**MA**), System and Communication Protection (**SC**), System and Information Integrity (**SI**)

Organization-Specific Account/Baseline Controls

AWS Foundation Services

Media Protection (**MP**) and partial Maintenance (**MA**)

AWS Global Infrastructure

Physical and Environmental (**PE**) and partial Contingency Planning (**CP**)

Shared/hybrid and customer-implemented security controls at the *application* level

Account governance, mapped to *your* SCM; implement through automation

Full and partially inherited security controls

Security controls matrix

NIST SP 800-53 rev4 Controls						Control Baselines			CNSS Instruction 1253 Control Selection									FedRAMP Control Selection			DoD Cloud SRG Control Selection		
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AUDIT AND ACCOUNTABILITY	AU-12	AU-12	AUDIT GENERATION	The information system:	P1	X	X	X	X	X	X	X	X	X				X	X	X	X		
AUDIT AND ACCOUNTABILITY	AU-12	AU-12a	AUDIT GENERATION	Provides audit record generation capability							X			X									
AUDIT AND ACCOUNTABILITY	AU-12	AU-12b	AUDIT GENERATION	Allows [Assignment: organization-defined information system components] to generate audit records							X			X									

CloudFormation Template Mapping				
IAM CloudFormation Stack/Template	MANAGEMENT VPC CloudFormation Stack/Template	PRODUCTION VPC CloudFormation Stack/Template	LOGGING CloudFormation Stack/Template	CONFIG-RULES CloudFormation Stack/Template
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::S3::Bucket AWS::S3::BucketPolicy AWS::CloudTrail::Trail	This stack does not directly implement this control
AWS::IAM::Group AWS::IAM::InstanceProfile AWS::IAM::ManagedPolicy AWS::IAM::Policy AWS::IAM::Role	This stack does not directly implement this control	This stack does not directly implement this control	AWS::IAM::InstanceProfile AWS::IAM::Role AWS::CloudTrail::Trail AWS::CloudWatch::Alarm AWS::SNS::Topic	This stack does not directly implement this control
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::CloudTrail::Trail AWS::S3::Bucket AWS::S3::BucketPolicy	This stack does not directly implement this control
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::CloudTrail::Trail AWS::S3::Bucket	This stack does not directly implement this control

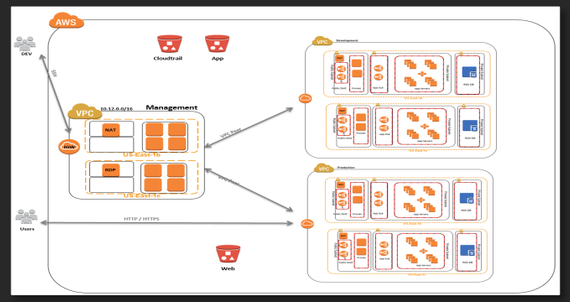
Quick Start Architecture Comments for NIST SP 800-53 Controls			
Addressed By This Quick Start	Category: Influence	Category: Responsibility	AWS Quick Start Control Implementation
Yes	Information Systems	Shared	AWS CloudTrail, S3 bucket logging, and RDS Database logging provide the audit record generation capability for the auditable events defined in AU-2a. by logging all security-relevant IAM user and API activities which address AWS infrastructure components (AWS Products and services).
Yes	Information Systems	Shared	While AWS Cloud trail logs all available API events automatically within the AWS infrastructure, AWS Identity and Access Management (IAM) configuration allows privileged users with administrator/audit access to modify Amazon CloudWatch alarms, AWS Config rules, and Amazon S3
Yes	Information Systems	Shared	AWS CloudTrail and S3 bucket logging generate audit records with the content defined in AU-3. Detailed content of CloudTrail logs are documented at http://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-
Yes	Information Systems	Shared	AWS CloudTrail compiles the audit records from all AWS infrastructure components into a system-wide audit trail in an S3 bucket that is time correlated using time stamps as specified in the ISO 8601 standard. IOS 8601 represents local time (with the location unspecified), as UTC, or as

Source: https://fwd.aws/bWvRw

Use the AWS Enterprise Accelerator as a validation tool

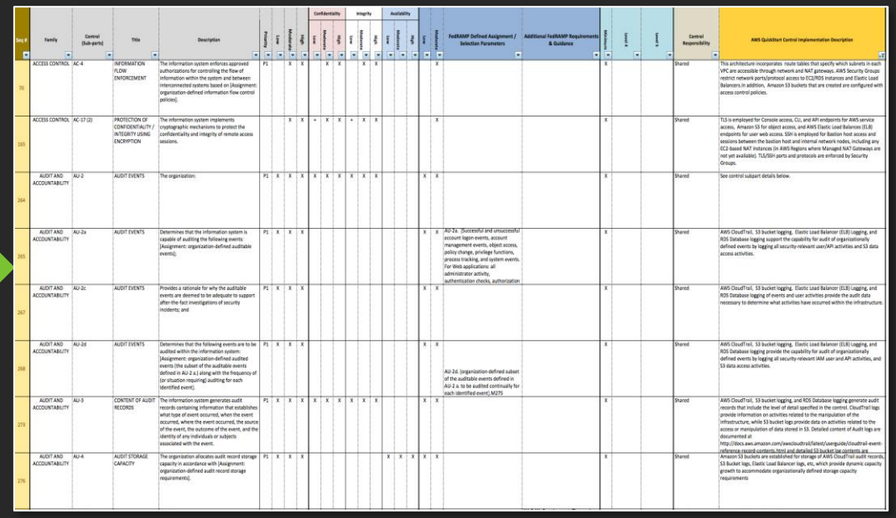
AWS Enterprise Accelerator SCM

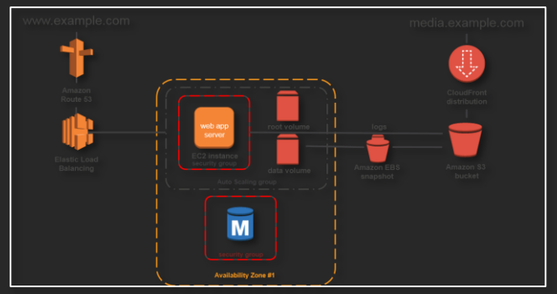
CloudFormation Template Mapping				
IAM CloudFormation Stack/Template	**MANAGEMENT VPC CloudFormation Stack/Template**	**PRODUCTION VPC CloudFormation Stack/Template**	**LOGGING CloudFormation Stack/Template**	**CONFIG-RULES CloudFormation Stack/Template**
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::S3::Bucket AWS::S3::BucketPolicy AWS::CloudTrail::Trail	This stack does not directly implement this control
AWS::IAM::Group AWS::IAM::InstanceProfile AWS::IAM::ManagedPolicy AWS::IAM::Policy AWS::IAM::Role	This stack does not directly implement this control	This stack does not directly implement this control	AWS::IAM::InstanceProfile AWS::IAM::Role AWS::CloudTrail::Trail AWS::CloudWatch::Alarm AWS::SNS::Topic	This stack does not directly implement this control
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::CloudTrail::Trail AWS::S3::Bucket AWS::S3::BucketPolicy	This stack does not directly implement this control
This stack does not directly implement this control	This stack does not directly implement this control	This stack does not directly implement this control	AWS::CloudTrail::Trail AWS::S3::Bucket	This stack does not directly implement this control



Are they similar?

Your SCM





Back to the demo

Pathway to ATO

AWS re:Invent

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ATO on AWS?

Benefits

Reduce effort to deploy security configurations and collect audit data to meet compliance requirements for solutions on AWS

Build an end-to-end automation capability to streamline regulated workload deployments

Reduce time to build applications in the cloud or to migrate applications into the cloud

Reduce cost to deploy workloads in the cloud

Improve security posture of your cloud estate

Guiding Tenets for ATO on AWS

ATO on AWS

Automation leverages ***Infrastructure as Code*** concepts

Certification optimizes security processes

Validation enables continual tests and monitoring of security configurations

Empowerment emboldens informed decision-making and drives change

Implement security and compliant architectures

Goal

Verifiable compliance control solution for regulated workloads

Outcomes

Accelerated path to production

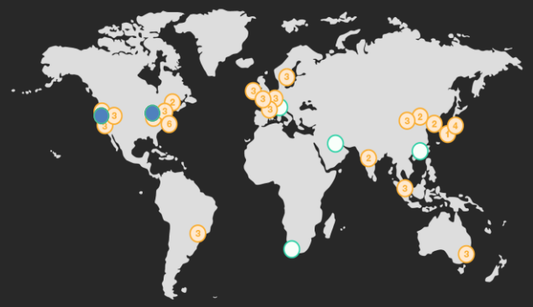
Improved compliance and security posture

Reduction in noncompliant findings and rework

Demonstrable controls to support the assessment process

Summary

Key takeaways



AWS GovCloud (US)

Is it right for your workload?

NIST Accelerator

Use as a reference point for your security control matrix

Pathway to ATO

Next Steps

What's next?

- Define/create YOUR baseline account automation
  - AWS Landing Zones
  - AWS Control Tower
  - Infrastructure as Code using AWS CloudFormation, Terraform, scripting, etc.
- Find (or create) your security control matrix (SCM)
- Compare to the AWS Enterprise Accelerator SCM
- Address the gaps

AWS GovCloud (US) information

Homepage: https://aws.amazon.com/govcloud-us
User Guide: docs.aws.amazon.com/govcloud-us/latest/UserGuide/welcome.html
Services in Scope: https://aws.amazon.com/compliance/services-in-scope/

ATO on AWS program information

Partners: https://aws.amazon.com/partners/ato/partners/
Customers: https://aws.amazon.com/partners/ato/
FAQ: https://aws.amazon.com/partners/ato/faqs/

Resources

Related sessions

- WPS318-R – Architecting security and governance across a multi-account strategy
- MGT403-R – How to audit and remediate resource misconfigurations

More resources

- AWS GovCloud (US) - A path to high compliance in the cloud (GRC344) – AWS re:Inforce 2019
- Implementing Governance@Scale – AWS Washington Public Sector Summit 2017

Thank you!

Derek Doerr

awsderek@amazon.com

AWS re:Invent

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Please complete the session survey in the mobile app.