Features

- Installs Debian GNU/Linux, Ubuntu, CentOS, SuSe, Scientific Linux Cern, ...
- **Class concept** supports heterogeneous configuration and hardware
- Fast creation of disk images for VM and the cloud
- FAI-CD performs the installation without an install server
- Autodiscover of the install server
- Reproducible installation
- **Automatic documentation** in central repository
- Advanced **disaster recovery** system
- Automated hardware inventory
- **Full remote control** via ssh during installation process
- *Shell*, *perl*, *expect* and *cfengine* script support for customization
- The FAI monitor shows an overview of the installation progress

- **GUI using GOsa^2**
  - GOsa^2 provides a web interface for FAI's config space in LDAP
  - The city of Munich is using the combination
- **openQRM** has a FAI plugin for cloud deployments
- **Qlustar** is a HPC Linux OS, using FAI as installer

Availability

- Homepage: **http://fai-project.org**
- Open source under GPL-2+ license
- Detailed documentation, mailing lists, IRC channel
- Official Debian packages, ISO images of FAI CD
- Commercial support available

Some FAI users

- Anonymous, financial industry, 32.000 hosts
- LVM insurance, 10.000 hosts
- StayFriends, 700+ hosts
- City of Munich, 16.000 hosts
- XING AG, 300-400 hosts
- Albert Einstein Institute, 1725 hosts
- Zivit, 260 hosts on two IBM z10 EC mainframes
- Archive.org, 1200 hosts + 800 KVM hosts
- Opera Software, ~300 hosts
- Stanford University, 450 hosts
- MIT Computer science research lab, 200 hosts
- The Welcome Trust Sanger Institute, 540 hosts
- Deutsches Elektronen-Synchrotron, 273 hosts
- Mobile.de, ~600 hosts
- Electricité de France (EDF), 1500 hosts
- Linux Information Systems AG, 1000+ hosts
- ETH Zurich, systems group, ~300 hosts
- Umeå university, 70 hosts
- Trinity Centre for High Performance Computing, 356 opterons, 80 xeons
- High Performance Computing Center North, HPC2N, two clusters with a total of 310 hosts
- For more see **http://fai-project.org/reports/**

FAI

Fully Automatic Installation

Plan your installation,
and FAI installs your plan.

Contact: Thomas Lange
Institut für Informatik, Universität zu Köln
Albertus-Magnus-Platz, 50923 Köln, Germany
Email: fai@fai-project.org

- System for unattended Linux installation
- Installs and configures the whole OS and all additional software
- Useful for XEN, KVM and Vserver host installations
- Centralized configuration management and administration
- Scalable and flexible rollout method for Linux migration
- **Linux deployment in only a few minutes**

Why use FAI?

- Manual installation takes hours, FAI just minutes
- Recurring tasks are boring and lead to errors
- You need an infrastructure management
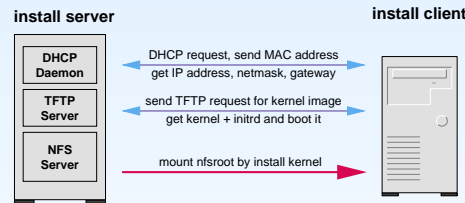- You want to save time

Installation times

CPU + RAM	software	time
E5-2690v2, 3.0 GHz, SSD	5.4 GB	7 min
i7-3770T, 2.50 GHz, SSD	6.0 GB	8.5 min
Core i7, 3.2 GHz, 6GB	4.3 GB	7 min
Core i7, 3.2 GHz, 6GB	471 MB	77 sec
Core2duo, 2 GHz, 2GB	4.3 GB	17 min
Core2duo, 2 GHz, 2GB	471 MB	165 sec
Pentium 4, 3 GHz, 1GB	2200 MB	10 min
Pentium 4, 3 GHz, 1GB	1100 MB	6 min
Pentium 4, 3 GHz, 1GB	300 MB	105 sec
Disk Image, Xfce desktop	1.1 GB	95 sec
Disk Image, Ubuntu 16.04	3.3 GB	5 min
Disk Image	630 MB	42 sec

The three steps of FAI

1 - Boot host

- Boot via network card (PXE), CD-ROM or USB stick

install server

DHCP Daemon — DHCP request, send MAC address / get IP address, netmask, gateway

TFTP Server — send TFTP request for kernel image / get kernel + initrd and boot it

NFS Server — mount nfsroot by install kernel

install client

- Now a complete Linux OS is running without using the local hard disks

2 - Get configuration data

install server

install client

nfsroot — mounted by kernel

config space
./hooks
./class
./disk_config
./package_config
./scripts
./files

NFS, svn, git, HTTP

Debian mirror

provided via HTTP, FTP or NFS

/
/usr
/bin
/var
.../fai/config/
/target/
/target/usr
/target/var
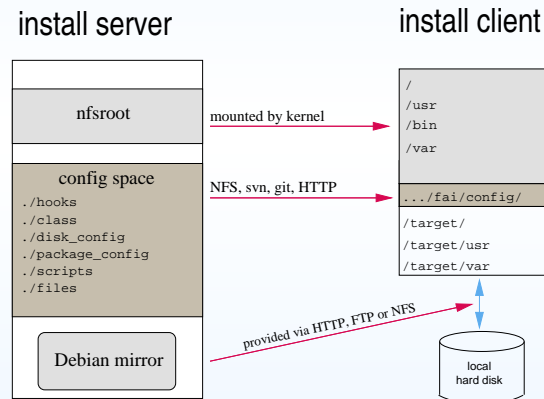
local hard disk

3 - Run installation

- partition local hard disks and create filesystems
- install software using package manager (apt, yum, yast and more)
- configure installed OS and additional software
- save log files to install server
- reboot new system

Requirements

DHCP, TFTP, NFS server: Install client receives network and configuration data from this servers.
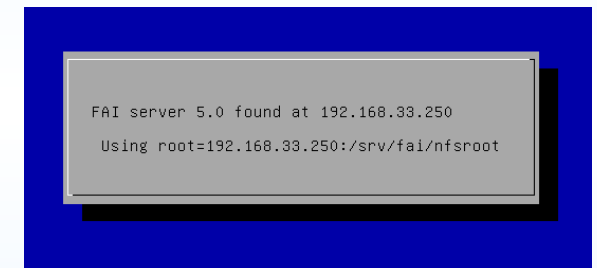
Client nfsroot: A directory which contains the whole file system for an install client during installation. All clients share the same nfsroot.

Configuration space: A directory tree which contains the configuration data. These are just small text files in a certain directory structure.

Debian mirror: Access to a package repository via HTTP, FTP and NFS is supported as well as a proxy.

These services may be spread across several computers.

Screenshots

```
FAI server 5.0 found at 192.168.33.250

Using root=192.168.33.250:/srv/fai/nfsroot
```

Autodiscover the FAI server

```
FAI - Fully Automatic Installation
Select your FAI profile

The profile will define a list of classes,
         which are used by FAI.

   Simple      My first FAI installation
   Xfce        Xfce desktop, LVM partitioning
   Gnome       Gnome desktop installation
   CentOS 7    CentOS 7 with Xfce desktop
   Ubuntu      Ubuntu 14.04 desktop installation
   Inventory   Show hardware info
   Sysinfo     Show detailed system information
   dummy       A dummy profile

   < OK >        <Cancel>        < Help >
```

Selecting a FAI profile from the menu