

Ermis service for DNS Load Balancer configuration

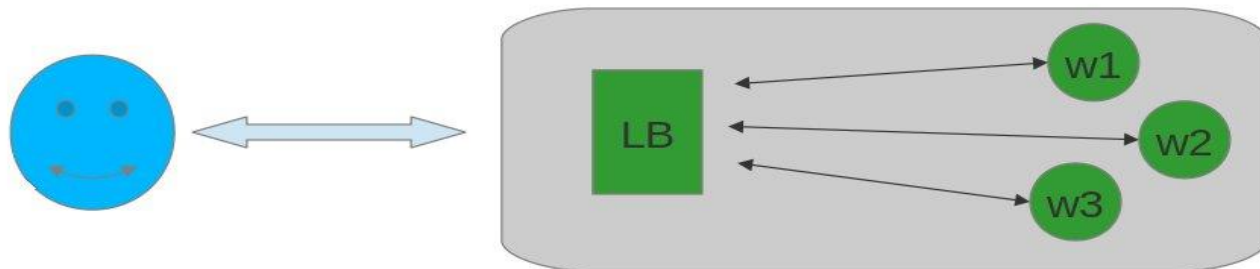
HEPiX Fall 2014

Aris Angelogiannopoulos, CERN IT-PES/PS
Ignacio Reguero, CERN IT-PES/PS

- Core concepts
- DNS Load Balancing at CERN
- Motivation and Purpose
- Ermis Gateway
- Ermis Gateway Architecture
- Miscellaneous

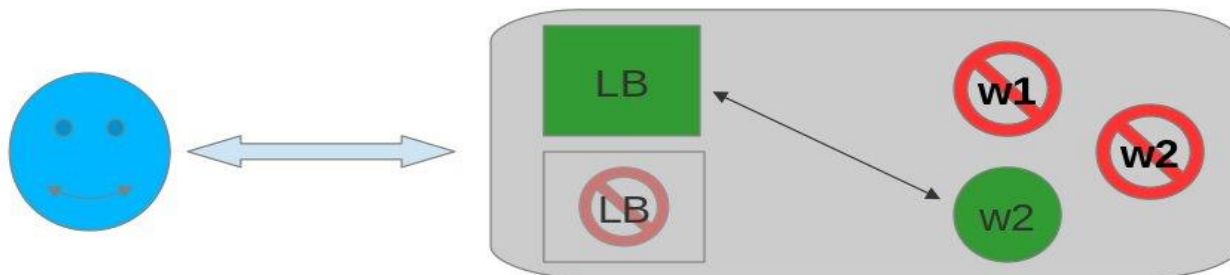
Load Balancing

- Scale a single service by spreading it to multiple back-end nodes



High Availability

- The end user must always “see” the service as functional
- Service should be up even if some front or back-end nodes fail



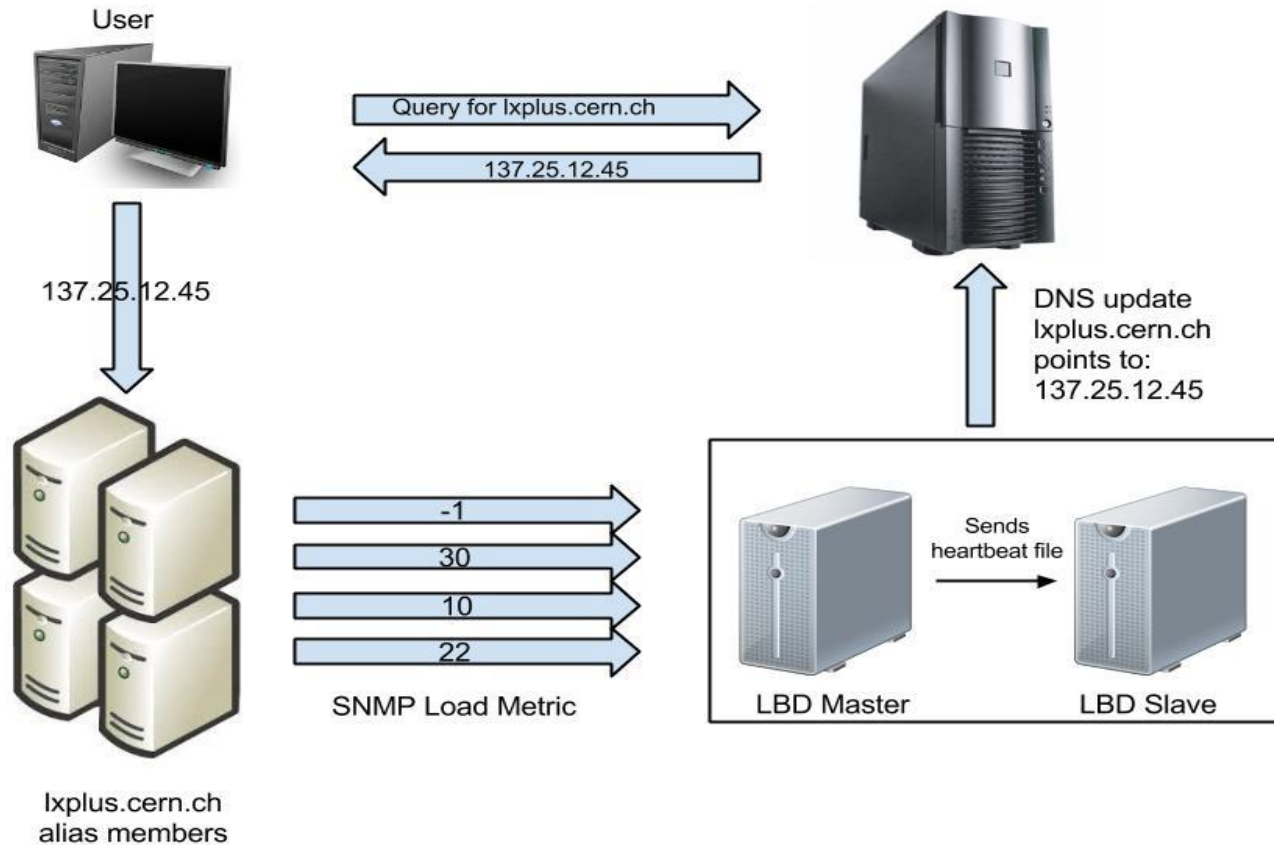
Service Manager's concerns:

. **Implement High Availability at the application Layer**

- No single point of failure
- Replicate physical nodes among independent subnets
- Replicate VM s among different availability zones

. **Service components are expected to fail**

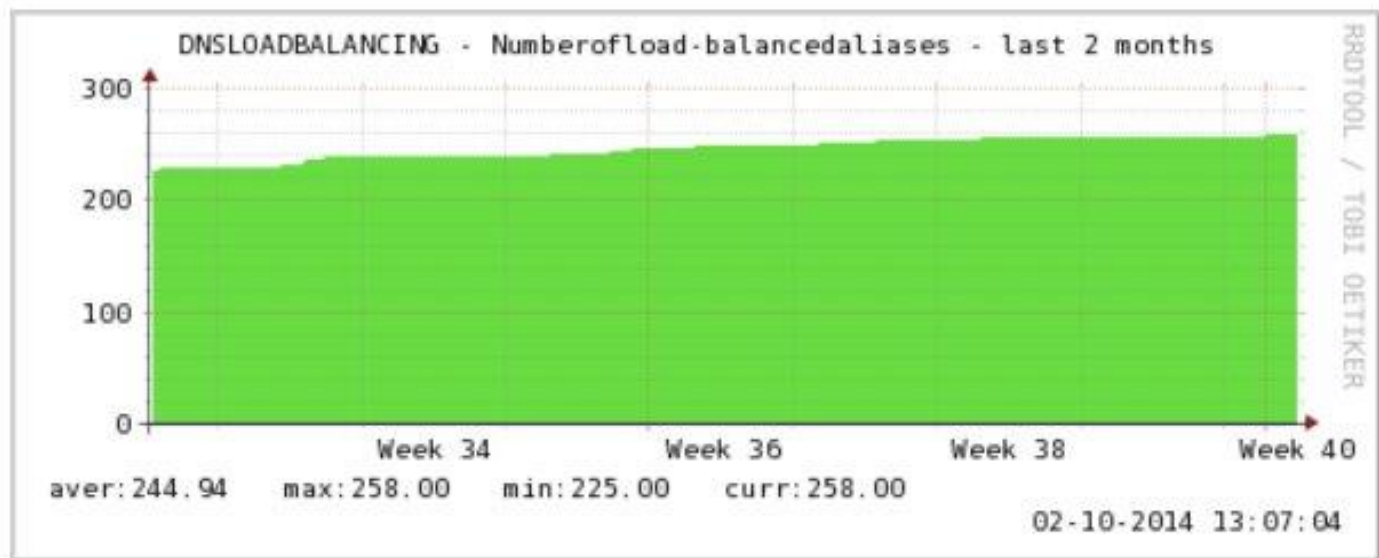
- Hardware failures (HDD, Switches, NIC's, Electricity etc)
- Software failures (Bugs)
- Human Errors



- We use a client server architecture:
 - LBD Master: Server reports to DNS service
 - LB Client: Runs in the hosts, triggered by SNMP request

1. LB Clients in the host provide LBD Master(through SNMP) with:
 - load metrics
 - availability checks
 2. The LBD Master decides which IP should be pointed by an LB Alias
 3. The LBD Master sends dynamic DNS requests to update the IP address pointed by the LB Alias
- The LBD Master uses a fail-over slave server for high availability

- Service is provided for 258 (and rising) different aliases



Motivation

- Creating new DNS Aliases in the cloud is time-consuming
 - Ticket to Config team -> Ticket to Network Ops
 - Lots of verbal and time-consuming communication
 - Waiting time for both can be high

Purpose

- Goal is to provide LBaaS to the end users of the cloud
- Fast CRUD of LB Aliases in the CERN cloud
- No more tickets to the Network Group
- Simplifies the procedure of creating LB Aliases

What is it?

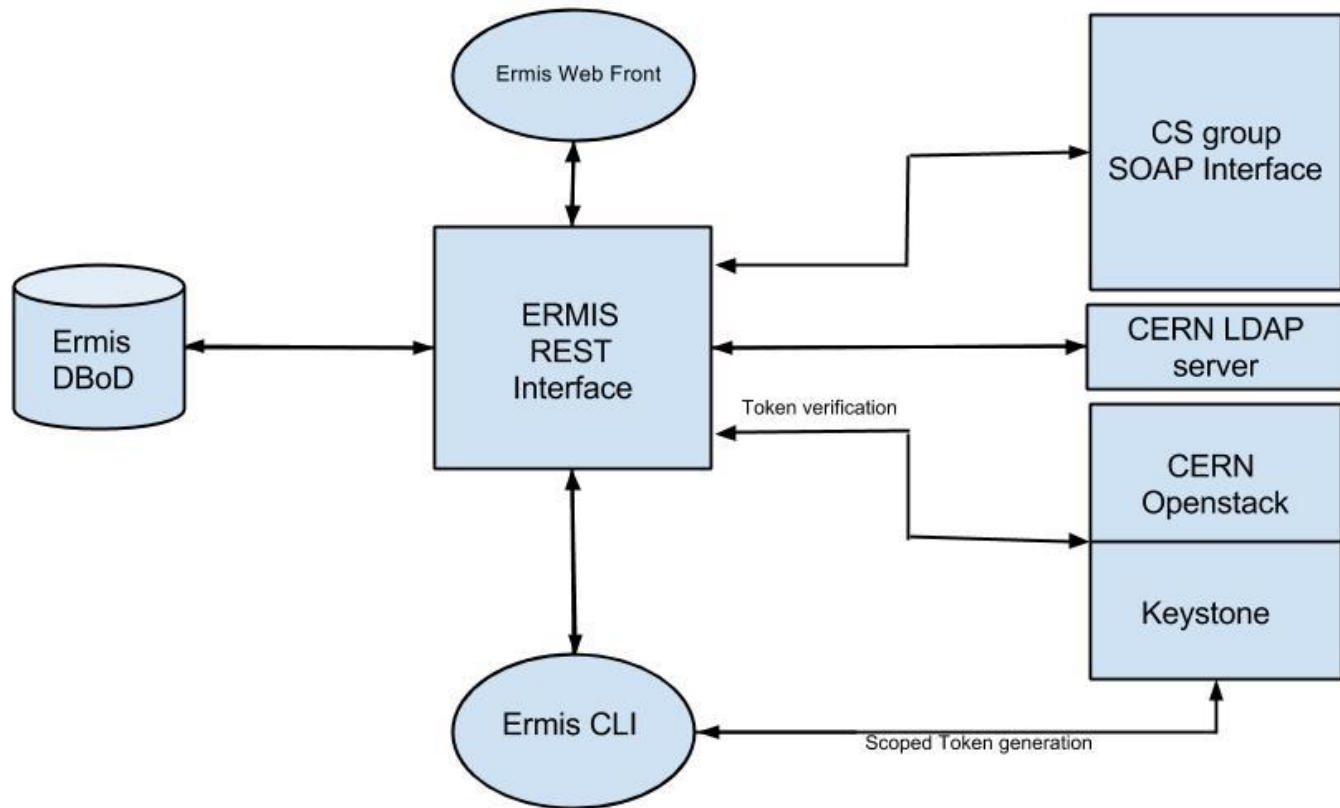
RESTful service that manages the configuration of DNS LB

- Django-Tastypie
- SOAP interface to Network Group
- CRUD of LB Aliases
- Aim is to provide LBaaS to the cloud end users
- Developed and tested using Agile techniques

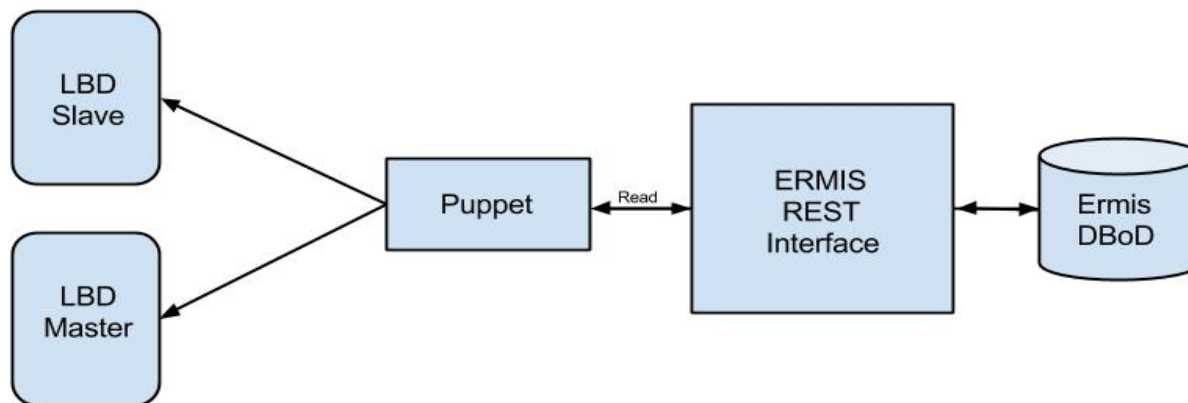
- Design
 - Model includes information about an Alias
 - Alias associated with a hostgroup or tenant
 - CRUD on model data
- Authentication
 - Kerberos ticket

- Authorization

- Egroups (CERN interface for managing groups of people)
- Openstack
 - Use of the Openstack identity service (keystone)
- Foreman (under development)
 - Alias creation for machines on the same hostgroup



- LBD configuration
 - Config file is created via the Ermis data



- Miscellaneous

- API endpoint
 - REST calls to the service available
- CLI available
- Web Front available
 - <https://aiermis.cern.ch> (Internal only)

Thank you!

Questions?

