

STREAMLINING TRANSLATIONS WITH HLT IN THE CLOUD

Graham Tech implemented a set of Cloud Services to help the DoD evaluate and operationalize Human Language Technology (HLT).

BACKGROUND

A DoD center for a large U.S. Government Agency required the ability to evaluate HLT. They needed to assess its effectiveness and potential for enhancing core translation capabilities. They needed an environment that allowed for efficient, compliant, and scalable deployments of HLT as it applied to their diverse clients and their widely varying needs.

The objectives were to:

- Reduce the maintenance costs of an on-premises laboratory.
- Increase the efficiency with which they could administer and evaluate HLT on various platforms.
- Monitor budget administration within the infrastructure and applications. It was imperative that the technology laboratory and applications maintain compliance with organizational standards.

Categories

Cloud Enterprise
Architecture

Architecture
DevOps

Cloud Governance
& Compliance

Solution
Containerization

CHALLENGE

GRAHAM solutions architect (SA) worked with the Product Owner to define the challenge. The Product Owner needed a flexible HLT hosting solution that leveraged agency compliant products and services. They needed the flexibility to expeditiously provision platforms of various types to compare and evaluate the technology and make it available for various agencies.

GRAHAM's SA and engineer determined that a scheduled maintenance and monitoring of assets would be a wise investment. It would ensure that the resources are used appropriately, that the services are available during peak activity and reduce costs during off-peak hours. Given the need to support neural networks and high resource usage HLT, the solution required support for large data sets management and efficient retrieval, as well as saleable resources.

SOLUTION

GRAHAM's SA and Engineer lead the establishment of the center's first Amazon Web Services (AWS) GovCloud offerings. Our SA identified AWS's GovCloud environment as an appropriate tool to enable the center to migrate from its antiquated on-premises HLT evaluation laboratory to a more modern environment best suited to meet the aforementioned needs.

The SA designed and implemented a virtual private cloud (VPC) architecture to serve as the new HLT laboratory. The SA identified and established FedRAMP compliant AWS services, STIG'd operating systems, and custom scripts and applications to deploy, configure, secure, and monitor HLT for isolated multi-tier evaluation environments.

The cloud environments were monitored to assess and assert least-privilege and cost control.

Graham Tech services included:

- Requirements development
- Design
- Cost estimation
- Deployment
- Configuration
- Test and evaluation master plan
- Alpha and beta test administration
- Evaluation and operationalization report support for an HLT computer assisted translation (CAT) tool.

We also facilitated the project in other ways, including:

- Acted as primary liaison with the vendor and other agency partner technical staff for planning and technical exchanges
- Peer review support for the System Requirement Specification, Software Design Document, and the Installation & Configuration Manual
- Establish cost estimation, cost justifications, and cost monitoring procedures
- Implement the AWS hosting environment in accordance with the vendor specifications and agency compliance regulations
- Deploy, update and configure the application within Kubernetes
- Develop and Test an Evaluation Master plan for agency approval
- Coordinate and participate in Alpha and Beta testing
- Create and submit an evaluation and operationalization report; with the intent of moving migrating to production, or providing lessons learned and procedures for a partner department with a broader user base

IMPACT

Through the use of automation, flexibility and streamlining within the cloud, the center can now quickly launch HLT applications within secure and compliant hosting environments. They can efficiently conduct testing, host tools, and more across the entire organization.

Specifically, the organization can now:

- **Manage and control cost estimates:** HLT cost estimation, justification and reporting to set expectations and maintain budgets; AWS cost calculator, resource tagging and usage reporting, services log capture & analysis, and instance on/off automation to enhance resource usage and cost control
- **Research and evaluate tools:** Research, prototype and report on cloud and HLT integration candidates to educate our business management team (BMS) on cloud compliant solutions and HLT capabilities that would streamline operations if integrated; automate project workflow management and establish key performance indicators
- **Improve usability and accessibility:** Enable less experienced AWS users on the evaluation team with offerings such as CloudFormation for VPC and instance provision automation, AutoScaling Group and Launch Configurations for instance scaling and recreation, and Kubernetes administration for large scale HLT cluster management and service interruption reduction.
- **Improve performance:** Docker, ECS, and Kubernetes administration significantly improves performance through enhanced scalability, faster deployments and updates, and higher system uptime

To learn more, visit www.graham-tech.com
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