INFRASTRUCTURE

a lunch-and-learn at AeroFS

OVERVIEW

- Architecture goals, design, and tools
- Elasticsearch and Kibana
- AWS Lambda and API Gateway

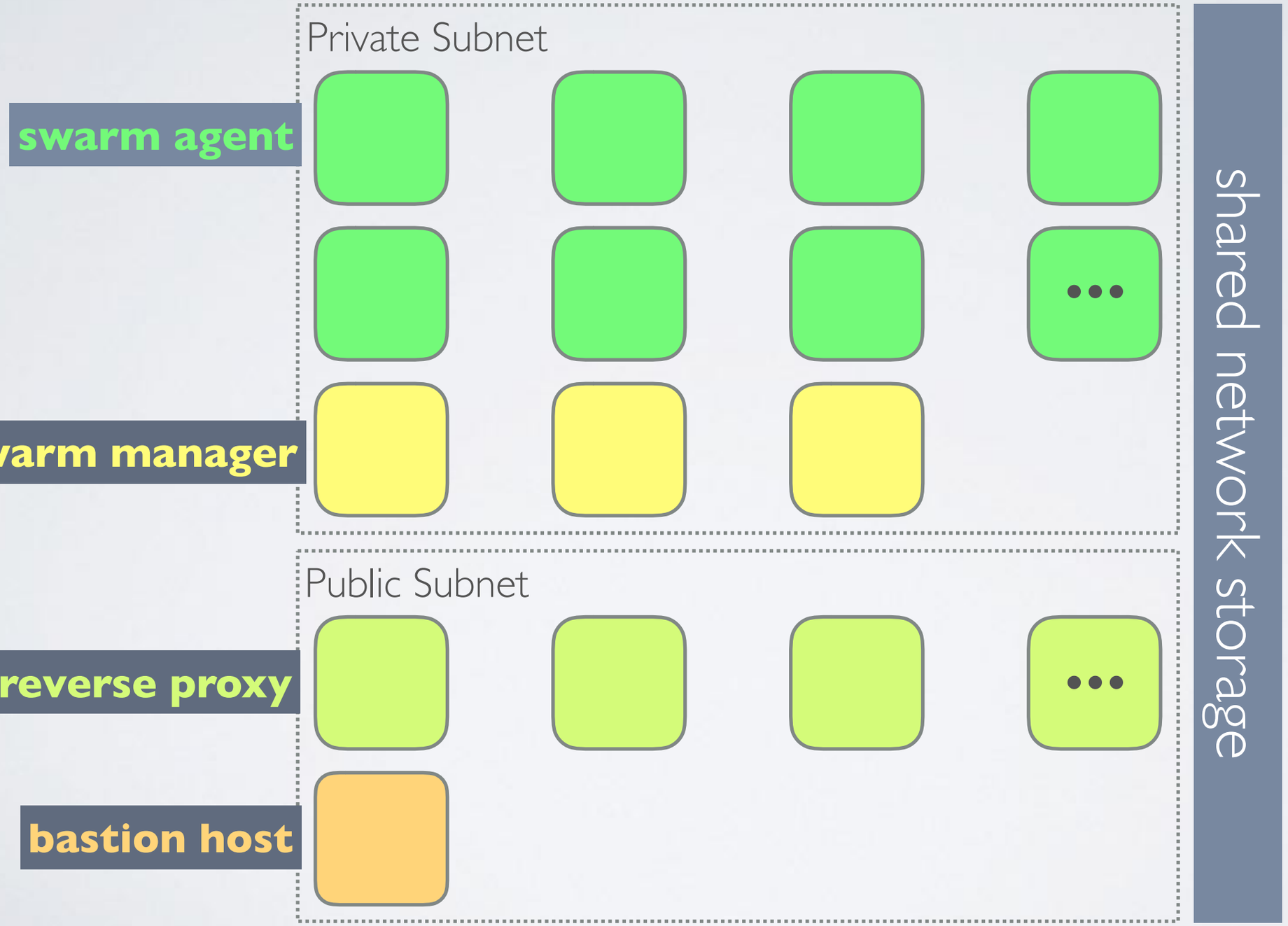
ARCHITECTURE

Goals

- Highly available
- Highly secure
- No human interaction

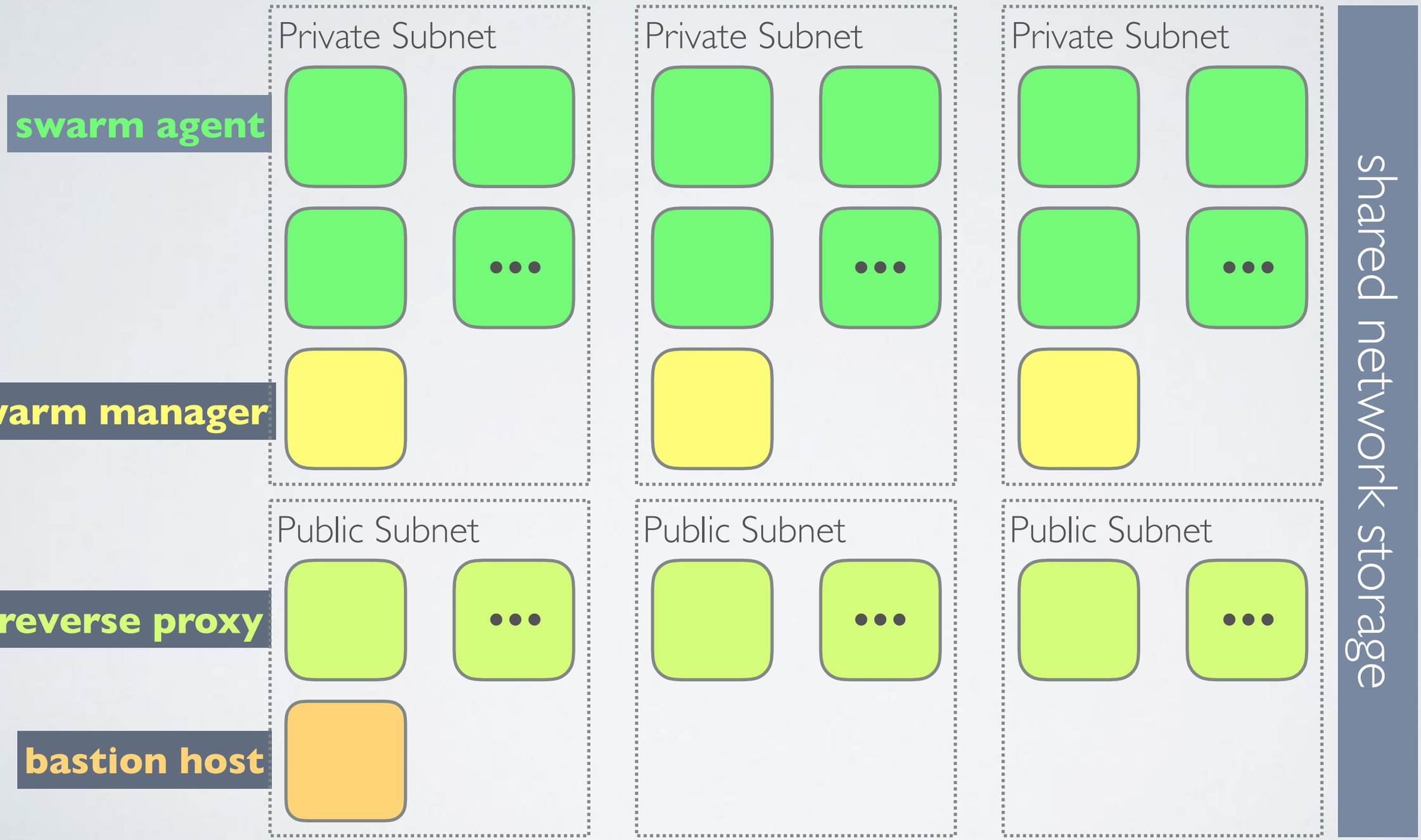
ARCHITECTURE

Single Availability Zone



ARCHITECTURE

Multiple Availability Zones



ARCHITECTURE

High Availability

- Multi-AZ cluster of manager nodes
- Autoscaling groups for instance-level persistence
- Docker Swarm scaling and rescheduling policies for container-level persistence
- Autoscaling groups and Docker Swarm scaling policies for reacting to load

ARCHITECTURE

Security

- Single point of access to the cluster
- Multi-factor authentication
- VPC security groups
- Fine-tuned IAM access policies for users and services
- Secret key storage

ARCHITECTURE

Tools: Packer

- Packer is a tool for creating machine and container images for multiple platforms from a single source configuration.

- https://www.packer.io/

ARCHITECTURE

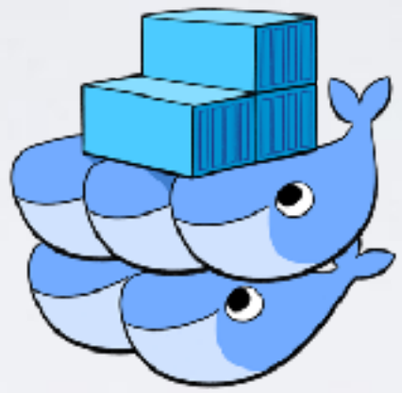
Tools: Terraform

- Terraform provides a common configuration to launch infrastructure

- https://www.terraform.io/

ARCHITECTURE

Tools: Docker Swarm



- Docker Swarm is native clustering for Docker. It turns a pool of Docker hosts into a single, virtual Docker host.

- https://docs.docker.com/swarm/overview/
  https://hub.docker.com/_/swarm/

ARCHITECTURE

No Human Interaction

- Infrastructure as code
- Full logging
- Full automation
- Self-healing

ARCHITECTURE

Ongoing Work

- Log aggregation
- Deployment strategy
- Testing

ELASTICSEARCH

- Central store for all analytics, logs, and metrics

- Visualize data with Kibana

- https://www.elastic.co/
  https://www.elastic.co/products/kibana

AWS LAMBDA

- "Serverless computing"
- Automatically trigger from other AWS services
- Trigger using HTTP with API Gateway
- https://aws.amazon.com/lambda/
  https://aws.amazon.com/api-gateway/

REVIEW

- Infrastructure goals, architecture, and tools
- Elasticsearch and Kibana
- AWS Lambda and API Gateway

QUESTIONS