



Prescriptive management

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LCFG managed platform

- LCFG core
 - component framework
 - compiler
 - profile distribution

- LCFG managed platform ("prescriptive")
 - LCFG core
 - +
 - boot mechanism
 - components - dns, syslog, fstab, kernel, network
 - software package management (eg RPMs)
 - automated machine installs
 - set of software packages
 - configuration data

Platform layers

- Layer model for platforms
 - configuration data
 - set of software packages
- Base "LCFG" layer
- "ed" layer inherits "LCFG" layer
- "dice" layer inherits "ed" layer
- "see" layer inherits "ed" layer
- "scobies" layer inherits "LCFG" layer

The boot component

- LCFG boot component replaces rc.d script mechanism
 - starts LCFG components ... *and* ... rc scripts
 - order specified by boot resources :-

| | |
|-------------------------|-----------------------------------------|
| boot.services | ... rc_network lcfg_dns lcfg_syslog ... |
| boot.levels_lcfg_syslog | 2 3 4 5 |
| boot.start_lcfg_syslog | 12 restart |
| boot.stop_lcfg_syslog | 88 restart |
| boot.reboot_lcfg_syslog | restart |

- Events :-
 - restart - transition between run levels
 - configure - resource changes
- Future project to move to dependency based start ordering

Principal components

- auth
- cron
- dns
- fstab
- gdm
- grub
- hardware
- init
- kernel
- mailng
- network
- nsswitch
- ntp
- openssh
- pam
- routing
- syslog
- tcpwrappers
- xfree
- xinetd

Package management

- Redhat/Fedora => RPM based
- Want to be able to specify which RPMs are present on machine
- Potentially want different set of RPMs on different machines
- In 1997 no tool to do this => updaterpms
- Why still updaterpms? Why not yum / whatever.....?
- A yum component might meet many sites' needs, but not ours.

Package specification

- [prefix]package-version-release [/arch] [:flags]

lcfg-client-2.2.26-1/noarch

lcfg-server-2.2.43-1/noarch

bash-3.1-9.fc5.1

glibc-2.4-11/i686:br

+lcfg-client-3.0.0-1/noarch

+lcfg-server-*-*/noarch:i

- profile.packages resource (LCFG guide p49-50)
 - list of packages required on machine (shipped in machine profile)
 - specifies packages, package lists or package list files
 - belongs to profile component, NOT updaterpms component

Package repository

- structure
 - /rpms/fc5/{base, extras, lcfg, updates}
- rpm headers - for rpmlib dependency checking
- rpmsubmit
- access
 - filesystem (local, NFS, ...)
 - HTTP, squid accelerator (rpmaccel)
- updaterpms.rpmpath resource
 - <http://rpms.scobies.org.uk/fc5/base>,<http://rpms.scobies.org.uk/fc5/updates>,<http://rpms.scobies.org.uk/fc5/extras>,<http://rpms.scobies.org.uk/fc5/lcfg>,<http://rpms.scobies.org.uk/scobies>

updaterpms - how it works

- Feed in list of packages (from profile) and rpmpath describing RPM repository
- determines which packages need to be installed, upgraded, downgraded or deleted from the machine
- uses RPMLIB to perform dependency checking and ordering
- uses RPMLIB to perform the real work (with callback to updaterpms to download packages)
- it *doesn't* automatically satisfy dependencies

Demo adding package

- demo of adding a package

```
!profile.packages
```

```
mADD(aumix-2.8-11.fc5)
```

```
!profile.packages
```

```
mADD(-zile-*-* )
```

- qxpack

```
qxpack -v perl
```

A real machine !

```
/* reid */
```

```
#include <dice/os/fc5.h>
```

```
#include <dice/hw/dell_optiplex_gx270.h>
```

```
#include <dice/options/office-bp.h>
```

```
#include <live/wire_g.h>
```

```
dhclient.mac 00:0F:1F:7D:0F:A5
```

```
/* Inventory information */
```

```
inv.sno      GWTE71J
```

```
inv.allocated jimbob
```

```
inv.location 2BP-3R11
```

Machine installation

- LCFG installroot
 - read only, cut down Linux
 - usually CD/DVD or PXE - but could be any bootable media
 - LCFG core + components needed to build self booting target
- Two stage process
 - LCFG installroot builds self booting target with standard set of RPMs (around 400). Set known as "installbase".
 - Target boots and updaterpms installs remaining RPMs (possibly deleting some if not needed for particular machine).
- Demo....