Fully Automatic Installation

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What is FAI ?

- System for unattended Linux installation
- Installs and configures the whole OS and all additional software
- 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

Features

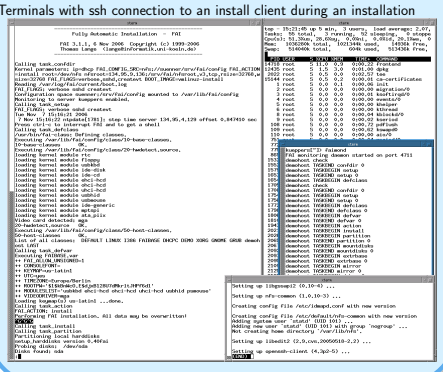
- Installs Debian GNU/Linux, Ubuntu, Mandriva, Suse, Solaris,...
- Useful for XEN and Vserver host installations
- **Class concept** supports heterogeneous configuration and hardware
- Update running system without installation (e.g daily maintenance)
- **Central configuration repository** for all install clients
- Advanced **disaster recovery** system
- Reproducible installation
- **Automatic documentation** in central repository
- Automated hardware inventory
- Hooks can extend or customize the normal behavior
- Full **remote control** via ssh during installation process
- *Shell*, *perl*, *expect* and *cfengine* script support for customization
- FAI runs on i386, AMD64, PowerPC, Alpha, SPARC and IA64 architecture
- Fast automatic installation for Beowulf clusters
- **GUI for FAI** using GOsa

Availability

- Homepage: **http://www.informatik.uni-koeln.de/fai**
- Open source under GPL license
- Detailed documentation, mailing lists, IRC channel
- Official Debian packages, ISO images of demo CD
- Commercial support available

FAI at work

Terminals with ssh connection to an install client during an installation



FAI

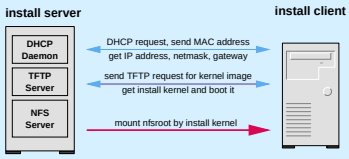
Plan your installation,
and FAI installs your plan.

debian

The three steps of FAI

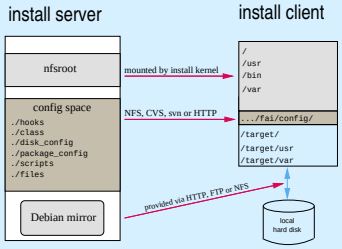
1 - Boot host

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



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

2 - Get configuration data



3 - Run installation

- partition local hard disks and create filesystems
- install software using apt-get command
- configure OS and additional software
- save log files to install server, then reboot new system

Examples of FAI installations

The Centibots Project
100 autonomous robots
funded by the DARPA
SRI International Artificial Intelligence Center, USA

Lucidor cluster
90 Dual Itanium2 900 MHz
6 GB RAM per node
Center for Parallel Computers, Sweden

Genome research cluster
168 IBM HS20 Blades
2x2.8 GHz P4
The Sanger Institute
Cambridge, UK

The MERLIN cluster
180 Dual AMD MP2200
1 GB RAM per node
Albert Einstein Institute
Golm, Germany

IITAC cluster, top500.org
356 opterons, 80 xeons
Trinity Centre for High Performance Computing,
University of Dublin, Ireland

Computer Science lab
308 workstations, 127 servers
University of West Bohemia
Czech Republic

FAI users

- **City of Munich**, several hundreds, (14.000 hosts planned)
- **Linux Information Systems AG**, >1000 hosts
- **Albert Einstein Institute**, 800 hosts
- **Lycos Europe**, 3000 hosts
- **Host Europe**, 250 hosts
- **Thomas Krenn AG**, 500 per month
- **MIT Computer science research lab**, 200 hosts
- **Electricité de France (EDF), France**, 200 hosts
- **France Telecom, TRANSPAC, France**, 300 hosts
- **Danmarks Meteorologiske Institut**, 85 hosts
- **OPIT Solutions AG, Swizerland**, 80 hosts
- **University of New Orleans, USA**, 72 node Beowulf cluster
- **Brown University, Dep. of Computer Science, USA**, 300+ hosts
- **Ewetel**, ISP and telco, 65 hosts at 3 locations
- **High Performance Computing Center North**, HPC2N, 2 clusters of top500.org, 192 dual Opteron, 120 dual Athlon
- Netcologne, Pironet, Linuxhotel, ZEDAT FU-Berlin, DESY, mc-wetter.de, ALTANA Pharma AG, Networking4all BV, Move Next BV, Belgacom NV/SA, easynet GmbH, Minick AG, Technische Universität München

Examples of installation times

Host CPU	MHz	RAM	disk type	software installed	installation time
Pentium 4	3000	1024MB	SATA	300 MB	105 sec
Pentium 4	3000	1024MB	SATA	1100 MB	6 min
Pentium 4	3000	1024MB	SATA	2200 MB	10 min
Athlon	800	512MB	IDE	300 MB	4 min
Athlon	800	512MB	IDE	1100 MB	17 min
Athlon	800	512MB	IDE	2200 MB	32 min
Pentium III	850	256MB	IDE	180 MB	3 min
PentiumPro	200	128MB	IDE	800 MB	28 min