Concepts and Architecture

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Geneva – January 2005

UAM

quattor

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- Introduction
- Design Criteria
- Configuration Database
- Configuration Cache Manager
- Node Configuration Manager
- Software Package Management
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quattor

quattor is an administration toolkit for optimizing resources

Goal: quattor is a system administration toolkit providing a powerful, portable and modular tool suite for the automated installation, configuration and management of clusters and farms running UNIX derivates like Linux and Solaris.

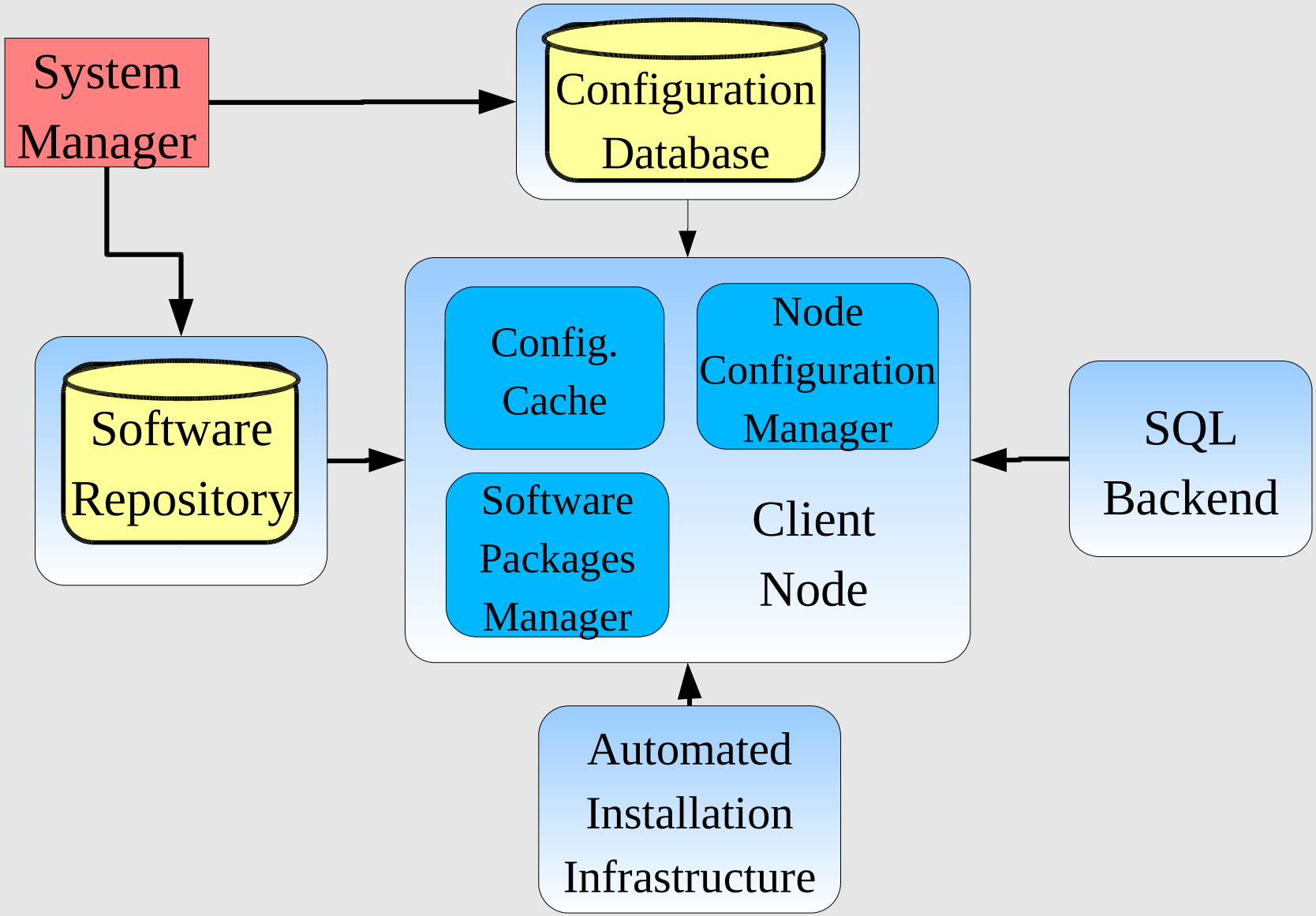
License: EU DataGrid (Open Source)

Web page: `http://www.quattor.org`

Design Elements

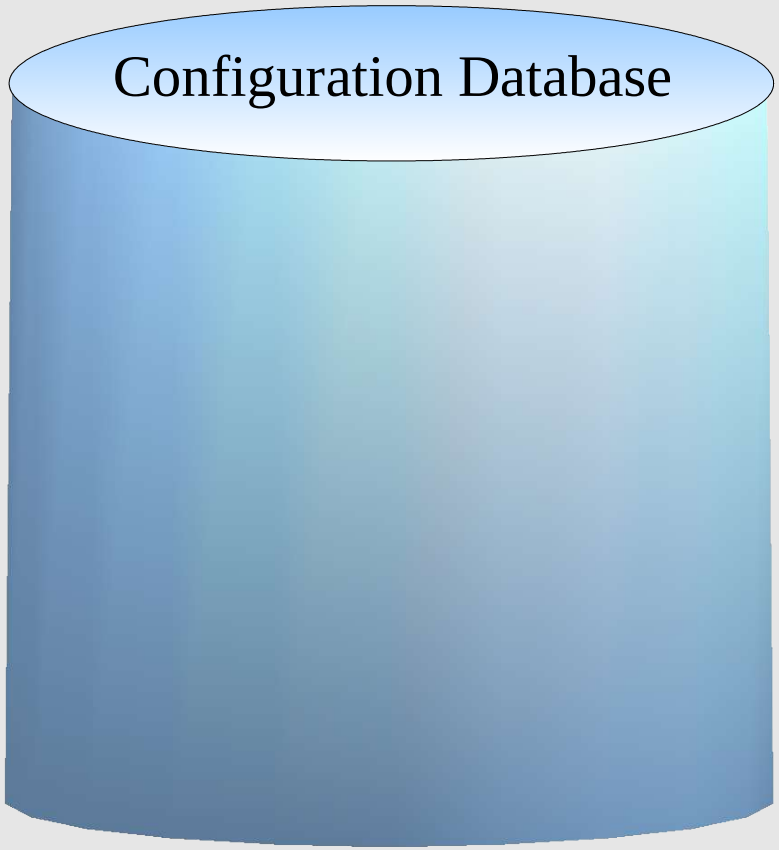
- Highly modular
- Non-intrusive system
- Use of third party tools (KickStart, PXELinux, DHCP, ...)
- Use of well known standards (HTTP, XML, etc.)
- Distributed approach
- Provides a set of base libraries

Global Quattor Architecture



CDB: Configuration Database

- *HLD: High Level Description*
- *LLD: Low Level Description*
- *System Manager Access*



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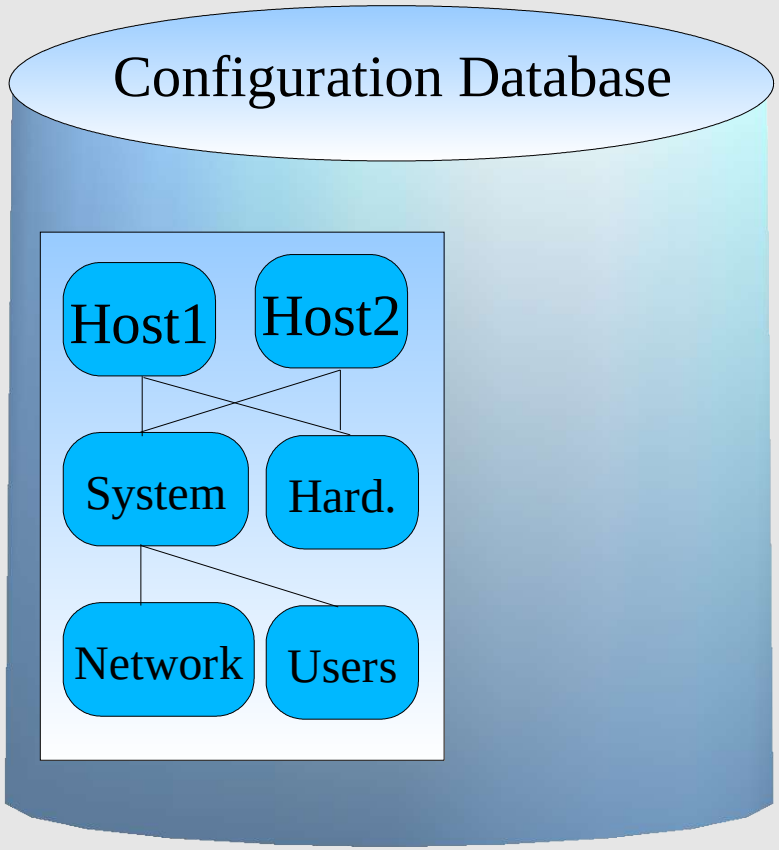
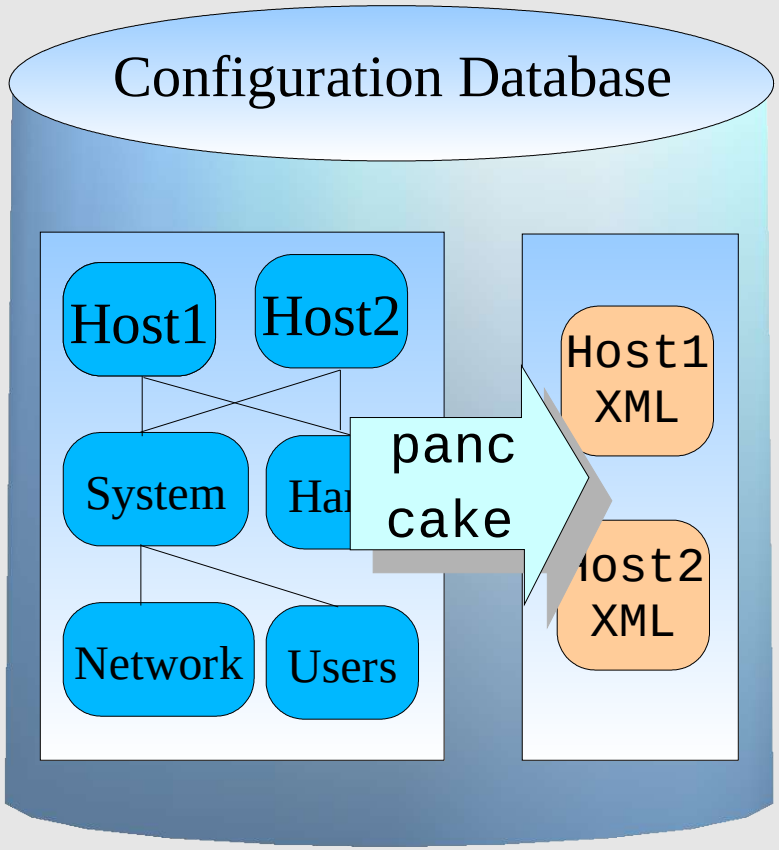


```
# New Types: CPU
define type cpu_t = {
    “vendor” : string
    “model”  : string
    “speed”  : double
};

# Structures
structure template cpu_intel_p3_800;
    “vendor” = “Intel”;
    “model”  = “Pentium III (Coppermine)”;
    “speed”  = 796.550 # Mhz

# Validation code
# be sure we have 256MB of RAM per CPU
valid “/hardware/memory/size” =
    self >= 256 * length(value(“/hardware/cpus”));

# Functions
define function increment = {
    argv[0] = argv[0] + argv[1];
};
```

CDB: Configuration Database

- *HLD: High Level Description*
- ***LLD: Low Level Description***
  - *Based on XML*
- *System Managers Access*



CDB: Configuration Database

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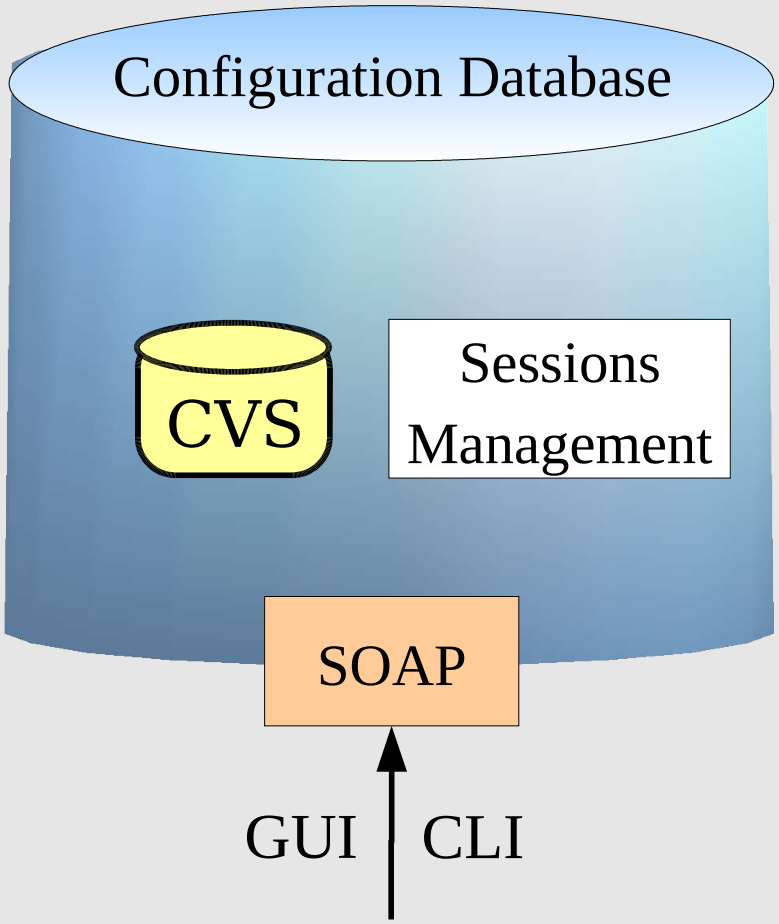
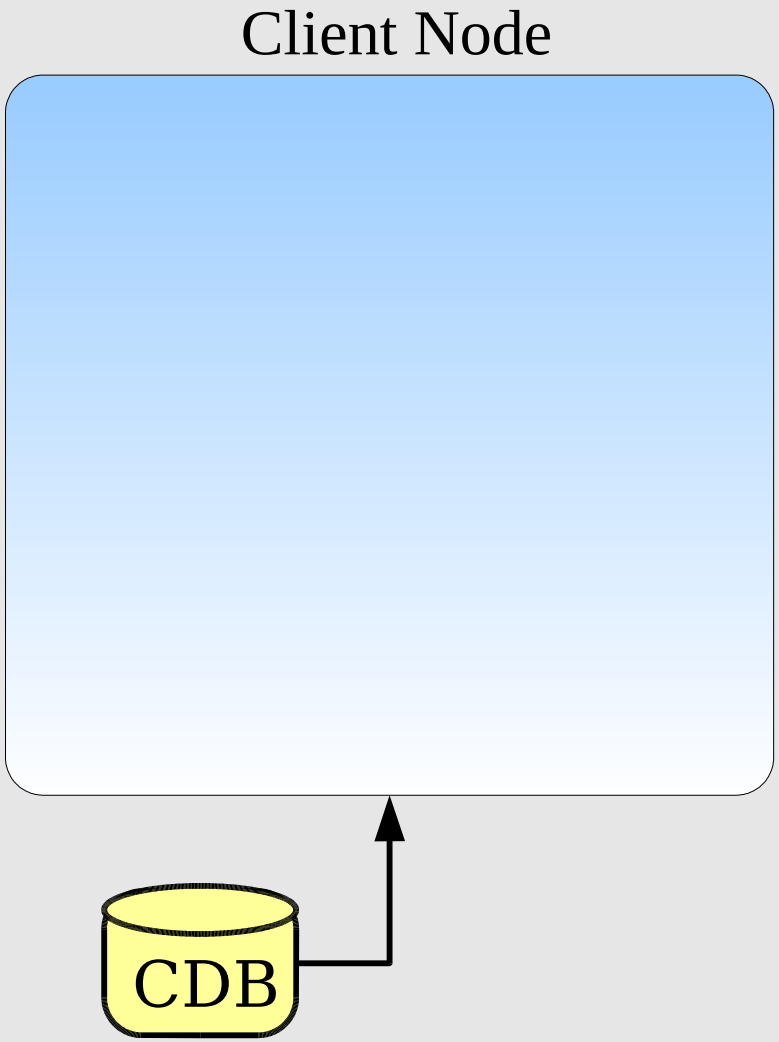
- ***System Managers Access***
  - *Concurrent Access*
  - *Transactions*
  - *Version Management*



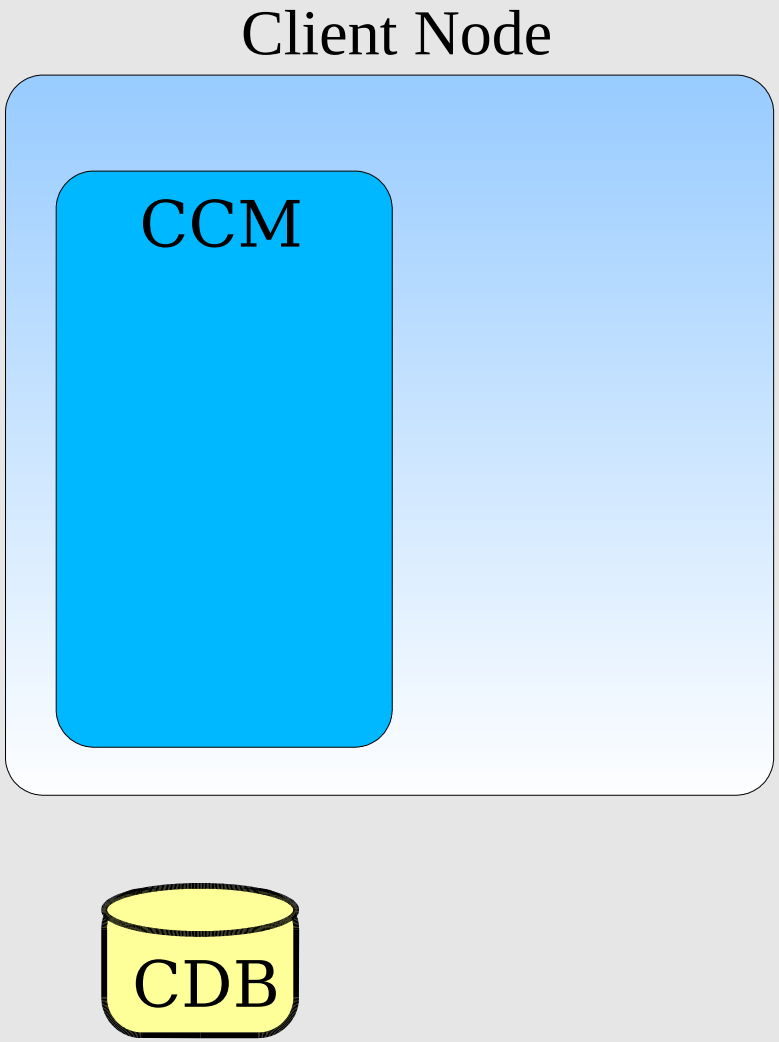
Client Configuration Management

- *Configuration Cache Manager (CCM)*
- *Node Configuration Manager (NCM)*



Client Configuration Management

- ***Configuration Cache Manager (CCM)***
  - *Notifications (`listend`)*
  - *Profiles Caching (`fetch`)*
  - *Access through NVA-API*
  - *Others: `purge`*
- *Node Configuration Manager (NCM)*



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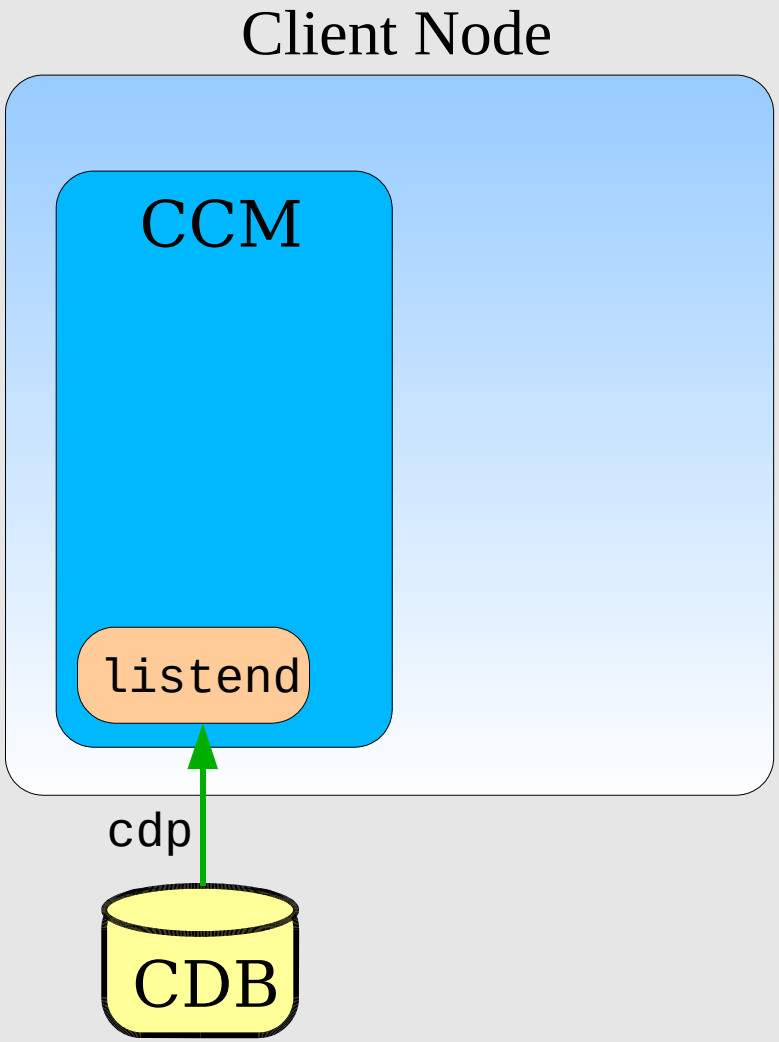

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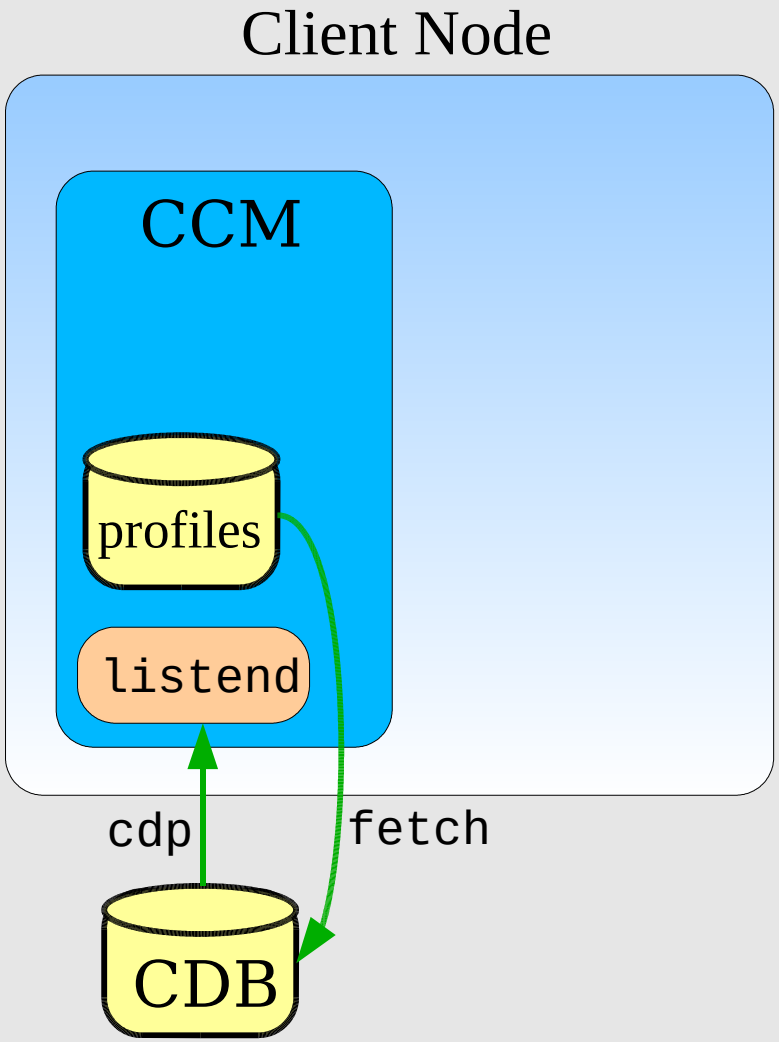

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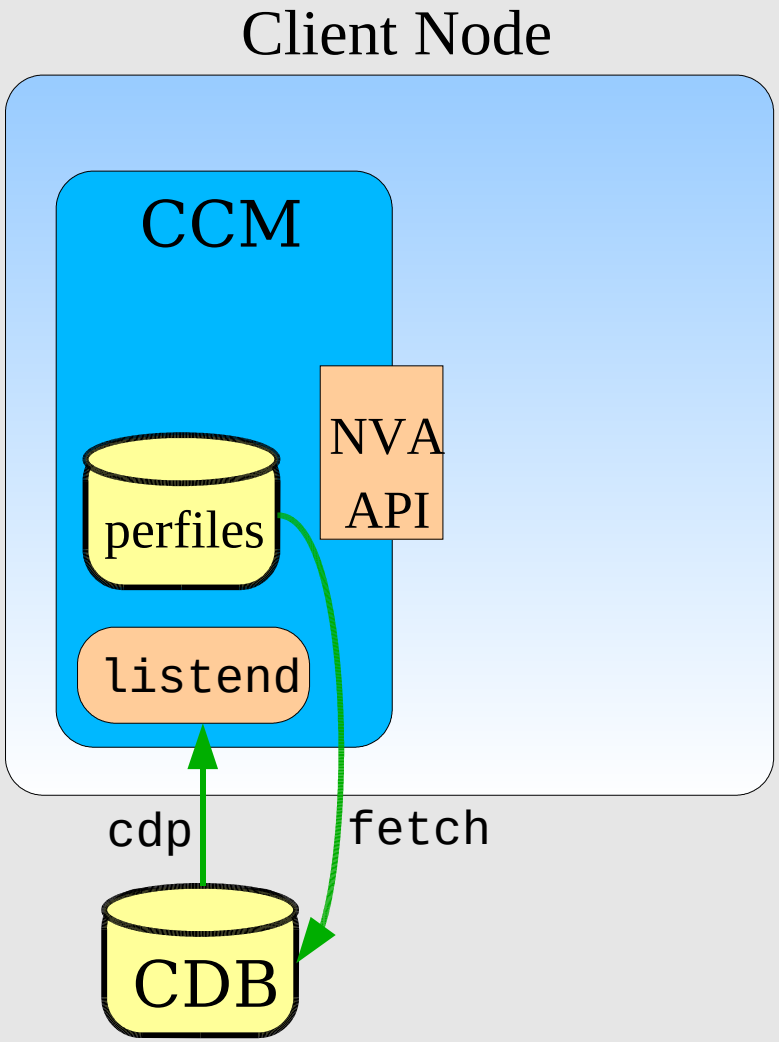

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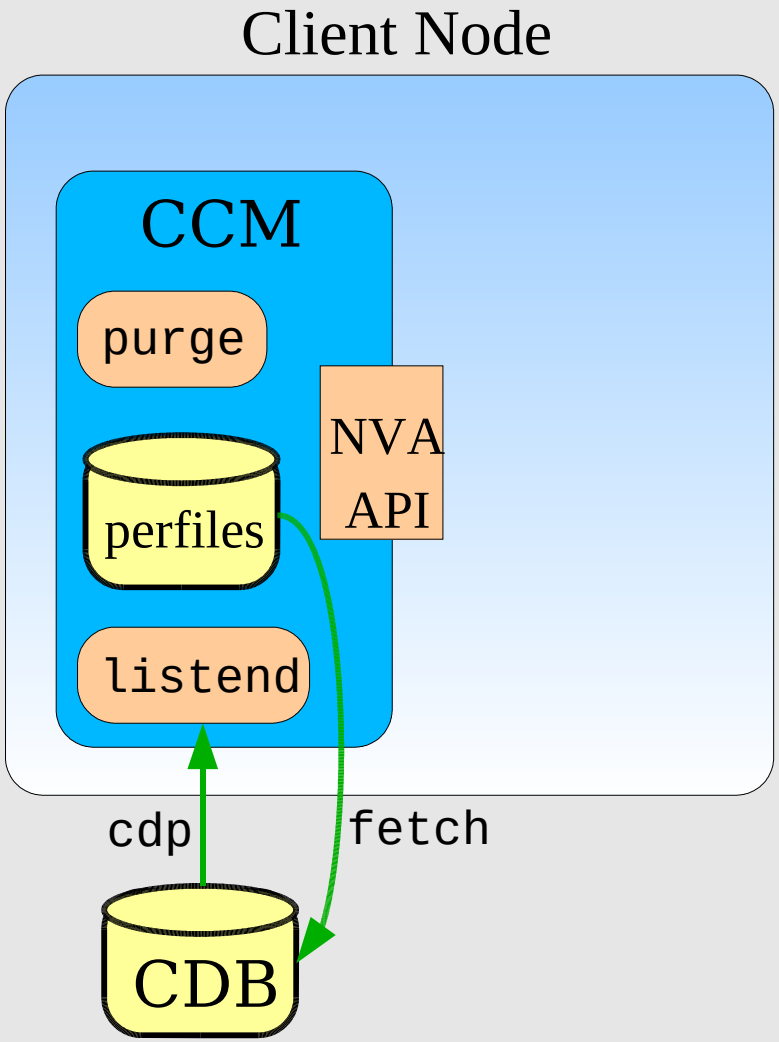
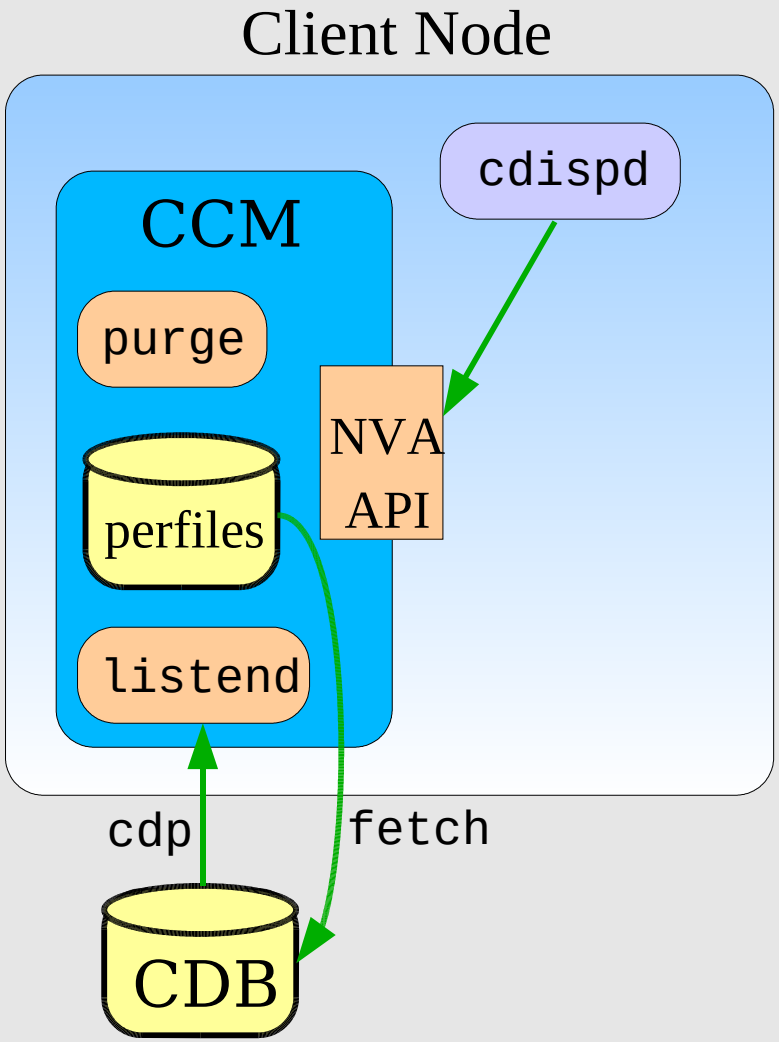


Client Configuration Management

- *Configuration Cache Manager (CCM)*
- *Node Configuration Manager (NCM)*
  - ***Configuration Dispatch Daemon (`cdispd`)***
  - *Node Configuration Deployer (`ncd`)*
  - *Configuration Components*



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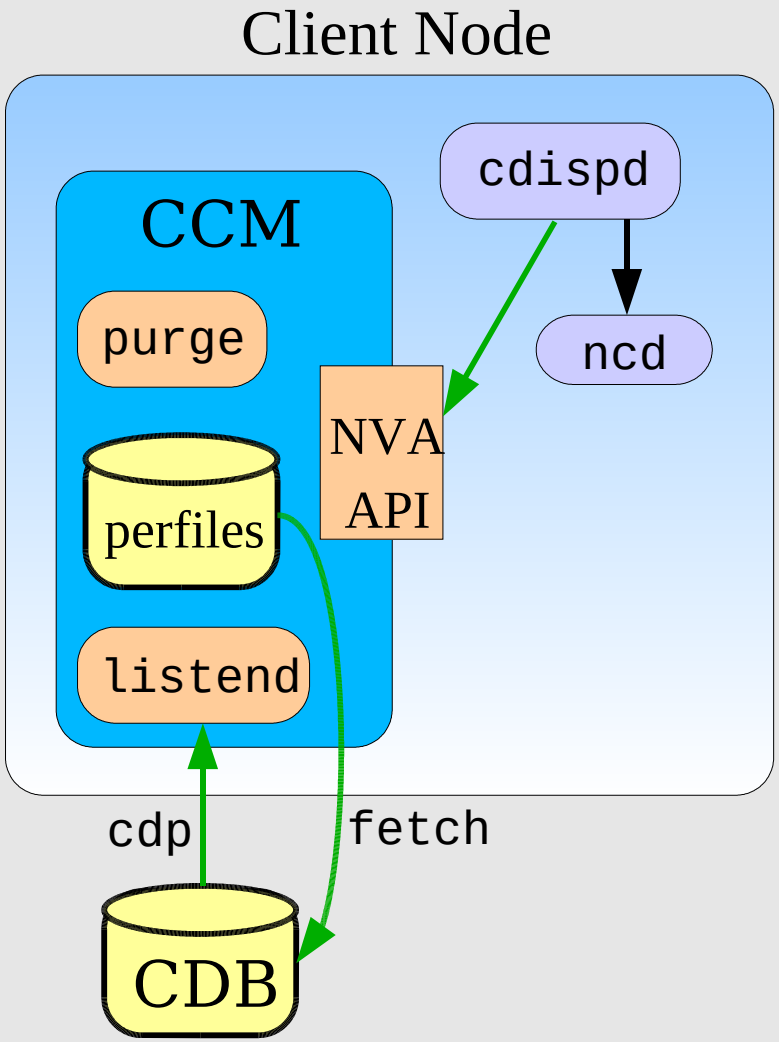

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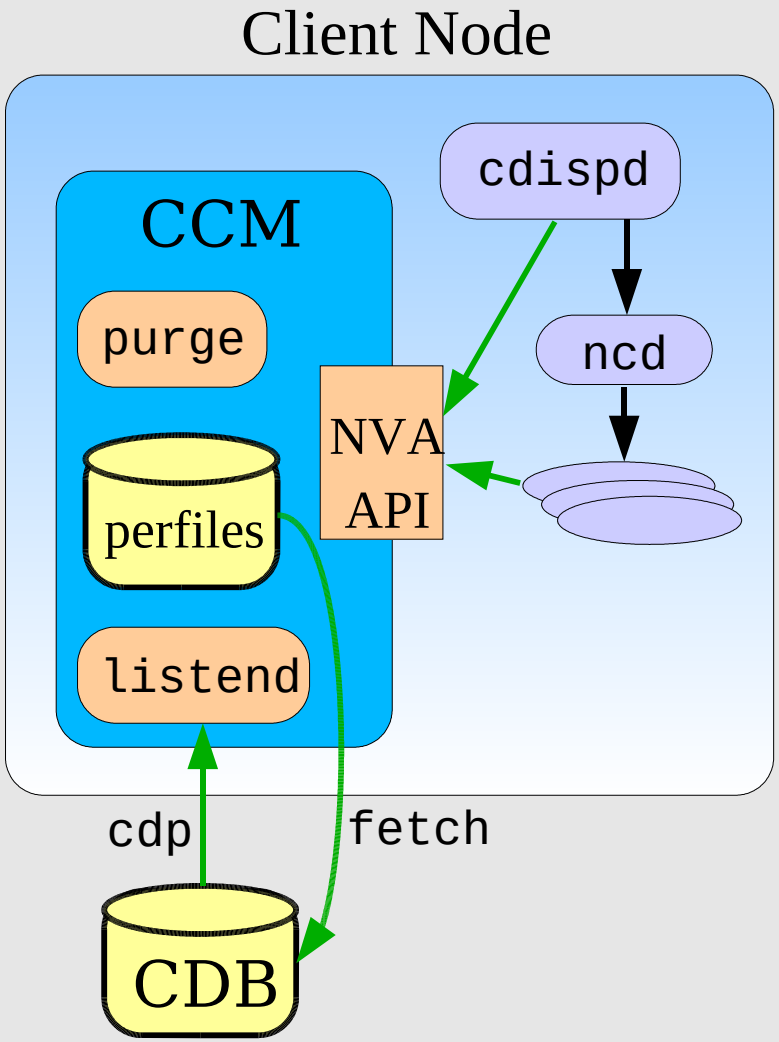

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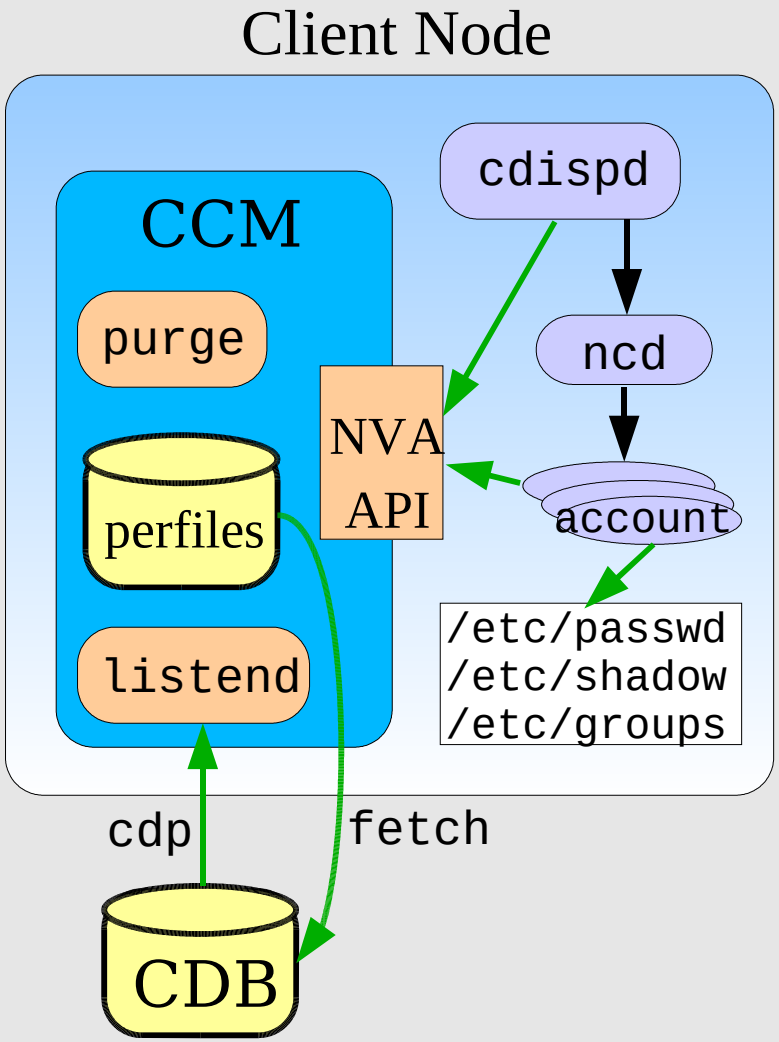
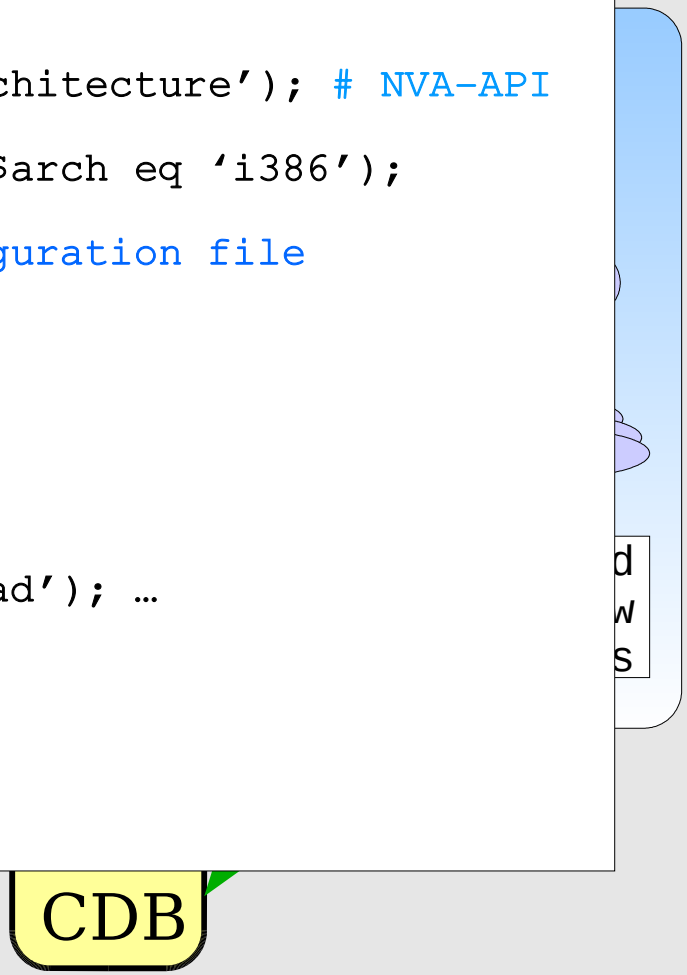
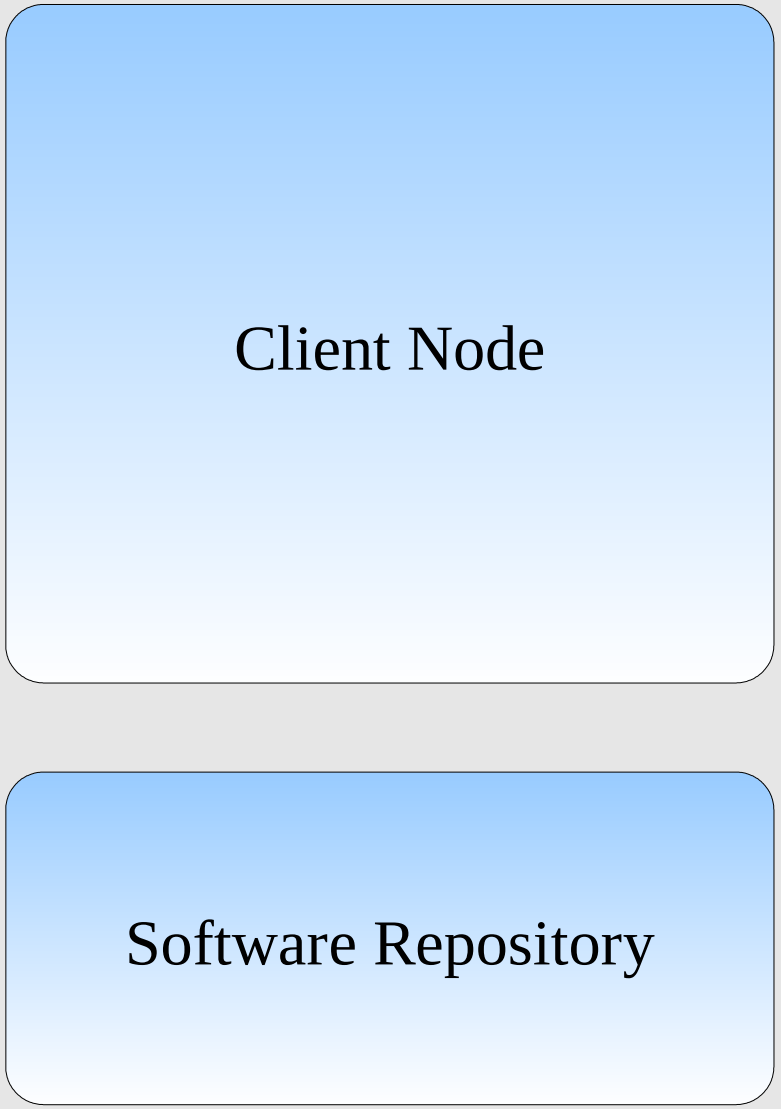


```
 [...]
sub Configure {
  my ($self,$config) = @_;
  # Access to configuration information
  my $arch=$config->getValue('/system/architecture'); # NVA-API
  $self->Fail ("not supported") unless ($arch eq 'i386');
  # create and/or update the local configuration file
  open (myconfig,'/etc/myconfig'); …
  # notify to affected services (SysV)
  if ($changed) {
    system('/sbin/service myservice reload'); …
  }
}
sub Unconfigure { ... }
```



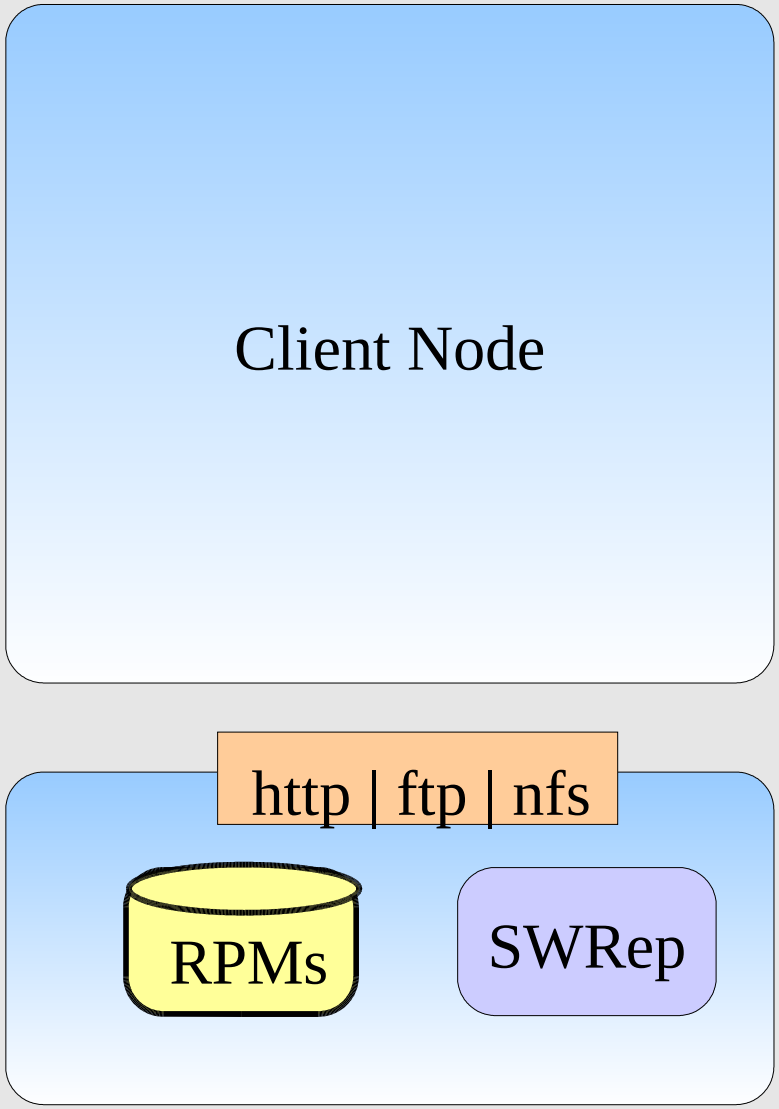
Software Packages Management

- *Software Repository (SWRep)*
- *Software Package Management (SPM)*



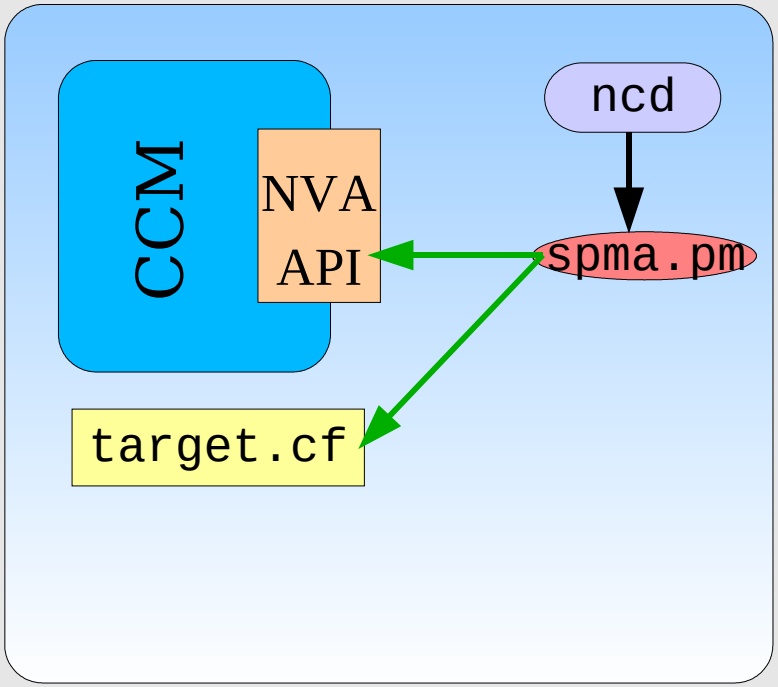
Software Packages Management

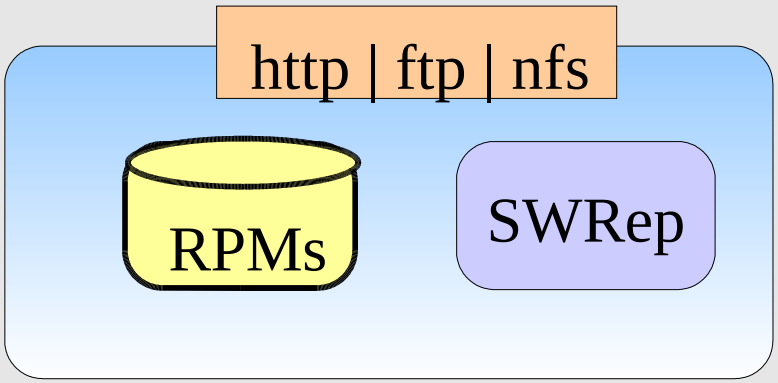
- ***Software Repository (SWRep)***
  - *Platforms*
  - *Areas*
  - *Repository Replicas*
- *Soft. Package Management (SPM)*



Software Packages Management

- *Software Repository (SWRep)*
- ***Soft. Package Management (SPM)***
  - ***spma component***
  - *SPMA*
  - *Package Manager:* `rmpt`, `pkg`





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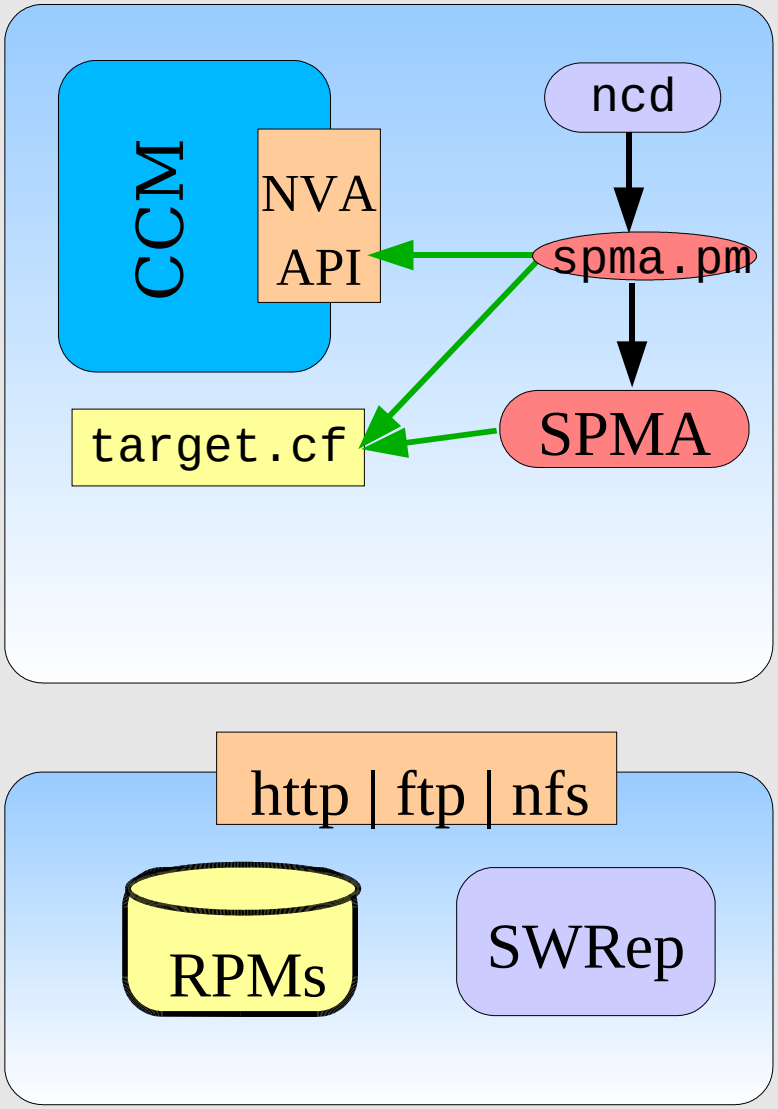

Software Packages Management

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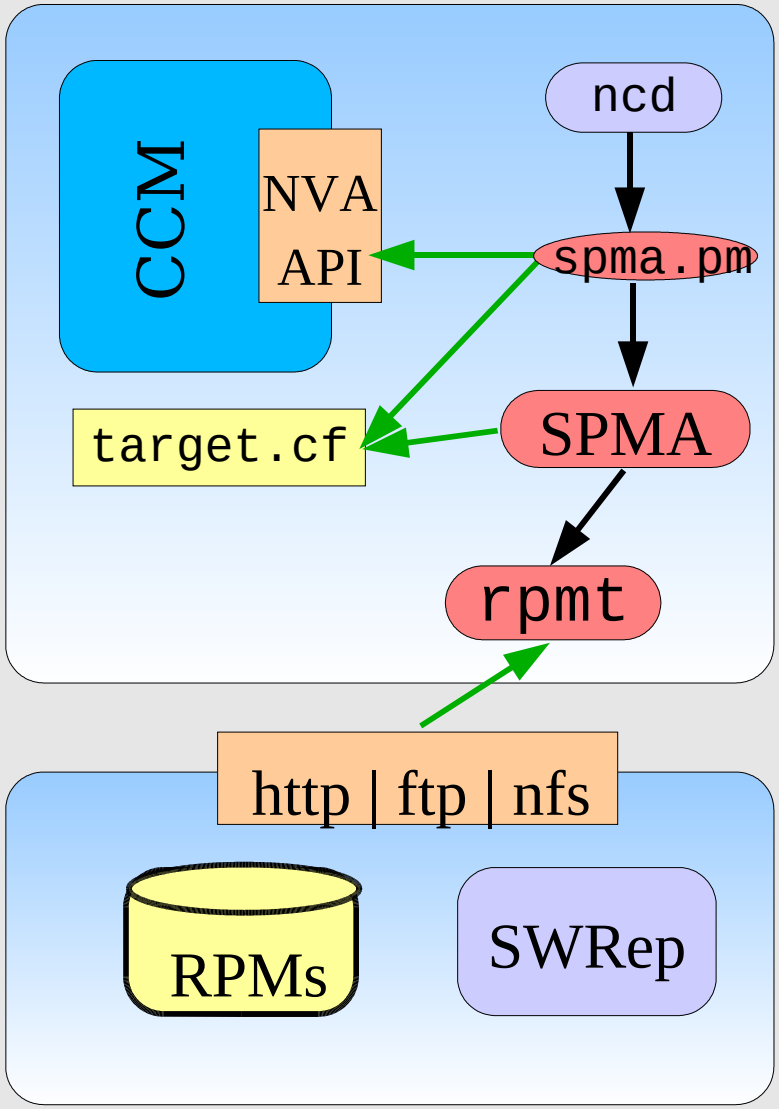
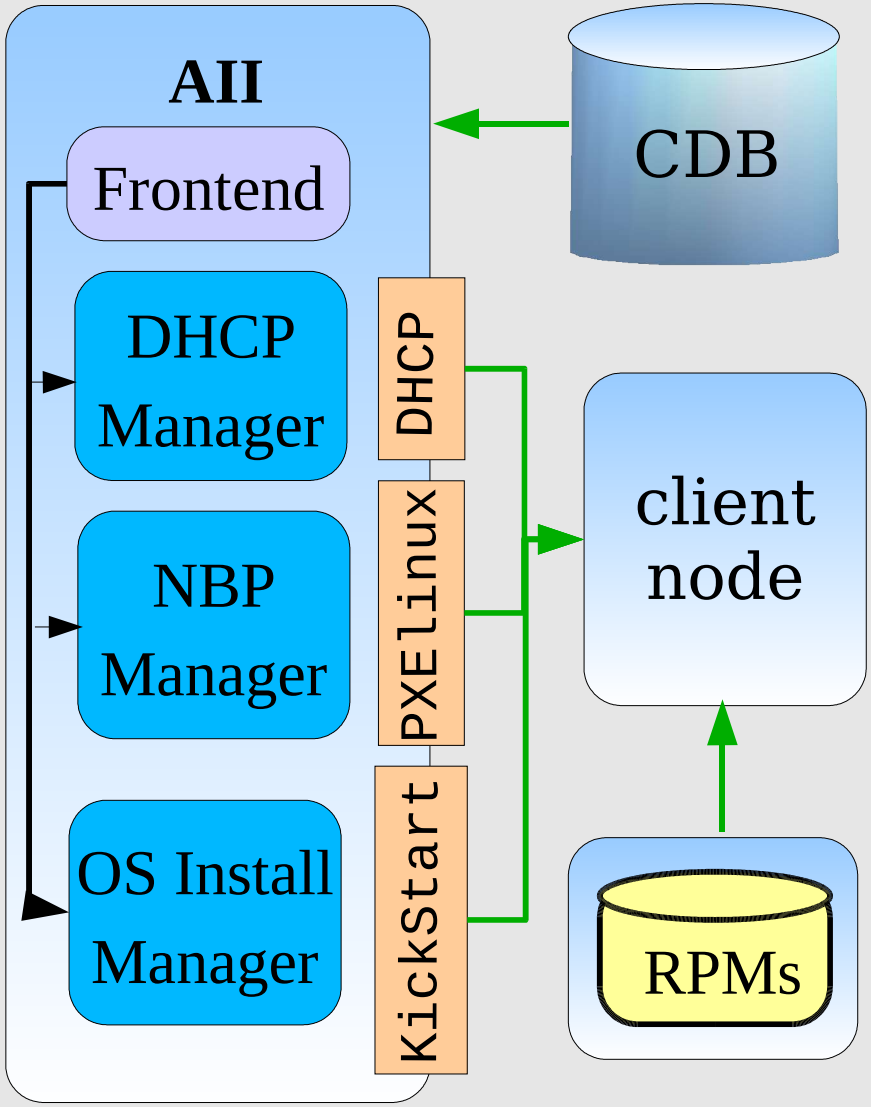
  - ***Package Manager: `rmpt`, `pkg`***



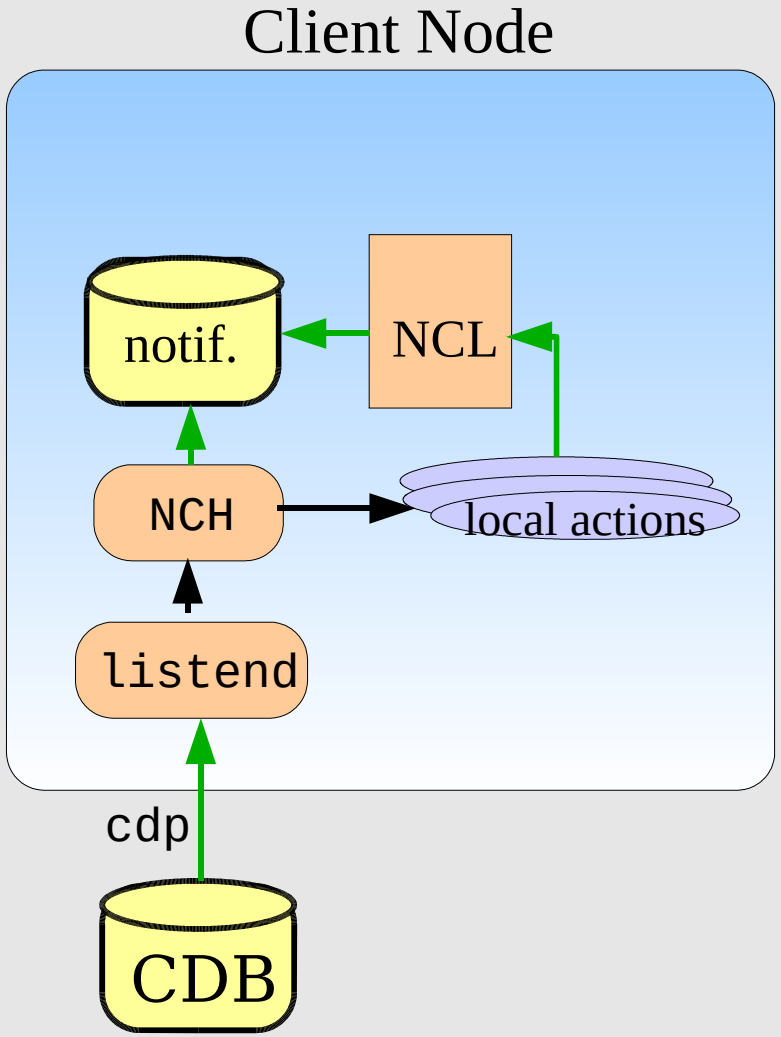
AII: Automated Installation Infrastructure

- *Automated Installation Infrastructure*
  - *DHCP Manager*
  - *NBP (PXElinux)*
  - *OS Installer (KS)*
  - *AII Frontend*



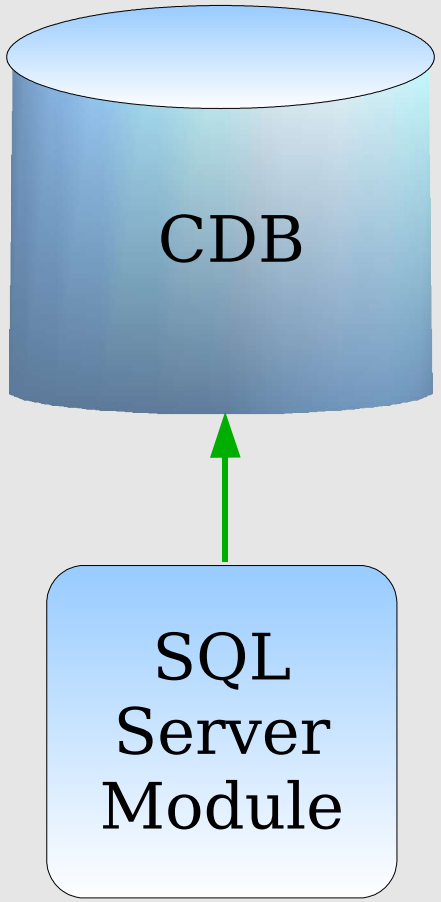
Synchronization Subsystem

- ***Synchronization Subsystem***
  - *Configuration Distribution Protocol*
  - *Notification Cache Repository*
  - *Notification Client Handler (NCH)*
  - *Notification Client Library (NCL)*
  - *Notification Client Daemon*

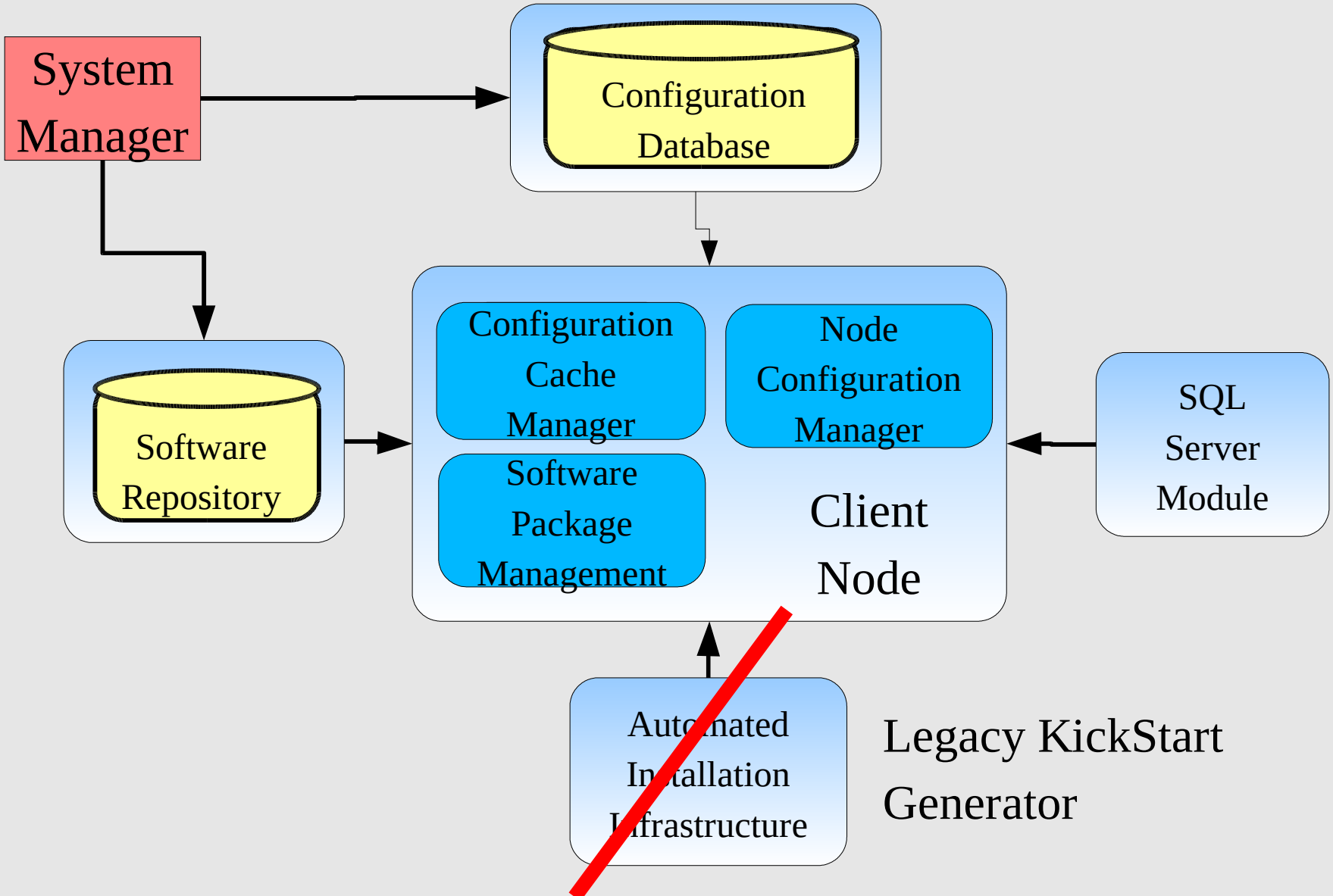


Server Modules

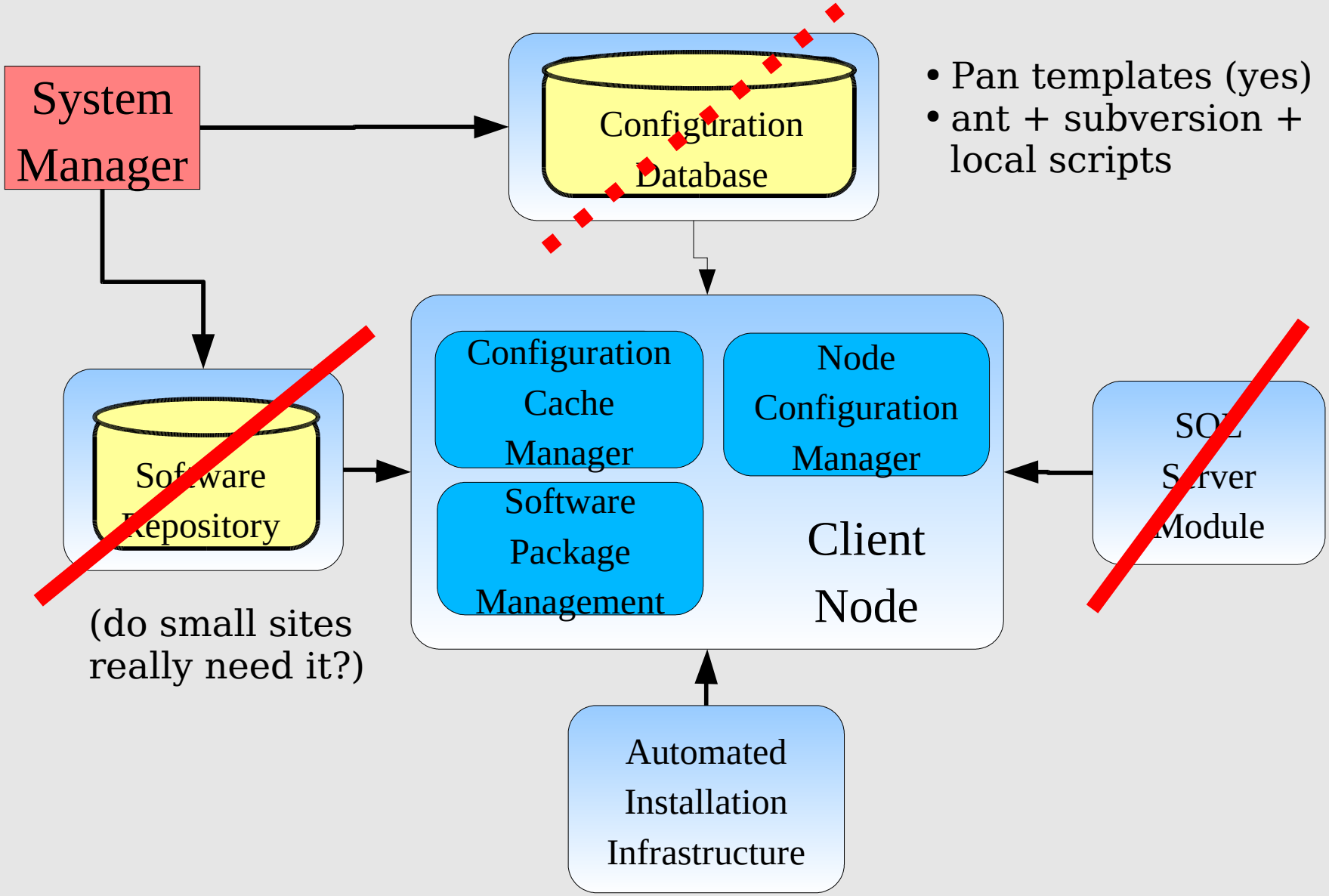
- *Server Modules*
  - ***SQL Queries***
  - *LDAP Queries (pending)*
  - *XML Replica*



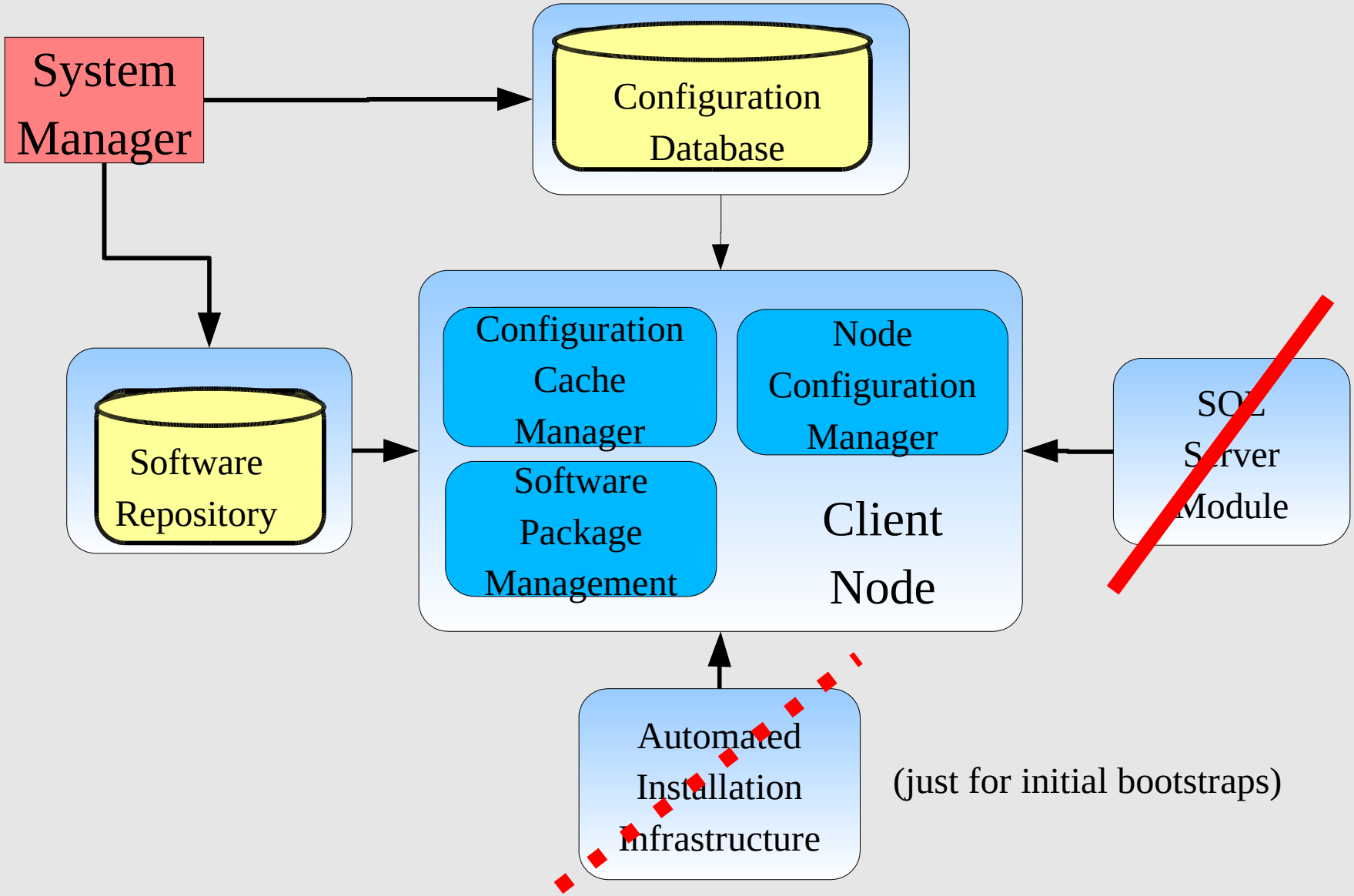
Quattor usage at CERN



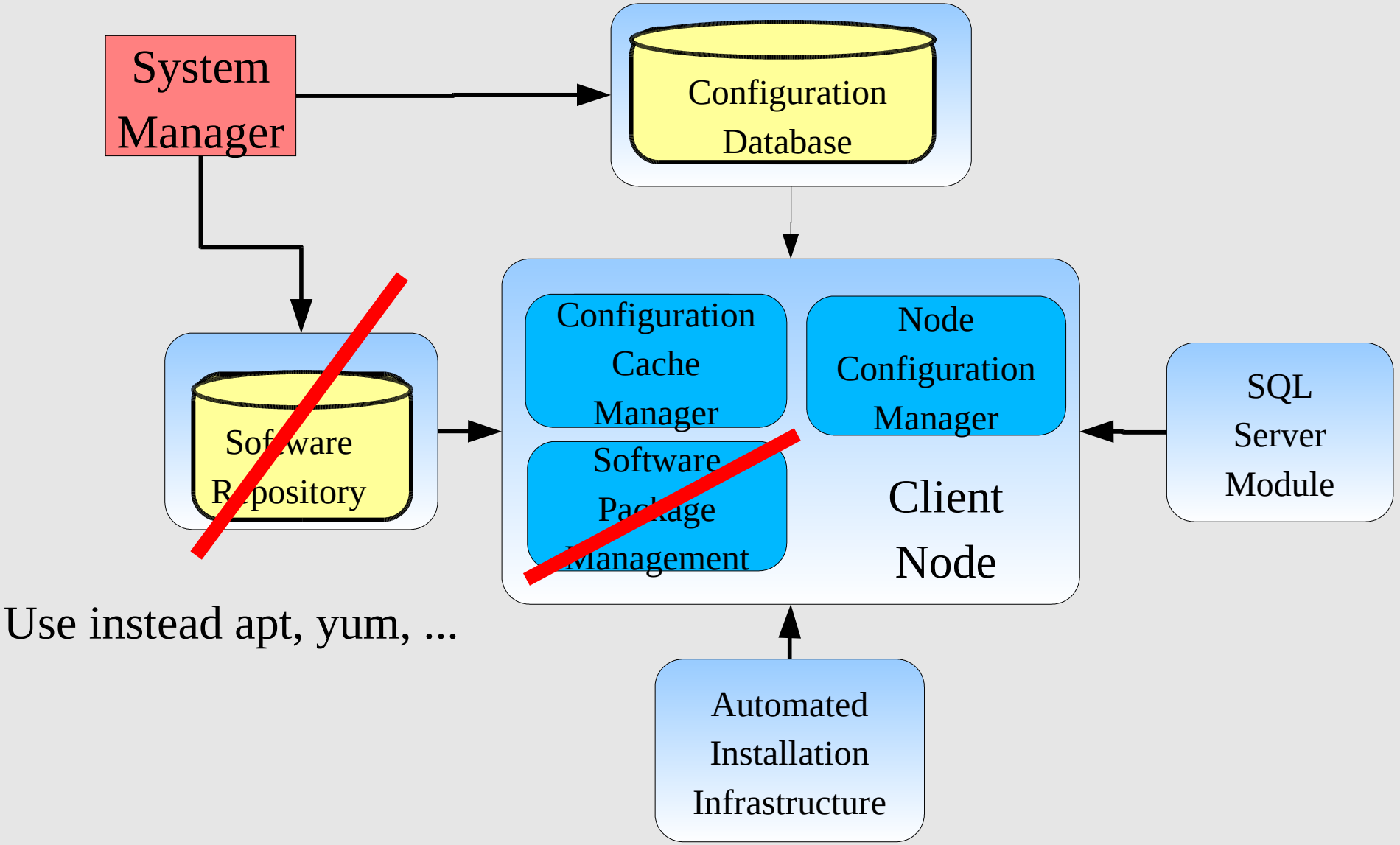
Quattor usage at LAL



Quattor usage at UAM



Other typical quattor usage



Use instead apt, yum, ...