DISA

DEFENSE INFORMATION SYSTEMS AGENCY
The IT Combat Support Agency

HOSTING AND COMPUTE CENTER
Actio Non Verba
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DoD Cloud IaC

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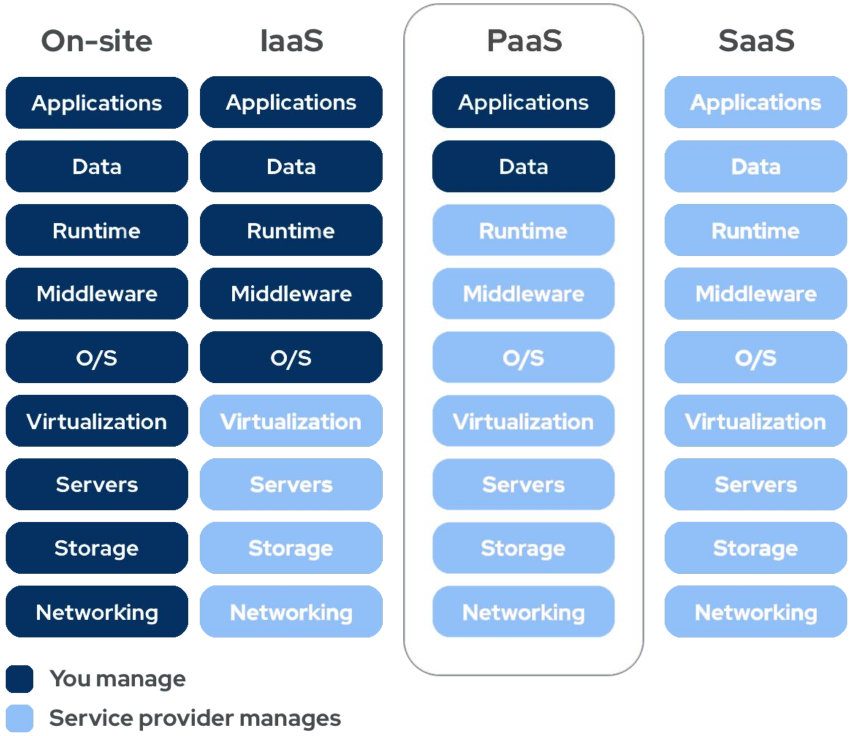
DoD Cloud Infrastructure as Code – Accelerate Cloud Adoption

DoD Cloud IaC are baselines that leverage IaC automation to generate **pre-configured, pre-authorized, Platform as a Service (PaaS)**-focused environments. Whenever possible, DoD Cloud IaC leverages security services offered by Cloud Service Providers (CSP) over traditional data center tools. DoD Cloud IaC helps customers adopt cloud faster.

Highlights

- **Takes 7 months off typical cloud journey**
  - Baselines for both Azure and AWS, Google in works
  - Supports IL2, IL4 and IL5 workloads. IL6 underway
  - PaaS focused; leveraging CSP Security Tools
- Only decentralized IaC baseline with ATO from DISA RME and Common Controls available for inheritance in eMASS
- Only IaC baseline available in Azure Marketplace
- Only IaC baseline developed under CRADAs w/ CSPs
- We help deploy baselines in a 3-4 hour session for free
- Completed 21 DoD Components deployments



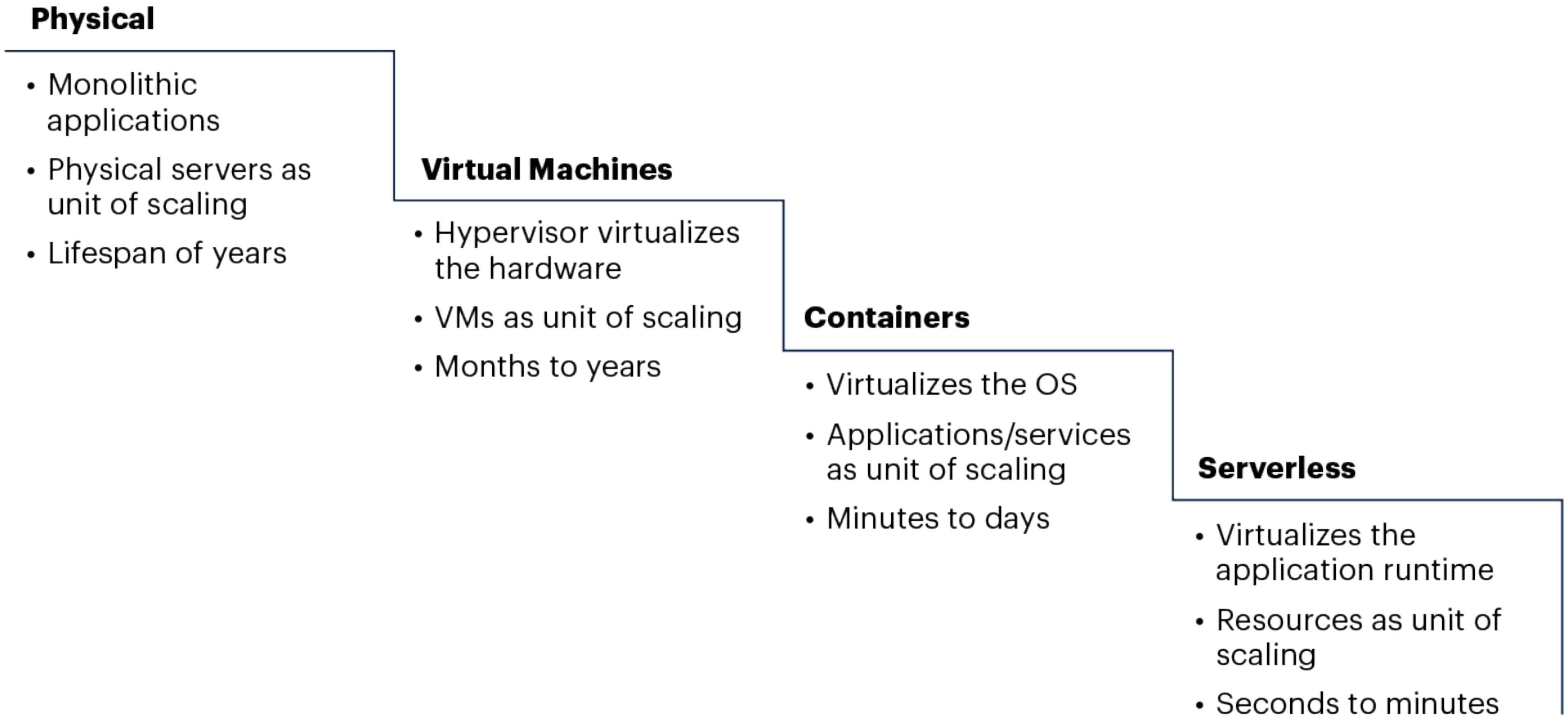
On-site	IaaS	PaaS	SaaS
■ Applications	■ Applications	■ Applications	□ Applications
■ Data	■ Data	■ Data	□ Data
■ Runtime	■ Runtime	□ Runtime	□ Runtime
■ Middleware	■ Middleware	□ Middleware	□ Middleware
■ O/S	■ O/S	□ O/S	□ O/S
■ Virtualization	□ Virtualization	□ Virtualization	□ Virtualization
■ Servers	□ Servers	□ Servers	□ Servers
■ Storage	□ Storage	□ Storage	□ Storage
■ Networking	□ Networking	□ Networking	□ Networking

■ You manage

□ Service provider manages

DoD Cloud IaC   Azure   aws   Google Cloud Platform

Workload Evolution



Physical

- Monolithic applications
- Physical servers as unit of scaling
- Lifespan of years

Virtual Machines

- Hypervisor virtualizes the hardware
- VMs as unit of scaling
- Months to years

Containers

- Virtualizes the OS
- Applications/services as unit of scaling
- Minutes to days

Serverless

- Virtualizes the application runtime
- Resources as unit of scaling
- Seconds to minutes

Source: Gartner

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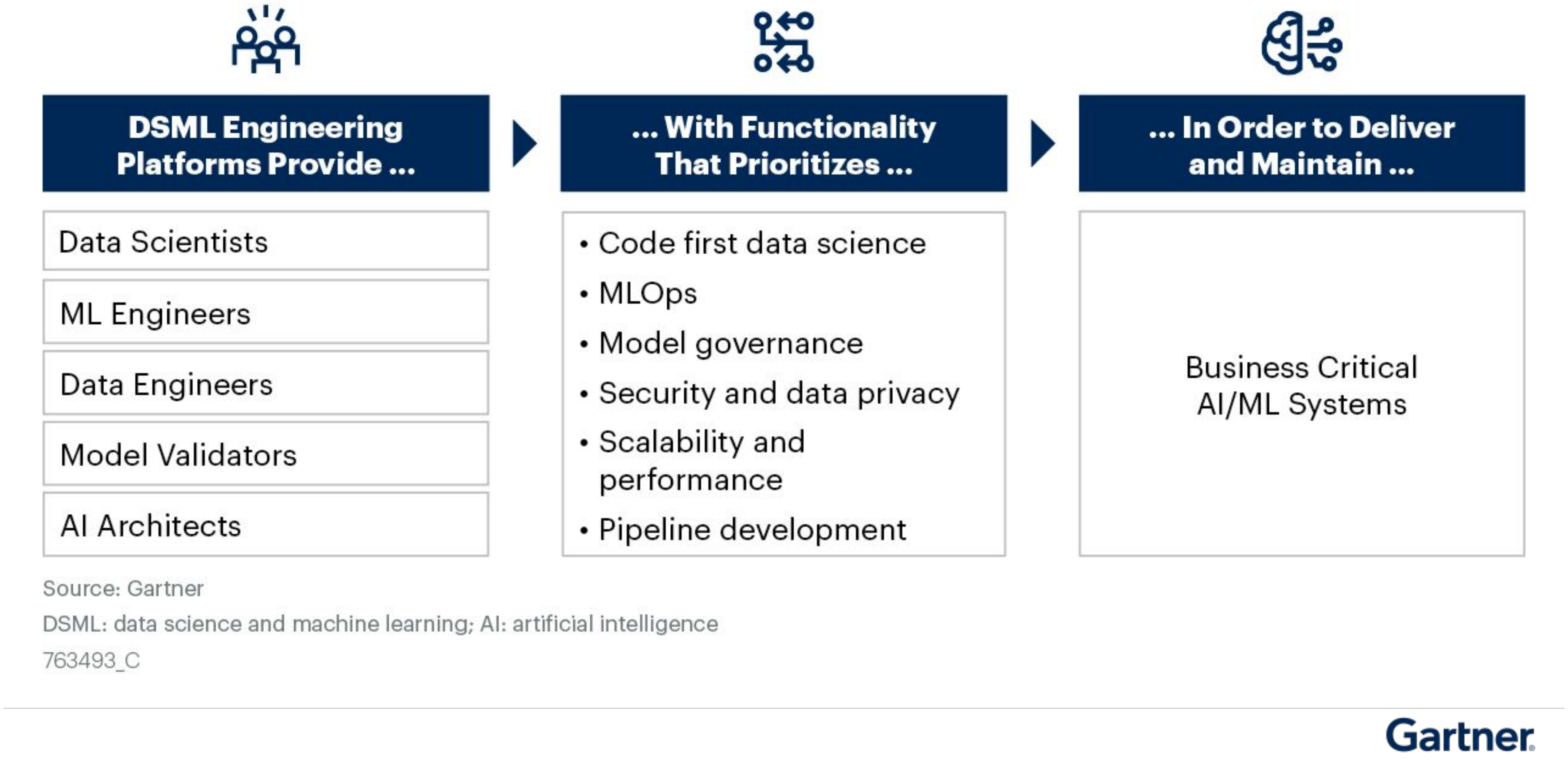
Gartner

Data Science and Machine Learning (DSML) Platforms



DSML Engineering Platforms Provide ...

- Data Scientists
- ML Engineers
- Data Engineers
- Model Validators
- AI Architects

... With Functionality That Prioritizes ...

- Code first data science
- MLOps
- Model governance
- Security and data privacy
- Scalability and performance
- Pipeline development

... In Order to Deliver and Maintain ...

Business Critical AI/ML Systems

Source: Gartner

DSML: data science and machine learning; AI: artificial intelligence

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Gartner

DoD Cloud IaC for Azure at IL2, IL4, IL5

- **Supporting Services**
  - Azure Active Directory
  - Azure Activity Logs
  - Azure Alerts
  - Azure Bastion
  - Azure Cloud Shell
  - Azure DDoS Protection
  - Azure Firewall
  - Azure Frontdoor
  - Azure Key Vault
  - Azure Log Analytics Notebook
  - Azure Network Security Groups
  - Azure Policies
  - Azure Security Center
  - Azure Sentinel
  - Azure Service Heath
  - Azure VNET
  - Azure Web Application Firewall
- **Application & DB Hosting**
  - Azure App Service
  - Azure Database
  - Azure Cosmos DB
  - Azure Cache for Redis
- **Containers**
  - Azure Kubernetes Service
  - Azure Container Registry
- **Serverless**
  - Azure Functions
  - Azure Event Hub
- **Storage**
  - Azure Blog Storage
  - Azure Data Lake
- **Virtual Machines***
  - Azure Virtual Machines
  - Azure Defender for Cloud
- **AI/ML**
  - Azure Machine Learning
- **Internet of Things (IoT)**
  - Azure IoT Hub
- **Hybrid Cloud**
  - Azure Data Factory
- **API Management**
  - Azure API Management
- **Maps**
  - Azure Maps

DoD Cloud IaC for AWS at IL2, IL4, IL5

- **Supporting Services**
  - AWS Audit Manager
  - AWS Cloud Trail
  - AWS CloudWatch
  - Amazon Cognito
  - AWS Config
  - AWS Network Firewall
  - Amazon GuardDuty
  - AWS Identity & Access Management (IAM)
  - AWS Key Management Service
  - AWS Organizations
  - AWS Security Hub
  - AWS Service Catalog
  - AWS Transit Gateway
  - Amazon Virtual Private Cloud
- **Containers**
  - AWS Elastic Kubernetes Service- Fargate*
  - AWS Elastic Container Service (ECS)- Fargate
  - Amazon Container Registry
- **Database Hosting**
  - Amazon Aurora
  - Amazon DynamoDB
- **Serverless**
  - AWS Lambda
- **AI/ML**
  - Amazon Sagemaker
- **IoT**
  - AWS IoT Greengrass
- **Hybrid**
  - AWS Storage Gateway
- **Managed Desktop**
  - Amazon AppStream 2.0

DoD Cloud IaC for Google at IL2, IL4, IL5

- **Supporting Services**
  - Google Cloud Armor
  - Google Cloud Logging
  - Google Cloud Monitoring
  - Google Cloud Identity & Access Management
  - Google Data Loss Prevention API
  - Google Cloud Security Command Center
  - Google Forseti*
  - Google Cloud IDS*
  - Google Virtual Private Cloud
  - 3rd Party Firewall
  - Google Cloud Router
  - Google Cloud Interconnect (BCAP)
  - VPC/Firewall Flow Logs
  - Google Cloud KMS
  - Identity Platform (GD)
  - Google Cloud Trace
  - Google Cloud Load Balancing
  - Google Cloud Storage

- **Containers**
  - Google Kubernetes Engine
  - Google Anthos
  - Google Container Registry
  - Container Analysis*
  - Container Threat Detection*
- **Database**
  - Google BigQuery
- **Virtual Machines**
  - Google Compute Engine
  - Persistent Disk
- **Additional VDMS Services**
  - Endpoint Protection Networking*
  - Vulnerability Scanning*

**Post MVP Enhancement*

- GCP AI/ML services are currently not available at IL4/IL5
- GCP AI/ML services will begin to be added to DoD Cloud IaC for Google baseline in Fall 2022

Google Cloud Platform

IaC in Use: Blue Heron C2 System for OAR

TRANSCOM Air Mobility Command (AMC) built a Command and Control (C2) system in 16 days w/ 3 FTE and a 10k budget to support OPERATION ALLIED REFUGE in Afghanistan

The DoD Cloud IaC for Azure baseline was used to deploy a serverless architecture to scale from pilot to production in 72 hours

Contact Us

- **To learn about DoD Cloud IaC**
  - https://www.hacc.mil/Products/DOD-IaC/
- **To review documentation - IaC Repo Instructions, Security Guide etc** (Requires CAC)
  - https://intelshare.intelink.gov/sites/ccpo/_layouts/15/start.aspx#/IaCDocuments/Forms/AllItems.aspx
- **To join the DoD Cloud IaC Community of Practice (COP)**
  - Email: osd.mc-alex.dod-cio.mbx.dod-iac@mail.mil (Limited to .mil email addresses only)
- **To ask specific questions or request a deployment session**
  - https://www.hacc.mil/Contact-Us/Product-Questions/
  - Email: dodcloudiac_support@ccpo.mil