

# AWS Migration Competency Case Study

Virtual Desktop Infrastructure (VDI) Migration



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**Client Organization Name:** Defense Contractor

**Period of Performance:** October 2019 – September 2021

**Migration Cutover/Go Live:** August 2021

**Offeror's Role for the Case Study:** Prime Contractor

## About the Customer:

Our client was a British multinational arms, security, and aerospace company based in London, England. The defense contractor contracted CTAC to help migrate their corporate desktop computing capabilities into a cloud-based Virtual Desktop Infrastructure (VDI). The contractor required the duplication of their on-premise/hybrid cloud computing capabilities and the migration of those workflows into a secure, isolated infrastructure. The new cloud-based platform was to be built in support of classified workloads for the United States Navy on the development of onboard naval missile systems. The work was classified at the Department of Defense (DoD) Cloud Computing (CC) Security Requirements Guide (SRG) Impact Level 5 (IL5).

## Customer Challenge:

Due to the DoD CC SRG IL5 security posture of the Navy's missile systems, The contractor's engineers could not leverage their corporate IT infrastructure for this project. Instead, they needed their corporate computing capabilities and workflows to be duplicated and migrated into a new, isolated cloud-based Information Technology environment. This isolated platform would provide a working environment capable of storing and processing Controlled Unclassified Information and access to services for employees and other authorized users. The secure environment would also have to be fully self-contained including its own full IT infrastructure including separate Outlook servers, Citrix VDI, Active Directory, etc. The defense contractor contracted CTAC's AWS DevOps engineers and cloud migration experts to design, migrate and deploy this new secure working environment.

Connections to various on premises hardware resources (thin clients, printers, etc...) needed to be provided in a secure and effective manner while maintaining a strongly isolated security posture for the environment as a whole. It was vital that core workflows, services, and applications remain unchanged in the new environment to minimize the impact and disruption associated with the migration effort. This meant that all existing software, licensing, account, access controls, and configurations needed to be replicated in the cloud with little to no divergence from the existing on-premises equivalents.

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### Partner Solution:

The defense contractor has a capable, mature corporate IT environment enabling its engineers to provide their clients with modern, robust solutions. The security requirements to access and enhance secure military systems are outlined by the DoD CC SRG IL5. All endpoints accessing classified systems are required to originate from trusted, secured environments. The defense contractor's corporate environment had not been subject to a Navy security review, and meeting such strict guidelines would limit the tools, applications and systems on their corporate network. Instead of limiting the capabilities of their own network/environment, they chose to build a new, isolated environment and migrate all data, files, applications, users, and workflow processes to the new platform. To meet this goal, the defense contractor turned to CTAC to help provision the infrastructure and migrate their workflows.

CTAC's DevOps engineering team established four new AWS GovCloud accounts each addressing a specific business need: Management, VDI, Shared Services, and Security. Within each account, our engineers provisioned new Virtual Private Clouds (VPCs) each with best practice subnet configurations. As no Navy data can be commingled with corporate or other program data, this infrastructure had to be isolated, but completely self-contained. Within each of the VPCs, EC2 instances were provisioned to manage the required computing capabilities supporting Microsoft Exchange Services, Microsoft Active Directory, Citrix VDI, and Liquidware App Suite. CTAC DevOps engineers leveraged Terraform to develop the Infrastructure as Code (IaC) to provision the entire solution. CTAC leveraged AWS Direct Connect to connect the defense contractor's corporate, on premises network to the new, secure AWS network using software defined networking to manage isolation and connectivity. Through the point-to-point secure connection, all workflows, information, files, and data-sets were migrated to AWS. Documentation and files were migrated into the encrypted network file system Amazon Elastic File System (EFS). Amazon Elastic Block Storage (EBS) and Amazon Relational Database Service (RDS) were leveraged for the secure object and database storage.

Classified at IL5, it was imperative that the environment restrict unauthorized access and remain completely isolated. CTAC leveraged AWS's native managed services available within its US GovCloud offering. In addition to the provisioned subnets, users were migrated with user access and permissions managed through AWS Identity and Access Management (IAM). CloudWatch is utilized to monitor applications and the overall performance of the infrastructure. CloudTrail ensures monitoring and logging of API activity within accounts and provides an audit trail for assessment and incident response. To further secure the environment, VPN clients and servers were configured to allow access only to Citrix VDIs via thin clients with Personal Identity Verification (PIV) card authentication.

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### Additional AWS Services & 3rd Party Tools Leveraged:

Customer Need	AWS	3rd Party
Secured Virtual Network	Amazon Virtual Private Cloud (VPC) – AWS GovCloud (US)	
The Ability to Store and Classify Files	Amazon Elastic File Systems (EFS)	
Store Drives	Amazon Elastic Block Storage (EBS)	
Computing Capabilities to include hosting Active Directory, Exchange Servers, and Print Servers	Amazon Elastic Compute Cloud (EC2)	
Virtual Desktops		Citrix VDI
Infrastructure as Code		HashiCorp Terraform
User Environment Management, Application Layering and User Experience Monitoring		Liquidware App Suite (FlexApp, ProfileUnity, Stratusphere)



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## Results and Benefits:

The new cloud-based IT environment provides our client's engineers with the secure and isolated development environment required to maintain and enhance the Navy's classified missile systems. Leveraging AWS's vast suite of managed services, CTAC and our client were able to establish a fully isolated and self-contained IT infrastructure that duplicated the capabilities of their corporate environment and migrated all users, workflows, applications, and systems seamlessly to the new environment. The migrated workflows ensured that no classified information could be accidentally commingled with corporate or unclassified data. The new environment and its extensible infrastructure as code also provided our client with the future capabilities of provisioning secure, isolated environments for upcoming classified work and clients up to DoD IL5. CTAC's solution provided our client with the enhanced capability of scalability by providing top-tier engineering and development to the military's most securely classified systems.

## About the Partner:

For 30 years, CTAC has built a team of people, and a business around them, who know what it means to put our client's mission first. We constantly invest in that team to ensure that we stay at the cutting edge of technology, so our clients are never getting yesterday's solution today. Our approach combines deep knowledge of the federal space, application of up-to-date industry best practices and a constantly evolving commitment to technical excellence to meet our clients where they are. That means answering the ask and digging deeper. It means showing up and staying connected. It means getting it done and getting it right.



- Solution Provider
- Govt. Services Competency
- DevOps Services Competency

- Public Sector Solution Provider
- Public Safety/Disaster Response Services Competency

CTAC is an Advanced AWS Partner and an AWS Public Sector Solutions Provider with the differentiator of having achieved three AWS competencies: Government, DevOps, and Public Safety and Disaster Response. As a testament to our commitment as an AWS partner, our staff currently hold over 50 AWS Accreditations and over 45 Specialty, Professional, Associate, and Foundational AWS certifications. This ensures our Migration, Platform as a Service (PaaS), Infrastructure Support, Modernization, Resale, and DevOps teams are up to date in both education and experience designing, modernizing and deploying cloud-based solutions in AWS.