DevOpsCon

Werner Schmid & Johann Füchsl | Red Lever Solutions

Infrastructure as Code and Service Discovery

with Terraform and Consul

TALK - OVERVIEW

- Terraform
  - What is Terraform
  - Terraform commands
  - Default AWS EC2 app setup
  - Terraform demo
- Consul
  - Consul overview
  - Consul cluster
  - Service discovery
  - Docker & Consul
  - Consul demo

TERRAFORM

WHAT IS TERRAFORM?

- Build, change and version your infrastructure
- This includes, instances, network, DNS, ...
- Infrastructure as code
- Execution plans
- Resource graphs
- Change automation

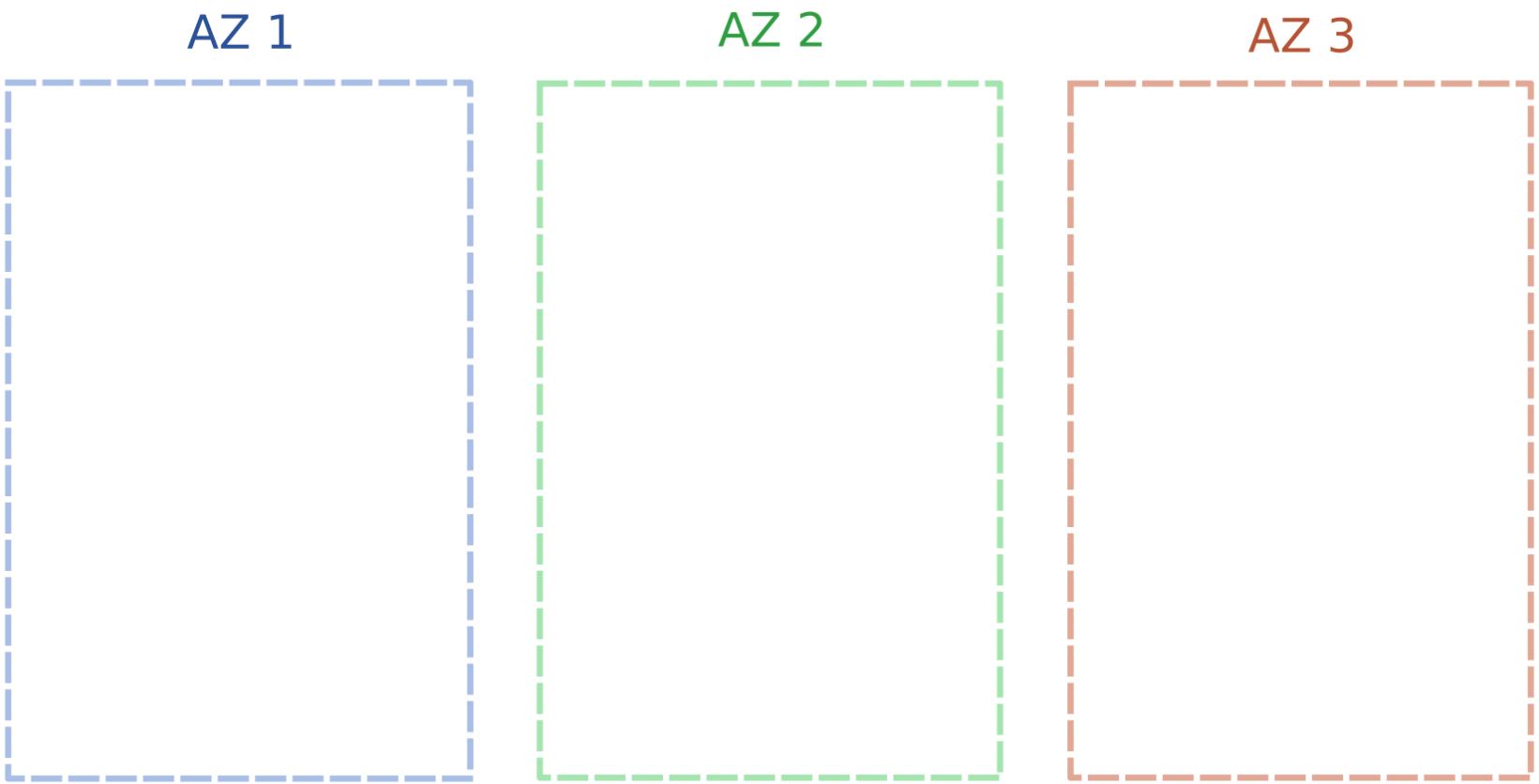
TERRAFORM COMMANDS

- Plan
- Apply
- Destroy
- Show

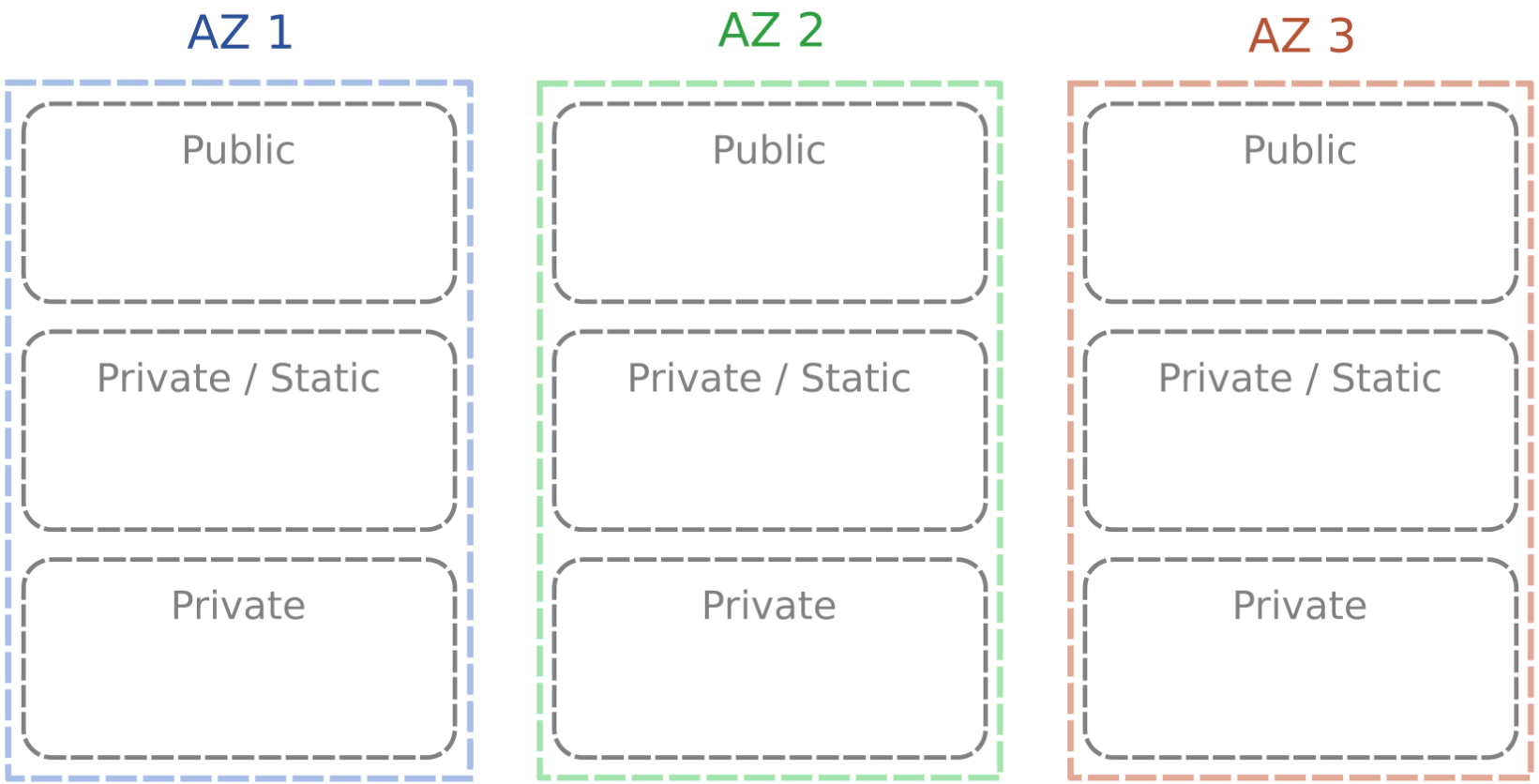
DEFAULT AWS EC2 APP SETUP

- Public and private subnets
- Security groups
- Bastion host
- Nat instance

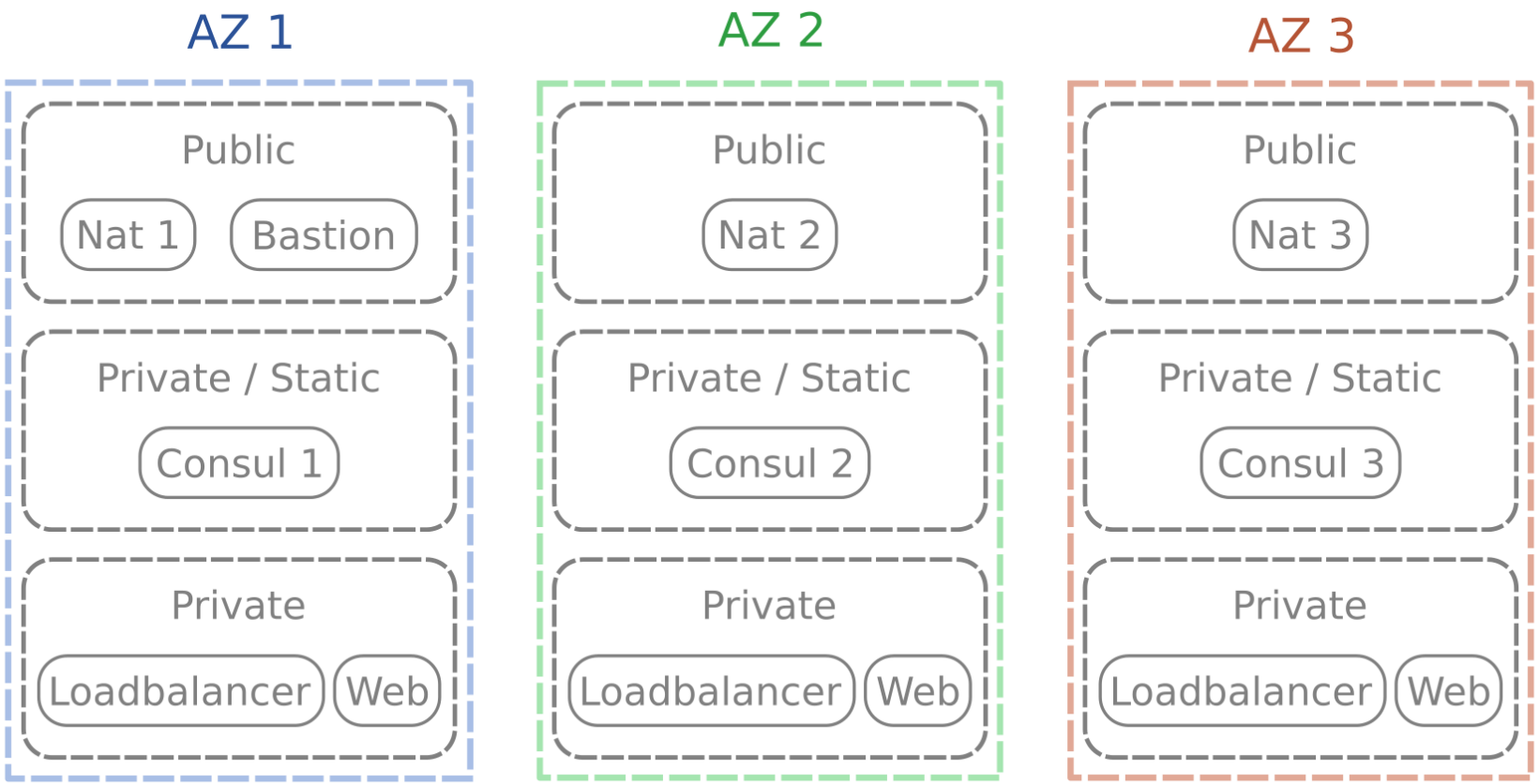
DEFAULT AWS EC2 APP SETUP



DEFAULT AWS EC2 APP SETUP



DEFAULT AWS EC2 APP SETUP

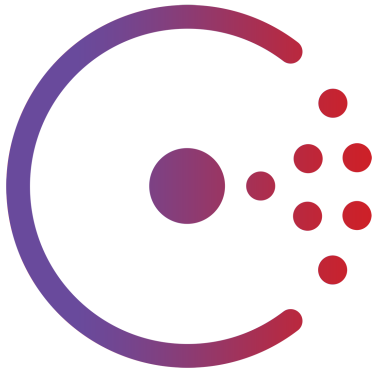


TERRAFORM DEMO

CONSUL

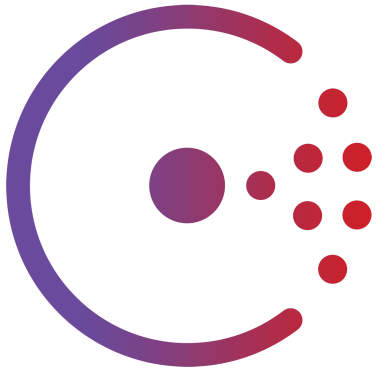
CONSUL OVERVIEW

- www.consul.io
- by HashiCorp
- Service Discovery & Configuration
- Distributed, Highly available, Datacenter aware



CONSUL FEATURES

- Service Discovery
- Health Checking
- Key/Value Storage
- Multi Datacenter



CONSUL FEATURE - SERVICE DISCOVERY

- Central catalog of component services (e.g. webapp, mysql, redis)
- Dynamic registration and discovery
- Supports DNS and HTTP interfaces
- Enables elastic infrastructures

CONSUL FEATURE - HEALTH CHECKING

- Health checks for individual services (and nodes)
- Unhealthy service instances don’t receive requests
- Automatic alerting and self-healing

Consul feature - key/value storage

- Dynamic configuration
- Coordinated actions & Event triggers
- Feature flagging

CONSUL FEATURE - MULTI DATACENTER

- Support for multiple datacenters
- Service queries can be restricted to any DC

CONSUL TOOLING

- **gliderlabs/registrator** (github.com/gliderlabs/registrator)
- Automatic service registration for Docker containers
- Perfect for Dockerized applications

CONSUL TOOLING

- **consul-template** (github.com/hashicorp/consul-template)
- Template rendering based on Consul entries
- Automatically update config files
- … haproxy.cfg in our case

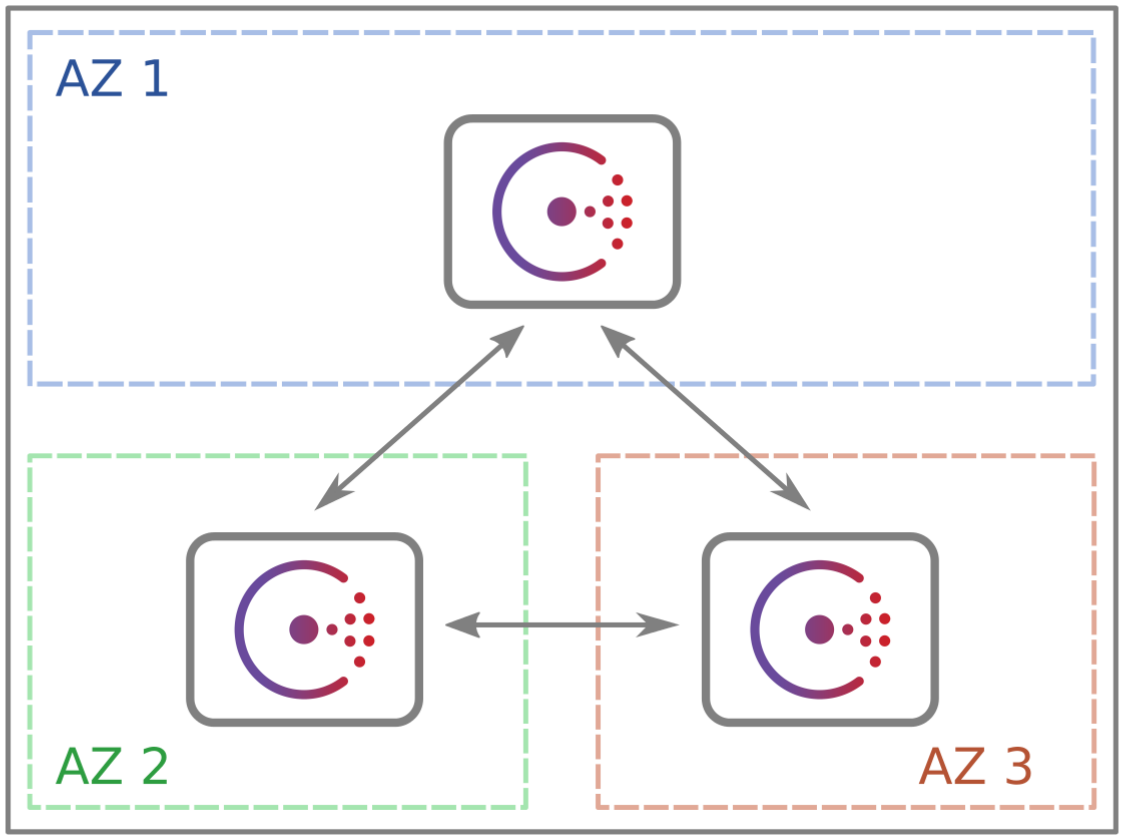
CONSUL TOOLING

www.consul.io/downloads_tools.html

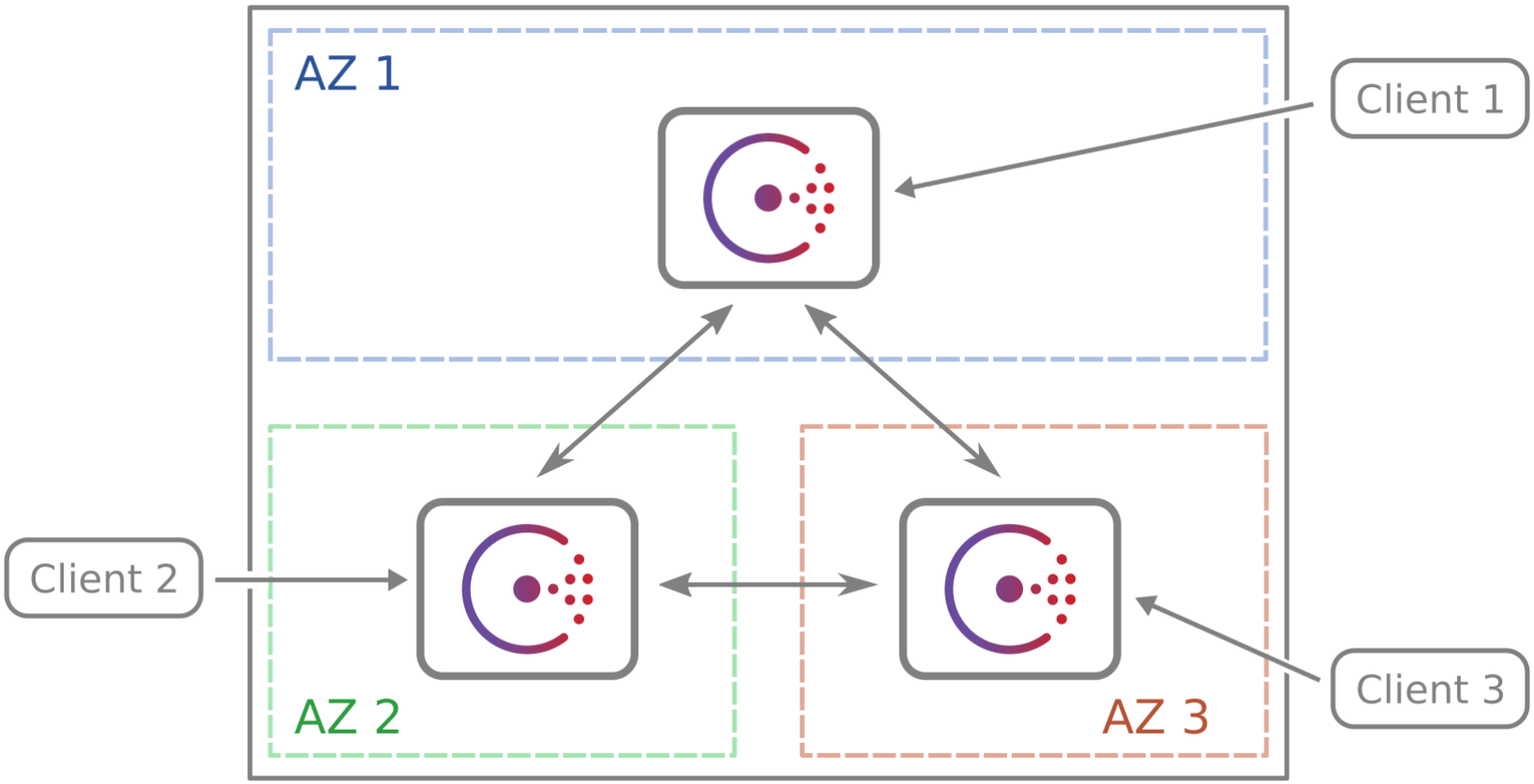
CONSUL CLUSTER SETUP

- Cluster consists of Server- and Client nodes
- Majority of Server nodes needed for quorum
- Three servers across different AZs
- Single failure tolerated
- Clients connect to Server nodes

CONSUL CLUSTER SETUP



CONSUL CLUSTER SETUP

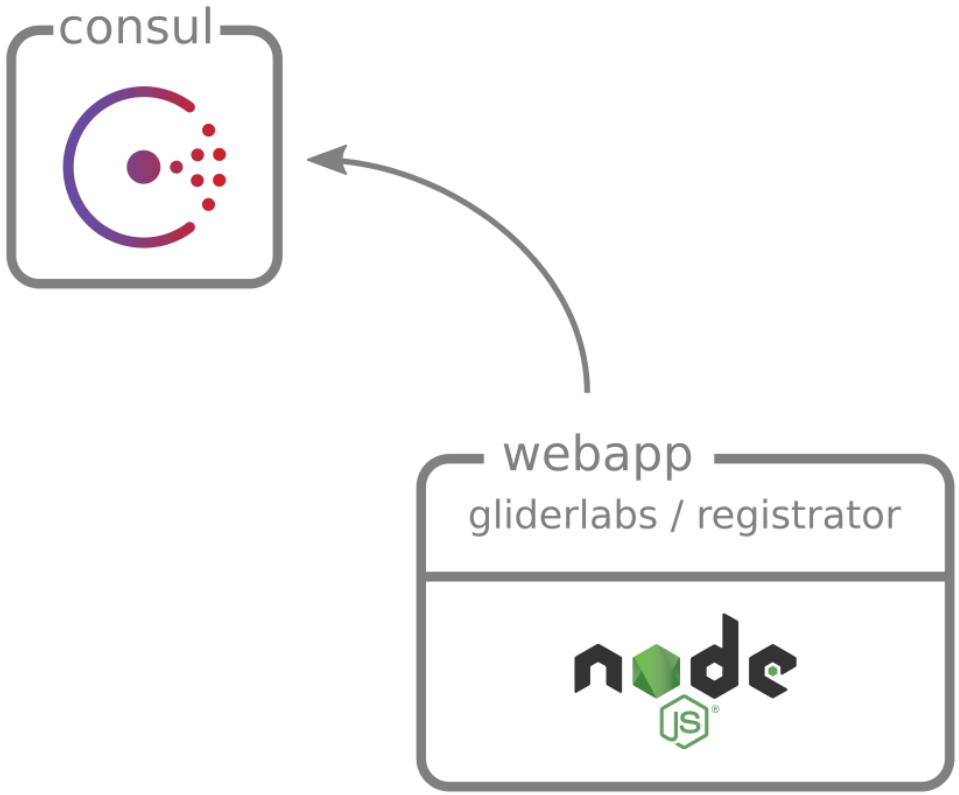


CONSUL DEMO

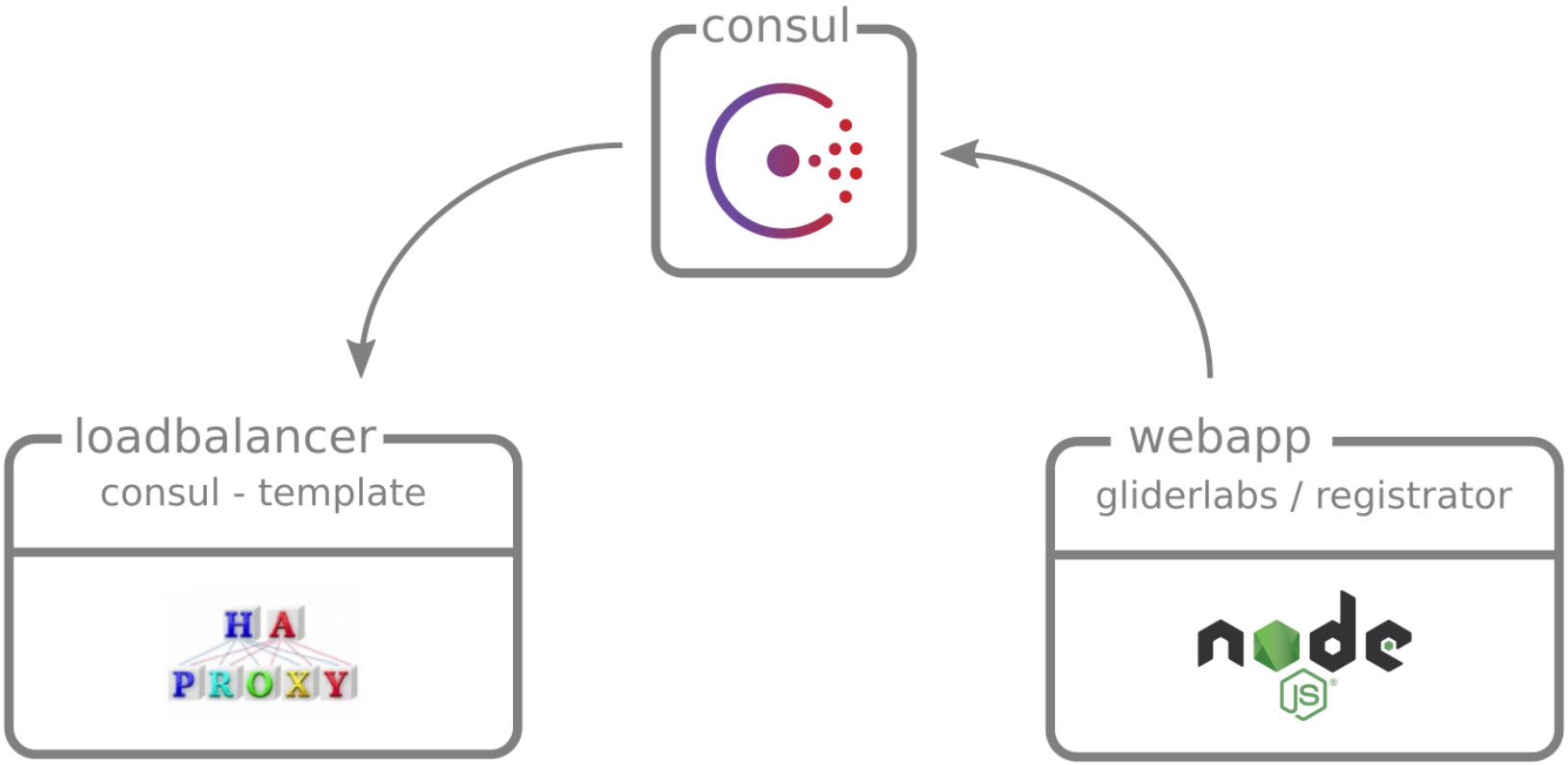
- One service: **webapp**
- Serves a Node.js app that lists all webapp service instances
- Uses the Node.js consul module
- haproxy loadbalancer routes requests to available webapp instances

CONSUL DEMO

CONSUL DEMO



CONSUL DEMO


consul
loadbalancer
consul - template
HA
PROXY
webapp
gliderlabs / registrator
node
JS

BROWSER DEMO & CONSUL UI

Questions?

Slides & Demo

github.com/red-lever-solutions/devopscon2016

Contact us at

Email	office@redlever.solutions
Web	www.redlever-solutions.com
Twitter	@wernerwws, @jfuechsl, @the_red_lever
Github	github.com/red-lever-solutions