

FAIme

Ein Dienst für individuelle Installationsmedien und VM Abbilder

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FrOSCon 2019

finger Mrfai@localhost

▶ whoami

- ▶ Diplominformatiker
- ▶ Systemadministrator an der Uni Köln seit über 25 Jahren
- ▶ SunOS 4.1.1 auf SPARC
- ▶ Solaris Jumpstart
- ▶ 1999 erstes Cluster (16× Dual PII 400MHz)
- ▶ FAI seit über 19 Jahren
- ▶ Debian Entwickler seit 2000
- ▶ Mitglied im Debian Cloud Team, Web Team
- ▶ Vorträge und Tutorials auf zahlreichen Konferenzen:
Linux Kongress, Linuxtag, DebConf, SLAC, LCA, FOSDEM,
CeBit, OSDC, UKUUG, FrOSCon, Grazer Linuxtage,
Chemnitzer Linuxtag, GUUG Frühjahrsfachgespräch
- ▶ FAI Schulungen

Motivation

- ▶ Debian Installer ist nicht tauglich für Anfänger
- ▶ Mind. 24 Fragen, oft nur ENTER drücken
- ▶ Einige Fragen sind von einem Anfänger nicht zu beantworten
- ▶ Es fehlt ein Modus mit weniger Fragen
- ▶ Andere Distributionen machen Installation deutlich einfacher

Die Idee

- ▶ Sollte die üblichen Installationen abdecken
- ▶ Ignoriere Spezialfälle
- ▶ Frage nur die wirklich wichtigen Dinge
- ▶ Frage alles am Anfang

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- ▶ Boote den Rechner und hole dir einen Kaffee
- ▶ Fertig! Arbeite mit dem neu aufgesetzten Rechner

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Das klingt ein wenig nach FAI

- ▶ FAI = Fully Automatic Installation
- ▶ FAI ist ein Tool für erfahrene Sysadmins
- ▶ FAI ist aber auch nicht tauglich für Anfänger :-)
- ▶ Wie kann man es nutzbar für Linux User machen?

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- ▶ FAI = Fully Automatic Installation
- ▶ FAI ist ein Tool für erfahrene Sysadmins
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- ▶ Wie kann man es nutzbar für Linux User machen?

FAI.me

<https://fai-project.org/FAIme>

FAI - Fully Automatic Installation

- Home
 - References
 - Features
 - Poster / Flyer
 - Case studies
 - Mailing Lists / IRC / Wiki
 - Clusters built with FAI

- FAI.me / Build your own

- Videos / Screenshots

- Download

- FAI CD
- Packages
- FAI questionnaire

- Documentation

- FAI Guide
- Manual pages
- Other documentation
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- Developers

- Sources / Bugs
- Roadmap
- Team

- Contact / Support

- Site search

FAI.me. Build your own installation media

This installation image will automatically install the OS and applications onto the computer. No network connection is needed, since all packages are on the installation media. You can burn this image onto a CDDVD or write it to an USB stick.

All data on the first disk will be overridden without any further confirmation.

Root password: if not set, sudo will be configured for the user account

SSH key for the root account: No file selected. Upload id*,pub file for login without a password

User name: Not the full name

User password: if not set, a password will be generated

Language and keyboard layout

Disk partitioning scheme

Select a distribution Enable backports including newer kernel

Which desktop to install

- | | |
|---|---|
| <input type="checkbox"/> Debian developer tools | <input checked="" type="checkbox"/> Openssh server |
| <input type="checkbox"/> Web server | <input checked="" type="checkbox"/> Standard system tools |
| <input type="checkbox"/> Print server | <input checked="" type="checkbox"/> Non-free Linux firmware |

Additional packages to be installed:

Separate with spaces, multiple names on one line are fine

Email (optional): You will be informed when the image generation is finished

- For the keyboard layout we assume Generic 105-key PC
- To change the keyboard layout call `dpkg-reconfigure keyboard-configuration`
- The timezone will be set to UTC. To change the timezone call `dpkg-reconfigure tzdata`
- You should change the user and root password after installation

Any feedback is welcome. Send an email to FAI.me-at-fai-project.org

FAI.me Installationsmedium

- ▶ Einfache Erstellung eines Installationsmediums
- ▶ Einfache Anpassungen möglich machen

- ▶ **Sprache, Benutzer + Passwort**, root Passwort, SSH Key
- ▶ Alle **Desktops** auswählbar
- ▶ Distributionen: **stable, stable+backports, testing**
- ▶ **Tools, Non-free Firmware, Web, Print, SSH Server**
- ▶ **Eigene Paketliste**
- ▶ Varianten für die Partitionierung (/home, LVM)

Cloud Images

- ▶ Keine Installation
- ▶ Plattenimage kann direkt booten
- ▶ Plattengröße
- ▶ Format (raw.zst, qcow2, vmdk,vhdx, vdi)
- ▶ Hostname
- ▶ Immer nur eine Partition

FAI.me weitere Ideen

- ▶ FAI kann Plattenimages auch cross Architektur bauen
- ▶ D.h. arm64 Plattenimage auf einem amd64 bauen
- ▶ Andere Distributionen (z.B. Ubuntu, CentOS)
- ▶ Einfacher Modus, weniger Boxen
- ▶ Generisches FAI.me Installationsmedium, ohne Pakete
- ▶ Wer noch mehr will, sollte einen eigenen FAI server aufsetzen

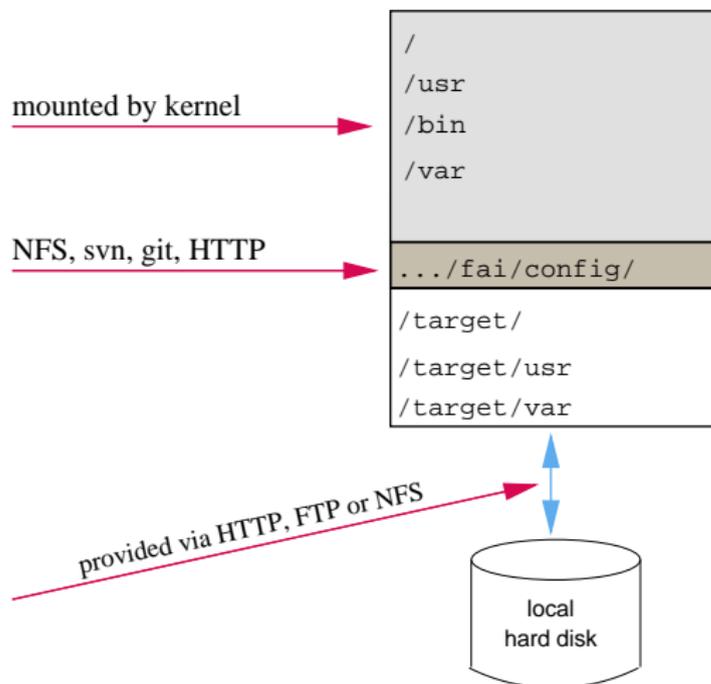
FAI.me im Hintergrund

- ▶ Webserver \neq Buildserver
- ▶ Perl CGI das die Eingaben validiert
- ▶ Je Auftrag ein Unterverzeichnis
- ▶ Schreibt eine config und eine meta Datei
- ▶ Status im Web sichtbar (waiting, processing, done, error)
- ▶ Shellskript auf dem Build Server verarbeitet neue Jobs
- ▶ Neue nfsroot, monitoring, cleanup alter Jobs

install server



install client



FAI Architektur

- ▶ FAI Config Space
- ▶ FAI Klassen
- ▶ AMD64 DEBIAN STRETCH HOME_LVM BACKPORTS SSH_SERVER
NONFREE GNOME FAIME

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- ▶ Installations ISO
`fai-mirror -cDEBIAN,GNOME,BACKPORTS,FAIME /tmp/mirror`
`fai-cd -m /tmp/mirror ABC.iso`
- ▶ Cloud Image
`fai-diskimage -S5G -cDEBIAN,GNOME,FAIME AB12.raw.zst`

Plattenpartitionierung

Example: .../disk_config/HOME_LVM:

```
# entire disk with LVM, separate /home
disk_config disk1 fstabkey:uuid align-at:1M
```

```
primary /boot    200      ext2     rw,noatime
primary -        4G-      -        -
```

```
disk_config lvm
vg vg1 disk1.2
vg1-root    /          3G-50G   ext4     noatime,rw
vg1-swap    swap       200-4G   swap     sw
vg1-home    /home     600-     ext4     noatime,nosuid,nodev,rw
```

- ▶ File systems: ext[2,3,4], vfat, xfs, ReiserFS, NTFS, btrfs

Softwareinstallation

Beispiel: .../package_config/DEBIAN:

```
PACKAGES install-norec  
apt-transport-https # is only needed for stretch  
sudo debconf-utils  
file less linuxlogo rsync openssh-client  
time procinfo  
nullmailer  
console-setup kbd pciutils usbutils  
unattended-upgrades
```

```
PACKAGES install NONFREE  
firmware-bnx2 firmware-bnx2x firmware-realtek  
firmware-linux-nonfree
```

```
PACKAGES install AMD64  
linux-image-amd64  
mementest86+
```

FAI Referenzen



FAI Nutzer

- ▶ Anonymous, financial industry, 32.000 hosts
- ▶ LVM insurance, 10.000 hosts
- ▶ City of Munich, 16.000 hosts
- ▶ Albert Einstein Institute, 1725 hosts
- ▶ Mobile.de, ~600 hosts
- ▶ StayFriends, 700+ hosts
- ▶ XING AG, 300-400 hosts
- ▶ Opera Software, ~300 hosts
- ▶ Stanford University, 450 hosts
- ▶ MIT Computer science research lab, 200 hosts
- ▶ The Wellcome Trust Sanger Institute, 540 hosts
- ▶ Deutsches Elektronen-Synchrotron, 273 hosts
- ▶ Archive.org, 200+ hosts
- ▶ Electricité de France (EDF), 1500 hosts
- ▶ BUF, digital visual effects company, 1000 hosts
- ▶ Zivit, 260 hosts on two IBM z10 EC mainframes
- ▶ ETH Zurich, systems group, ~300 hosts
- ▶ Grml, creating eight different ISOs, daily builds

Debian Cloud Images

- ▶ Ziel: Offizielle Images inkl. Tool und Konfiguration
- ▶ Debian Cloud Team erzeugt Cloud Images mit FAI
- ▶ Openstack noch mit shell Skript
- ▶ <https://salsa.debian.org/cloud-team>
- ▶ Git repo: `debian-cloud-images`
- ▶ Makefile, Python Wrapper um `fai-diskimage`:
`debian-cloud-images`
- ▶ Varianten: `azure`, `ec2`, `gce`, `generic`, `genericcloud`, `nocloud`
- ▶ Download: <https://cloud.debian.org/images/cloud>
- ▶ TODO: Image Finder

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Fragen?