Amazon Web Services - Space
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USSF challenge

Gen Raymond

The change in the geo-strategic and operating environment that compelled the creation of the Space Force means that many of our legacy space capabilities must be reevaluated for ongoing relevance. ***Let me be clear – if we do not adapt to outpace aggressive competitors, we will likely lose our peacetime and warfighting advantage in space.***

The process of designing and building a new Service requires productive disruption. We cannot deliver the new capabilities the Nation requires while remaining indistinguishable from the ways and means of our past.

I expect commanders and program managers to accept moderate risk associated with innovation and experimentation to build an agile force that better ensures our long-term competitive advantage in space.

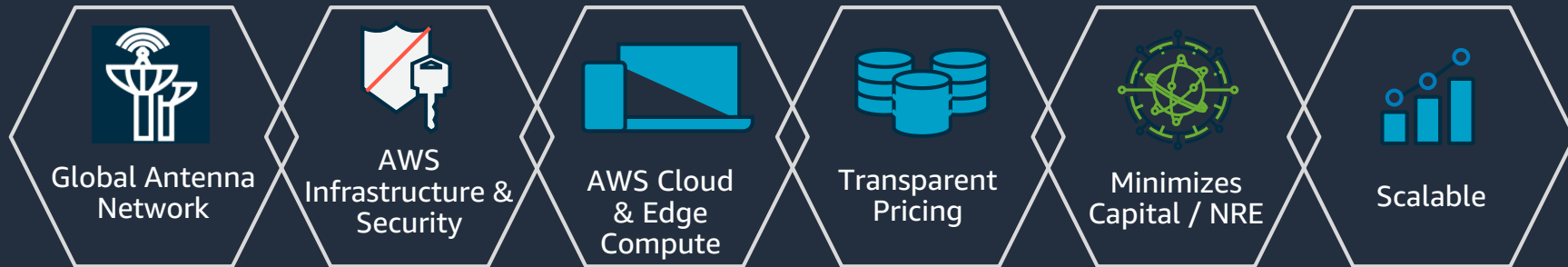**- General Raymond, Chief of Space Operations Planning Guidance**

"In order to be ready for this conflict we must be bold…We must innovate. We must move and think faster. And we must empower and leverage the outstanding talent we have in the Space Force."

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AWS Space Value Proposition

Global Antenna Network

AWS Infrastructure & Security

AWS Cloud & Edge Compute

Transparent Pricing

Minimizes Capital / NRE

Scalable

Satellite Architecture Growth
Sensor data drives business growth

Scalable Ground, Processing & Storage
EC2, S3, SageMaker, CloudFront

Economies of Scale
The more you use, the less you pay

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What is Amazon Web Services (AWS)?

Everything you'd want to do in a traditional datacenter

Provision network, compute, storage and database services in the cloud with the click of a button

Run applications – **reliably** and **securely**

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The AWS Intersection

Program Development

Mission Operations

Infrastructure as Code

DevOps, DevSecOps

Managed Security Services

Code Low, Deploy High

Robust Commercial Network

Collaboration Environments

Commercial
GovCloud
Secret
TS/SCI

Space

Ground

Cloud / Edge Computing

Cyber Security

Rapid Software Delivery, Data Management, Networking and Security Key to Maintaining Advantage

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Digital Engineering & Management
A fully digital acquisition

Agile Software	AWS CodeDeploy, AWS CodeCommit, AWS CodePipeline, Bring your own Continuous delivery, Rapid delivery, fail fast
Open Architecture	API enabled, Infrastructure as Code (Terraform, CloudFormation) Network connectivity, Flexibility to stand up environment in Cloud
Digital Twins	Replicating hardware (sensors, bus sub-systems) from on-prem to Cloud Virtualized physical environment from on-prem to Cloud (SVs, sensors, architectures) (physical hardware, server infrastructure); Tested thoroughly within the Cloud, minimizes on-prem testing
Own the Tech Stack	GFE cloud / GFE provided accounts; Tech stack is all data, models, software, and associated infrastructure needed to create and optimize a system's lifecycle digitally.
Cyber Secure Infrastructure	Accreditations, ability to leverage AWS tools and services; Third party tools and services to secure Shared responsibility model
ATOs	Accreditations; Shared responsibility model Production applications running at all IL levels and TS/SCI SAP
DevOps / DevSecOps	Infrastructure as code; Automation; Pipelines through AWS or third party tools Templated environments
Streaming Data Management	AWS Kinesis; IoT services
Algorithm Training	SageMaker; KubeFlow; Third party tools

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Digital Engineering & Management
Own the Tech Stack

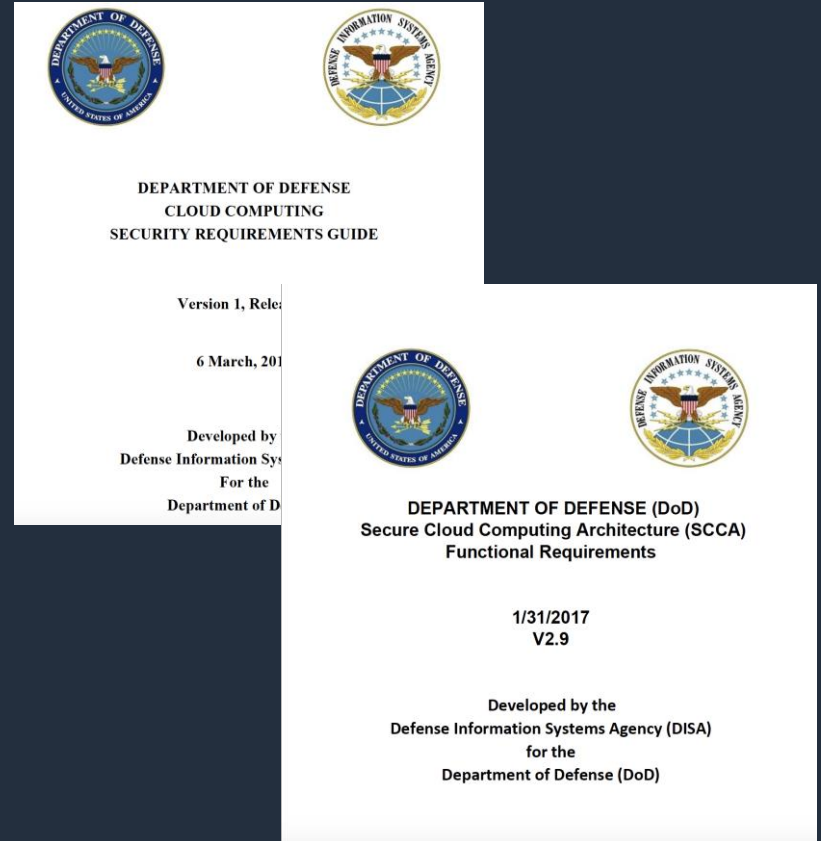|	Integrated Tech Stack
Cloud as a Service	#cloudOne (base layer of tech stack)
Platform as a Service	#platformOne (base layer of tech stack)
Model Based System Engineering	#mbseOne Bring your own tools (Cameo, Matlab, STK)
Data as a Service	#dataOne (UDL, Vault) on AWS AWS S3, AWS Elastic File System
Data Analytics as a Service	#analyzeOne AWS EMR, AWS Athena, AWS Glue, Bring your own
Artificial Intelligence as a Service	#smartOne AWS SageMaker, AWS Rekognition, AWS Transcribe, AWS Comprehend Bring your own
Edge as a Service	#deviceOne Getting data HERE is what matters AWS Outpost, AWS Snow Familiy

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DoD Cloud Governance

DoD Cloud Computing Security Requirements Guide (DoD SRG)
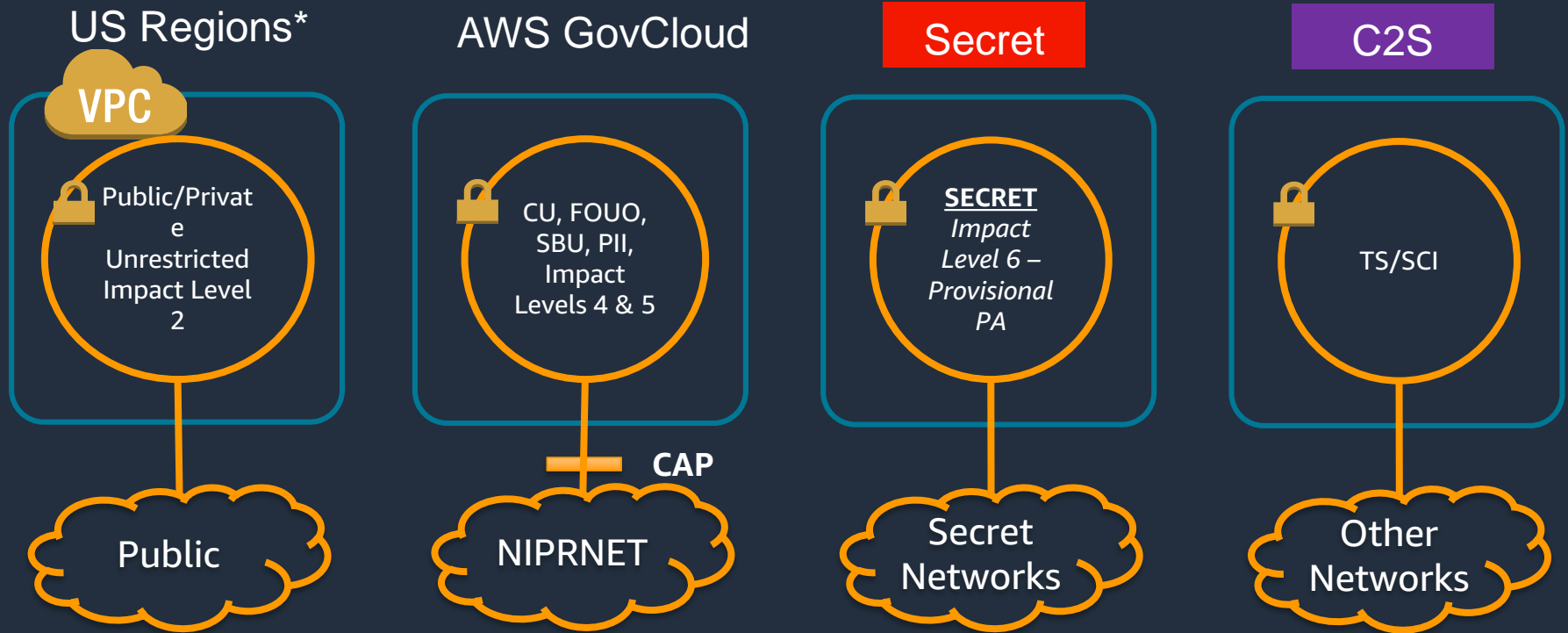
Overall governing document across all cloud providers

DoD Secure Cloud Computing Architecture (DoD SCCA)

Prescriptive "How" guidance on how to build IL2 through IL6 environments

DEPARTMENT OF DEFENSE
CLOUD COMPUTING
SECURITY REQUIREMENTS GUIDE

Version 1, Rele...

6 March, 201...

Developed by
Defense Information Sys...
For the
Department of D...

DEPARTMENT OF DEFENSE (DoD)
Secure Cloud Computing Architecture (SCCA)
Functional Requirements

1/31/2017
V2.9

Developed by the
Defense Information Systems Agency (DISA)
for the
Department of Defense (DoD)

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AWS's Commitment to DoD: Purpose Built Infrastructure

US Regions*

AWS GovCloud

Secret

C2S

VPC

Public/Private Unrestricted Impact Level 2

CU, FOUO, SBU, PII, Impact Levels 4 & 5

SECRET *Impact Level 6 – Provisional PA*

TS/SCI

CAP

Public

NIPRNET

Secret Networks

Other Networks

* US Regions – CONUS (US-East/West)

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Direct Access to AWS
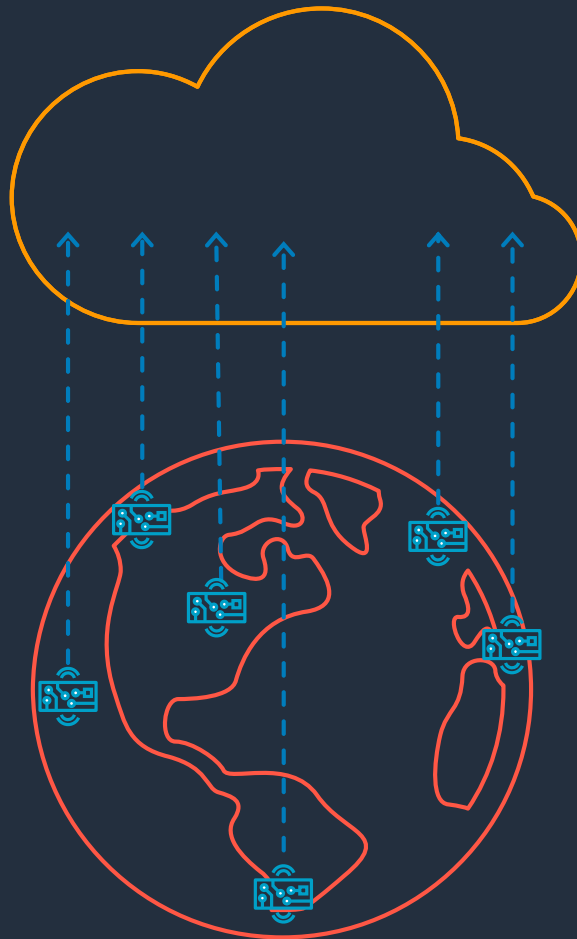
Elastic Cloud Compute (EC2)
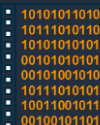
Simple Storage Service (S3)

SageMaker Machine Learning

CloudFront – Data Distribution

Security: Shared Responsibility Model

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AWS Ground Station & Global Infrastructure

The broad set of AWS networking services offers essential security features by isolating resources, encrypting data, and connecting privately on the AWS global network.

Space Force Environment & Vision Alignment

Adversaries and threats

Space Force "Digital Service by Design"

Space transformation → mission and data integration

Leverage **digital engineering** → experimentation and innovation

Integrated **Cyber Security**

Develop a digital workforce

Asymmetric Advantages

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Summary

Transformation of USG Space

AWS Infrastructure & Security

Power of AWS Cloud Services

Economics of the Cloud

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