CLOUD SERVICES

Securely scale services as demand grows.

TCG modernizes government services for improved availability, scalability, and security through cloud technology. We have configured and deployed cloud environments for mission-critical applications on platforms such as AWS, Cloud.gov, and Microsoft Azure.



We Offer

- **Native Cloud Development**
- **Migration to Secure Cloud Environments**
- **AWS Elastic Container Service (ECS)**
- **Platform as a Service**
- **Certified AWS Solutions Architects**

Advantages for Federal Agencies

Our cloud operations are backed by CMMI and ISO 20000-1 (IT Service Management) quality processes.

MINIMIZE TOTAL COST OF OWNERSHIP

Evaluate current system architectures before beginning migrations to highlight and mitigate inefficiencies (this could mean deferring migration of a particular system until it can be redesigned).

TAILORED, ITERATIVE MIGRATION

Implement hybrid systems that run partially in the cloud and partially in agency data centers. Secure, high-speed data connections can be maintained between cloud and on-prem systems, with components deployed to the cloud incrementally over time without major disruptions.

APPLICATION AND SUPPLY CHAIN SECURITY

Use FISMA controls for network topology, server configuration, application security, application logging, authentication, and monitoring. Align with NIST Cloud Reference Architecture to provide standard approaches for network and application controls. Apply Zero Trust Architecture with AWS Cognito and PIV, SAML, and OIDC single sign-on (SSO). Target FedRAMP High and DoD IL5 cloud environments.

TCG CLOUD SERVICES

Container orchestration
Automatic scalability
AWS ECS, Kubernetes.

Load balancing
Performance, availability
Amazon ELB, Amazon Load Balancer, LoadMaster, NGINX, Zevenet, Incapsula.

Virtual Private Networking (VPN)
Improved security, reduced risk
AWS VPN, Azure VPN Gateway.

Serverless Architecture
Cost and time savings
AWS Lambda, AWS Fargate, Azure Serverless.

Cloud native database services
Maintainability
Amazon RDS, MongoDB, Amazon DynamoDB, Azure SQL Database, Azure Cosmos DB, Amazon Redshift.

Content Delivery Network (CDN)
Increased reliability, performance, cost savings
Akamai, Amazon CloudFront, Cloudflare, Azure CDN, Google Cloud CDN.

Infrastructure-as-Code
Supports CI/CD, provides consistency, visibility
AWS CloudFormation and Terraform, Ansible.

CLOUD: INFINITELY SCALABLE

SUCCESS STORIES

NIH NITRC

The NeuroImaging Tools & Resources Collaboratory (NITRC) has transformed neuroscience research through cloud technology, putting vast stores of data and computing power at the fingertips of researchers across the globe at a fraction of the previous cost. Research that previously took a year or more now takes weeks. Computing power that cost thousands now costs pennies.

Funded by the National Institutes of Health (NIH), TCG designed and developed NITRC as a collaborative site and repository of neuroimaging analysis software, publicly available datasets, and virtualized computational environments that can be run anywhere. NITRC uses the Oracle Grid Engine to permit grid pipeline computing across cloud environments on open AWS and Azure virtual machine images.

OUTCOMES

$35.4M
Cost savings from data sharing component

460,700
Unique visitors per month

$10.7M
Data sets and software downloaded

81,300
Page views per month

22,500
Registered users

14,000
Google Scholar citations

FCC ECFS

The Federal Communications Commission (FCC) Electronic Comment Filing System (ECFS) plays a vital role in ensuring the public has a voice in the rules and policies that shape key telecommunication and broadcast issues, such as net neutrality. The previous version of ECFS crashed during periods of very high traffic, including when a late-night TV host urged viewers to comment in large numbers.

TCG worked with the FCC to implement a cloud-first, “infinitely scalable” architecture, overhauling the system to meet future surges in demand and secure data. The core of the system uses AWS’s Elastic Container Service (ECS) to dynamically manage, or “orchestrate,” multiple containers. This architecture ensures reliability by reducing single points of failure. It also creates cost savings as expensive computing power is increased and throttled back as needed.

OUTCOMES · JULY 2022

Dish Network proposed using the 12GHz spectrum for 5G; SpaceX urged Starlink users to petition the FCC, and every signature filed a comment in ECFS.

70,000 Comments in the first week

95,000 Comments in total

No change in response time as traffic surged.

Scaling was automatic — no team intervention.