

Cloud Management und Automatisierung mit Open Source Software

Michael Eichenberger
Time to Market
24. Mai 2013

Übersicht

- Ziel
- Benötigte Komponenten
- Life Cycle der virtuellen Maschinen
- VM Profile
- VM Template
- Persistente VM
- Abschluss mit Fragerunde

Ziel

- Warum Cloud Management und Automatisierung?
 - Die steigende Anzahl Maschinen soll einfach und effizient verwaltet werden.
 - Neue Maschinen mit fertigen Diensten sollen in kürzester Zeit ausgeliefert werden.
 - Dienste sollen auf allen Maschinen gleich aussehen und automatisiert aktualisiert werden.

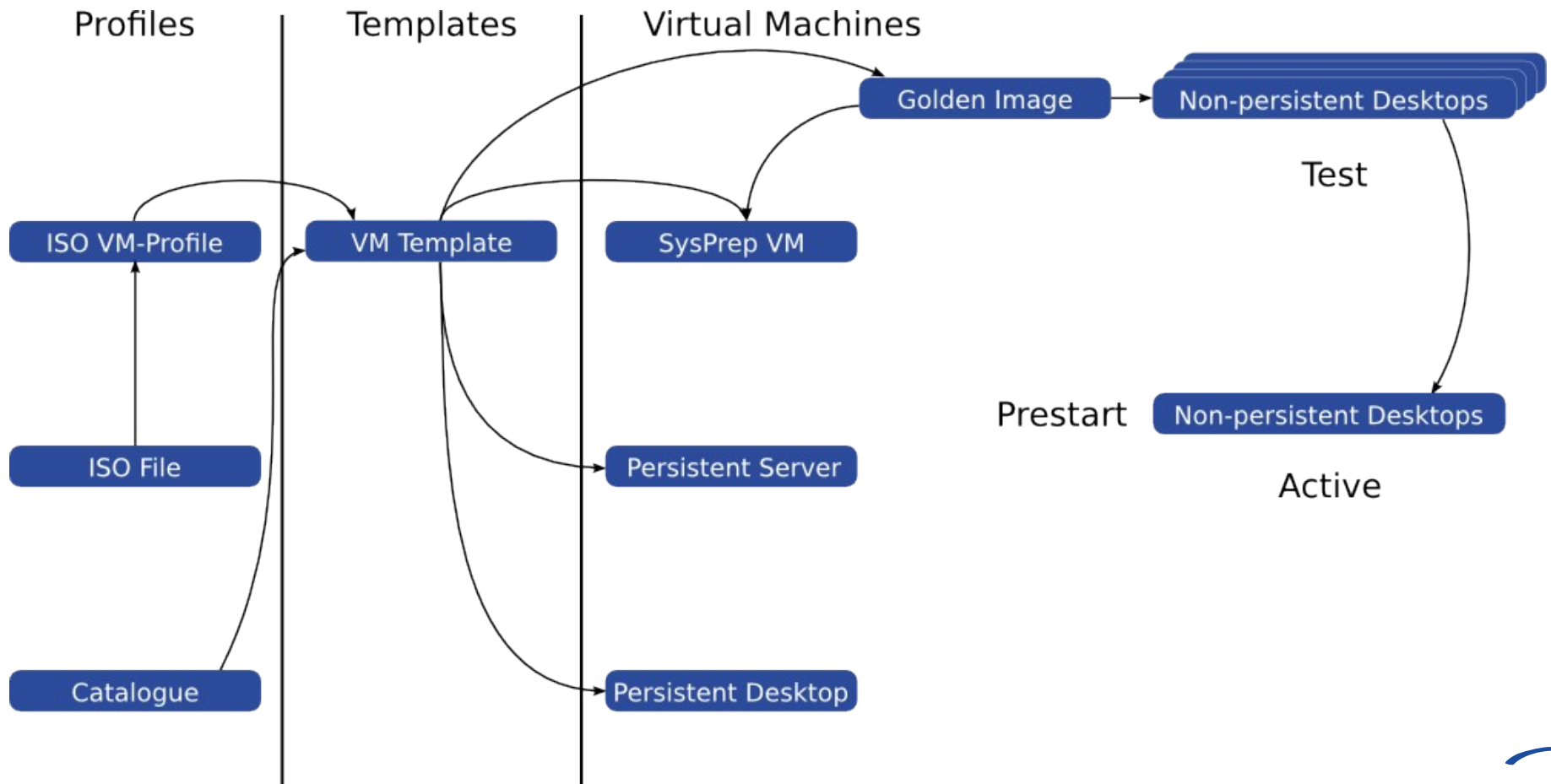


Benötigte Komponenten

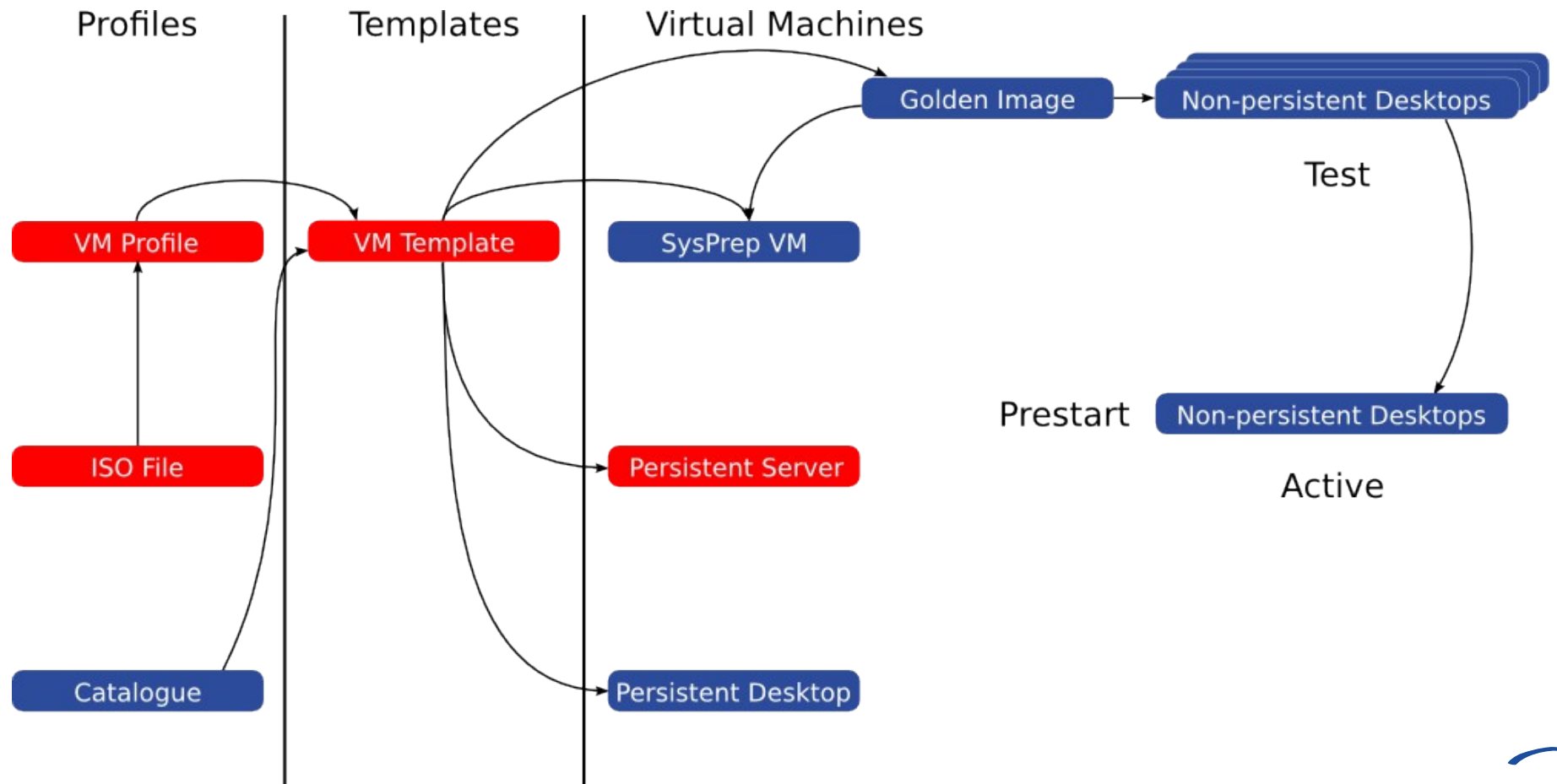
- Virtualisierungs-Umgebung (Cloud)
 - stoney cloud
- Konfigurations-Management
 - Puppet
- Überwachung
 - Zabbix
- Backup
 - stoney cloud (VMs) / Sepiola (Nutz-Daten)



Virtual Machine Life Cycle

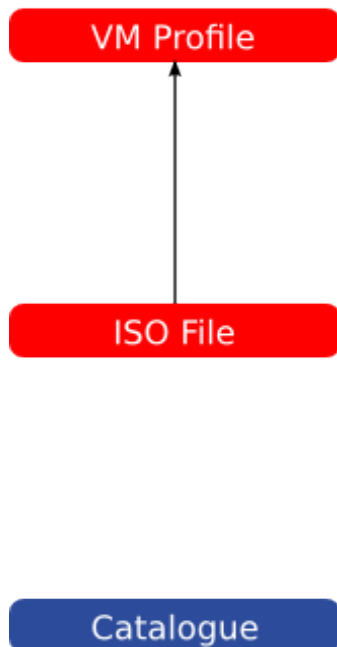


Persistent Server Life Cycle



Erstelle VM Profile

Profiles



Erstelle VM Profile

- ISO Datei mit Meta Daten
 - Name und Beschrieb der ISO Datei
 - Betriebssystem, Version, Sprache
 - Architektur (32- oder 64-Bit)
 - Grösse des Speichers (RAM)
 - Anzahl der CPUs
 - Grösse der Harddisk
 - Clock Offset (localtime oder utc)



Erstelle VM Profile: Schritt 1/3

Auswahl Basis Profil



Step 2

Step 3

Choose VM Profile

Add Meta Data to VM Profile


Confirmation

Choose VM Profile

<input type="checkbox"/> VM Profile Name	<input type="checkbox"/> Operating System	<input type="checkbox"/> Architecture	<input type="checkbox"/> Language	<input type="checkbox"/> RAM	<input type="checkbox"/> CPU	<input type="checkbox"/> Disk
<input type="checkbox"/> Linux Default	Linux	-	-	1 GB	1	30 GB
<input type="checkbox"/> Linux Fedora 18 64-Bit Netinstall	Linux Fedora 18	64-Bit	Multi	1 GB	1	30 GB
<input type="checkbox"/> Linux Debian 7 (Wheezy)	Linux Debian 7	64-Bit	Multi	1 GB	1	30 GB
<input checked="" type="checkbox"/> Linux Gentoo 2013.0 Minimal	Linux Gentoo 2013.0	64-Bit	Multi	1 GB	1	30 GB
<input type="checkbox"/> Windows Default	Windows	-	-	2 GB	1	50 GB
<input type="checkbox"/> Windows Server 2008 Standard SP2	Windows Server 2008 Standard	64-Bit	de-CH	2 GB	1	50 GB
<input type="checkbox"/> Windows Server 2008 R2 Standard	Windows Server 2008 R2 Standard	64-Bit	de-CH	2 GB	1	50 GB
<input type="checkbox"/> Windows Server 2012 Standard	Windows Server 2012 Standard	64-Bit	de-CH	2 GB	1	50 GB

Next

Erstelle VM Profile: Schritt 2/3 Konfiguration

Step 1  Step 3

Choose VM Profile Add Meta Data to VM Profile Confirmation

Add Meta Data to VM Profile

VM Profile ISO File

- Debian-7-minimal-x86_64.iso
- Fedora-18-x86_64-netinst.iso
- Gentoo_2013.0-x86_64.iso**
- Windows-...

VM Profile Name:

VM Profile Description:

VM Profile Operating System: Linux (taken from step 1)

VM Profile Operating System Type:

VM Profile Operating System Version:

VM Profile Architecture:

VM Profile Memory:


VM Profile Diskspace:

Number of CPUs:

Clock Offset:

Erstelle VM Profile: Schritt 3/3

Bestätigung Konfiguration

Step 1 Step 2 

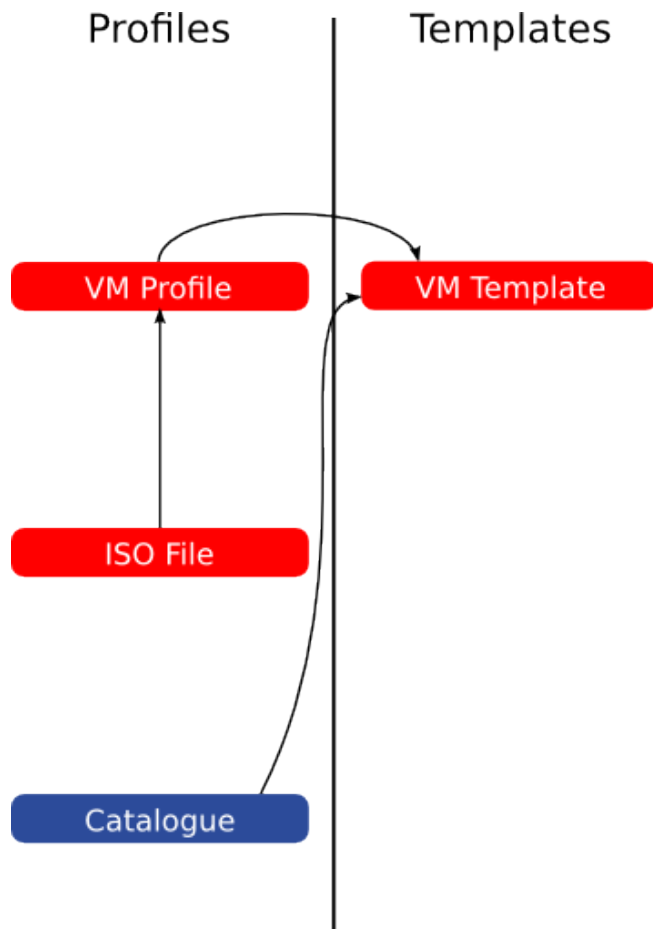
Choose VM Profile Add Meta Data to VM Profile Confirmation

Confirmation

VM Profile ISO File	Gentoo_2013.0-x86_64.iso
VM Profile Name	Gentoo Linux 2013.0 64-Bit Profile
VM Profile Description	Gentoo Linux 2013.0 64-Bit Profile for Configuration Management.
VM Profile Operating System	Linux
VM Profile Operating System Type	Gentoo
VM Profile Operating System Version	2013.0
VM Profile Architecture	64-Bit
VM Profile Memory	1 GB
VM Profile Diskspace	30 GB
Number of CPUs	1
Clock Offset	utc

[Back](#) [Save](#)

Erstelle VM Template




Erstelle VM Template

- Vorlage einer Virtuellen Maschine
 - Wahl des VM Profiles (ISO Datei)
 - Letzte Anpassungen am VM Template (RAM, CPUs, Harddisk, Clock Offset)
 - Installation des gewählten Betriebssystems sowie der Basis Software (z.B. Puppet-Client)
 - SysPrep als Vorbereitung für das spätere Klonen durchführen (löschen von Log-Dateien, Host-Name, ...)

Erstelle VM Template: Schritt 1/5

Auswahl VM Profil



Choose VM Profile Step 2 Step 3

Choose VM Profile Configure the VM Template Confirmation


Choose VM Profile

VM Profile Name	Operating System	Architecture	Language	RAM	CPU	Disk
<input type="checkbox"/> Linux Fedora 18 64-Bit Netinstall	Linux Fedora 18	64-Bit	Multi	1 GB	1	30 GB
<input type="checkbox"/> Linux Debian 7 (Wheezy)	Linux Debian 7	64-Bit	Multi	1 GB	1	30 GB
<input checked="" type="checkbox"/> Linux Gentoo 2013.0 Minimal	Linux Gentoo 2013.0	64-Bit	Multi	1 GB	1	30 GB
<input type="checkbox"/> Windows Server 2008 Standard SP2	Windows Server 2008 Standard	64-Bit	de-CH	2 GB	1	50 GB
<input type="checkbox"/> Windows Server 2008 R2 Standard	Windows Server 2008 R2 Standard	64-Bit	de-CH	2 GB	1	50 GB
<input type="checkbox"/> Windows Server 2012 Standard	Windows Server 2012 Standard	64-Bit	de-CH	2 GB	1	50 GB

Next

Erstelle VM Template: Schritt 2/5

Konfiguration

Step 1  Step 3

Choose VM Profile **Configure the VM Template** Confirmation

Configure the VM Template

VM Template Pool

VM Template Node

- vm-node-01.stepping-stone.ch
- vm-node-02.stepping-stone.ch**
- vm-node-03.stepping-stone.ch
- vm-node-04.stepping-stone.ch

VM Template Name

VM Template Description

VM Template Operating System **Linux**

VM Template Operating System Type **Gentoo**

VM Template Operating System Version **2013.0**

VM Template Architecture **64-Bit**

VM Template Memory 1 GB


VM Template Diskspace 30 GB

Number of CPUs

Clock Offset

Erstelle VM Template: Schritt 3/5

Bestätigung Konfiguration

Step 1 Step 2  Confirmation

Choose VM Profile Configure the VM Template Confirmation

Confirmation

VM Template Pool	vm-template-virtual-machine-pool-01		
VM Template Node	vm-node-01.stepping-stone.ch		
VM Template Name	kvm-0003.stepping-stone.ch		
VM Template Description	Gentoo Linux 2013.0 64-Bit Profile for Configuration Management.		
VM Template Operating System	Linux		
VM Template Operating System Type	Gentoo		
VM Template Operating System Version	2013.0		
VM Template Architecture	64-Bit		
VM Template Memory	1 GB		
VM Template Diskspace	30 GB		
Number of CPUs	1	Clock Offset	utc

[Back](#) [Save](#)

Erstelle VM Template: Schritt 4/5

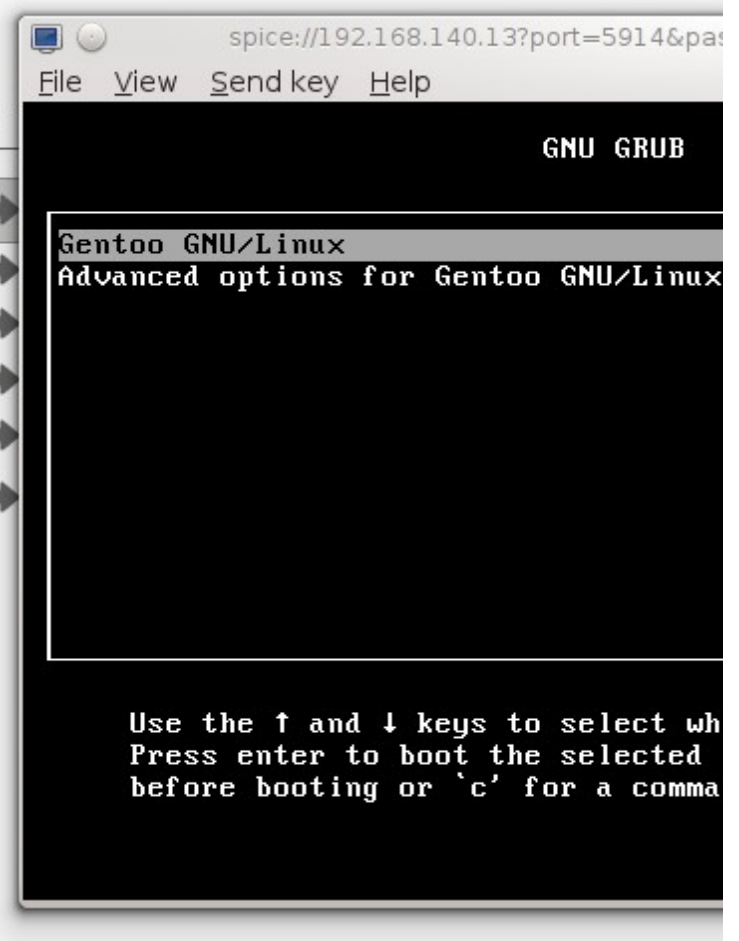
Installation Betriebssystem

Showing 6 of 6 VM Templates

VM Template Name	Status	Action
<input checked="" type="checkbox"/> <input type="checkbox"/> kvm-0001 (Linux Debian 7)	✓ ready for use	↑ ↓ ✕ →
<input type="checkbox"/> kvm-0002 (Linux Fedora 18)	! do not use	↑ ↓ ✕ →
<input type="checkbox"/> kvm-0003 (Linux Gentoo 2013.0)	✕ stopped, streaming	↑ ↓ ✕ →
<input type="checkbox"/> kvm-0004 (Windows Server 2008 Standard)	✓ ready for use	↑ ↓ ✕ →
<input type="checkbox"/> kvm-0005 (Windows Server 2008 R2 Standard)	✓ ready for use	↑ ↓ ✕ →
<input type="checkbox"/> kvm-0006 (Windows Server 2012 Standard)	! Crashed	↑ ↓ ✕ →

select all Please choose an option

- Delete selected VM Templates(s)
- Add plus Standby Duty Unit P1 to selected VM(s)
- Add plus Standby Duty Unit P2 to selected VM(s)
- Add plus Standby Duty Unit P3 to selected VM(s)
- ...



Erstelle VM Template: Schritt 5/5

SysPrep

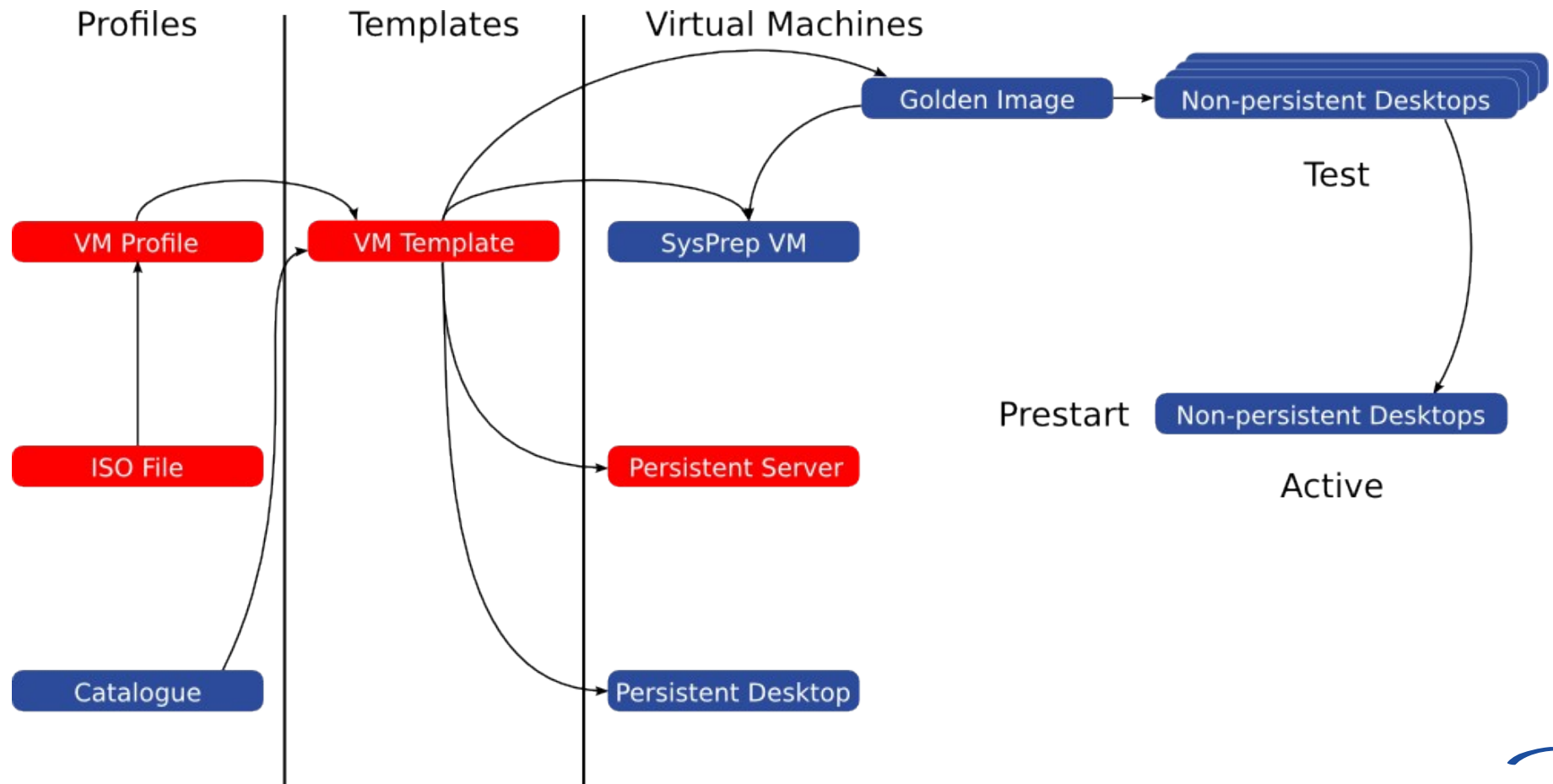
Showing 6 of 6 VM Templates

VM Template Name	Status	Action	RAM	CPU	Disk Usage	Disk
<input checked="" type="checkbox"/> kvm-0001 (Linux Debian 7)	✓ ready for use		1 GB	1		25% of 30 GB
<input type="checkbox"/> kvm-0002 (Linux Fedora 18)	! do not use		1 GB	1		25% of 50 GB
<input type="checkbox"/> kvm-0003 (Linux Gentoo 2013.0)	✗ stopped, streaming		1 GB	1		25% of 50 GB
<input type="checkbox"/> kvm-0004 (Windows Server 2008 Standard)	✓ ready for use		2 GB	4		25% of 30 GB
<input type="checkbox"/> kvm-0005 (Windows Server 2008 R2 Standard)	✓ ready for use		2 GB	1		25% of 50 GB
<input type="checkbox"/> kvm-0006 (Windows Server 2012 Standard)	! Crashed		2 GB	1		25% of 50 GB

select all Please choose an option

- Delete selected VM Template(s)
- Add plus Standby Duty Unit P1 to selected VM(s)
- Add plus Standby Duty Unit P2 to selected VM(s)
- Add plus Standby Duty Unit P3 to selected VM(s)
- ...

Erstelle persistente VM




Erstelle persistente VM

- Persistente virtuelle Maschine
 - Auswahl des gewünschten Software-Stacks
 - Provisionierung von DHCP, DNS, Konfigurations-Management (Puppet) sowie der Überwachung (Zabbix)
 - Klonen des VM Templates mit „Lean Provisioning“ (Block-Streaming der Disk im Hintergrund)
 - Starten der neu geklonten virtuellen Maschine
 - Ausführung des Puppet-Client auf der virtuellen Maschine und Installation des ausgewählten Software-Stacks

Erstelle VM: Schritt 1/4

Auswahl Basis Template



Step 2 Step 3

Choose VM Template Configure the VM Confirmation


Choose VM Template

VM Template Name	Status	Action	RAM	CPU	Disk Usage	Disk
<input type="checkbox"/> kvm-0001 (Linux Debian 7)	✓ ready for use	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	1 GB	1	<div style="width: 25%; background-color: green;"></div> 25% of 30 GB	
<input type="checkbox"/> kvm-0002 (Linux Fedora 18)	! do not use	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	1 GB	1	<div style="width: 25%; background-color: green;"></div> 25% of 50 GB	
<input checked="" type="checkbox"/> kvm-0003 (Linux Gentoo 2013.0)	✓ ready for use	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	1 GB	1	<div style="width: 25%; background-color: green;"></div> 25% of 50 GB	
<input type="checkbox"/> kvm-0004 (Windows Server 2008 Standard)	✗ stopped, streaming	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	2 GB	4	<div style="width: 25%; background-color: green;"></div> 25% of 30 GB	
<input type="checkbox"/> kvm-0005 (Windows Server 2008 R2 Standard)	✓ ready for use	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	2 GB	1	<div style="width: 25%; background-color: green;"></div> 25% of 50 GB	
<input type="checkbox"/> kvm-0006 (Windows Server 2012 Standard)	! Crashed	↑ ↓ × ↶ ↷ ↸ ↹ ↺ ↻	2 GB	1	<div style="width: 25%; background-color: green;"></div> 25% of 50 GB	

Next

Erstelle VM: Schritt 2/4

Auswahl Software Stack

Step 1  Step 3

Choose VM Template **Configure the VM** Confirmation

Configure the VM

VM Pool

VM Node

VM Name

VM Description

VM Type

VM Software Stack

VM Environment

Erstelle VM: Schritt 3/4 Konfiguration



Step 1

Step 2

Confirmation

Choose VM Template

Configure the VM

Configure the VM

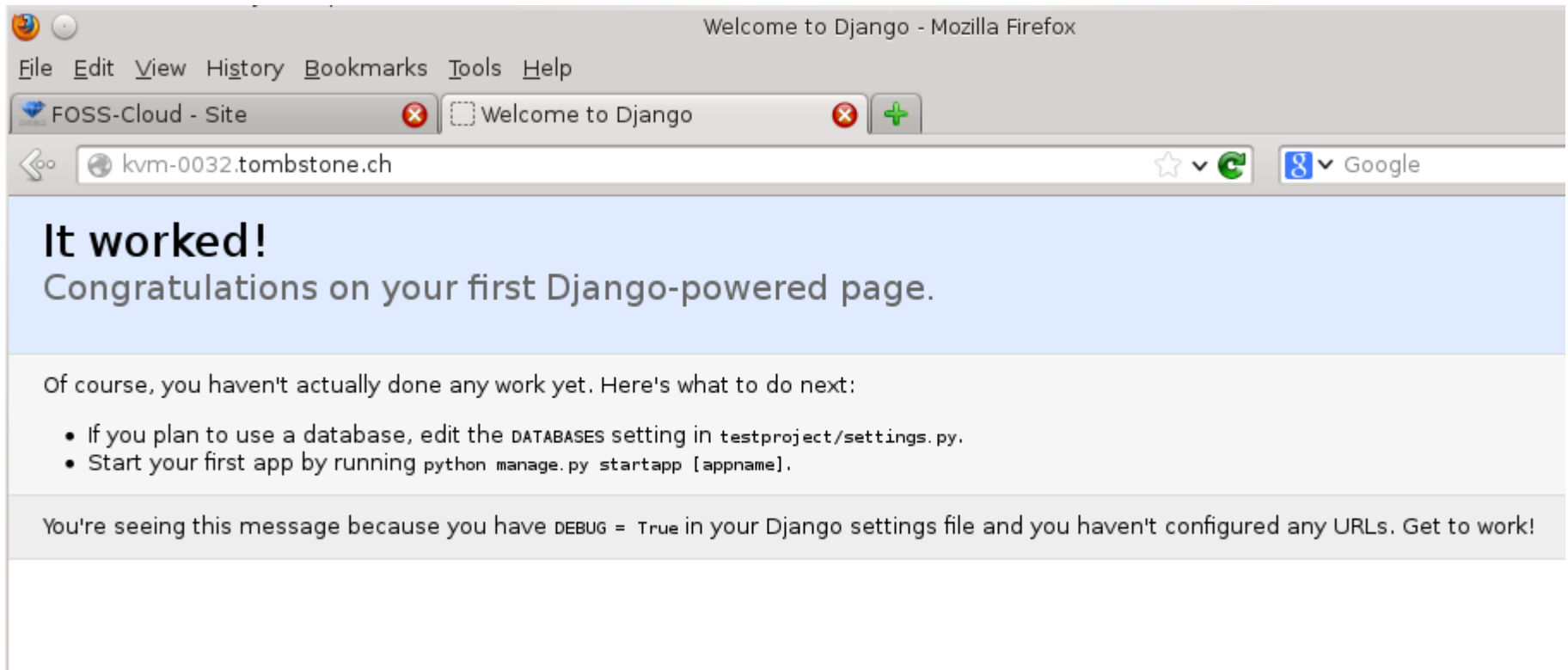
VM Pool	persistent-virtual-machine-pool-01
VM Node	vm-node-02.stepping-stone.ch
VM Name	kvm-0013.stepping-stone.ch
VM Description	Django Server for Customers
VM Type	Server
VM Software Stack	Django (Version 1)
VM Environment	Production

Back

Save

Erstelle VM: Schritt 4/4

Verifikation



Fragen?



stepping stone

Links

- <http://www.stoney-cloud.org/>
- <https://puppetlabs.com/>
- <http://www.zabbix.com/>
- <http://www.sepiola.org/>
- <http://www.stepping-stone.ch/>



stepping stone GmbH

Neufeldstrasse 9

CH-3012 Bern

Telefon: +41 31 332 53 63

www.stepping-stone.ch

info@stepping-stone.ch

