AWS Security Overview

AWS Security Workshop

Agenda

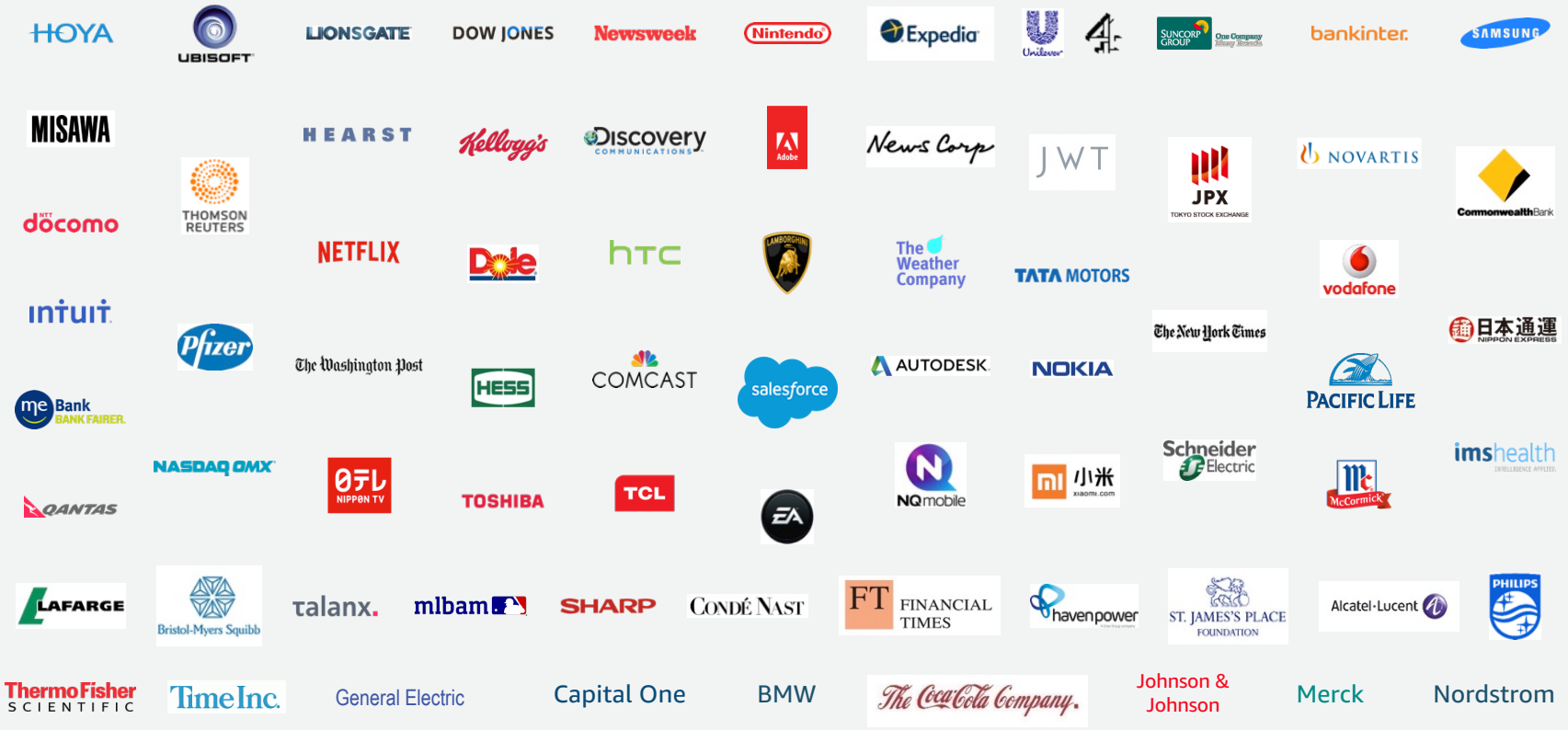
- Global Infrastructure
- Shared Responsibility
- Security Assurance
- Customer responsibility

Goals

- Learn how AWS approaches security
- Understand how AWS protects the cloud
- Understand your responsibility in the cloud

AWS Global Infrastructure

Global Portfolio of Customers in 190 Countries



AWS Global Infrastructure

21 Regions – **66** Availability Zones – **176** Edge Locations

Announced Regions

Jakarta, Cape Town, Milan

Region & Number of Availability Zones

US East
N. Virginia (6), Ohio (3)

US West
N. California (3), Oregon (4)

Asia Pacific
Mumbai (2), Seoul (2), Singapore (3), Sydney (3), Tokyo (4), Hong Kong (3), Osaka-Local (1)

Canada
Central (2)

China
Beijing (2), Ningxia (3)

Europe
Frankfurt (3), Ireland (3), London (3), Paris (3), Stockholm (3)

South America
São Paulo (3)

AWS GovCloud (US)
US-East (3), US-West (3)

North America

US East (N. Virginia) Region

EC2 Availability Zones: 6

US East (Ohio) Region

EC2 Availability Zones: 3

US West (Oregon) Region

EC2 Availability Zones: 4

US West (N. California) Region

EC2 Availability Zones: 3*

AWS GovCloud (US-West) Region

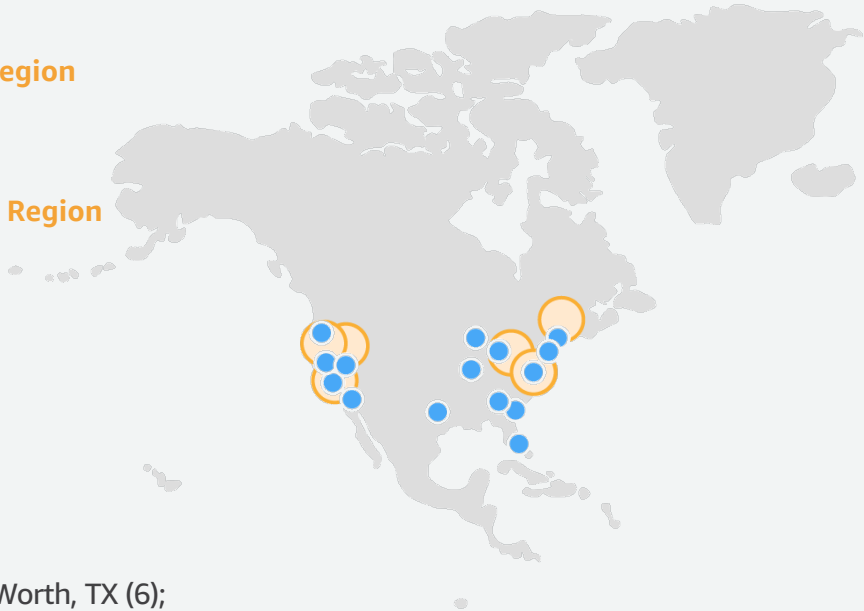
EC2 Availability Zones: 3

AWS GovCloud (US-East) Region

EC2 Availability Zones: 3

Canada (Central) Region

EC2 Availability Zones: 2



*New customers can access two EC2 Availability Zones in N. California

AWS Edge Locations

Ashburn, VA (6); Atlanta GA (5); Boston, MA (2); Chicago, IL (7); Dallas/Fort Worth, TX (6); Denver, CO (2); Hayward, CA; Hillsboro, OR; Houston, TX (2); Jacksonville, FL; Los Angeles, CA (5); Miami, FL (3); Minneapolis, MN; Montreal, QC; New York, NY (3); Newark, NJ (5); Palo Alto, CA; Phoenix, AZ; Philadelphia, PA; San Jose, CA (2); Seattle, WA (3); South Bend, IN; Toronto, ON

South America

São Paulo Region

EC2 Availability Zones: 3*

*New customers can access two EC2 Availability Zones in South America (São Paulo)

AWS Edge Locations

Rio de Janeiro, Brazil (3), São Paulo, Brazil (2)

Europe / Middle East / Africa

EU (Ireland) Region

EC2 Availability Zones: 3

EU (Frankfurt) Region

EC2 Availability Zones: 3

EU (London) Region

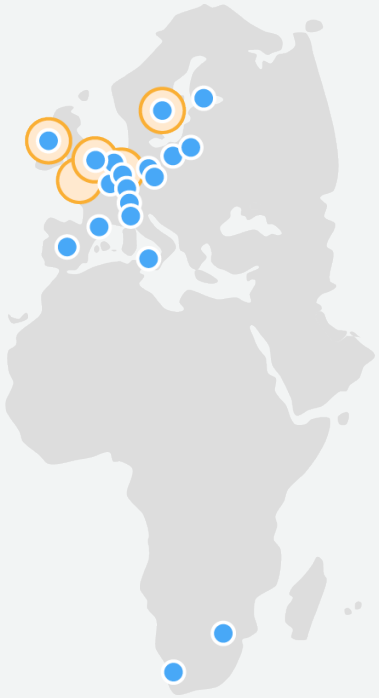
EC2 Availability Zones: 3

EU (Paris) Region

EC2 Availability Zones: 3

EU (Stockholm) Region

EC2 Availability Zones: 3



AWS Edge Locations

Amsterdam, The Netherlands (2); Berlin, Germany (2); Cape Town, South Africa; Copenhagen, Denmark; Dubai, United Arab Emirates; Dublin, Ireland; Frankfurt, Germany (8); Fujairah, United Arab Emirates; Helsinki, Finland; Johannesburg, South Africa; London, England (9); Madrid, Spain (2); Manchester, England; Marseille, France; Milan, Italy; Munich, Germany (2); Oslo, Norway; Palermo, Italy; Paris, France (5); Prague, Czech Republic; Stockholm, Sweden (3); Vienna, Austria; Warsaw, Poland; Zurich, Switzerland

Asia Pacific

Asia Pacific (Singapore) Region
EC2 Availability Zones: 3

Asia Pacific (Tokyo) Region
EC2 Availability Zones: 4*

Asia Pacific (Osaka) Local Region
EC2 Availability Zones: 1

Asia Pacific (Sydney) Region
EC2 Availability Zones: 3

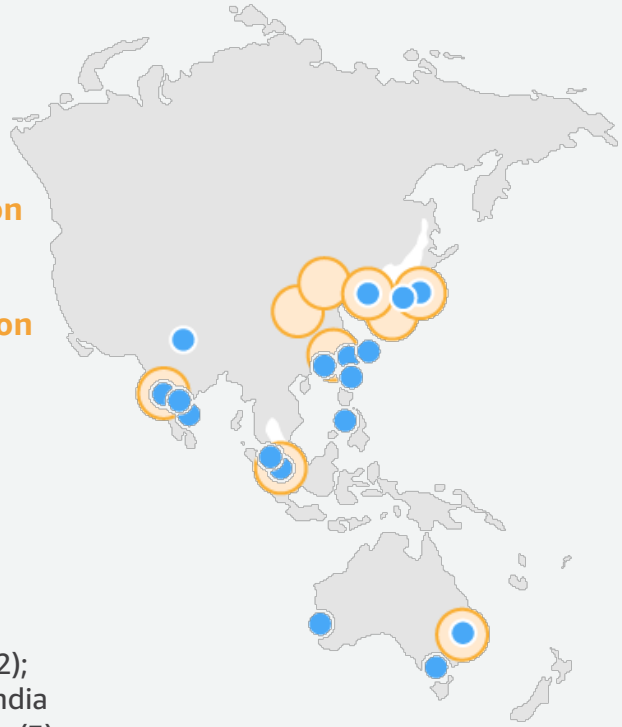
Asia Pacific (Hong Kong) Region
EC2 Availability Zones: 3

Asia Pacific (Seoul) Region
EC2 Availability Zones: 3

Asia Pacific (Mumbai) Region
EC2 Availability Zones: 3

Mainland China (Beijing) Region
EC2 Availability Zones: 2

Mainland China (Ningxia) Region
EC2 Availability Zones: 3



*New customers can access two EC2 Availability Zones in Tokyo.

AWS Edge Locations

Bangalore, India; Chennai, India (2); Hong Kong SAR, China (3); Hyderabad, India (2); Kuala Lumpur, Malaysia; Manila, The Philippines; Melbourne, Australia; Mumbai, India (2); New Delhi, India (3); Osaka, Japan; Perth, Australia; Seoul, Korea (4); Singapore (3); Sydney, Australia; Taipei, Taiwan (3); Tokyo, Japan (11)

AWS Shared Responsibility

What is AWS Shared Responsibility?

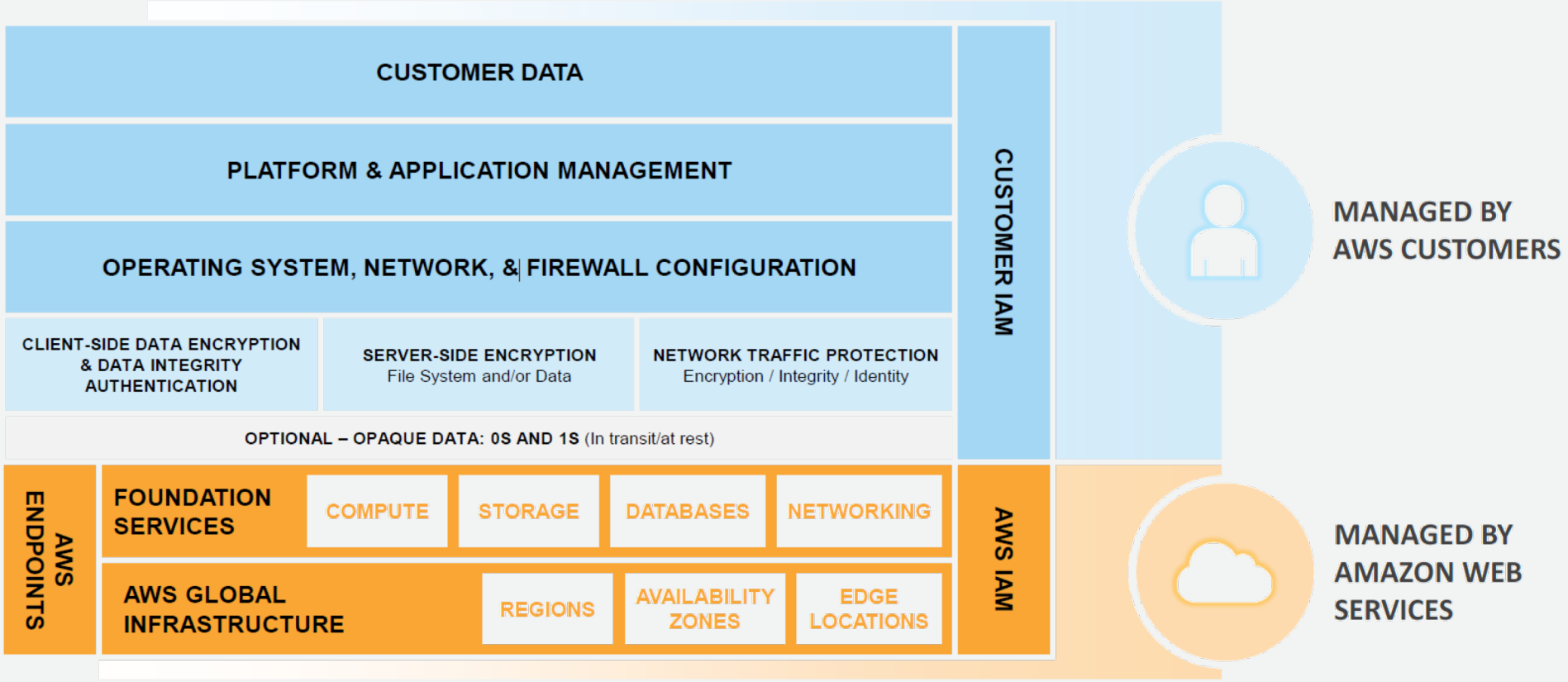
Security measures that the customer implements and operates, related to the security of customer content and applications that make use of AWS services

SECURITY **IN** THE CLOUD

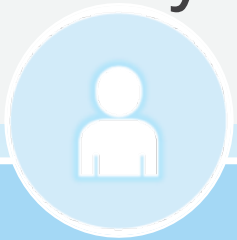
Security measures that the cloud service provider (AWS) implements and operates

SECURITY **OF** THE CLOUD

What is AWS Shared Responsibility?



Security “in” and “of” AWS



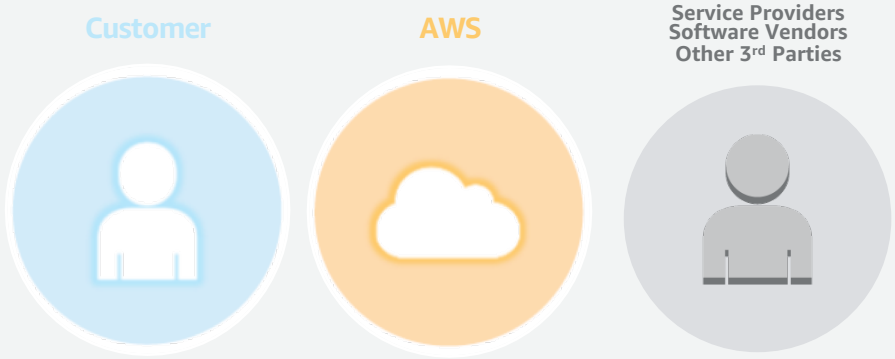
MANAGED BY CUSTOMERS (**IN**)

- Configure AWS security features
- Can implement and manage own controls
- Choose additional assurance above AWS controls
- Gain access to a mature vendor marketplace

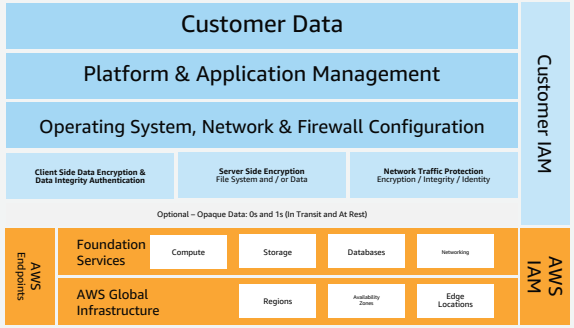
MANAGED BY AWS (**OF**)

- Ongoing audit and assurance programs
- Protection of the global infrastructure that runs all of the AWS services
- Protection of large-scale AWS service endpoints
- Culture of security and improvement

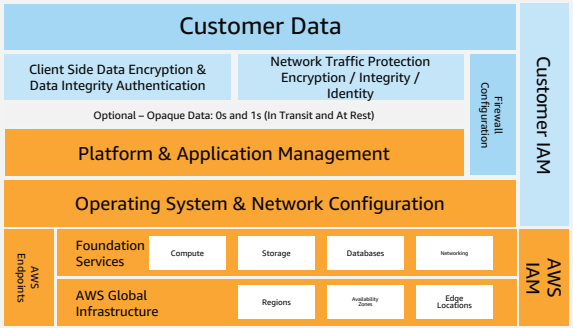
Shared Responsibility is not Static



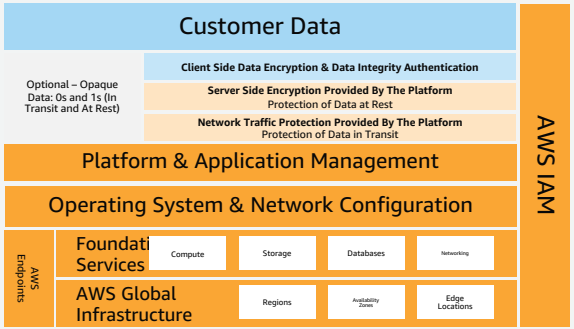
Infrastructure Services



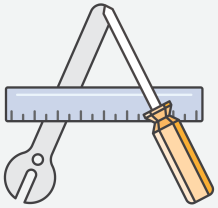
Container Services



Abstracted Services



Security is Our Number 1 Priority



Designed for Security

Constantly Monitored

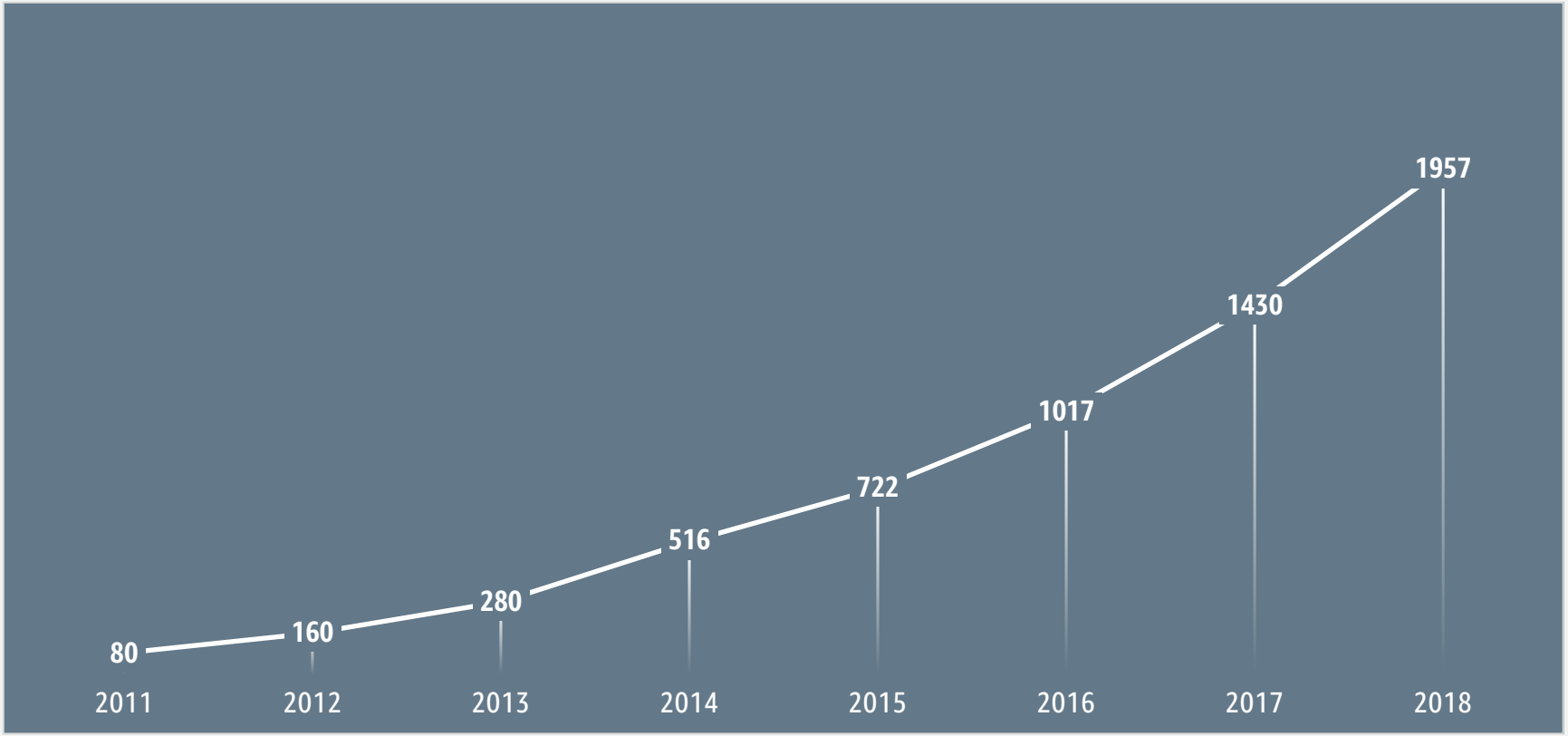
Highly Automated

Highly Available

Highly Accredited


I WAS A
SOLID
STATE
DRIVE

AWS Pace of Innovation



Who is AWS Security

AWS Employees

AWS Security (CISO Staff)	AWS Security Assurance	AWS Security Solution Architects
Security Operations Center (SOC)	AWS Abuse Team	AWS Professional Services SRC Practice
AWS Service Team Security SDEs	AWS Lookout Team	Support Security SMEs & TAMs

AWS Compliance Programs

Global

United States

AWS Compliance Programs

Asia Pacific

Europe

All customers benefit from the same security

60+ Assurance programs, including

- **SOC 1** (SSAE 16 & ISAE 3402) Type II
- **SOC 2 Type II** and public SOC 3 report
- **ISO 27001**
- **ISO 9001**
- **PCI DSS Level 1** - Service Provider
- **ISO 27017** (security of the cloud)
- **ISO 27018** (personal data)
- **BSI C5** (Germany) – ESCloud (EU)
- **CISPE** - GDPR

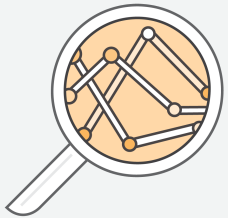
Find Compliance Reports on AWS Artifact

Reports On-Demand

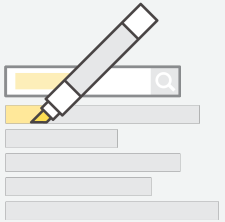
Globally Available

Easy Identification

Quick Assessments



Continuous Monitoring



Enhanced Transparency

https://aws.amazon.com/artifact/

What does this mean?

- You benefit from an environment built for the most security sensitive organizations
- AWS manages 1,800+ security controls **so you don’t have to**
- You get to define the right security controls for your workload sensitivity
- You always have full ownership and control of your data

Security “of” AWS

AWS Security Whitepaper

AWS Global Security Infrastructure

Physical and Environmental Security

Business Continuity Management

Network Security

AWS Employee Access

Secure Design Principles

Change Management

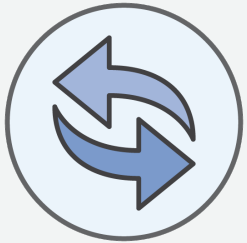
AWS Account Security Features

AWS Service-Specific Security

Customer Security Operations in AWS

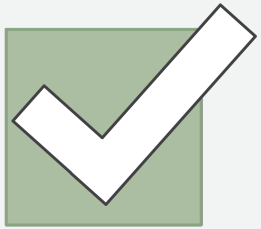
Modernizing Technology Governance

Automate Governance



Automate Deployments

Automate Security Operations



Continuous Compliance & Audit Reporting

Access a deep set of cloud security tools

Networking


Amazon VPC


AWS Direct Connect


Flow logs

Route table


AWS VPN


AWS Transit Gateway


Amazon VPC PrivateLink


AWS WAF


AWS Shield


AWS Firewall Manager


AWS Identity and Access Management


Amazon Cognito


AWS Directory Service


AWS Organizations


AWS Single Sign-On


AWS Secrets Manager


Active Directory integration


SAML Federation


Temporary security credentials

MFA

Identity

Governance, Compliance, and Encryption


AWS Security Hub


AWS Artifact


Amazon Macie


Amazon GuardDuty


AWS Service Catalog


AWS Systems Manager


AWS Trusted Advisor


Amazon Inspector


Amazon CloudWatch


AWS CloudTrail


AWS Control Tower


AWS Config


AWS CloudHSM


AWS Key Management Service


AWS Certificate Manager

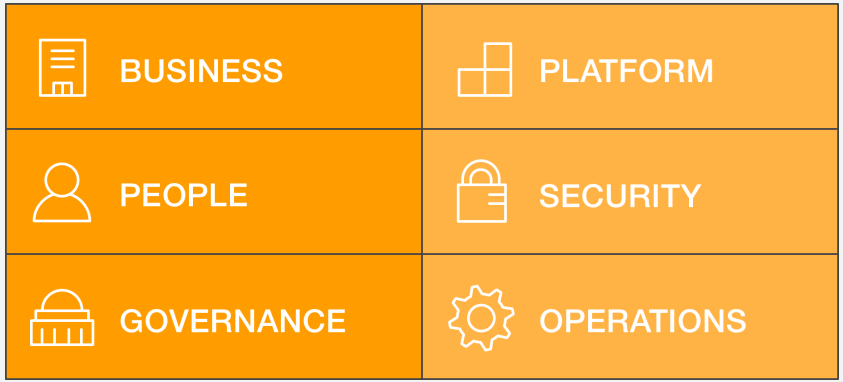

Client-side Encryption

What is the Cloud Adoption Framework?

CAF identifies stakeholders that are critical to cloud adoption

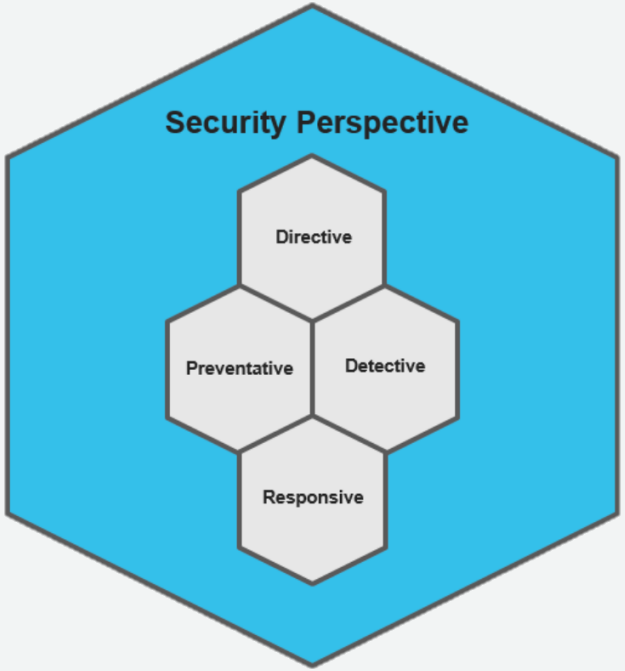
It groups related stakeholders into 6 Perspectives.

The Perspectives allow us to understand Cloud Adoption from the view of those stakeholders.



Security Perspective

- **Directive** controls establish the governance, risk, and compliance models the environment will operate within.
- **Preventive** controls protect your workloads and mitigate threats and vulnerabilities.
- **Detective** controls provide full visibility and transparency over the operation of your deployments in AWS.
- **Responsive** controls drive remediation of potential deviations from your security baselines.



Directive Controls

Concepts	Examples
Account Ownership and contact information	Assignment of AWS Accounts to business units
Change and asset management	Assigning customer-specific tags to resources
Least privilege access	Assignment of AWS roles to customer staff

Preventative Controls

Concepts	Examples
Identity and access	Deny `ec2::CreateVpc` to AWS IAM users with “Dev” role
Infrastructure protection	Deny packets from public subnet to sensitive subnet
Data protection	Require MFA delete on sensitive S3 bucket

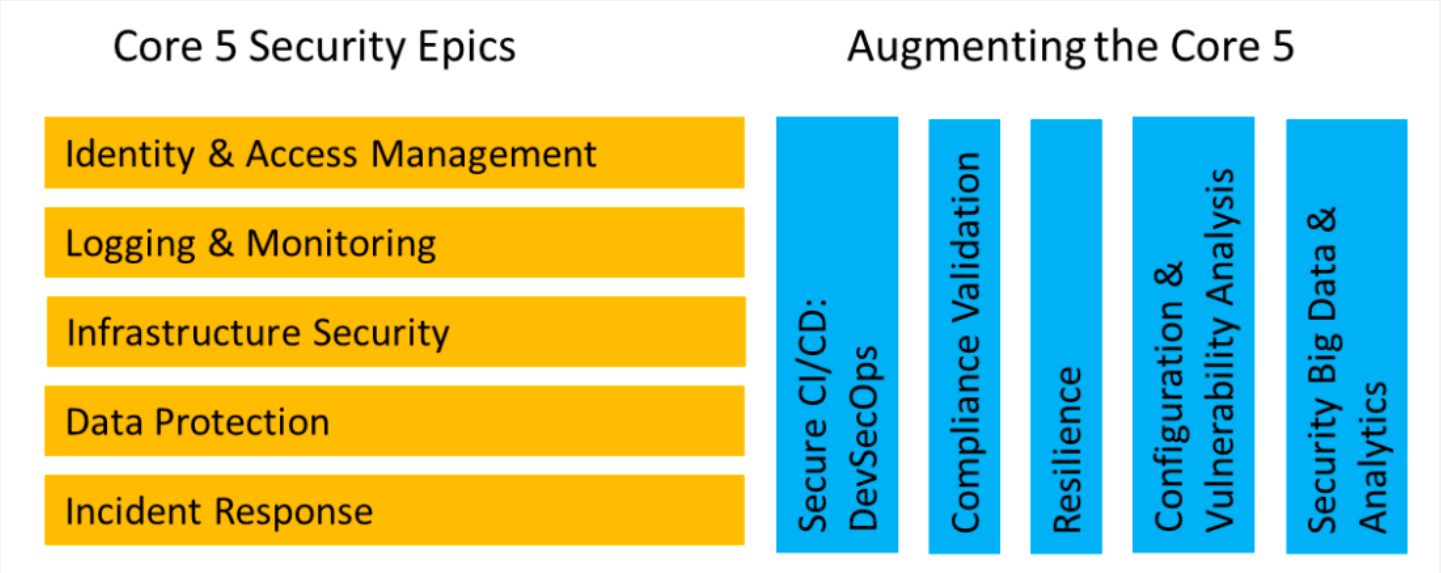
Detective Controls

Concepts	Examples
Logging and monitoring	Log all AWS API activity via CloudTrail
Asset inventory	Alert cloud administrators if any AWS Config rules are non-compliant
Change detection	Alert on denied AWS IAM API requests

Responsive Controls

Concepts	Examples
Vulnerabilities	Initiate operating system security patching
Privilege escalation	Revert dangerous changes in IAM
DDoS attack	Blacklist source IP address(es)

Security Epics



AWS Professional Services Security Journey

Align

Goals

- AWS Jam
- Security on AWS Workshop
- SRC Blueprint

Enable your organization to understand Cloud Security

Identify tactical plans for quick wins

Define a target state design and kick off a program to get there

Launch

Innovation

- Identity & Access Mgt
- Logging & Monitoring
- Infrastructure Security
- Data Protection
- Incident Response

Migration

5 Core Security Epics Accelerator Engagements

Deliver solutions based on a specific scope & objective aligned with security / product teams

Operationalize and automate to optimize coverage and efficiency for each security epic

Scale

Optimize

- Security Incident Response Simulation
- Security Assessment

Business Outcomes

Check the overall cloud security maturity of the organization

Act on recommendations to improve security posture

Questions?

Appendix A

Develop a Security Strategy

Appendix A – Develop a Security Strategy

Review your current security strategy to determine if portions of the strategy would benefit from change as part of a cloud adoption initiative.

Map your AWS cloud adoption strategy against the level of risk your business is willing to accept, your approach to meeting regulatory and compliance objectives, as well as your definitions for what needs to be protected and how it will be protected.

Appendix A – Develop a Security Strategy

Example Security Strategy

Infrastructure as code

- Skill up security team in code and automation; move to DevSecOps

Design guardrails not gates

- Architecture drives toward good behavior.

Use the cloud to protect the cloud.

- Build, operate, and manage security tools in the cloud.

Stay current; run secure.

- Consume new security features; patch and replace frequently.

Reduce reliance on persistent access.

- Establish role catalog; automate KMI via secrets service.

Appendix A – Develop a Security Strategy

Example Security Strategy

Total visibility

- Aggregate AWS logs and metadata with OS and app logs.

Deep insights

- Implement a security data warehouse with BI and analytics.

Scalable incident response (IR)

- Update IR and Forensics standard operating procedure (SOP) for shared responsibility framework.

Self-Healing

- Automate correction and restoration to known-good state.

Appendix B

Develop a Security Program

Appendix B – Develop a Security Program

Consider using the CAF Security Epics

- The Security Epics consist of groups of user stories (use cases and abuse cases) that you can work on during sprints.
- Each of these epics has multiple iterations addressing increasingly complex requirements and layering in robustness.
- Although we advise the use of agile, the epics can also be treated as general work streams or topics that help in prioritizing and structuring delivery using any other framework.
- Multiple sprints will lead to increased maturity while retaining flexibility to adapt to business pace and demand.

Appendix C

Develop Robust Security Operations

Appendix C – Develop Security Operations

In an environment where infrastructure is code, security must also be treated as code.

The Security Operations component provides a means to communicate and operationalize the fundamental tenets of security as code:

- Use the cloud to protect the cloud.
- Security infrastructure should be cloud-aware.
- Expose security features as services using the API.
- Automate everything, so that your security and compliance can scale.