Universidad Rey Juan Carlos

Master in Free Libre Open Source Software

FℓOSS HA cluster for Netnovation's ZCS

Master Thesis

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Problem Statement

- Business continuity, fault tolerant systems
- Cloud Computing Services (ZCS)
- Meet Service Level Agreements (SLAs)

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Justification/Motivation

- Give credit to business models based on FℓOSS
  - Netnovation: Product Specialists, Hosting Providers

- Show that private enterprise can be benefited by FℓOSS

And many other: LDAP, BIND, Postfix, OpenSSL, ClamAV, KVM, OpenVZ, etc.

Overall Objectives

- Frame the FℓOSS business model used by Netnovation
- Show various current alternatives provided by FℓOSS at enterprise level
- Adapt the proposed solution to the guidelines established by Netnovation
- Establish an initial reference point for implementing HA private cloud services offered by Netnovation

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Specific Objectives

- Implement a FℓOSS HA cluster for Netnovation's ZCS
- Perform tests in a controlled laboratory environment in order to promote it to production
- Describe the methodology used for the selection of the solution, as well as the process to be implemented

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Scope

- The solution is not intended to replace the elements of the existing operations platform
  - Seeks the adaptation to the current infrastructure
- Used methodology is not intended to provide an exhaustive process that considers all possibilities in the area
  - Seeks a flexible way to classify available solutions, justifying their choice through concrete models and metrics
- Serve as an starting point for providing high availability to other enterprise systems in the company
  - Configurations of other systems are not covered in this exercise

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Related Technologies

- Commercial Enterprise Cluster Software
  - HP Serviceguard (proprietary license)
  - Red Hat Cluster Suite (Linux-HA GPL/LGPL)
  - SUSE Linux Enterprise HA Extension (GPL/LGPL)
- HA FℓOSS based tools
  - Heartbeat > Pacemaker (Linux-HA GPL/LGPL)
  - OpenAIS (Artistic License) > Corosync (BSD)
  - DRBD (GPL), GFS (GPL), OCFS (GPL)
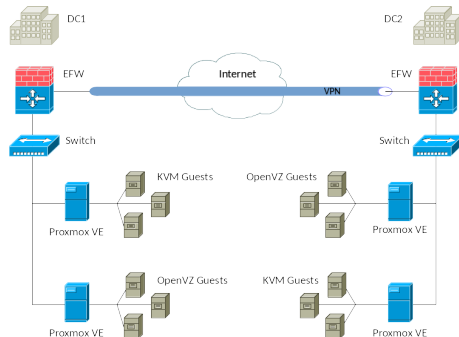 - HAProxy (GPL), and many others

Methodology

- The SME guide to OSS by Carlo Daffara
- Lazy User Model (model of technology acceptance)
- Metrics Grimoire (data-mining toolsets)

Netnovation's Architecture

- Infrastructure
- Network Scheme
- Supporting Software

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Implementation

- 08
- Key software elements
- Graphical scheme (stack)

Results

- 09
- Metrics comparison with other minor scale solutions

Conclusions and future work

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- Cloud benefits and side effects
- Accomplished objectives

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