



Linux and Configuration Support Section

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Section Members



LCS Section Mandate

- Provide Linux Support and Configuration Management Infrastructure for CERN computing resources
- Taking care of 7 Functional Elements:
 - Linux OS
 - IT RPM building system
 - LXPLUS
 - Configuration Management
 - DNS Load Balancing
 - ElasticSearch
 - Acron

Linux OS

Provide a stable and long support version of the Linux operating system:

- Linux CERN 5, 6 and CERN CentOS 7
 - Strong community engagement working well
- RHEL 5, 6, 7 and RHEV (+600 licenses)
- linuxsoft.cern.ch (8 servers): Packages distribution server / aims2 / koji
- Over 1000 SNOW tickets in 2015

Linux OS (2016)

- Refactoring AIMS2 to support UEFI standard
- Quattor retirement to Masterless Puppet on the desktop
- Container and Docker support into production
- ARM64 pilot
- Prepare phase-out of SLC5/ Investigate CC8

IT RPM building system

- Koji based service that builds and distributes RPMs for the IT Agile Infrastructure Project.
- From source RPMs
- From Git
- From GitLab
- Closely related with Linux OS and CM FEs

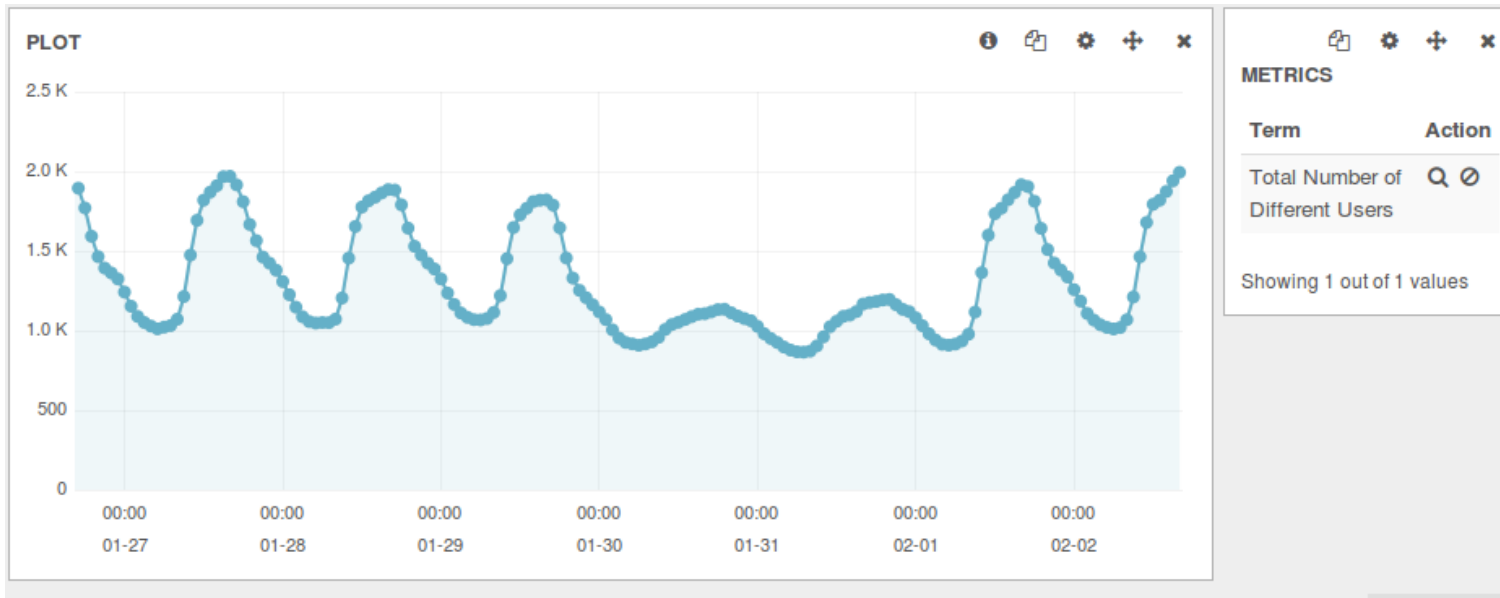
IT RPM building system (2016)

- Koji 2.0
 - Rewrite
 - Namespace Support
 - LDAP Integration
 - More than one pkg version for external repos
-and more

LXPLUS

Central Linux-based Public Logon User Service.

- 80 VMs hosting sessions for 2000 users/day:
- 25 users/VM; 60 sessions/VM. Limits per user;
- Fair share CPU/I-O; Limits on Memory; Service Metrics



LXPLUS (2016)

- Collect and process per **user accounting** information from CGroups counters. Collect more Plus wide usage information.
- Investigate use of **containers**.
- Develop LXPLUS Puppet module to facilitate reuse of configuration in bi/inter/plus hostgroup. Eg. **RootaaS**
- Further deploy **CC7** based service.
- Review Plus User Documentation (GitBook)

Configuration Management

- Provides development, support and maintenance of the range of tools and infrastructure needed to manage the configuration of machines hosted in the CERN Computer Centre
- + 600 SNOW tickets in 2015

Configuration Management



FOREMAN

CM Challenges

- Scaling
 - Than 20K agents (physical and virtual)
 - 55 octocore Puppet masters (not 100% used; mco peaks)
- Administratively distinct admins that formally don't trust each other
 - 207 environments
 - 177 hostgroups (or "services")
 - 312 modules (CERN and upstream)

Configuration Management



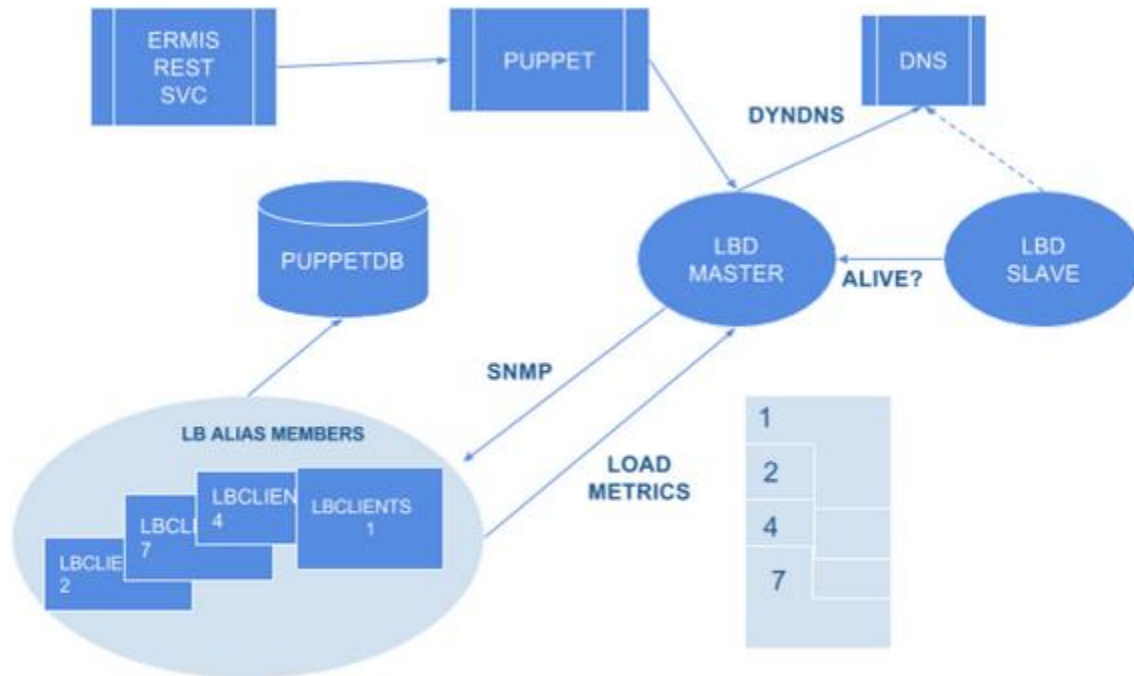
CM (2016)

- Resources in Commercial Clouds
 - Initially virtual Worker Nodes
 - Later on Baremetal
- Upgrades
 - Puppet 4
 - Puppet DB 3
 - Foreman 1.9
 - Mcollective 2.8.7
 - Migration to GitLab
 - Service Splitting
 - More Automation
 - Finish up move to CC7

DNS Load Balancing

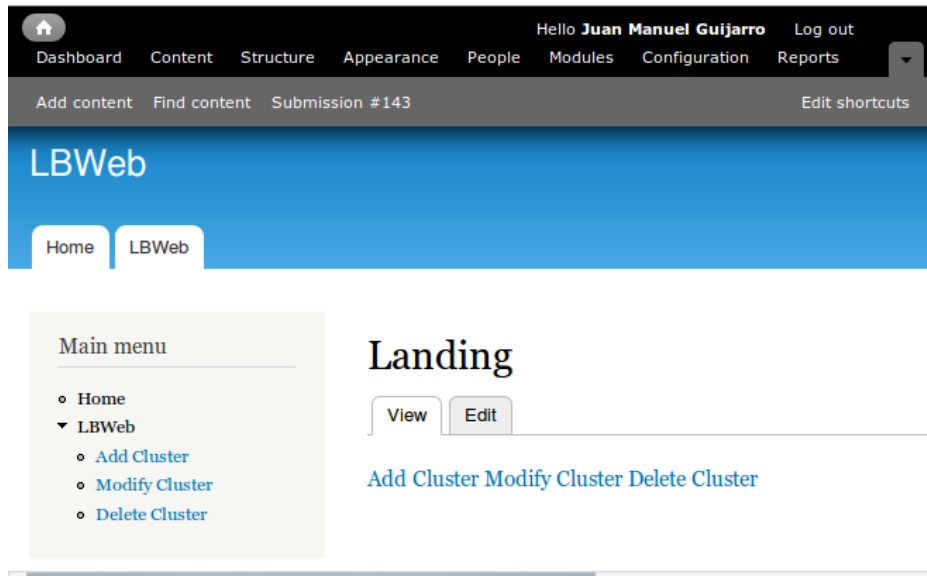
Load balance requests across several machines running the same service by using DNS.

- 394 LB aliased defined. Per alias history dashboards.
- Roger State aware
- Lemon Metrics
- User-defined scripts
- Policies



DNS Load Balancing

- New LBaaS self-service portal with fully automated alias CRUD (create/read/update/delete).



DNS Load Balancing Service

Logged in as manuel

CERN SSO Logout

Main menu

- LBWeb
 - Add LB Alias
 - Modify LB Alias
 - Display LB Alias
 - Delete LB Alias
 - LB Alias Logs

LBWeb Self-Service

- Add LB Alias
- Modify LB Alias
- Display LB Alias
- Delete LB Alias
- LB Alias Logs

- Upgrade to CC7

Acron Service

Enables users to create crontab entries for Kerberos-authenticated cron jobs.

- Execution on a user-specified target machine, equipped with fresh Kerberos credentials of standard lifetime
- 100 jobs/day; 800 users; 7000 entries
- Dedicated LXPLUS-ACRON subcluster

Acron Service (2016)

- Just being Puppetised
- Finalise handover
- Understand what it is really used for
- Possible improvements:
 - Use constrained delegation instead of fully privileged KDC account to generate user tickets
 - Review the use of arc and replace it with SSH
 - Move the service to VMs (HWD about to expire)

ElasticSearch

- Consolidate proliferation of ES instances in a central service
- Being designed as I speak....
- See Ulrich's presentation

Thanks !!!

- Questions?
- Suggestions?
- Comments?

