

Hyperkonvergenz mit



5.0

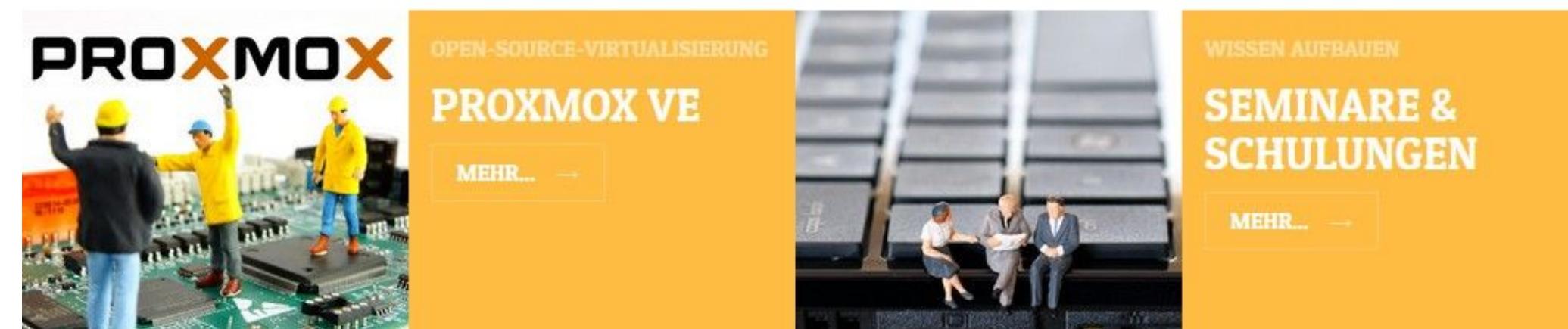
Dennis Busch
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ATTENTION

BUZZWORDS



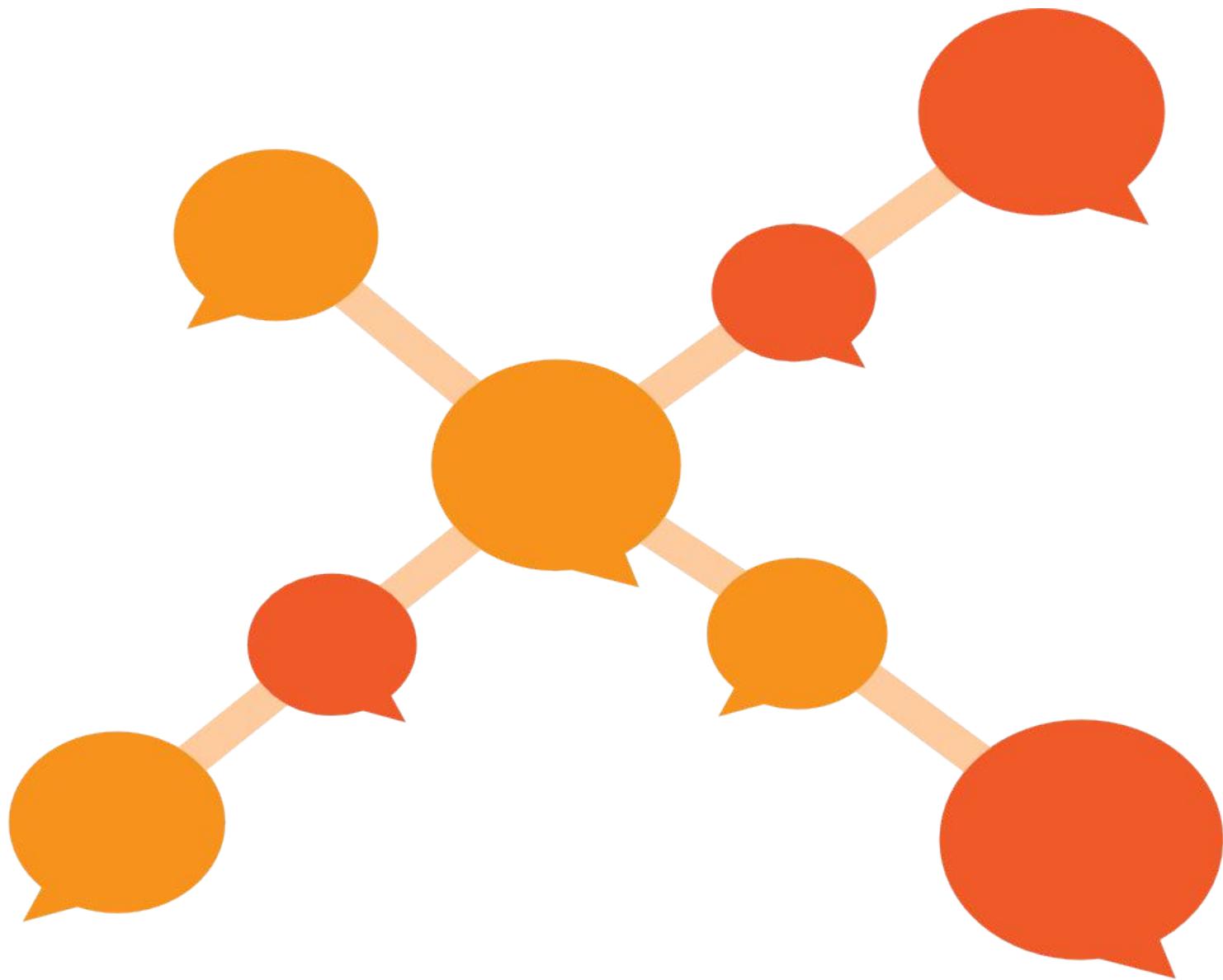
stacktrace



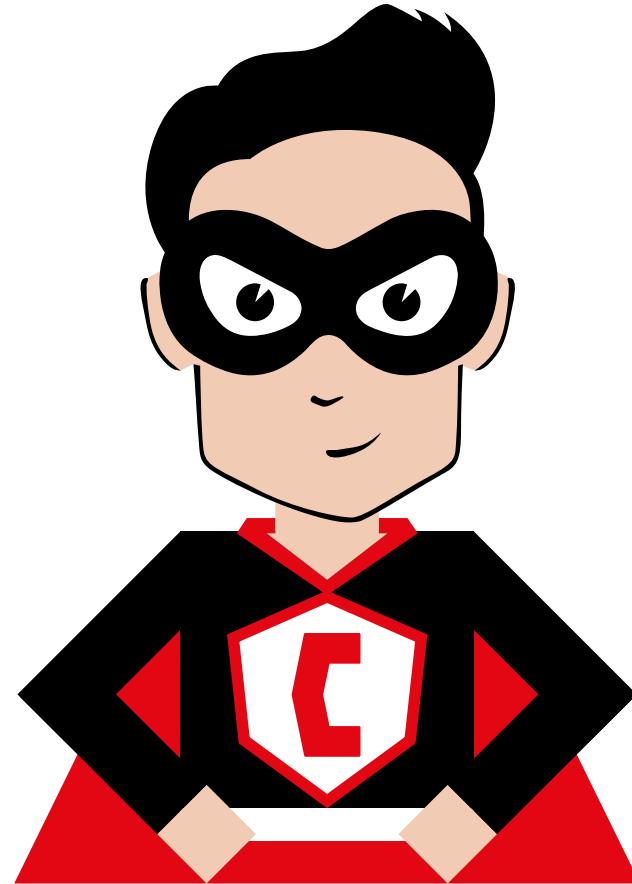


PROXMOX

training partner



proxTalks



— mein —
COMPUTERHELD



KEY FEATURES

INDUSTRY-LEADING ENTERPRISE VIRTUALIZATION TECHNOLOGY

- Linux and Windows Servers, 32 and 64 bit operation systems
- Support for the latest Intel and AMD server chipsets for great VM performance
- Leading performance relative to bare metal for real-world enterprise workloads
- Management layer contains all the capabilities required to create and manage a virtual infrastructure

OPEN SOURCE SOFTWARE

- Licensed under the free, copyleft GNU Affero General Public License, version 3 (AGPL, V3: <http://www.gnu.org/licenses/agpl-3.0.html>)
- Designed to ensure cooperation with community
- Public code repository (GIT)
- Bugtracker
- Public community forum
- Free Wiki for documentation and HowTo's

RESTFUL WEB API

- Easy integration for third party management tools like custom hosting environments
- REST like API (JSON as primary data format, and the whole API is formally defined using JSON Schema)
- Easy and human readable data format (native web browser format)
- Automatic parameter verification (verification of return values)
- Automatic generation of API documentation
- Easy way to create command line tools (use the same API)
- Resource Oriented Architecture (ROA)
- Declarative API definition using JSON Schema

HIGH AVAILABILITY CLUSTER

- No single point of failure (no SPOF)
- Mult-master cluster (no single master)
- GUI for managing KVM and container HA settings
- pmxcfs—Proxmox VE Cluster File System: database-driven file system for storing configuration files replicated in realtime on all nodes using Corosync

- Based on proven Linux HA technologies, providing stable and reliable HA service
- Resource agents for KVM and Linux Containers (LXC)
- Watchdog based Fencing

FENCING

- Proxmox VE HA Manager uses self fencing provided by hardware Watchdog or kernel Softdog
- No simultaneous data access and corruption
- Works „out-of-the-box“
- Proxmox VE HA Simulator included for testing

INTEGRATED WEB-BASED MANAGEMENT

GUI

- No need to install a separate management tool or any additional management node
- Fast search-driven interface, capable of handling thousands of VM's
- Secure HTML5 VNC console, supporting SSL
- Wizard based creation of virtual servers and containers
- Seamless integration and management of Proxmox VE 4.x Cluster
- Subscription management via GUI
- Role based permission management for all objects (VM's and CT's, storages, etc.)
- Support for multiple authentication sources (e.g. local, MS ADS, LDAP, ...)
- AJAX technologies for dynamic updates of resources
- Based on Ext JS JavaScript framework.
- Cluster-wide Task and Cluster logs: The GUI shows all running tasks from the whole cluster but also the history and the syslog of each node. This includes running backup or restore jobs, live-migration or HA triggered activities

LIVE MIGRATION

- Moving QEMU virtual servers from one physical host to another without any downtime.

COMMAND LINE INTERFACE

- For advanced users
- Manage all components of your virtual environment
- CLI with intelligent tab completion and full UNIX man page documentation

KEY FEATURES

STORAGE TYPES

- Local storage, ZFS, LVM with ext3/ext4, and XFS
- Shared storage such as FC, iSCSI or NFS
- Distributed storage such as Ceph RBD, Sheepdog, GlusterFS
- Unlimited number of storage definitions (cluster-wide)

BRIDGED NETWORKING

- Bridged networking model
- Each host with up to 4094 bridges
- TCP/IP configuration
- IPv4 and IPv6 support
- VLANs
- Open vSwitch

BACKUP AND RESTORE

- Full backups of containers and VMs
- Live Snapshot Backups
- Multiple schedules and backup storages
- GUI integrations, but also via CLI
- "Backup Now" and restore via GUI
- All jobs from all nodes can be monitored via the GUI tab "Tasks"

PROXMOX VE FIREWALL

- Linux-based netfilter technology. Stateful firewall. Provides high bandwidth.
- Distributed: Main configuration in Proxmox VE cluster file system, iptable rules stored in nodes.
- Supports IPv4 and IPv6
- Cluster-wide settings
- 3 levels of configuration (datacenter, host, VM/CT)
- Completely customizable allowing complex configurations via GUI or CLI
- Quick setup with predefined macros

MULTIPLE AUTHENTICATION SOURCES

- Proxmox VE supports multiple authentication sources
- Linux PAM standard authentication (e.g. 'root' and other local users)
- Proxmox VE authentication server (built-in)
- Microsoft Active Directory (MS ADS)
- LDAP

ROLE-BASED ADMINISTRATION

- User- and permission management for all objects (VM's, storages, nodes, etc.)
- A role is simply a list of privileges. Proxmox VE comes with a number of predefined roles which satisfies most needs. The whole set of predefined roles can be seen on the GUI.
- Permissions are the way to control access to objects. In technical terms they are simply a triple containing <path,user,role>. This concept is also known as access control lists. Each permission specifies a subject (user or group) and a role (set of privileges) on a specific path.

VM TEMPLATES AND CLONES

- Deploying virtual machines from templates is blazing fast, very comfortable and if you use linked clones you can optimize your storage by using base images and thin-provisioning.
- Linked and Full Clones

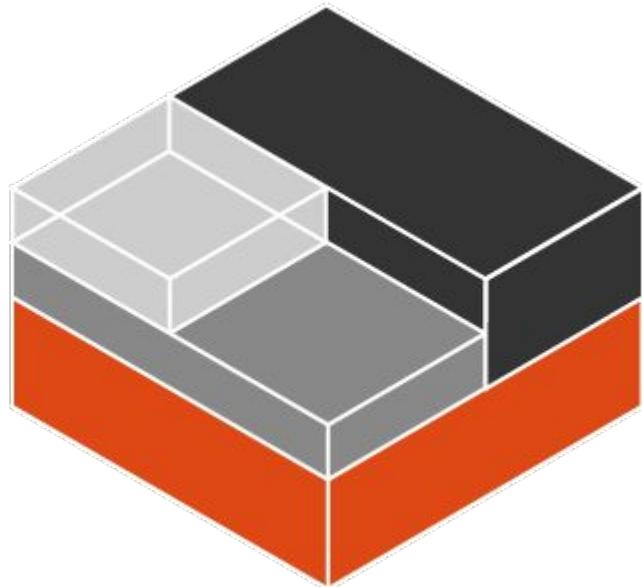
TWO-FACTOR AUTHENTICATION

- For high security
- 2 types: Time-based One Time Passwords and YubiKey



debian





LXC

Server-Ansicht

- [Rechenzentrum](#)
- [pve11](#)
 - [101 \(XubuntuLocal\)](#)
 - [ceph \(pve11\)](#)
 - [local \(pve11\)](#)
 - [local-lvm \(pve11\)](#)
- [pve12](#)
 - [ceph \(pve12\)](#)
 - [local \(pve12\)](#)
 - [local-lvm \(pve12\)](#)
- [pve13](#)
 - [100 \(Xubuntu\)](#)
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 - [local-lvm \(pve13\)](#)

Rechenzentrum

[Suche](#)
 [Übersicht](#)
 [Optionen](#)
 [Storage](#)
 [Backup](#)
 [Rechte](#)
 [Benutzer](#)
 [Gruppen](#)
 [Pools](#)
 [Rollen](#)
 [Authentifikation](#)

[Zustand](#)

Status	Knoten	Ceph
	✓ Online 3 ✗ Offline 0	
		Cluster: PROXLAB, Quorate: Ja
		HEALTH_OK

Gäste

Virtuelle Maschinen	LXC Container
<input checked="" type="radio"/> Laufend 2 <input type="radio"/> Gestoppt 0	<input checked="" type="radio"/> Laufend 0 <input type="radio"/> Gestoppt 0

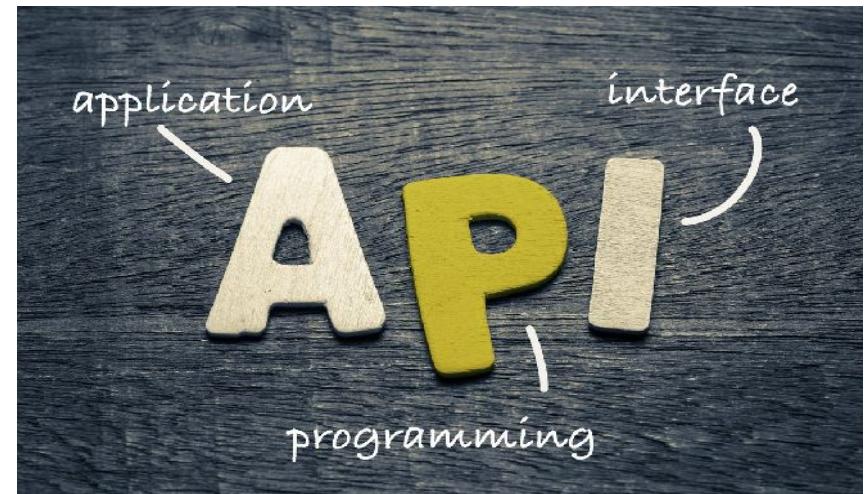
Ressourcen

CPU	Speicher	Storage
 6% von 24 CPU(s)	 3% 6.15 GiB von 176.94 GiB	 2% 33.41 GiB von 1.56 TiB

Knoten

Name	ID	Online	Support	Server-Adresse	CPU-Auslast...	Speicherverb...	Betriebs...
pve11	1		-	10.0.1.1	13%	4%	2 Tage 08:...

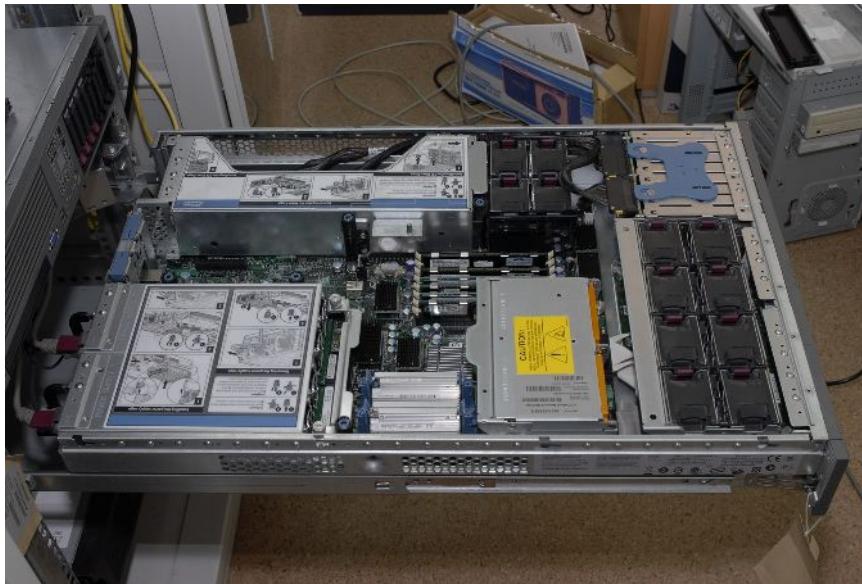
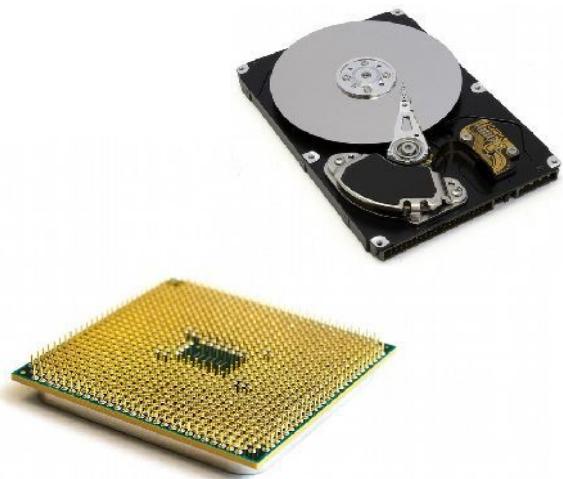


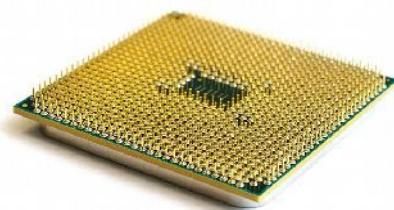
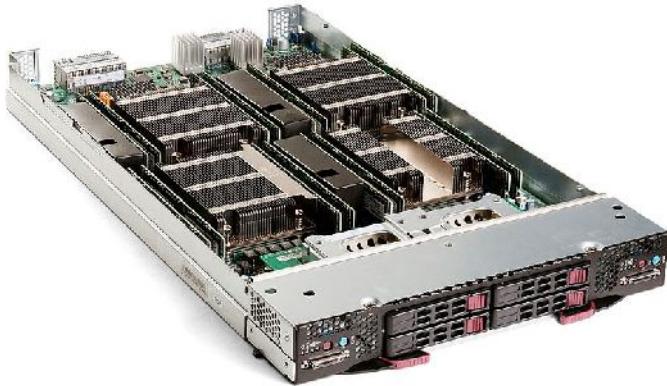
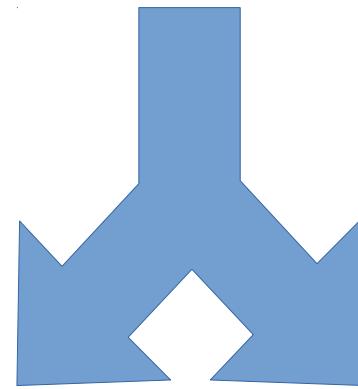
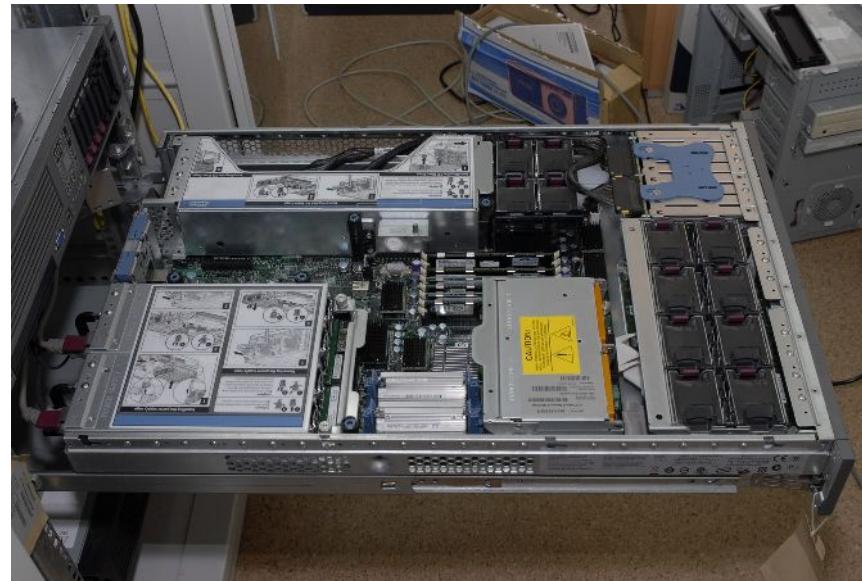


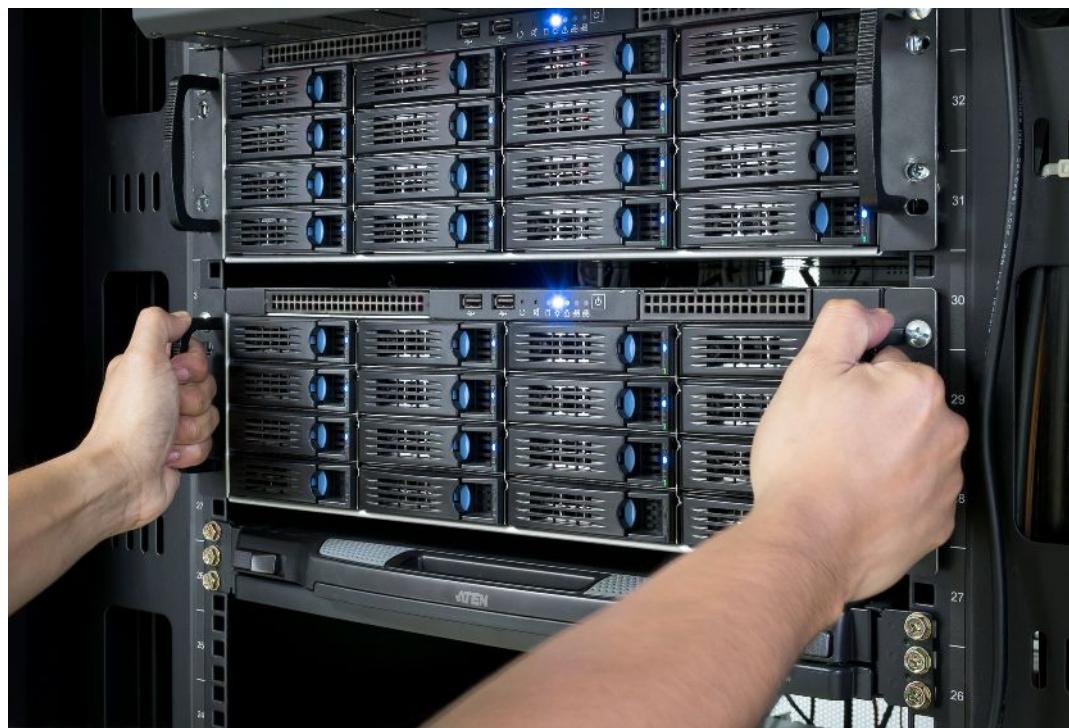
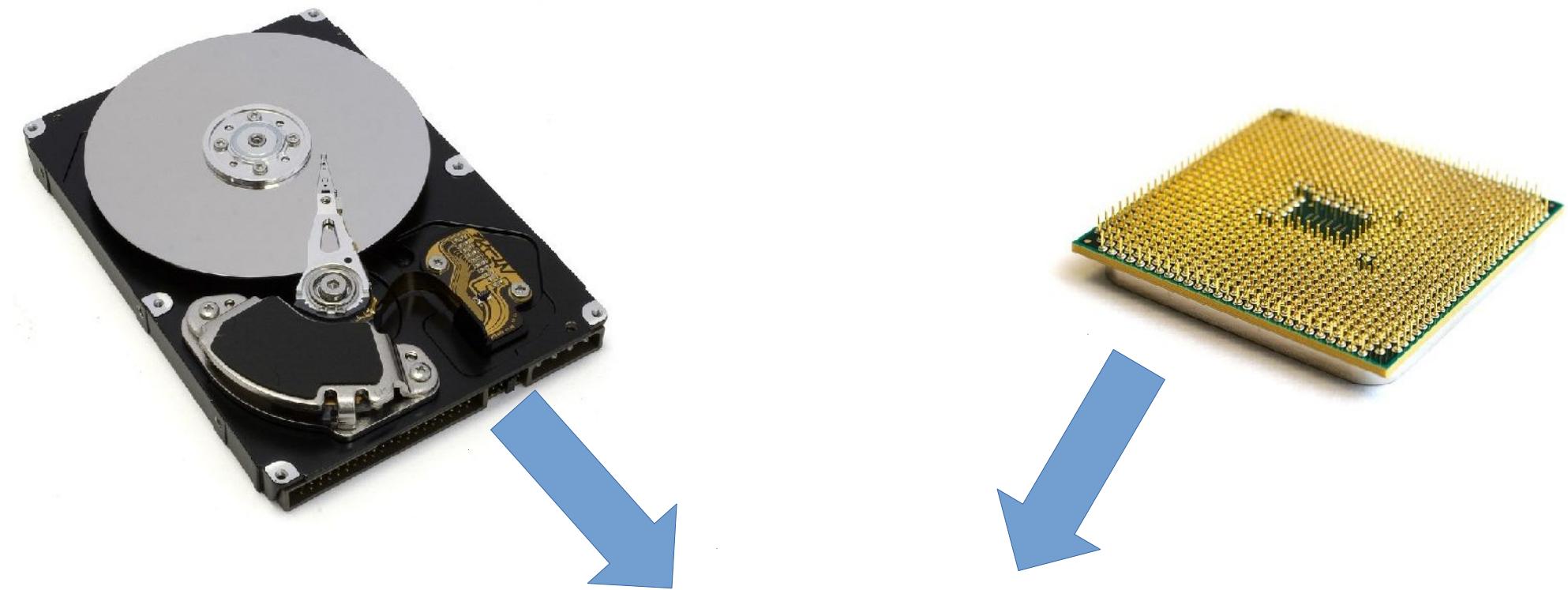


OPEN SOURCE

Hyperkonvergenz







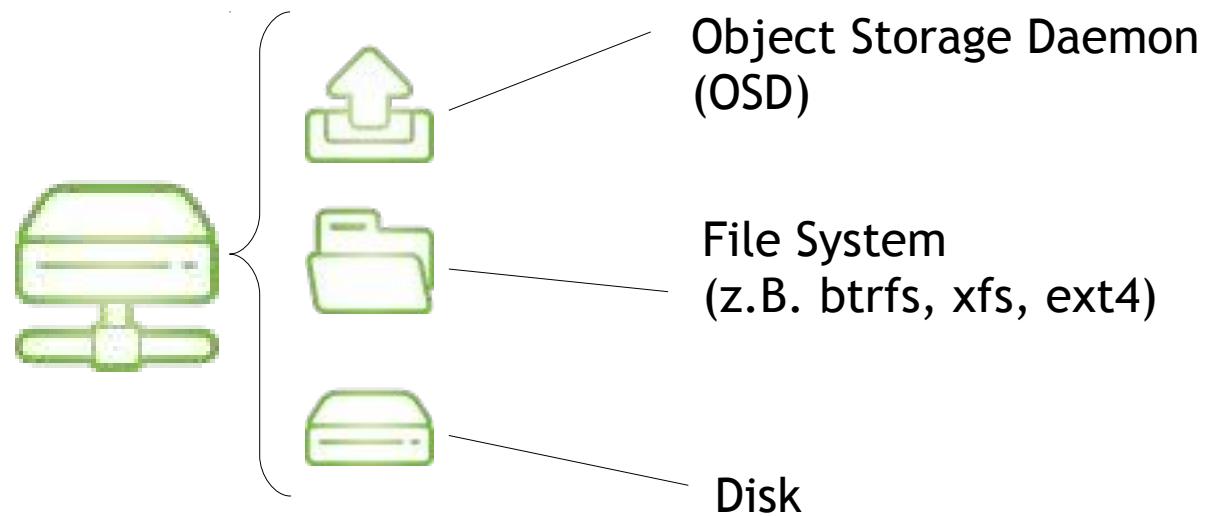
-
- Verzeichnis
 - LVM
 - LVM-Thin
 - NFS
 - iSCSI
 - GlusterFS
 - RBD
 - ZFS over iSCSI
 - ZFS





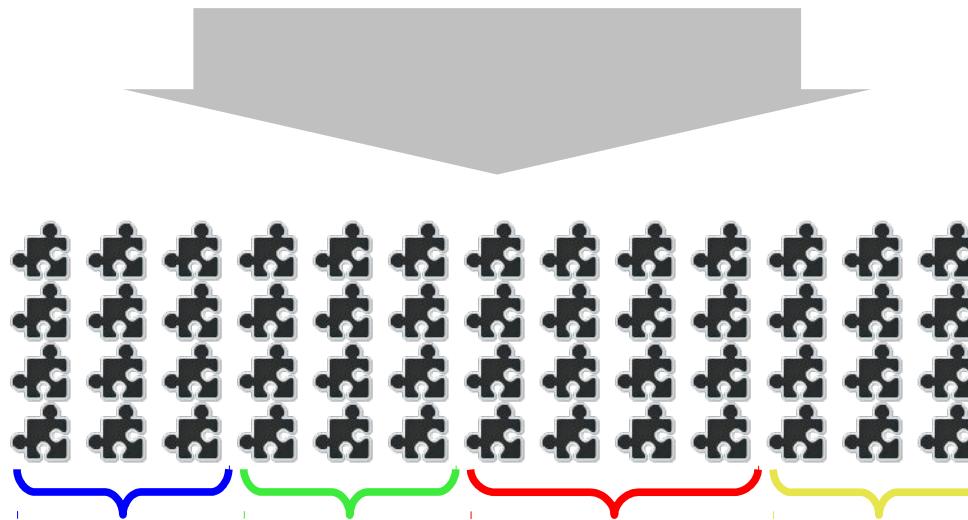
ceph

OSD





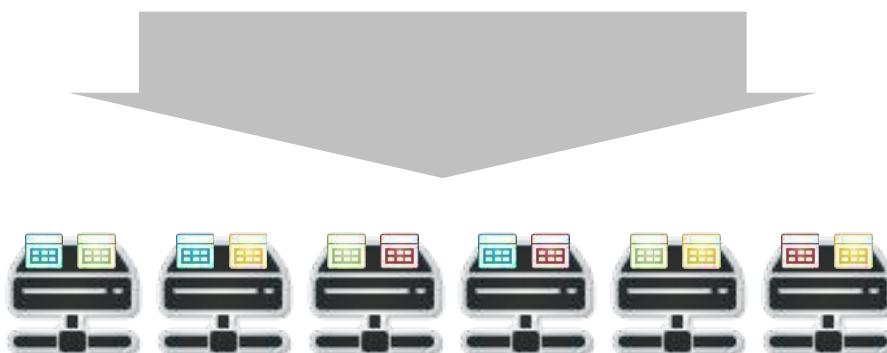
Image/Block
Device

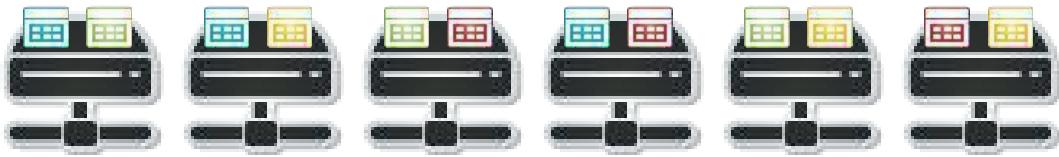


Zuteilung erfolgt basierend auf Objektnamen



Placement
Groups

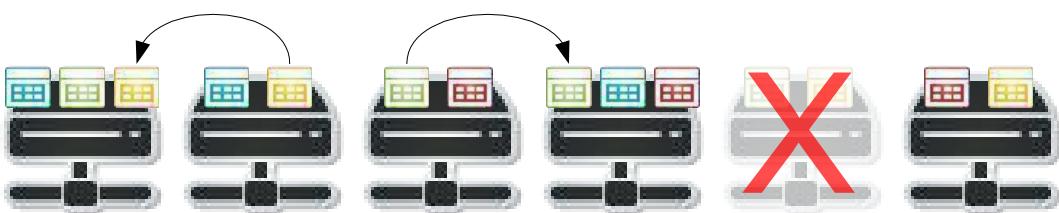


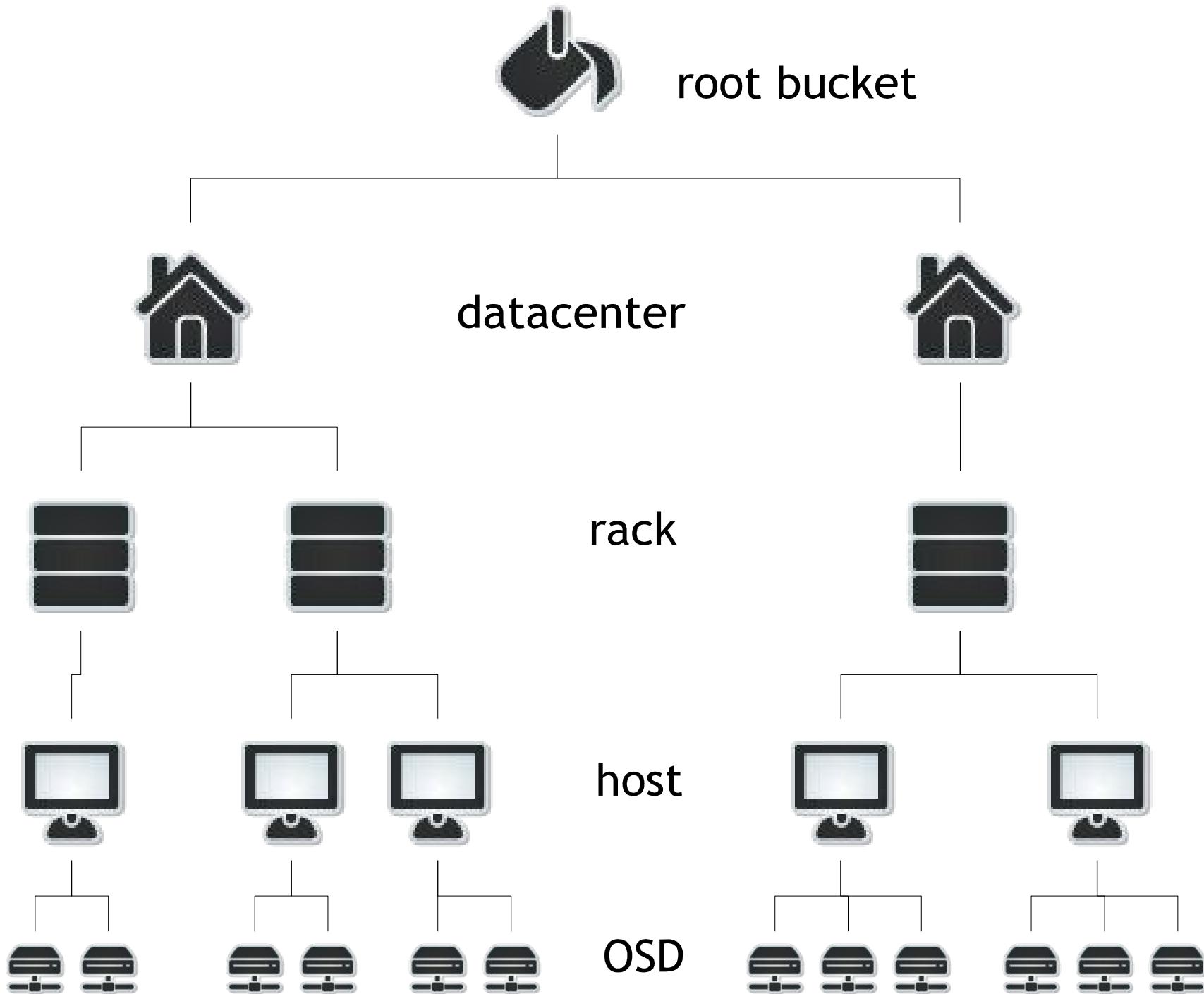


Ausfall eines Knotens



peer2peer-Replikation





Server-Ansicht

Knoten 'pve13'

Neustart

Herunterfahren

Shell

Massenaktionen

Rechenzentrum

pve11

- 101 (XubuntuLocal)
- ceph (pve11)
- local (pve11)
- local-lvm (pve11)

pve12

- ceph (pve12)
- local (pve12)
- local-lvm (pve12)

pve13

- 100 (Xubuntu)
- ceph (pve13)
- local (pve13)
- local-lvm (pve13)

Suche

Übersicht

Shell

System

Netzwerk

DNS

Zeit

Syslog

Updates

Firewall

Disks

Ceph

Konfiguration

Monitor

OSD

Pools

Log

Task History

Subscription

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HEALTH_OK

Status

Schw... Übersicht

Keine Warnungen/Fehler

Status

Monitore

0: ✓ 1: ✓ 2: ✓

OSDs

	In	Out
Up	6	0
Down	0	0

PGs

active+clean:

576

Total: 6

Leistung

Auslastung

1%

11.14 GiB von 1.43 TiB

Lese-Vorgä

0 B/s

Schreib-Vorgänge:

0 B/s

PROXMOX Virtual Environment 5.0-10/0d270679 **BETA** Suche Sie sind angemeldet als 'root@pam' Hilfe Erstelle VM Erstelle CT Logout

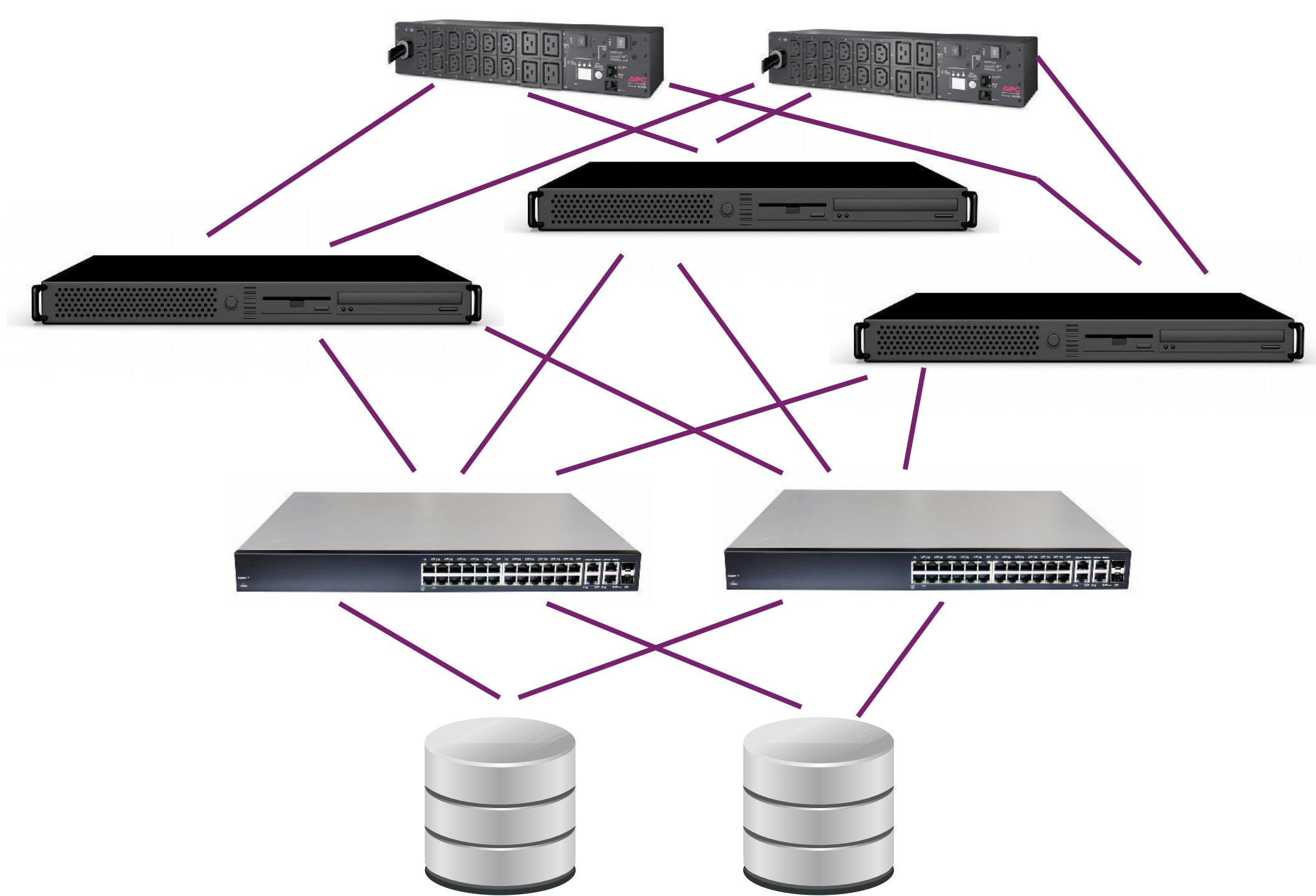
Server-Ansicht

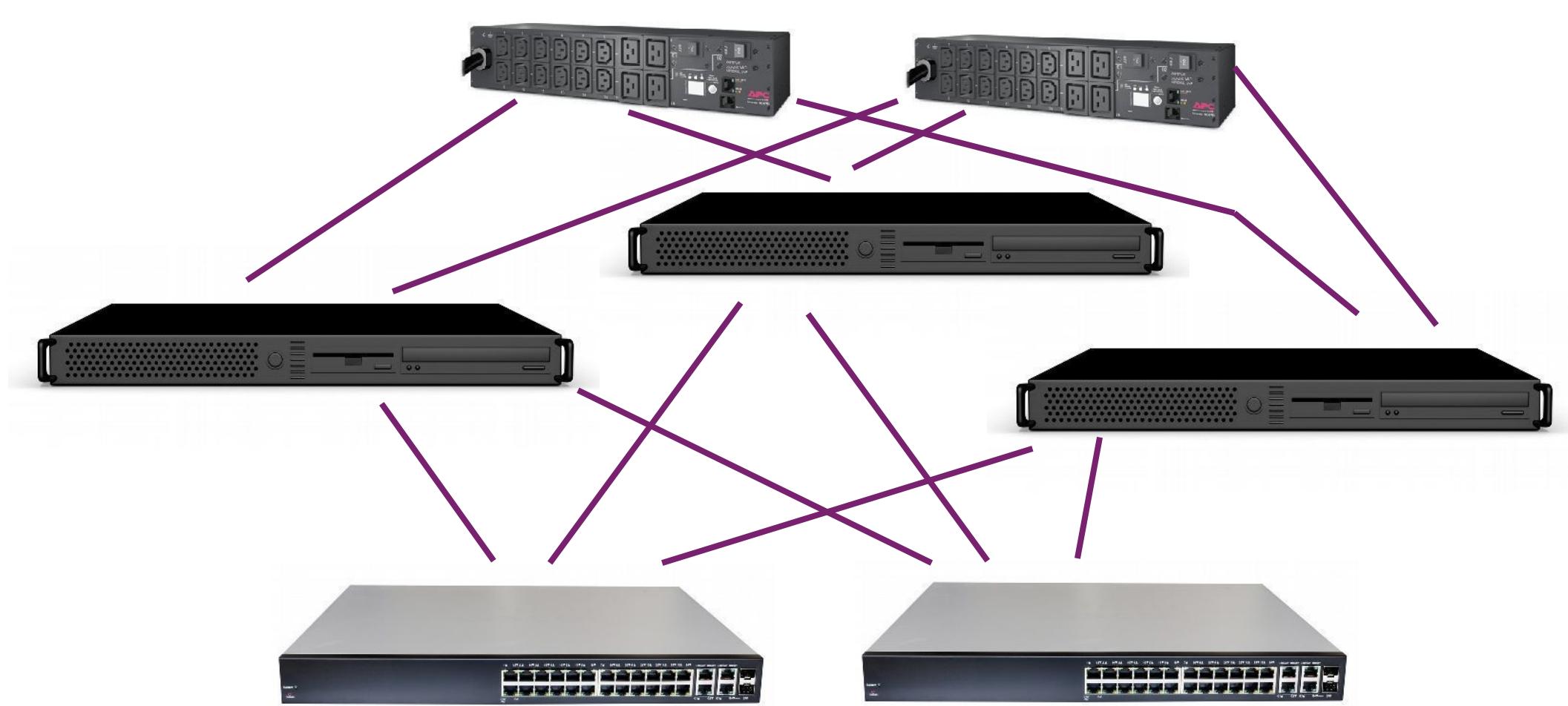
Knoten 'pve13'

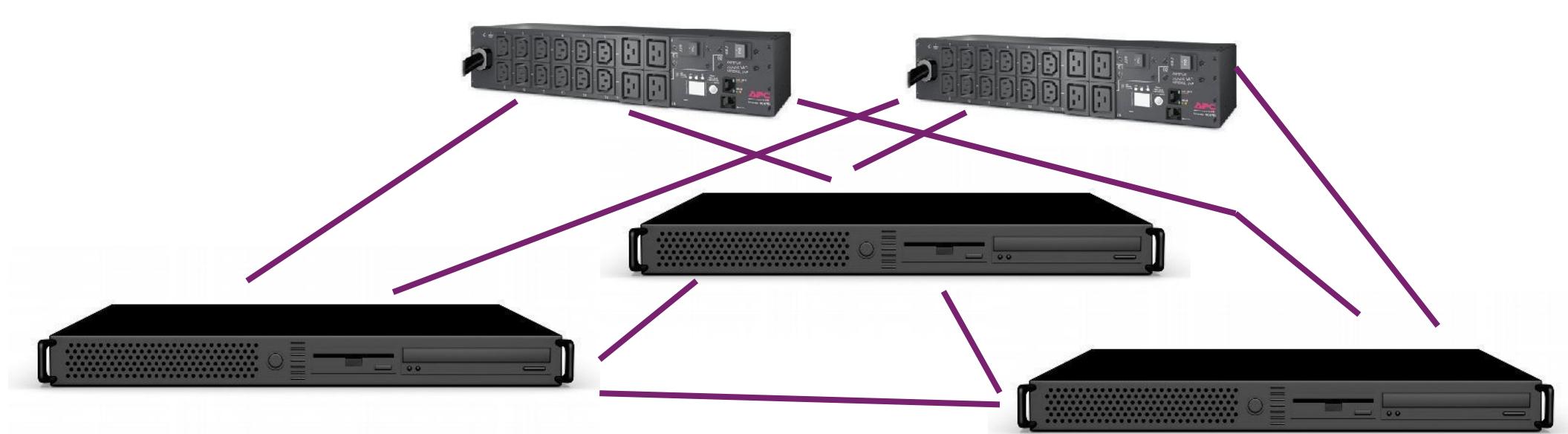
Suche Erstellen: OSD Neu laden noout setzen Keine OSD ausgewählt Start Stop Out In Entfernen

Übersicht Shell System Netzwerk DNS Zeit Syslog Updates Firewall Disks Ceph Konfiguration Monitor OSD Pools Log Task History Subscription

Name	Ty...	Status	weight	reweight	Verwendet		Latenz (ms)		
					%	Total	A...	C...	
- default	root								
- pve11	host								
- osd.5	osd	up / in	0.23909	1	0,73	244.88 GiB	0	0	
- osd.2	osd	up / in	0.23909	1	0,84	244.88 GiB	0	0	
- pve12	host								
- osd.4	osd	up / in	0.23909	1	0,78	244.88 GiB	0	0	
- osd.1	osd	up / in	0.23909	1	0,70	244.88 GiB	0	0	
- pve13	host								
- osd.3	osd	up / in	0.23909	1	0,79	244.88 GiB	0	0	
- osd.0	osd	up / in	0.23909	1	0,71	244.88 GiB	0	0	







A red silhouette of a devil's head and upper body against a black background. The devil has long, thin horns and a small, pointed tail. The letters 'HA' are printed in white on the right side of the devil's forehead.

High
Availability
From
Hell



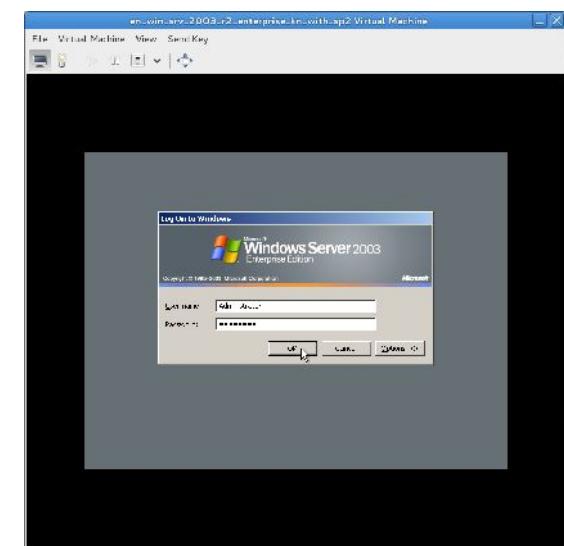
H O C H V E R F Ü G B A R



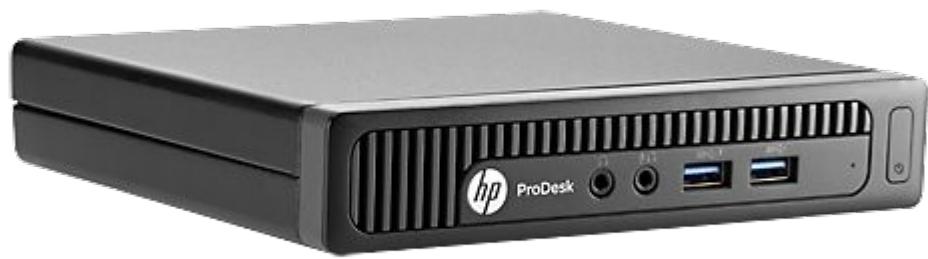
Open Source

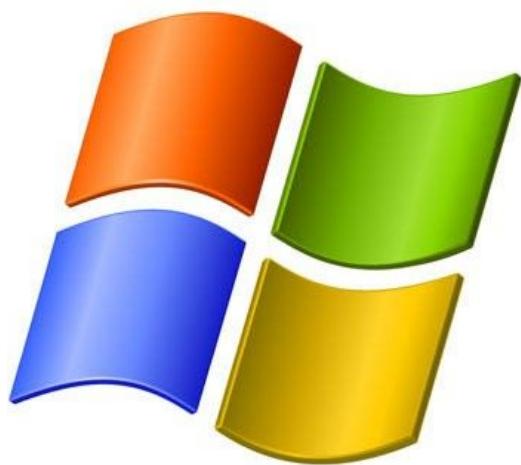


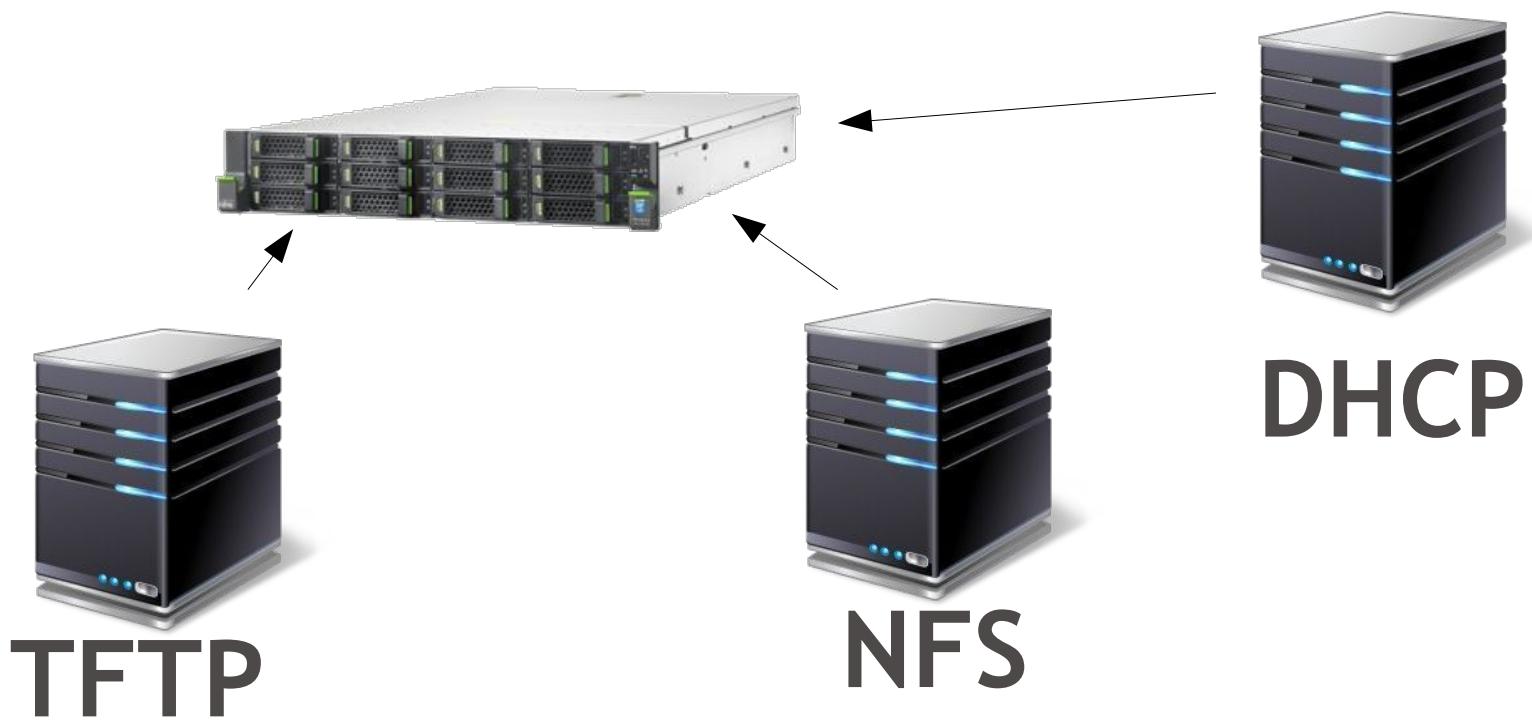
PROXMOX



SPICE









Proxtalks 2017

die Konferenz rund um Proxmox VE

25. Oktober 2017

Frankfurt am Main - The Squaire - Flughafen

<https://proxtalks.de>