WP4-install task report

WP4 workshop

Barcelona project conference 5/03

German Cancio

Agenda

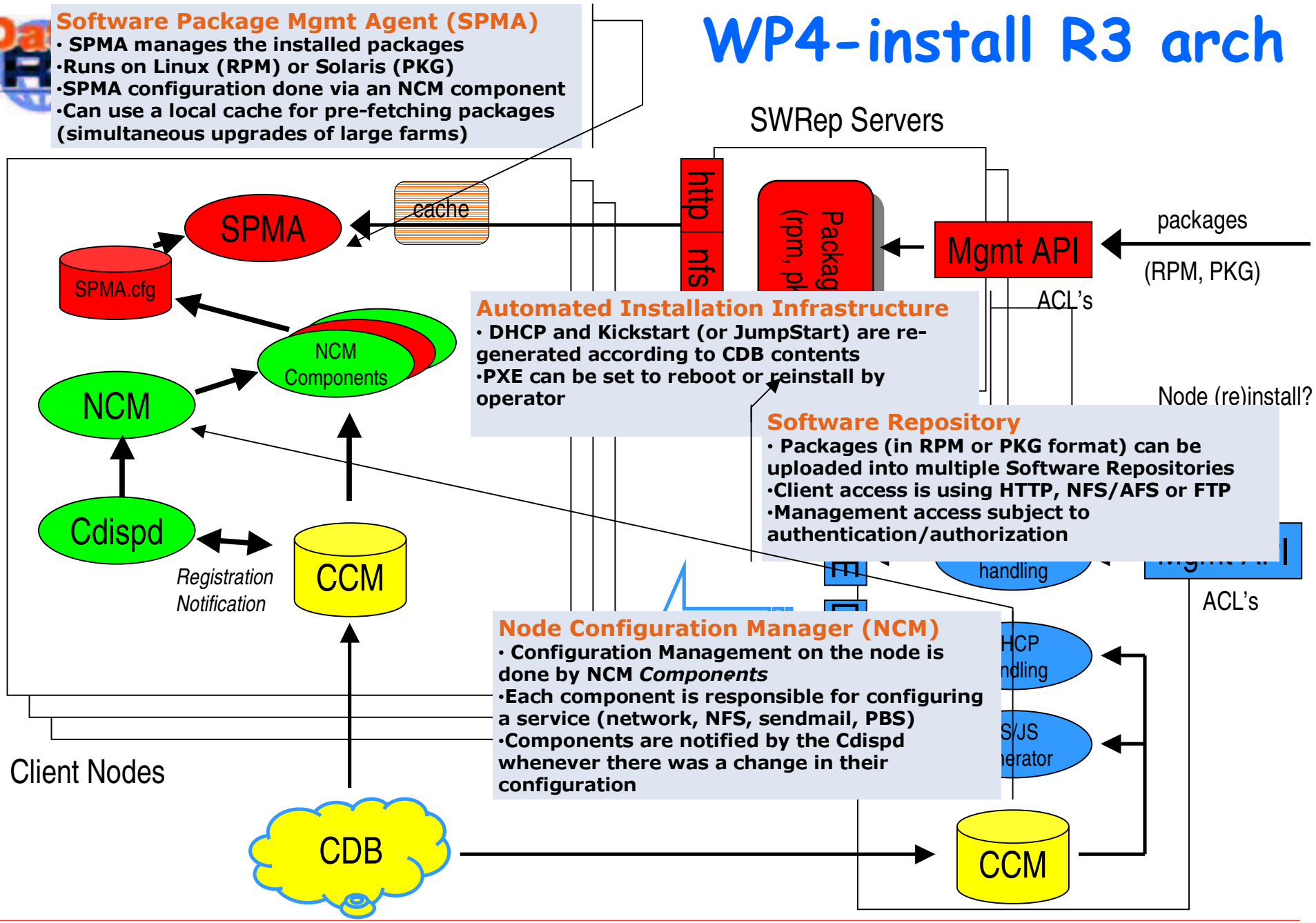
- General architectural overview for R3
- R3 components description
- EDG testbed integration
- Issues

Release 3 architecture

R3 subsystems:

- Base Installation:
  - AII (Automated Installation Infrastructure)
- Software Distribution:
  - Software Repository (SWrep)
  - Software Package Management Agent (SPMA)
- Node Configuration:
  - NCM (Node Configuration Manager)
- (Ongoing: LCFGng)

WP4-install R3 arch



SPM (Software Package Mgmt) (I)

SWRep (Software Repository):

- Client-server toolsuite for the management of software packages
- Universal repository:
  - Extendable to multiple platforms and package formats (RHLinux/RPM, Solaris/PKG,... others like Debian dpkg)
  - Multiple package versions/releases
- Management ("product maintainers") interface:
  - ACL based mechanism to grant/deny modification rights
  - Current implementation using SSH
- Client access: via standard protocols
  - HTTP (scalability), but also AFS/NFS, FTP
- Replication: using standard tools (eg. rsync)

SPM (Software Package Mgmt) (II)

Software Package Management Agent (SPMA):

- Runs on every target node
- Configurable locally or via CDB (NCM component)
- Multiple repositories can be accessed (eg. division/experiment specific)
- Plug-in framework allows for portability
  - System packager specific transactional interface (RPMT, PKGT)
- Can manage either *all* or a *subset* of packages on the nodes
  - Useful for add-on installations, and also for desktops
  - Configurable policies (partial or full control, mandatory and unwanted packages, conflict resolution…)
- Addresses scalability
  - Packages can be stored ahead in a local *cache*, avoiding peak loads on software repository servers (simultaneous upgrades of large farms)

NCM (Node Configuration Manager)

Modules:

- Components:
  - NCM 'components' (like LCFG components) are responsible for updating local config files, and notifying services if needed
  - Components are notified if there are changes in the configuration chunks they're interested in
- cdispd (Configuration Dispatch Daemon)
  - Monitors the config profile, and invokes components via the ncd if there were changes
- ncd (Node Configuration Deployer):
  - framework and front-end for executing components (via cron, cdispd, or manually)
- Component support libraries:
  - For recurring system mgmt tasks (interfaces to system services, sysinfo), log handling, etc
- More details in NCM design document http://edms.cern.ch/document/372643

AII (Automated Installation Infrastructure)

- Subsystem to automate the node base installation via the network
- Layer on top of *existing* technologies (base system installer, DHCP, PXE)
- Modules:
- AII-dhcp:
  - manage DHCP server for network installation information
- AII-nbp (network bootstrap program):
  - manages the PXE configuration for each node (boot from HD/ start the installation via network)
- AII-osinstall:
  - Manage OS configuration files required by the OS installation procedure (KickStart, JumpStart)

- More details in AII design document: http://edms.cern.ch/document/374559

Current status

- SPM
  - First production version **available** (SPMA and SWRep)
  - Being deployed in the CERN Computer Centre (see my next talk)
  - Enhanced functionality for **mid-October**
- NCM
  - Architectural design finished
  - Detailed (class) design progressing
  - first version of new build tools (replacing DICE tools)
  - First version expected **mid July**
  - Porting/coding of base configuration components completed **mid September**
- AII
  - Architectural design finished
  - Detailed Design, implementation progressing
  - first version expected **mid July**
- LCFGng:
  - Functionality freeze, but **ongoing** maintenance/support until the end of the project

EDG testbed integration ?

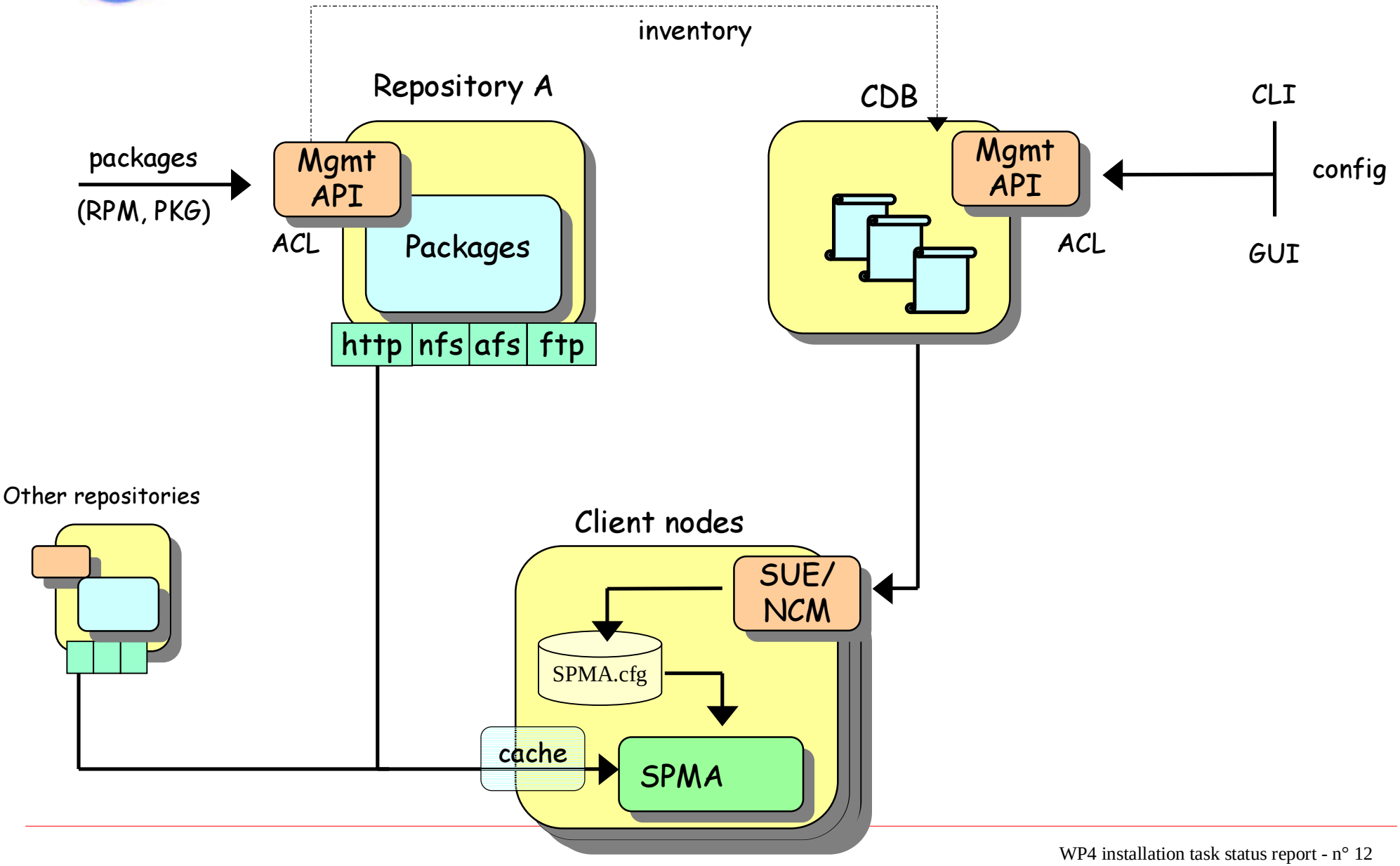
- A full stable and production replacement of the current fabric management tool (LCFGng) is *not realistic* before the end of the year:
  - LCFGng parts for base installation, software distribution and node configuration are tightly coupled – no drop-in replacement
  - LCFGng components have to be ported or rewritten (>60 components!)
  - Testbed configuration has to be migrated to CDB/Pan
  - Teaching of sysadmins to use new tools (installation&configuration)
  - **Stability, stability, stability**…
- A fully functional NCM/SPM/AII solution will be provided, although with limited configuration components and pre-defined configurations:
  - AII functional for RH73
  - SPM functional for RH73 and (maybe) Solaris *
  - NCM with 'base' components (for managing a basic RH73 system, maybe Solaris*)

*(*Solaris port by CERN/IT and Sun collaboration)*

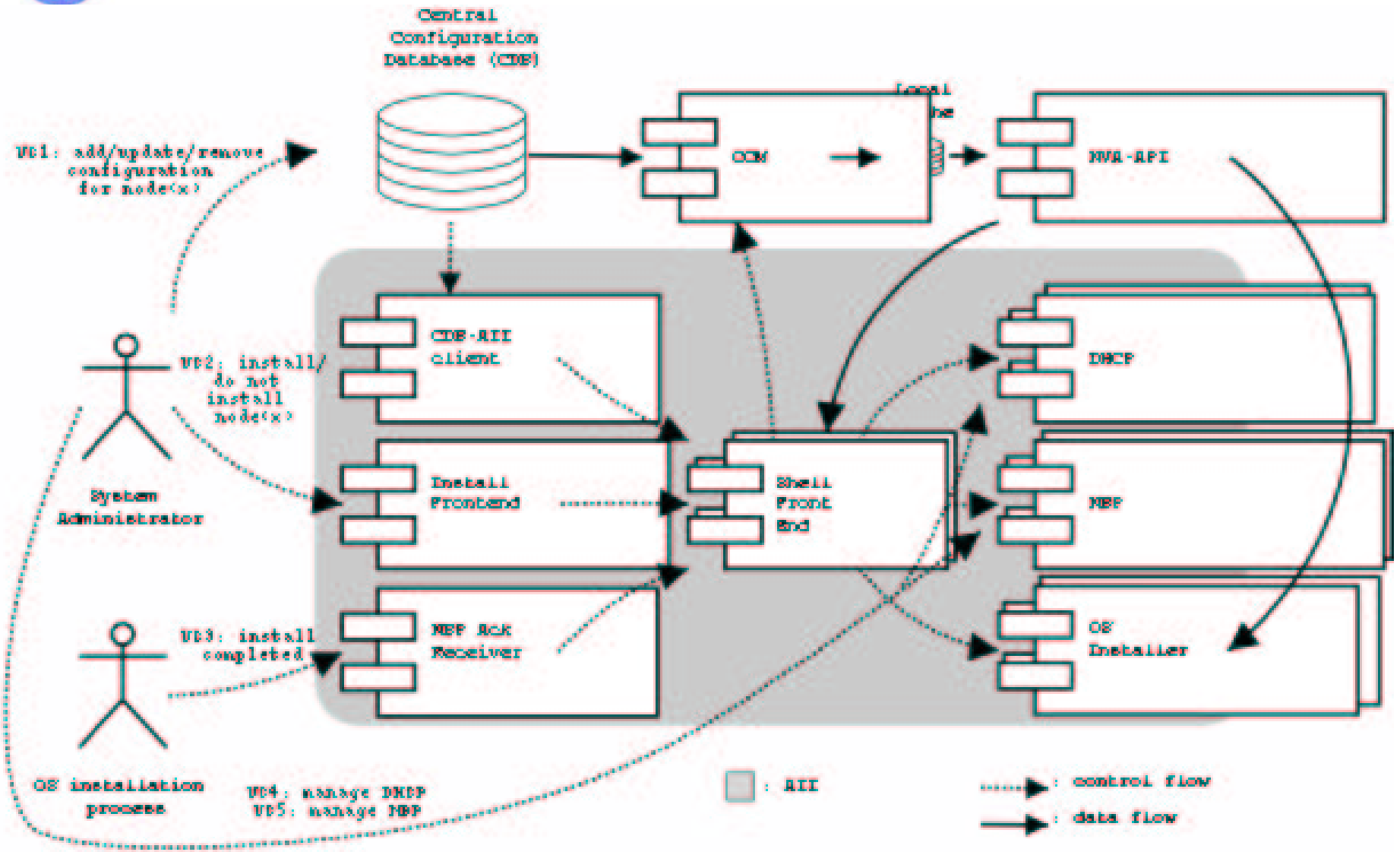
Issues

- LCFGng (and LCFG!!) support and maintenance
  - Maintenance, support and teaching for production legacy systems is an manpower consuming issue!

WP4 SW distribution architecture



AII design


Central
Configuration
Database (CDB)
VB1: add/update/remove
configuration
for node<x>
CCM
NVA-API
CDB-AII
client
VB2: install/
do not
install
node<x>
DHCP
Install
Frontend
Shell
Front
End
MBP
System
Administrator
VB3: install
completed
MBP ACK
Receiver
OS
Installer
OS installation
process
VB4: manage DHCP
VB5: manage MBP
: AII
: control flow
: data flow

NCM architecture