Technical Exercise Assignment Options

Briefing: Terraform Cloud 2.0 (Terraform 1)

ACME corp sells widgets online and maintains a customer-facing website for order intake and management. The CIO of ACME corporation has publicly described his Cloud 2.0 initiative reinventing provisioning across the company. Goals of the initiative are to minimize cloud cost and enforce provisioning in a uniform way. The output of the initiative will be the selection of an infrastructure provisioning platform that will be provided to all business units as the standard path for deployment. A team of experts will be responsible for developing reusable code and offering a common registry for developers to source components.

The ACME team is interested in exploring Terraform Cloud as the potential provisioning platform according to the CIO's vision. HashiCorp is aware due to previous calls that some people on the team have tried alternative solutions, and that today a competitive solution is used. While not realizing the full value the customer needs, the competitive solution feels good enough for a considerable number of technical stakeholders. All options are on the table according to the CIO including building a new custom platform, or purchasing a competitive tool.

The ACME team joining your call asked for the meeting with the intention of understanding the value of using Terraform Cloud versus other competitive tools. The team specifically asked for a demo of:

- Terraform Code or Modules residing in a VCS such as GitLab or GitHub
- Creation of Workspaces
- Use of Terraform CLI / Open Source against remote backend workspace
- How different teams can collaborate
- Provisioning to one or more clouds or services

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Resources:
Create a free cloud account at https://app.terraform.io/signup/account
Terraform Cloud Learn: https://developer.hashicorp.com/terraform/tutorials/cloud-get-started

Briefing: Terraform – MultiCloud / Platform Provisioning, Infrastructure as Code (Terraform 2)

The CTO of ACME corp has announced the need to shift from AWS dependency to a multi cloud strategy due to an upcoming merger with Initech. The ACME team is interested in using Terraform for provisioning to multiple clouds and to understand the value of infrastructure as code. Teams across Initech and ACME have been using a combination of custom python scripts, ServiceNow, and Ansible. Budget planning has started for next year and the CTO would like to make a decision on a path forward asap.

The ACME team joining your call asked for the meeting with the intention of understanding the value of using **Terraform Cloud** versus other competitive tools. The team specifically asked for a demo of:

- AWS or Azure or GCP (live demo). Preference should be given to Terraform 1.0 and above. OR
- Openstack or Openshift or VMware OR
- Demonstration of how Terraform can provision to other platforms

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Note: Please develop terraform code demonstrating an example use case of your choosing (provisioning a VM, database application, etc). Your example should not resemble a canned solution on the web.

Resources:
Create a free cloud account at https://app.terraform.io/signup/account
Terraform Cloud Learn https://developer.hashicorp.com/terraform/tutorials/cloud-get-started

Briefing: Vault - database dynamic secrets (Vault 1)

ACME corp is in the business of selling widgets and offers an app for its customers to purchase widgets for friends and family. The customer-facing app is responsible for 90% of ACME's revenue and its stability is mission critical.

Following a recent breach revealing customer information, the CSO of ACME is looking to improve security posture across the organization. A security audit found that the customer facing app used static credentials for connecting to its databases. The ACME team would like to improve the security posture of their database credentials, which currently are provisioned by the IAM team through a ticketing system.

We are aware due to previous calls that there is a solution for password vaulting that includes a manual process to store and retrieve credentials, that while not realizing the full value the customer needs, it feels good enough for a considerable number of technical stakeholders. All options are on the table according to the CSO including building the platform, or purchasing a competitive tool.

The ACME team asked for the meeting with the intention of understanding and seeing a demo of:

- Demonstrate Vault provisioning database credentials (your choice of database; live demo)
- Describe the solution (slides, code review)
- Discuss the solution using Vault versus other tools in the space

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Vault - Generate PKI X.509 certificates (Vault 2)

ACME corp has issued an RFP for PKI modernization. HashiCorp has been selected along with one other finalist following review of the RFP and both companies have been invited to meet with a set of stakeholders prior to ACME's decision.

After reviewing the RFP, the HashiCorp account team learned that ACME currently uses several costly HSMs for storage of long-lived certificates. ACME no longer has a requirement for an HSM and would like to decommission the HSM fleet if possible. The HashiCorp account team also learned that generation of private certificates for new endpoints on the customer's network currently has a 5 day SLA and requires an approval process. Developers have been missing app release timelines which is affecting ACME's bottom line and frustration is building. Out of desperation one development team is exploring Microsoft CA, and another team is looking into Vault OSS.

The team asked for the meeting with the intention of understanding and seeing the demo of:
- Demonstrate Vault PKI backend functionality (live demo)
- Describe the solution, via slides and code review
- Be ready to answer technical questions about the implementation (rotation, revocation, CRL, mTLS etc)
- Be ready to answer questions about the (flaws, downsides, competitors)

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Consul – Service discovery or multi-platform service mesh (Consul 1)

ACME corp is a software company that produces SaaS based business intelligence applications. The BI application is built on hundreds of microservices over several AWS EKS clusters. The application generates over 85% of ACME's revenue. ACME is currently researching service discovery solutions for their microservices as well as the ability to securely connect the services.

From a previous discovery session, we are aware that ACME is also exploring another competitive service discovery and mesh solution. Additionally, due to recent AWS outages, ACME is considering increasing the availability of their applications by deploying extra instances of their microservices to Azure. ACME is seeking a best-of breed solution that is scalable and offers the fastest time to market.

The ACME team asked for the meeting with the intention of understanding and seeing a demo of:
- Demonstrate Consul service discovery or service mesh (live demo)
- Describe the solution, via slides and code review
- Be ready to answer technical questions about the implementation (resiliency, how services are discovered, connected, and secured)
- Be ready to answer questions about Consul's pros and cons, competitors, and risks.

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Consul - Network Infrastructure Automation (Consul 2)

ACME corp is an auto manufacturer that's currently modernizing their IT operations by transitioning to the cloud. Currently, it takes ACME several weeks to stand up new applications due to constraints in place by a manual ticketing process required to update their load balancers. The required load balancer updates allow new applications to be discovered. The inability for ACME to productionalize new applications quickly is hurting their sales.

In a previous discovery call we learned the app team is frustrated because it takes too long for LB changes to be updated during production deployments. We also learned that ACME's networking team has been challenged to keep their LBs in sync due to the dynamic nature of ACME's applications. As a result, ACME has experienced several outages due to networking misconfigurations. ACME is interested in learning how Consul can solve their networking challenges.

The ACME team asked for the meeting with the intention of understanding and seeing the demo of:
- Demonstrate Consul-Terraform-Sync functionality (live demo) with NGINX, HAProxy, or F5 BigIP
- Describe the solution, slides, Consul UI, etc
- Be ready to answer technical questions about the solution (any potential risks, downsides, caveats)

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

Nomad - Flexible Workload Orchestration (Nomad 1)

ACME corp is a fintech firm providing digital banking services for 100+ financial institutions, banks, and credit unions. ACME powers the digital experiences for their clients by delivering applications across their on-premise and cloud environments. The workloads include containerized and non-containerized apps running in Linux and Windows. Due to the ACME's customers' heterogeneous environments, the ACME team is looking for a robust solution to

orchestrate their compute workloads across AWS, Google, and on-prem VMWare environments.

We learned from a recent call with ACME that it takes multiple hours to a week to set up new configurations for ACME's Compute environment. ACME spends a significant amount of time allocating application resources to servers, VMs, and containers across multiple clouds and on-prem environments. ACME has informed us that they are exploring Kubernetes as potential workload orchestration.

The ACME team asked for the meeting with the intention of understanding and seeing a demo of:
- Demonstrate multi cloud heterogeneous workload deployment using Nomad (live demo)
- Describe the solution with slides, diagrams, code review
- Be ready to answer technical questions, Nomad versus competition, how might the solution be improved

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.

ACME Corp: Design your own scenario (Choice)

Design your own scenario based on a product of your choice. Be sure to include the following:

- A brief introduction of the product and its value propositions.
- An outline of the needs and challenges discussed in a prior discovery meeting with ACME corp (slides or whiteboard) [Note: See example customer scenario according to the option selected below]
- An outline of how the product you chose solves the use case (slides or whiteboard)
- A live, hands-on technical demonstration (demo) of the tool actually solving the use case
- Summary and next steps

The following individuals from Acme Corp will be attending the meeting:
- CIO
- Cloud Architect
- DevOps Engineer
- SRE

Additionally, the Hiring Manager will join to orchestrate the Technical Exercise.