Welcome

DCO COBRA and SOSSEC - CYBER TALK

Presents:

Cloud Hosting Amazon’s Capabilities

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Speaker: Mike Colson, Technical Engagement Architect
AWS & The Department of Defense

Security and agility for the future of data
Who We Are:

Chris Walker
walkercj@amazon.com
Army Account Manager

Mark Myshatyn
myshatyn@amazon.com
Army Solutions Architect

Mike Colson
mccolson@amazon.com
Presenter of Things
Broad and Deep Functionality

- Technical & Business Support
  - Support
  - Professional Services
  - Partner Ecosystem
  - Training & Certification
  - Solutions Architects
  - Account Management
  - Security & Pricing Reports

- Hybrid Architectures
  - Integrated Networking
  - Direct Connect
  - Identity Federation
  - Integrated App Deployments
  - Data Backups
  - Integrated Resource Management

- Analytics
  - Data Warehouse
  - Hadoop/Spark
  - Real-time Streaming Data
  - Machine Learning
  - Elastic Search

- App Services
  - Queuing & Notifications
  - Workflow
  - Search
  - Email
  - Transcoding

- Mobile Services
  - API Gateway
  - Identity
  - Sync
  - Mobile Analytics
  - Push Notifications
  - Resource Templates

- Development & Operations
  - One-click App Deployment
  - DevOps Resource Management
  - Application Lifecycle Management
  - Containers
  - Triggers

- Enterprise Apps
  - Virtual Desktops
  - Sharing & Collaboration
  - Corporate Email
  - Backup

- Security & Compliance
  - Identity Management
  - Access Control
  - Key Management & Storage
  - Monitoring & Logs
  - Configuration Compliance
  - Resource & Usage Auditing

- Core Services
  - Compute
  - Storage
  - CDN
  - Databases
  - Networking

- Infrastructure
  - Regions
  - Availability Zones
  - Points of Presence

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Redundant Tier-1 Internet & Inter-Region Connectivity

~2ms latency
AWS CONNECTIVITY

96 AWS Direct Connect locations

Customers can reach every public AWS Region from the local Direct Connect location (except China)
## DoD Information Impact Levels

<table>
<thead>
<tr>
<th>SRG v1r2 Impact Level</th>
<th>Maximum Data Type</th>
<th>Information Characterization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Non-Controlled Unclassified Information</td>
<td>Unclassified information approved for public release&lt;br&gt;Unclassified, not designated as controlled unclassified information (CUI) or critical mission data, but requires some minimal level of access control</td>
</tr>
<tr>
<td>4</td>
<td>Controlled Unclassified Information</td>
<td>Requires protection from unauthorized disclosure as established by Executive Order 13556 (Nov 2010); Education, Training, SSN, Recruiting (if medical is not included), Credit card information for individuals (i.e., PX or MWR events)&lt;br&gt;PII, PHI, SSN, Credit card information for individuals, Export Control, FOUO, Law Enforcement Sensitive, Email</td>
</tr>
<tr>
<td>5</td>
<td>Controlled Unclassified Information + NSS</td>
<td>National Security Systems and other information requiring a higher level of protection as deemed necessary by the information owner, public law, or other government regulations</td>
</tr>
<tr>
<td>6</td>
<td>Classified up to SECRET</td>
<td>Pursuant to EO 12958 as amended by EO 13292; classified national security information or pursuant to the Atomic Energy Act of 1954, as amended to be Restricted Data (RD)</td>
</tr>
</tbody>
</table>


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AWS’s Commitment to DoD: Purpose Built Cloud Infrastructure

US Regions*
- Public/Private Unrestricted Impact Level 2

AWS GovCloud
- CU, FOUO, SBU, PII, Impact Levels 4 & 5

Secret
- Secret Networks
- SECRET Impact Level 6

High Side
- TS

* US Regions – CONUS (US-East/West)

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What if I told you the Cloud is **safer** than your datacenter?
Why is he talking crazy!?!?
How does your DC Compare?

- Some API-enabled services
- Disparate APIs
- No true control plane
- Physical concealments
- Often co-habited

- Fully API-enabled
- API homogeneity
- A “source of truth” control plane
- Nowhere to hide
- Nobody can “climb into” your account

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Shared Responsibility: **Infrastructure Services**

Amazon EC2, Amazon EBS, Amazon VPC
Shared Responsibility: Abstract Services

Such as Amazon S3, Amazon DynamoDB, and Amazon Kinesis
Shared responsibility model

**Security IN the Cloud**
Customer responsibility will be determined by the AWS Cloud services that a customer selects.

**Security OF the Cloud**
AWS is responsible for protecting the infrastructure that runs all of the services offered in the AWS Cloud.

Customer
AWS
Elevate your security with the AWS Cloud

- Inherit global security and compliance controls
- Scale with superior visibility and control
- Highest standards for privacy and data security
- Automate with comprehensive, integrated security services
- Largest network of security partners and solutions
AWS security overview – NIST CSF

Identify → Protect → Detect → Respond → Recover

Investigate

Automate

Amazon Inspector
Amazon Macie
Amazon GuardDuty
AWS Security Hub
AWS Lambda

AWS VPC
AWS Shield
AWS WAF

AWS Single Sign-On
AWS Firewall Manager
AWS Secrets Manager

AWS IoT Device Defender
AWS Key Management Service
AWS Identity and Access Management

Amazon CloudWatch
AWS CloudTrail

Snapshot
Archive
Encrypt all the things...

I FIND YOUR LACK OF ENCRYPTION

DISTURBING
AWS KMS

• **What it is:** AWS-managed encryption and decryption service

• **Why it matters to you:** Many data-handling AWS services offer simple AWS KMS integrations; if you know how to use AWS KMS, you can protect your data at rest simply and with no management overhead

• **What builders need to know**
  • The basics of how to use an AWS KMS key
  • The AWS KMS integrations offered by many AWS data-handling services
  • How to use IAM to control access to keys
Executive Summary

This assessment was performed by the Vulnerability Solutions and the Security Engineering Service Offices. Based on this assessment, NSA believes that the risk of using AWS Service in GovCloud along with AWS KMS for encryption of DoD Cloud Computing Security Requirements Guide (CC SRG) Impact Level 5 (IL5) information is “very low”. While the KMS is a multi-tenant service, the controls in place in the web tier and internal architectural levels sufficiently reduce the risk of an attacker compromising the service. AWS has designed the system using cryptographic mechanisms that meet the National Security System (NSS) standards.
Data Lakes on AWS

Machine Learning
- Amazon SageMaker
- AWS Deep Learning AMIs
- Amazon Rekognition
- Amazon Lex
- AWS DeepLens
- Amazon Comprehend
- Amazon Translate
- Amazon Transcribe
- Amazon Polly

Analytics
- Amazon Athena
- Amazon EMR
- Amazon Redshift
- Amazon Elasticsearch Service
- Amazon Kinesis
- Amazon QuickSight

Traditional data movement
- AWS Direct Connect
- AWS Snowball
- AWS Snowmobile
- AWS Database Migration Service

Real-time data movement
- AWS IoT Core
- Amazon Kinesis Data Firehose
- Amazon Kinesis Data Streams
- Amazon Kinesis Video Streams

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Solution Architecture
The AWS ML Stack

Broasted and most complete set of Machine Learning capabilities

AI SERVICES

VISION
Amazon Rekognition
Amazon Polly
Amazon Transcribe
Amazon Comprehend
Amazon Translate
Amazon Textract

TEXT

TEXT

SEARCH
Amazon Kendra
Amazon Lex
Amazon Personalize
Amazon Forecast
Amazon Fraud Detector
Amazon CodeGuru

DEVELOPMENT

CONTACT CENTERS
Contact Lens

SageMaker Studio IDE

Built-in algorithms
Notebooks
Experiments
Model training & tuning
Debugger
Autopilot
Model hosting
Model Monitor

ML SERVICES

Ground Truth
ML Marketplace

Augmented AI

ML FRAMEWORKS & INFRASTRUCTURE

TensorFlow
mxnet
PyTorch

nn

Deep Learning
AMIs & Containers
GPUs & CPUs
Elastic Inference
Inferentia
FPGA

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Marinus Analytics worked with AWS ML Services to combat human trafficking.

- 169 people arrested in human trafficking sting at Super Bowl 2019
- 12 brothels and 500 websites taken down in late 2018 international sting operation
- Amazon Rekognition helps Marinus Analytics fight human trafficking
The Marinus ML processing pipeline includes text, video, sound, and images, all searched with a graph.

Additional Federal Agencies adopting this architecture include:

- Intelligence Agencies
- SOF Community
- ONR
- FINRA
- White House COVID-19 response
AWS Training Options

(Mostly) Free Training

• AWS Service Videos and Solution Webinars
• AWS CBTs: Security Fundamentals https://aws.amazon.com/training/course-descriptions/security-fundamentals/
• Public Sector Technical Essentials (Herndon and DC)
• Qwiklabs (advanced labs with codes) https://qwiklabs.com
• A Cloud Guru https://acloud.guru/
• Veterans: AWS Educate https://aws.amazon.com/education/awseducate/veterans/

Formal AWS Training & Certification

• AWS: Virtual and Instructor-led (Architecting, Developing, Operations)
  • “DOD-modified Architecting on AWS” Classroom in a Box Training
• 3rd Party: Global Knowledge

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Thank you!
Benefits of Joining the SOSSEC Consortium

✓ Opportunity to perform work under seven (7) OTAs for the Air Force, Army and National Geospatial-Intelligence Agency
✓ Opportunity to build members’ business base by applying their technologies/expertise to meeting urgent DoD requirements
✓ Simple, streamlined process to compete for DoD work
✓ Average 60 days from requirements definition to award
✓ Flexible treatment of intellectual property
✓ OTA access to any DoD user with approval of OTA customer

Go to www.sossecinc.com and click on the JOIN NOW Tab to access the membership application. The process is simple and rapid. There is no joining fee, and the membership fee is $500 per year. Membership is open to Industry (traditional, nontraditional, small business), not for profit and academic institutions that share the values of the SOSSEC Consortium.

Questions about SOSSEC COBRA OTA contact: eaguirre@sossecinc.com