

SWDIST - Architecture

Software Distribution, Installation, Patch & Configuration Management

Architecture

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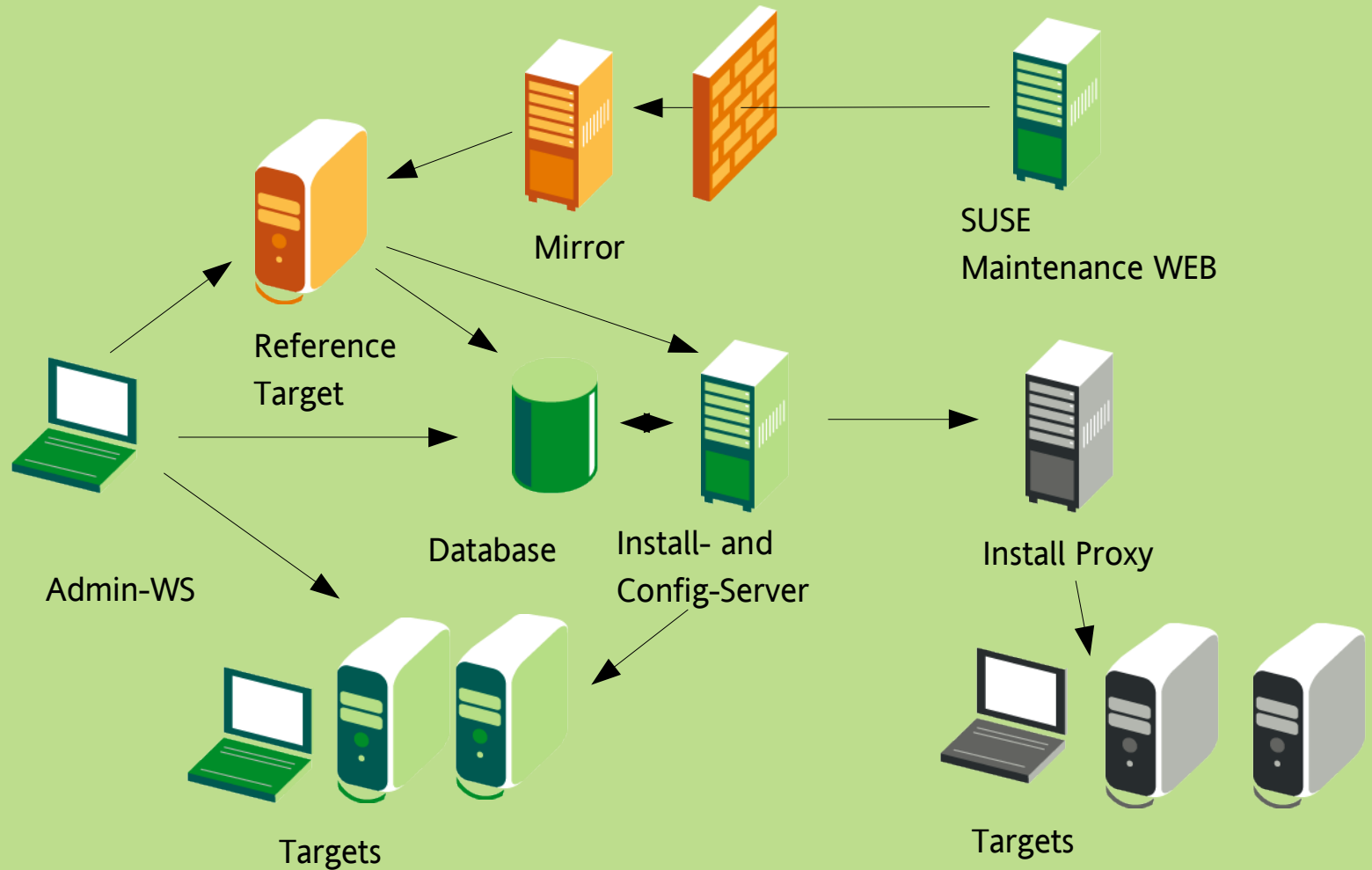
www.swdist.org

Content

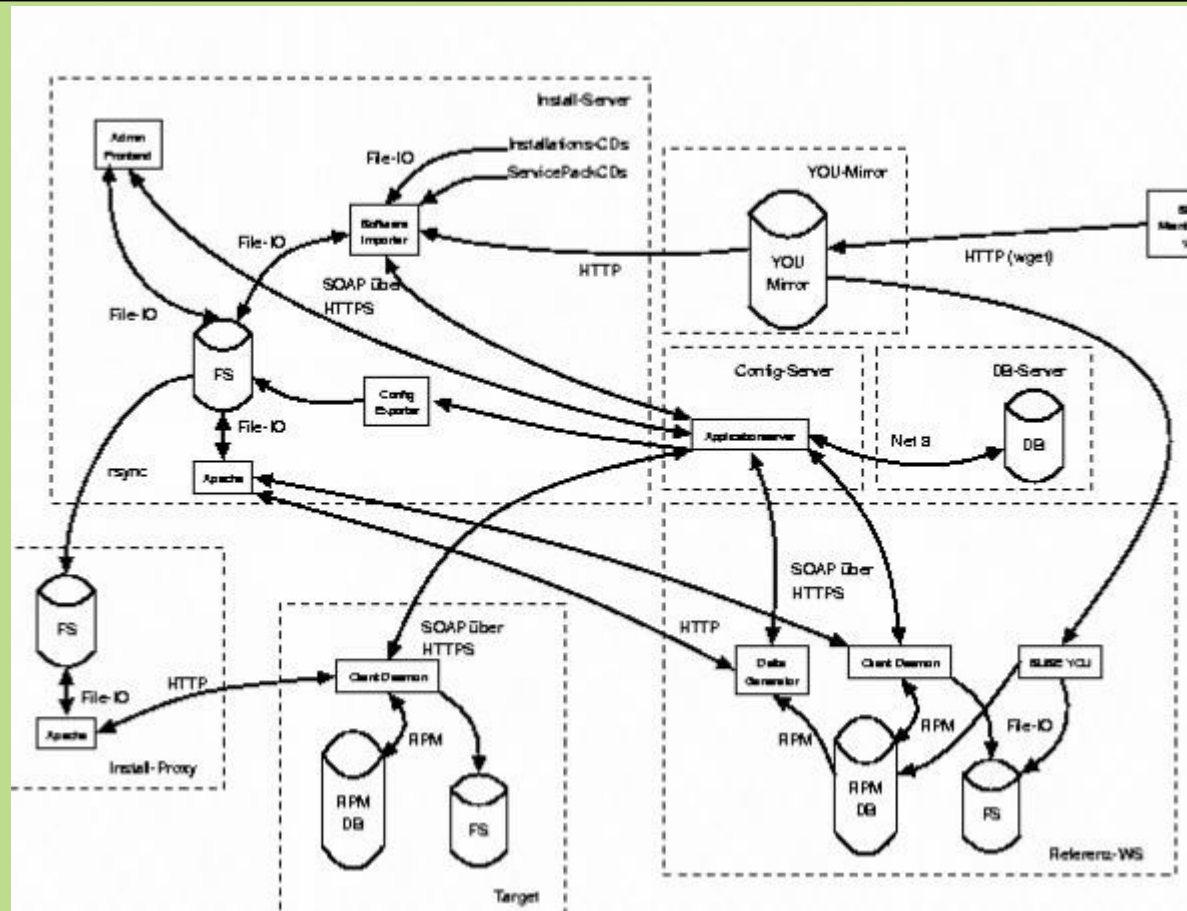
- Architecture
- Components
- Capabilities
- Appendix

Architecture

System - Overview



System - Details



Open Technologies

Boot & Install server

- PXE, GRUB
- ext2/ext3, XFS, ReiserFS, loopback
- HTTP(S), NFS, FTP, CIFS

Application server

- Apache2
- Java, JBoss
- XML, SOAP

Database server

- PostgreSQL
- (Oracle)

Open Tools

Initial Installation

- AutoYaST
- Alice

Config Management

- Alice

Software Management

- SWDIST

Patch Aggregation

- youmirror (SUSE Maint. Web)
- rcmirror (opt.)

Automated Deployment with AutoYaST

- **“No Touch” Linux deployment**
 - Works without user or IT intervention
 - Supports configuration deployment on any hardware configuration
 - Explicit settings or automated hardware detection
- **Configuration-driven automation**
 - Hardware configurations
 - Software configurations
 - Custom settings

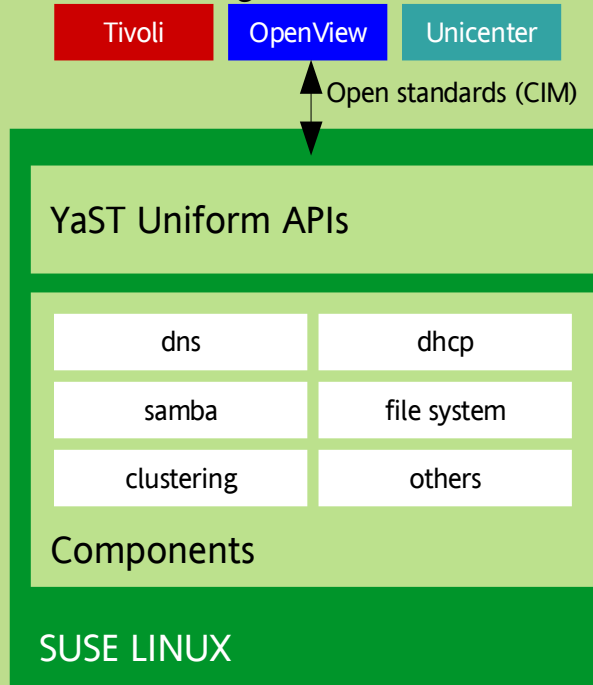
Configuration Management with Alice

- **Proven Concept**
 - modular design
 - open APIs
 - rich tool set
 - since 1999
- **Powerfull configuration**
 - supports classes and templates
 - allows to modify and expand tag content at runtime
 - supports import of configuration from installed systems
- **Re-configuration of running systems**

Common Information Model (CIM)

SUSE LINUX Enterprise Server

- Compatible with any CIM system
- Flexible architecture
- Eases IT change



Installation Server Structure

Products And Media-Sets

A Product

- Contains one ore more media-sets
- Has a defined target architecture
- Has a master repository, if more than one media-set is concluded

A media-set

- Is a set of one ore more medias
- Has a defined name
- Has a defined version
- Has a defined target architerture

SUSE Enterprise Server 9
is a product.

It concludes the media-sets
“SUSE SLES” and “SUSE CORE”

Also service-packs are
media-sets.

The Content File

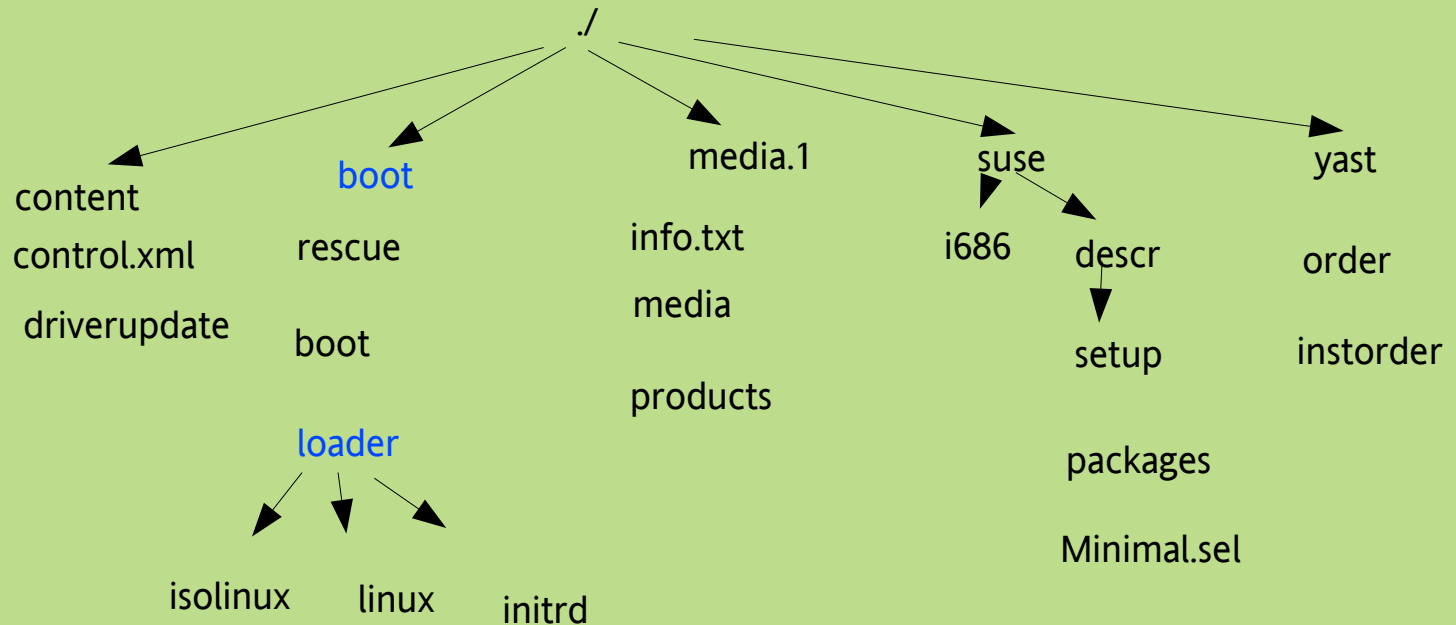
```
PRODUCT SUSE SLES
VERSION 9
...
VENDOR SuSE Linux AG
ARCH.i686 i686 i586 i486 i386 noarch
ARCH.i586 i586 i486 i386 noarch
ARCH.i486 i486 i386 noarch
ARCH.i386 i386 noarch
DEFAULTBASE i386
DESCRDIR suse/setup/descr
DATADIR suse
```

...

Media-Set of the SUSE Linux Enterprise Server

- The name is “SUSE SLES”
- The version is 9
- The target architecture is i386.
- The package priorities are i686 > i585 > i484 > i386 > noarch
- The package descriptions can be found in suse/setup/descr
- The packages can be found in suse/<arch>

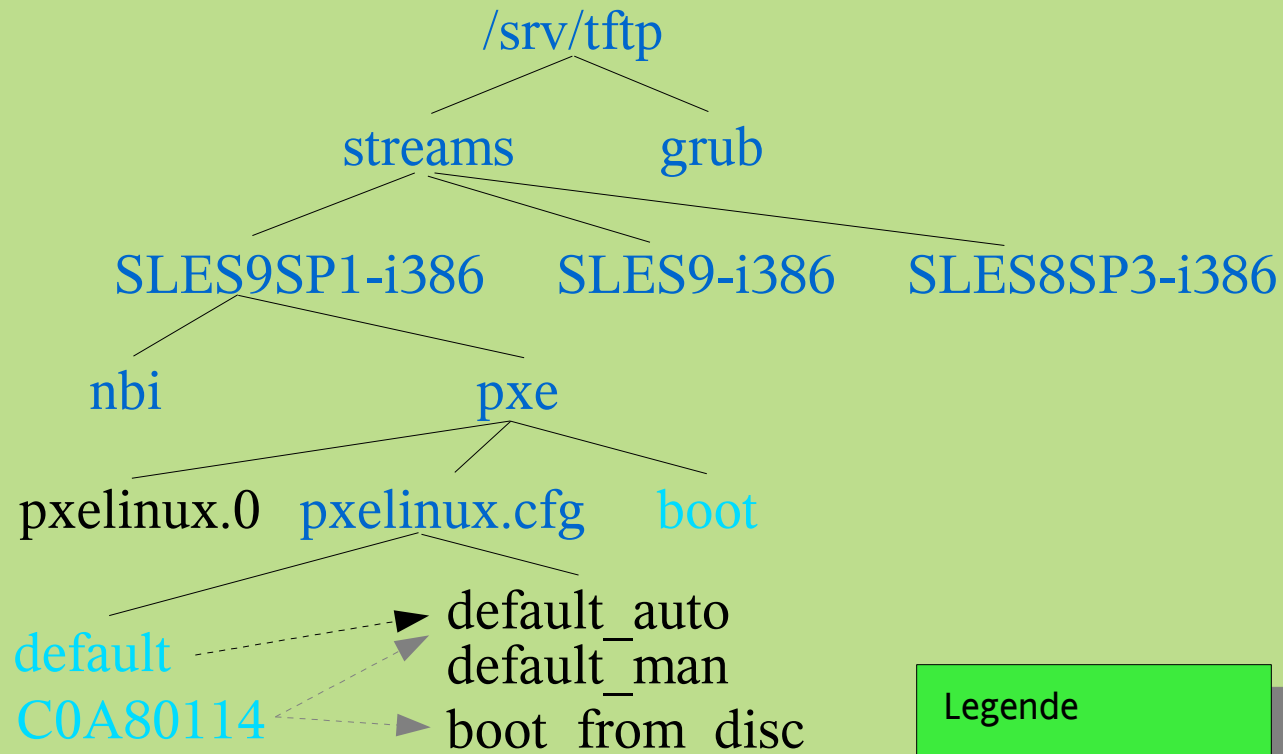
MediaSet – Structure



Legende

directory file
symlink

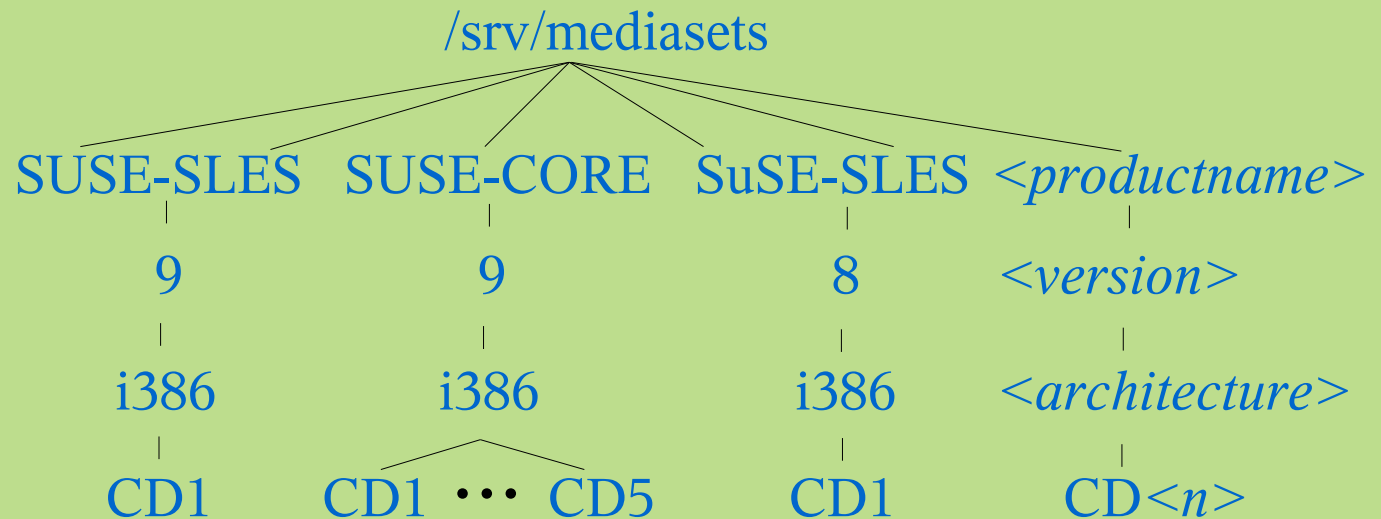
Boot Server – Tree



Legende

directory	file
symlink	

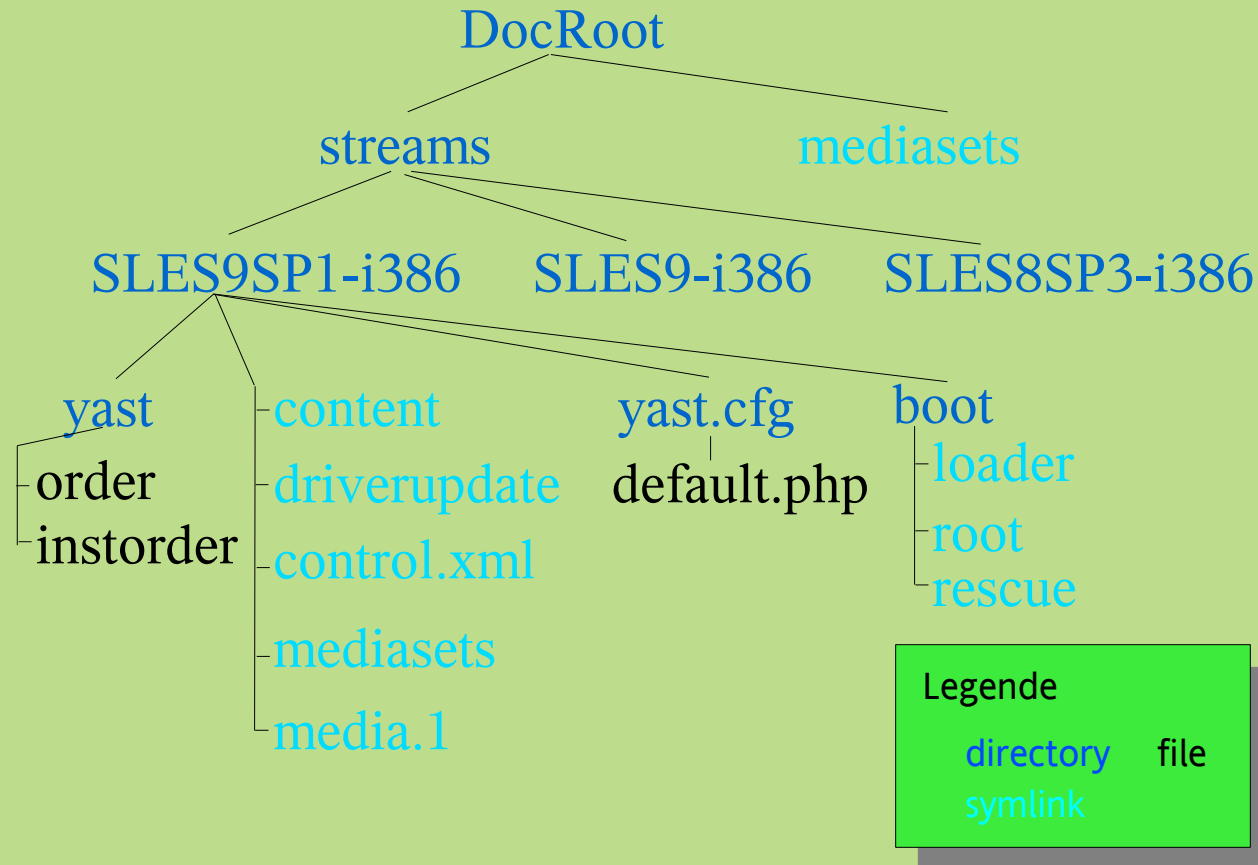
Install Server – Mediaset Tree



Legende

directory file
symlink

Install Server – Structure of Streams



Components

Components - Mirror

- Mirror of SUSE Maintenance Web
- Mirror of ZLM channels (opt.)
- Synchronisation per HTTPS
- Should be a separate machine, for security reasons

Components – Reference WS

- For internal evaluation and release of patches
 - authenticity
 - functionality
 - compatibility with internal standards
- Could be installed unattended
- Process
 - automated base installation, configuration and update
 - manual or automated installation of patches to test
 - test of patches
 - release of patches = definition of new software release

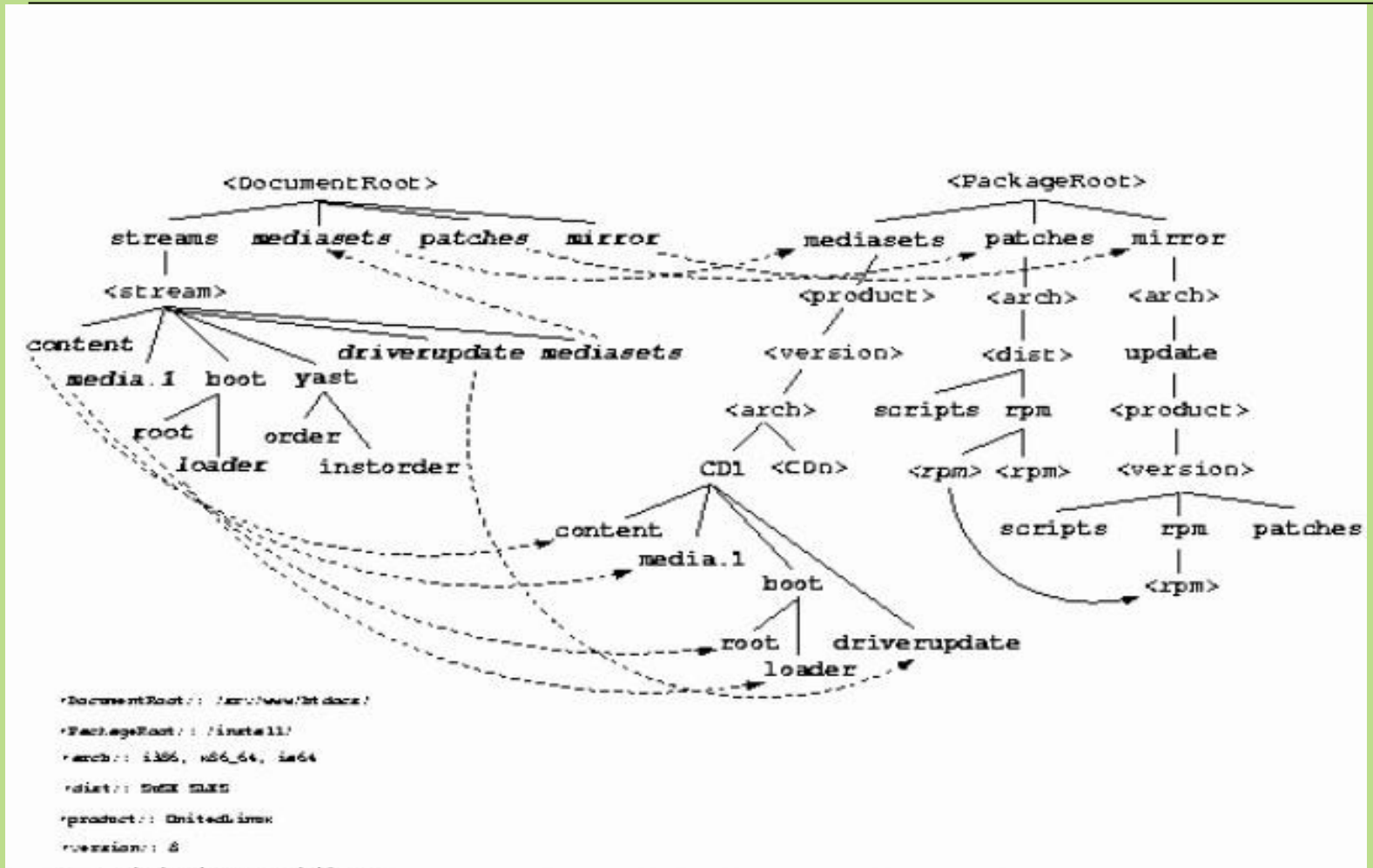
Components – Configuration DB

- Relational Database Management System
- Data entities
 - package
 - patch
 - channel
 - mediaset
 - distribution
 - stream
 - architecture
 - target (machine)
 - config
 - event
- Service on installserver, dedicated server or cluster

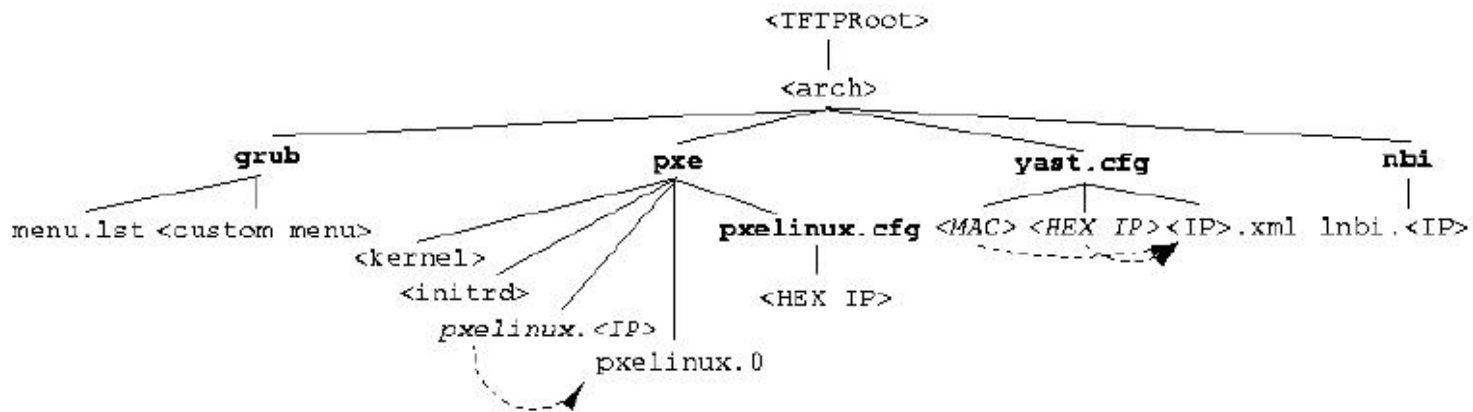
Components – Installserver

- Installserver
 - patches (SUSE, 3rd party or private)
 - mediasets (SUSE, 3rd party or private)
 - fully compliant to YaST and YOU
 - preferred protocol is HTTPS
 - multiple instances eg. at remote sites (opt.)
 - creation of boot/install media (opt.)
- Bootserver
 - boot images
 - AutoYaST control files
 - preferred protocol is TFTP
 - multicast TFTP (opt.)
- Others
 - DHCP, DNS, NTP (opt.)
- Services on installserver, dedicated servers or cluster

Installserver Directories



Bootserver Directories



```

<TFTPRoot>: /srv/tftp/
<arch>: i386, x86_64, ia64
<kernel>: linuxSLES8
<initrd>: initrdSLES8
<IP>.xml: 10.70.127.201.xml
<HEX IP>: 0A467EC9
  
```

```

—▶ hardlink
- - -▶ softlink
  
```


Components - Installproxy

- Installproxy
 - clone of installserver
 - automated traffic-minimized replication
 - all packages are stored
 - direct access to packages possible
- Webproxy (opt.)
 - for HTTP only
 - self adapting caching
 - not all packages stored
 - no direct access to packages possible

Components - Target

- Target for installation or update
 - server or workstation to be installed or updated
 - update of software (incl. removing, downgrade, kernel)
 - update of configuration data (incl. 3rd party, applications, disk layout)
 - SWDIST client acts time- or event-driven
 - GUI for user interaction on workstation (opt.)
- Update process
 - check for new updates (software or configuration)
 - check for severity
 - user interaction (opt.)
 - update
 - status report to config DB

Components - Admin WS

- Administration of
 - initial installation
 - software deployment
 - patches and updates
 - configuration changes
- Tools
 - SWDIST tools (eg. sdadm, sdacimp, sdsлимп)
 - Alice tools (eg. copy_machine, make_inst_cd)
 - Remote Administration (eg. ssh, VNC)

Capabilities

Performance

SWDIST

- handles several 10.000s targets
- handles several 10.000s software packages and patches
- installs and configures a target in 15 minutes
- installs dozens of targets in parallel
- imports several 1.000s patches in 10 minutes

Scalability

SWDIST has

- **3-tier architecture**
 - dedicated database and application server
- **horizontal scalability**
 - Oracle database server cluster (opt.)
 - JBOSS application server cluster
 - Apache2 web server cluster
 - distributed install server
- **online resizeable mass storage**
 - XFS
 - raw devices

Security



- HTTPS for
 - remote administration
 - data transport (packages, configuration)
- MD5 sum for
 - installed files (by RPM)
 - RPM packages
 - ISO images
- Different user roles allow access control to database content
 - Machine
 - Admin
 - Superuser

Documentation www.swdist.org

■ Literature

- Handbuch zur SWDIST-Administration
- Automatic Installation and Configuration using YaST
- ALICE – Advanced Linux Installation and Configuration Environment
- Maximum RPM

■ Web Sites

- www.suse.de/~nashif
- www.suse.de/~fabian

■ Manual Pages

- `installserver.7`
- `alice.5`
- `sdadm.8`

General Disclaimer

This document is delivered under the GPD