

# Open Source Cloud Software Made in Switzerland

Michael Eichenberger  
CEO stepping stone GmbH  
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# Agenda

- About us
- Why our own Cloud solution?
- Technology
- Distinctive Features
- Planned Enhancements
- Questions



# About us

- Founded 8 years ago
- Clear focus on Cloud Computing
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)
- With emphasis on Managed Services
  - Backup, Maintenance, Monitoring and Standby Duty (all Services Platform-independent)
- Providing Solutions for Partners and SME's

# Why our own cloud solution?

- As of autumn 2008 ...
  - No existing solution concentrated on Infrastructure as a Service (IaaS) only
  - Only proprietary accelerated remote access protocols on the market
  - No simple integration of external directories for user and group authentication
  - Available solutions were (and still are) too complicated

# Resulting in the FOSS-Cloud

- Turnkey solution to build public and private clouds
- Runs unmodified Windows and Linux servers as well as desktops on commodity hardware
- Persistent and non-persistent virtual machines
- User friendly web interface to manage every aspect of your cloud
- Clear separation between the infrastructure and application and service layer
- Multi-tenant capable (not yet implemented in the web interface)



# FOSS-Cloud Project Set up

- Financed mainly through FOSS-Group Management AG in Switzerland which also offers commercial consulting and support
- Developed by stepping stone GmbH in Switzerland and limbas GmbH in Germany
- FOSS-Cloud partners in the Netherlands, Belgium, Luxembourg, Germany and more

# KVM

- Kernel-based Virtual Machine
- Live Migration between Server Nodes
- Kernel Samepage Merging (KSM)
  - Reduces the memory usage when running virtual machines of the same type
- Supports multiple Storage back ends
  - File-, Volume- and Object-based (distributed) storage
- Remote Access
  - SPICE: Simple Protocol for Independent Computing Environments
- Open Formats and Protocols



# GlusterFS

- Open source cluster file system
- Scalable to several petabytes
- Horizontally scalable (simply add new Storage-Nodes)
- Supports various volume configurations
  - Distributed, replicated, striped and combinations there of
  - FOSS-Cloud uses distributed replicated volumes for VM storage



# Software Stack

Remote Access Protocol (SPICE)

Domain Name Service (PowerDNS)

Dynamic Host Configuration Protocol (ISC DHCP Server)

Login Broker & Administration (Apache with PHP)

Loadbalancing Daemon (C++)

Virtualization Toolkit (libvirt)

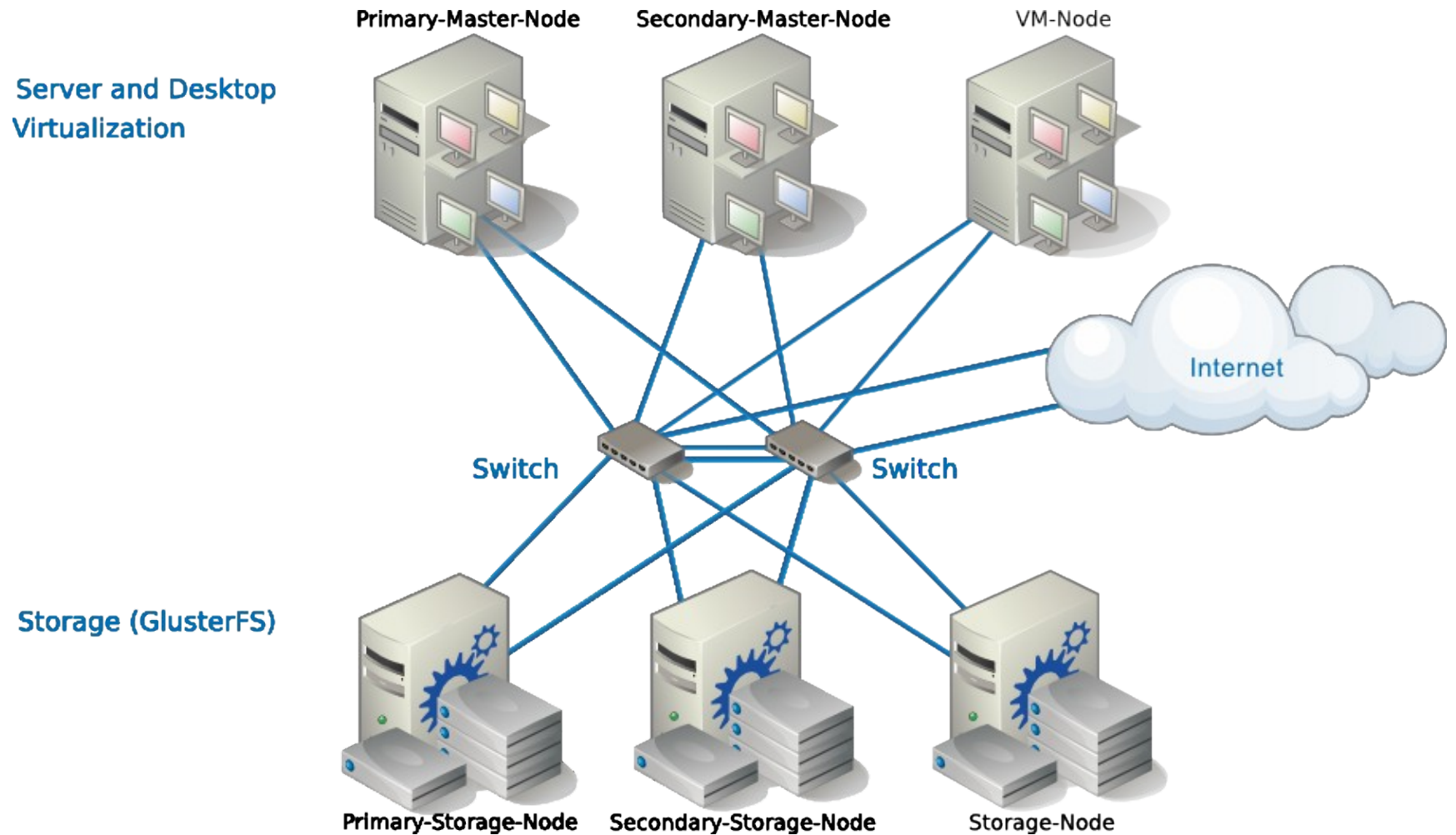
Failover (UCARP)

User and Virtual Machine Data (OpenLDAP)

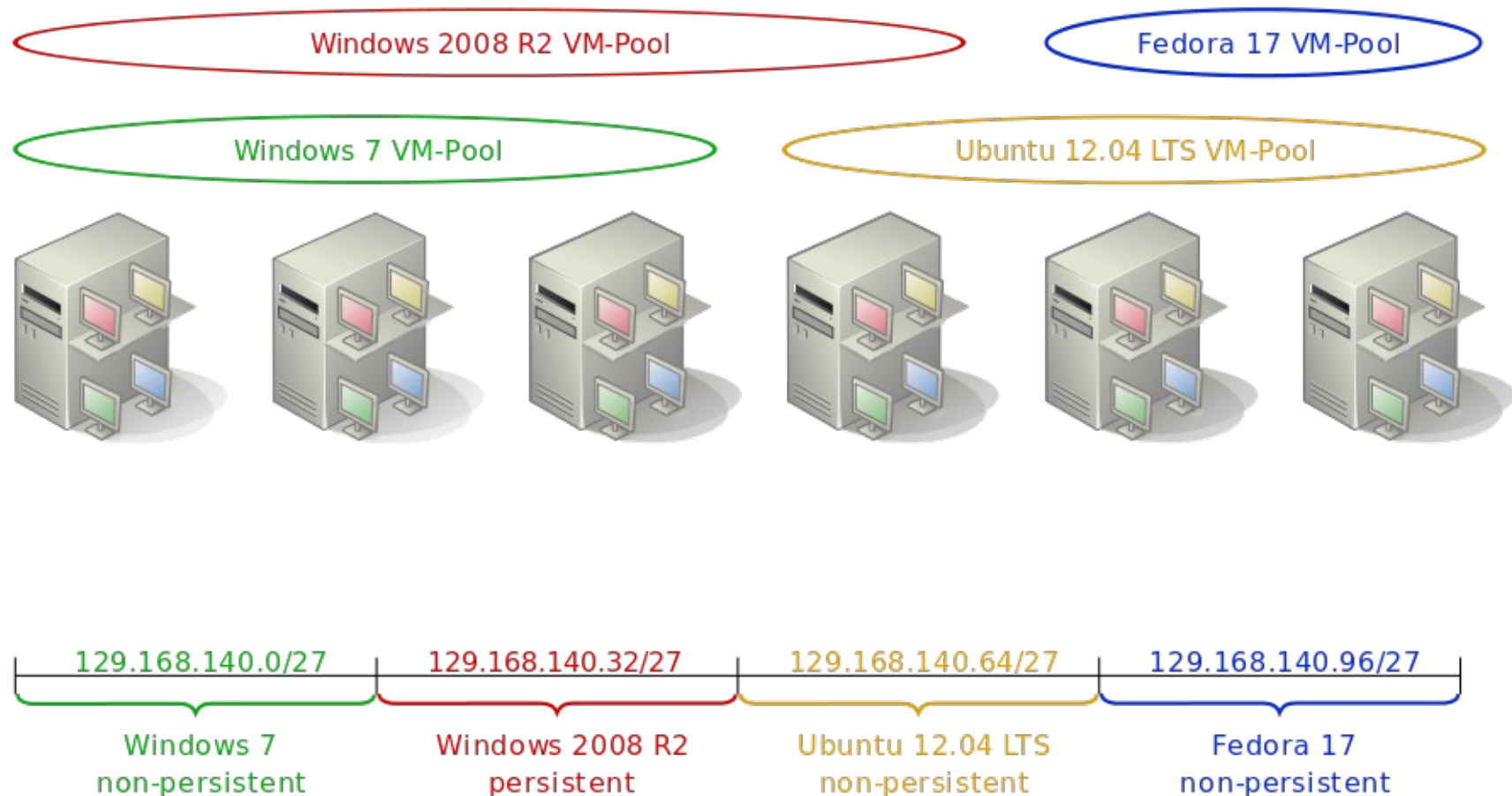
Mass Storage (GlusterFS)

Operating System (Linux with QEMU/KVM)

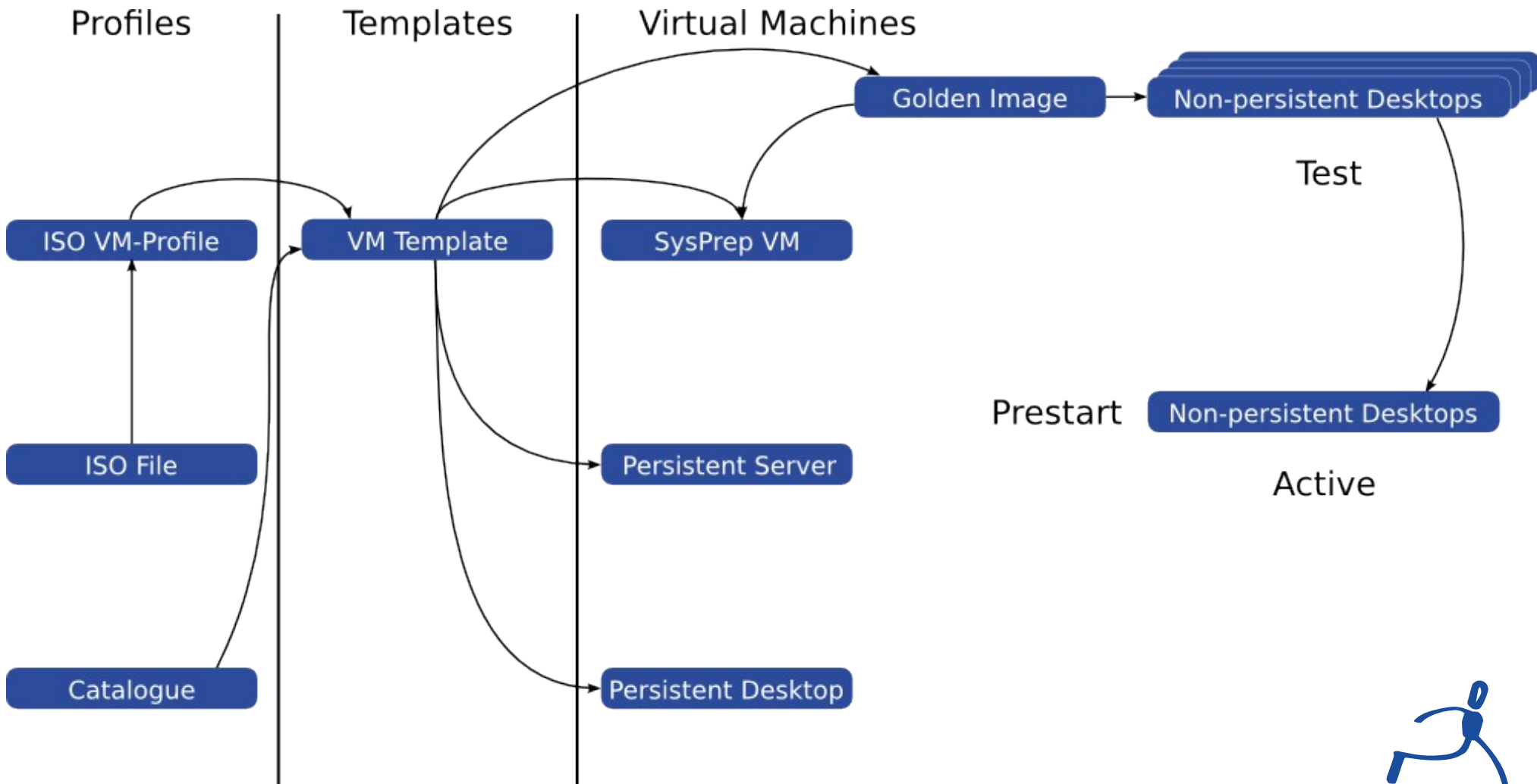
# Physical Configuration



# Virtual Machine Pools



# Virtual Machine Life Cycle



# Planned Enhancements

- Add multi tenancy to the web interface
- Open-vSwitch integration
- Firewall integration and configuration
- Enhance the current Backup / Restore / Snapshots / Rollback possibilities
- Non-persistent (dynamic) virtual machines
  - Pre start of virtual machines
  - Load balancing
  - Maintenance mode



# Questions?



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# Links

- <http://www.foss-cloud.org>
- <http://www.linux-kvm.org>
- <http://www.gluster.org/>
- <http://www.spice-space.org/>
- <http://openvswitch.org/>
- <http://www.foss-group.ch/>
- <http://www.limbac.com/>
- <http://www.stepping-stone.ch/>



# Contact

## **stepping stone GmbH**

Neufeldstrasse 9  
CH-3012 Bern

Phone: +41 31 332 53 63  
[www.stepping-stone.ch](http://www.stepping-stone.ch)  
[info@stepping-stone.ch](mailto:info@stepping-stone.ch)

## **FOSS-Group**

Riedstrasse 29  
CH-2544 Bettlach

Phone: +41 32 530 30 32  
[www.foss-group.ch](http://www.foss-group.ch)  
[info@foss-group.ch](mailto:info@foss-group.ch)

