

```

      dF      @88>      x+=:z      S
      '88bu.  %8P      z` ^%      :8
      '*88888bu  ^"88888N  +@8Ned8"  .88
      +udR88N      ^"88888N  +@88u  +@^%8888"  -*88888888
<888'888k  beWE "888L  '888E` x88: `)8b.  8888
9888 'Y"  888E 888E 888E 8888N=*8888 8888
9888      888E 888E 888E %8" R88 8888
9888      888E 888F 888E @8Wou 9% .8888Lu=
?8888u+./ +888N+.888 888& +888888P` ^%888*
"8888P'  `""888*""  R888" ` ^"F  'Y"
  "p'      ""      ""      `

```

cdist

next generation configuration management

Topics

- Configuration Management
- Introduction to cdist
 - History
 - Design Goals
 - Features
- How to use cdist

Who's that guy?



Nico Schottelius - Linuxtag - 20140508

Next generation configuration management?

Huh?

Configuration Management

Manage configurations in a well defined way.

- Reproducible
- Documentation
- Idempotent
- Scaling out

Configuration Management - NG

Lessons learned from the mistakes others did

- Easy to use – no facepalm effect
- Simple design – no grey hair effect
- Push Support – for coordinated changes
- DRY – Reuse existing technologies
- FOSS – GPL, not half commercial
- Installation support – in 4.0pre branches
- Not affiliated with \$distro \$vendor \$evil_vendor_lockin

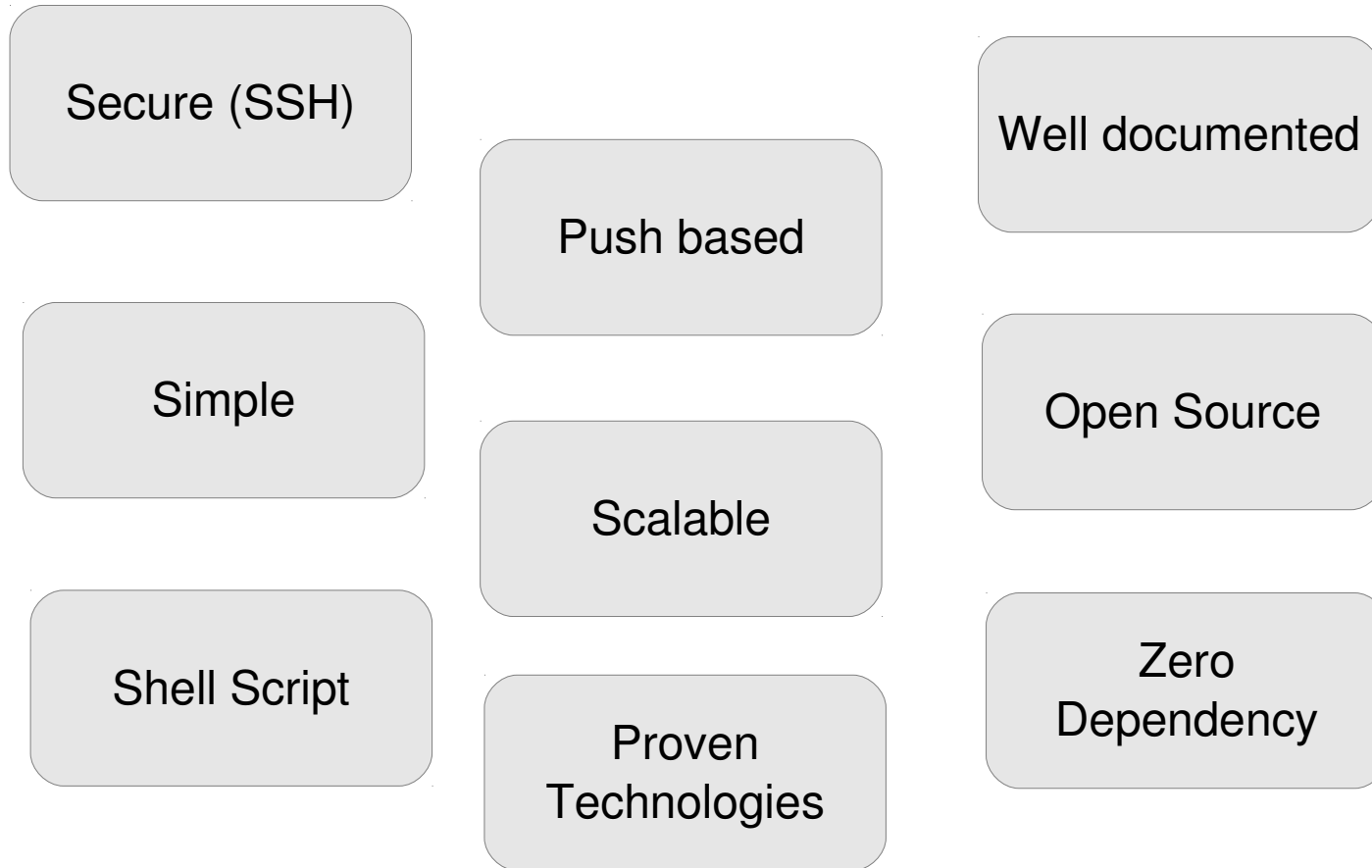
Cdist history

- 2010-11-10: LISA'10 BoFs
- 2011-03-07: First public release of cdist
- 2011-09-16: Rewrite cdist core in python
- 2013-01-01: Founded ungleich GmbH
- 2014-05-05: Released cdist 3.1.5

Design Goals

- Minimale requirements to environment
 - DB (filesystem)
 - Target hosts (sh, ssh)
 - Technologies (fs, sh, ssh)
- Known DSL (sh)
- Scalable

Cdist Features



cdist is very simple

Configuration

```
% mkdir -p ~/.cdist/manifest
% $EDITOR ~/.cdist/manifest/init

case "$__target_host" in
    localhost)
        __file /tmp/cdist-rocks
        ;;
esac
```

Configuration Run

```
% cdist config -v localhost
```

```
INFO: localhost: Running global explorers
```

```
INFO: localhost: Running initial manifest
```

```
/home/users/nico/.tmp/tmpn9mbqn/out/conf/manifest/init
```

```
INFO: localhost: Running object manifests and type explorers
```

```
INFO: localhost: Running manifest and explorers for
```

```
__file/tmp/cdist-rocks
```

```
INFO: localhost: Generating and executing code
```

```
INFO: Resolving dependencies...
```

```
INFO: localhost: Generating and executing code for
```

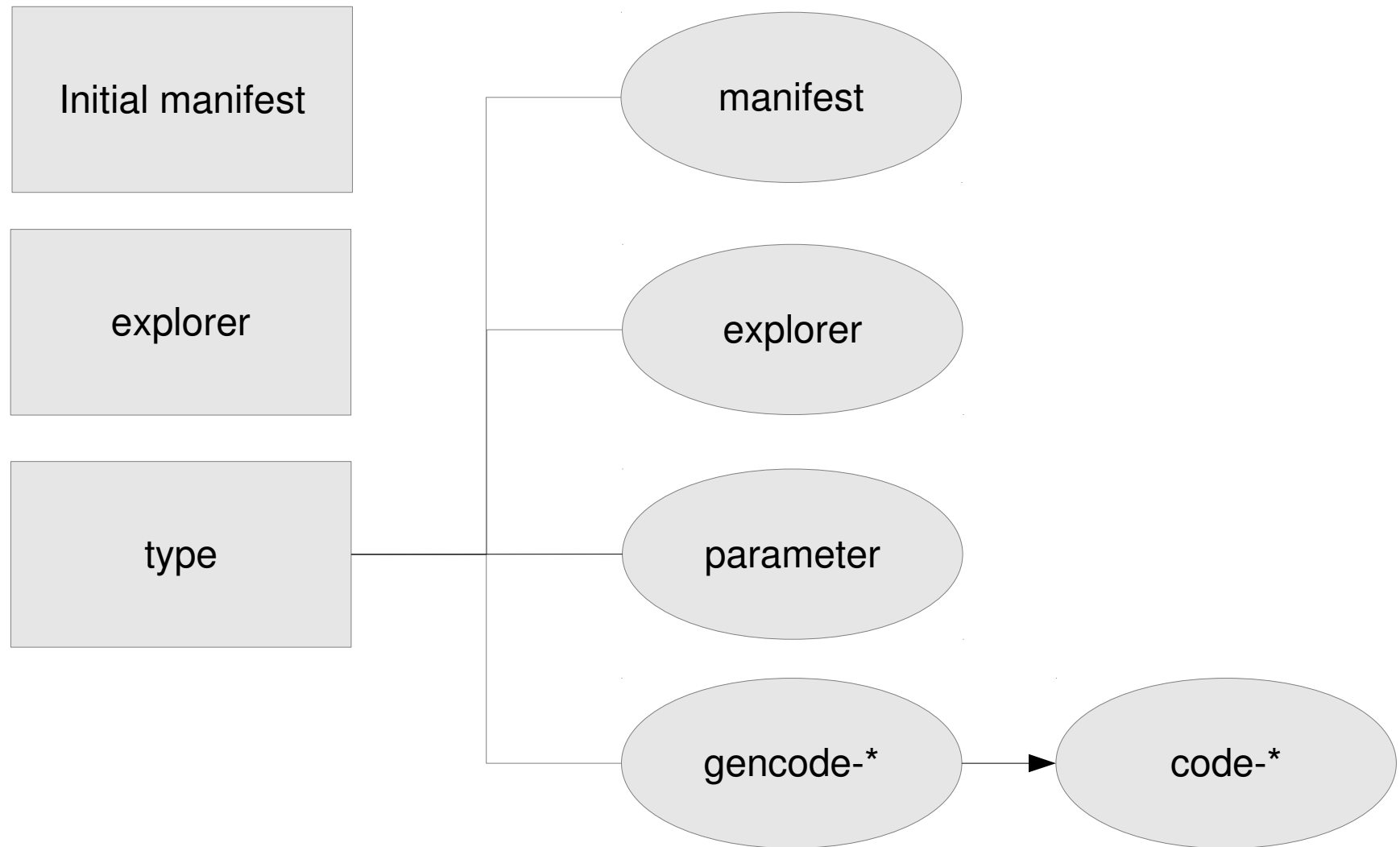
```
__file/tmp/cdist-rocks
```

```
INFO: localhost: Finished successful run in 4.075293779373169  
seconds
```

```
INFO: Total processing time for 1 host(s): 4.618075609207153
```

Behind the scenes...

The big picture



Manifest

- Shell script
- Define what to use

```
% $EDITOR ~/.cdist/manifest/init

case "$__target_host" in
    localhost)
        __file /tmp/cdist-rocks
    ;;
esac
```

Explorer

- Acquire state of the system

```
% cdist config -v localhost
```

```
INFO: localhost: Running global explorers
```

```
INFO: localhost: Running initial manifest...
```

- Examples of explorers:
 - hostname
 - interfaces
 - OS

Types

Type

- A type bundles functionality
- Consist of
 - Manifest
 - Explorer
 - Manpage
 - Parameter
 - gencode-local, gencode-remote

Create Type

```
% mkdir -p ~/.cdist/type/_speech
% mkdir ~/.cdist/type/_speech/parameter
% echo colour > ~/.cdist/type/_speech/parameter/required
% $EDITOR ~/.cdist/type/_speech/manifest

colour=$(cat "$__object/parameter/colour")
__file "$__object_id" --source - << eof
The speech is $colour today!
eof

% echo "__speech /tmp/speech --colour green" >> ~/.cdist/manifest/init
```

Type Being Used

```
% cdist config -v localhost
```

```
INFO: localhost: Running global explorers
```

```
INFO: localhost: Running initial manifest
```

```
/home/users/nico/.tmp/tmp89xo__/_out/conf/manifest/init
```

```
INFO: localhost: Running object manifests and type explorers
```

```
INFO: localhost: Running manifest and explorers for __file/tmp/cdist-rocks
```

```
INFO: localhost: Running manifest and explorers for __speech/tmp/speech
```

```
INFO: localhost: Running manifest and explorers for __file/tmp/speech
```

```
INFO: localhost: Generating and executing code
```

```
INFO: Resolving dependencies...
```

```
INFO: localhost: Generating and executing code for __file/tmp/cdist-rocks
```

```
INFO: localhost: Generating and executing code for __file/tmp/speech
```

```
INFO: localhost: Generating and executing code for __speech/tmp/speech
```

```
INFO: localhost: Finished successful run in 4.90235710144043 seconds
```

```
INFO: Total processing time for 1 host(s): 5.402170896530151
```

```
% cat /tmp/speech
```

```
The speech is green today!
```

Type: Parameter

- Optional (optional_multiple)
- Required (required_multiple)
- Boolean

```
% __file /etc/shadow \  
    --mode 0600 --owner root --group shadow
```

```
% __ssh_authorized_keys root \  
    --key "$(cat ~/.ssh/id_rsa.pub)" \  
    --key "ssh-rsa AXYZAAB3NzaC1yc2..."
```

```
% __directory /home/services/nfs \  
    --parents
```

Type: Gencode

- Shell script
- Outputs code to be executed
 - Local
 - Remote

```
__package_pip:  
    echo pip install \"$name\"  
  
__directory:  
    absent)  
        echo rm -rf \"$destination\"  
    ;;
```

Everything you ever need to know

Contact

- IRC: #cstar (freenode)
- Twitter: @NicoSchottelius
- Mailinglist
- Github: Issue tracking
- Commercial Support (<http://www.ungleich.ch>)

Questions?

Backup Slides

(for the too interested parties)

Cdist SLIDES

How to use cdist

- Download cdist
 - Via git
 - Via pypi
 - Archlinux: via AUR
- Installation is optional

```
% cdist -V
```

```
2.1.0
```

Using Type

```
% cat ~/.cdist/manifest/init  
case "$__target_host" in  
    localhost)  
        __file /tmp/cdist-rocks  
        ;;  
    esac  
    __speech /tmp/speech --colour green
```

Cdist Features

- Configured in Shell script
- SSH for auth* & transport
- Zero dependency CM
- Highly scalable
- Push based
- Manpages

More on the website...

INTRO SLIDES

Development Objectives

- Central point for configuration
- Reproduceable (omnipotent)
- Configuration = Documentation
- ...

History

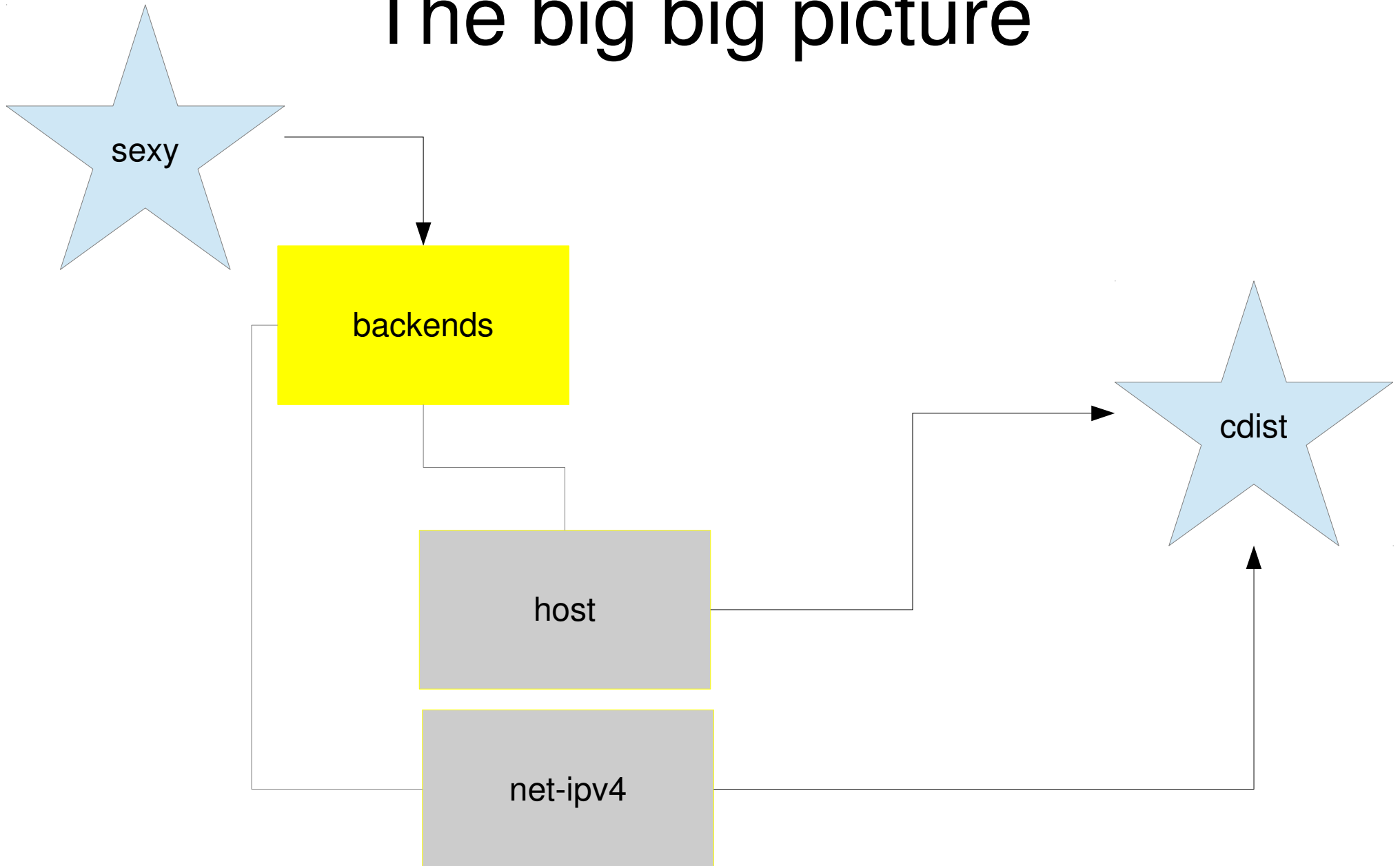
- Sysadmin @ ETH Zurich (2008-2011)
- Used existing CM
 - Found many bugs
- Tried other CM
 - Not suited
 - Seemed to be too complex

Sexy SLIDES

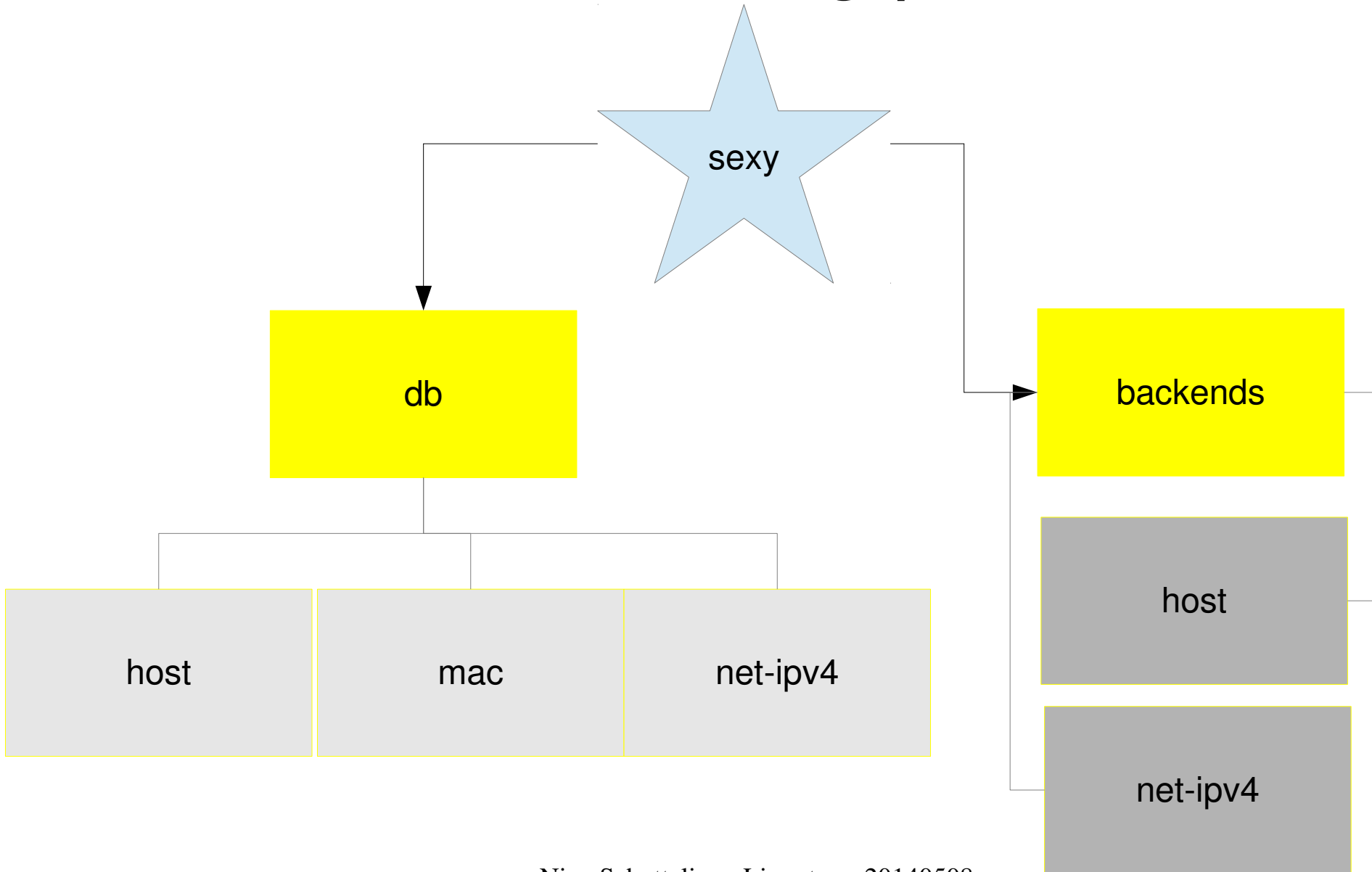
Anforderungen

- Simple = Super
- Einfach verständlich, einfach nutzbar
- FOSS
- Einfaches (CLI) basierte Tools für die Verwaltung

The big big picture



The small big picture



How to use sexy

- Download sexy
 - Via git

- % `sexy -V`

`sexy 1.9.13-1-g7fc7b8b`

mac usage

```
[17:32] brief:~% sexy mac -h
usage: sexy mac [-h] [-d] [-v]
           {free-add,free-list,generate,prefix-get,prefix-
set} ...
```

optional arguments:

```
-h, --help          show this help message and exit
-d, --debug         Set log level to debug
-v, --verbose       Set log level to info, be more verbose
```

Mac Commands:

```
{free-add,free-list,generate,prefix-get,prefix-set}
free-list          List free mac addresses
```

```
[17:32] brief:~%
```

host usage

[17:32] brief:~% sexy host -h
usage: sexy host [-h] [-d] [-v]

{add,cores-get,cores-set,del,disk-add,disk-size-get,disk-list,memory-get,memory-set,nic-add,nic-del,nic-addr-get,nic-list,list,type-get,vm-host-get,vm-host-list,vm-host-set,apply}

...

optional arguments:

-h, --help show this help message and exit
-d, --debug Set log level to debug
-v, --verbose Set log level to info, be more verbose

Host Commands:

{add,cores-get,cores-set,del,disk-add,disk-size-get,disk-list,memory-get,memory-set,nic-add,nic-del,nic-addr-get,nic-list,list,type-get,vm-host-get,vm-host-list,vm-host-set,apply}

[17:35] brief:~%

net-ipv4 usage

[17:51] brief:~% sexy net-ipv4 -h

usage: sexy net-ipv4 [-h] [-d] [-v]

{add,bootfilename-get,bootfilename-set,bootserver-get,bootserver-set,broadcast-get,mask-get,mask-dotted-quad-get,router-get,router-set,host-add,host-del,host-list,host-ipv4-address-get,host-mac-address-get,list,apply}

...

optional arguments:

- h, --help show this help message and exit
- d, --debug Set log level to debug
- v, --verbose Set log level to info, be more verbose

Host Commands:

{add,bootfilename-get,bootfilename-set,bootserver-get,bootserver-set,broadcast-get,mask-get,mask-dotted-quad-get,router-get,router-set,host-add,host-del,host-list,host-ipv4-address-get,host-mac-address-get,list,apply}

[17:51] brief:~%

Ziele (sexy)

- Inventarverwaltung für Rechner
- Übersicht über Rechner und Eigenschaften
- Einfaches (CLI) basierte Tools für die Verwaltung
- Virtuelle and echte Maschine verwaltbar
- ...

LISA SLIDES

LISA'10 BoFs

- CM, how I would love it
 - Easy to use (everyday!)
 - Reuses existing tools
 - Provides good documentation
 - Scales out (> 10k clients are no problem)
 - Push and Pull architecture

Back in the mountains...

- That idea at LISA...need to do some coding ...
 - 2011-03-07: first public release of cdist
 - 2011-09-16: Rewrite cdist core in python
 - 2012-12-09: Release of cdist 2.1

This is not a speech