Summary

The Teleport Cloud offering is new; we're on a journey of defining and building a culture around production, offering a secure and reliable hosted version of Teleport Enterprise as a service.

Our mandate is straightforward; we need to be prepared to secure, monitor, maintain, scale, investigate, and automate our production environment for Teleport Cloud. Our work includes a wide variety of projects drawing on various skillsets, from ensuring we're up to date on patches to redesigning parts of the Teleport Core project to be more appealing to the Cloud.

Here are some of the projects we're working on right now:

- Rewriting the Teleport core project networking so that agents run by customers require fewer connections and overhead when phoning home.
- We are expanding Teleport Cloud to multiple regions, reducing latency between users and their infrastructure.
- We are deploying auto scalers, so no one needs to be paged to scale our infrastructure when there is a burst in new accounts.
- We're improving our security posture, currently focusing on ensuring we have an audit trail for generated and published assets and ensuring we're using encryption at rest in the right places.
- Progressing beyond minimum viable monitoring and alerting and fully adopting Grafana Cloud as our centralized metrics, alerting and logging platform.

The toolset we currently use is:

- Golang
- Terraform and Packer
- Kubernetes
- Prometheus / Alertmanager / Loki internally and on Grafana Cloud
- Amazon Web Services
- Drone.io
- and More

Rationale

These exercises have two goals.

- It helps us understand what to expect from you as an engineer, how you reason about production systems and investigate faults.
- It helps you get a feel for what it would be like to work at Teleport, as this exercise aims to simulate some of our day-as-usual and expose you to the type of work we're doing here.

We believe this technique is better and is more fun compared to whiteboard/quiz interviews so common in the industry. It's not without the downsides as it could take longer than traditional interviews. Some of the best teams use coding challenges.

We appreciate your time and are looking forward to hacking on this challenge together.

Backgrounds

Development Focus: Systems / Backend Developers

Systems developers on the platform team leverage a strong background in software development to build, maintain, deploy core production services.

Challenge

1. Systems developer challenge

Levels

See levels.pdf

Operations Focus: Devops / DevSecOps / SREs / Production engineers / etc

Team members with experience in various operations focused disciplines are focussed on the day to day delivery of platform components, such as build/testing automation of infrastructure as code, deploying and configuring our metrics, alarming and logging systems, automating build pipeliness, and other day to day activities to enable our cloud infrastructure.

Challenge

We use two interviews for team members with operational backgrounds, the first is a lightweight scripting / programming challenge, and the second is a troubleshooting production test. See the following links for outlines of each challenge.

1. Devops development challenge

2. Troubleshooting challenge

Levels

Area	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Scope	• Takes direction from the team to configure, automate, and troubleshoot internal or production systems	• Delivers solutions to achieve team-level goals	• Independently identifies and delivers solutions across a product area or technical systems	• Delivers business impact by leading multi-phase or cross-team efforts	• Contributes to the multi-year and multi-team technical strategy and deliver it through direct implementation or broad technical leadership	• Delivers results against strategic company level business objectives
Collaboration	• Works closely with a tech lead, team lead, or manager to execute on defined tasks	• Works with high level guidance from a tech lead, team lead, or manager on initiatives within a team	• Works primarily with a team and contributes to cross team initiatives	• Leads efforts within a team or portions of cross team efforts as applicable to a team	• Leads multi-team efforts and influences roadmaps	• Sets roadmaps and multi-year effort to evolve infrastructure and product
Skills Development	• Primarily focus on improving and gaining exposure as an engineer	• Increasingly developing in some areas and leveraging expertise for higher impact (e.g. Kubernetes Administration)	• Begins to focus on developing a combination of skills for broader exposure to the technical landscape	• Is a domain expert in a particular technology or product area, drawing on the broader skills exposure	• Begins to balance a focus on tactical vs strategic skillsets	•
Mentorship	•	• May mentor new hires, interns, or more junior engineers	• Actively works with less experienced engineers by helping them with their skills development, providing guidance, and setting a good example	•	• Serves as a role model for other engineers	•
Communications	• Updates internal documentation • Asks clear questions in Pull Requests, Slack, etc • Keeps the team updated on activities and blockers	• Writes new documentation, run-books, guides, etc • Leads knowledge sharing sessions based on recent learnings	• Contributes to engineering blog, meetups, booth duty, etc. to help advertise product and engineering culture	• Communicates design intent through design documents, technical reports, that is clear and understandable by the wide team.	• Able to work with customers or non-technical business units to articulate how our product investments solve customer problems.	•
On-call	• Trains and shadows others to develop on-call readiness	• Participates in on-call rotation utilizing available runbooks with backup available for novel problems	• Investigates and solves novel production issues where existing runbooks or documentation are not available • Acts as an escalation point for more junior on-call engineers	• Applies significant investigation experience to solve rare problems • Documents problems as runbooks or other supplementary	•	• Helps set and guide the production culture for the organization

				documentation for other engineers		
Security	• Asks others when unsure of the security implications of their work • Follows internal guidelines and best practices when interacting with the production environment	• Analyzes and apply security considerations to projects and configuration • Interprets upstream reports or scanner results and understand how vulnerabilities apply to our work	• Takes charge of minor security incident coordination • Contributes to security incident analysis and recommended mitigations or posture improvements • Actively contributes to increasing the security posture of the team	• Partner with outside security vendors for independent input into our security posture • Ensures security is fully considered for product features, infrastructure changes, etc	• Leads security design work for meeting compliance, engineering, or team goals	• Operates as a domain expert for security across the engineering team
Operations	• Documents and executes prescribed maintenance activities such as patching our environments when upstream releases are available	• Develops and tests procedures for production in a key area (such as backup and restore)	• Contributes to disaster recover planning and participates in resiliency tests	• Introduces the organization to new operational concepts (such as chaos engineering)	• Sets the standards for operational approach to achieve higher availability or resiliency targets	•
Development / Automation	• Writes clean and maintainable automation code in at least one language • Working towards learning and cleanly using the automation languages used by the team	• Able to write and contribute to more sophisticated control logic such as internal controllers • Designs, write, and test support automation such as chat bots, upgrade scripts, ticket routing, etc • Patches internal or upstream projects for better logging, analytics, monitoring, etc	• Engineers a key area of the cloud platform, such as design and deployment of autoscaling logic, patch automation, backup & restore, etc	• Applies software and systems engineering techniques to solve problems with production, not duct tape them over	• Applies sophisticated design techniques to improving our product capabilities in novel ways	•
Reliability	•	• Works towards filling monitoring and recovery gaps in our production systems, with a focus on avoid nuisance / toil from false positives	• Contributes to internal and upstream projects to fill instrumentation and logging gaps to collect the right information in metrics, logging, and alarming systems.	• Applies domain expertise to tune production software as we set our sights on increased scale	•	•
Systems Experience and Understanding	• Working understanding and ability to navigate linux systems and software systems used by a team	• Goes deeper into kernel, networking, overlay and cloud routing, including configuration and troubleshooting	• Solid understanding of linux workload isolation, syscall filtering, internals, for high security and production workloads	• Deep understanding of how various layers of abstraction interact for a working software system	• Deep understanding of how networked and distributed systems interact for a working cluster system	•

Note: These levels are used as a guide, not every engineer specifically matches every skill in every focus area of the guide. Higher level engineers are expected to have a broader set of skills than junior team members. Engineers that focus on certain disciplines do not require as broad an area of skills, such as team members focussing on Tooling may not require as deep network understanding. All team members are expected to meet Communications, Security, Oncall, and Operations requirements.
Note: Our production and operational focussed culture is very new and under development