



# W P4 PM 9 deliverables: Fabric installation & configuration tools

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## W P4 deliverables

1) *Interim Installation System (IIS)* for the installation and maintenance of the M 9 testbeds

- Linux clusters are prime target.
- Components:
  - Initial installation tool using system **image cloning**
  - LCFG (Edinburgh University) for software updates and maintenance



## W P4 deliverables

### 2) Configuration management prototype:

- Low level language and API for fabric components to reliably retrieve their configuration information.
- Design:
  - Node profiles stored in XML format
  - central HTTP(S) servers host configurations
  - Node access API for tree-like navigation
- Used by the **Image Installation tool** to get all configuration information.
  - Configuration information is entered per node

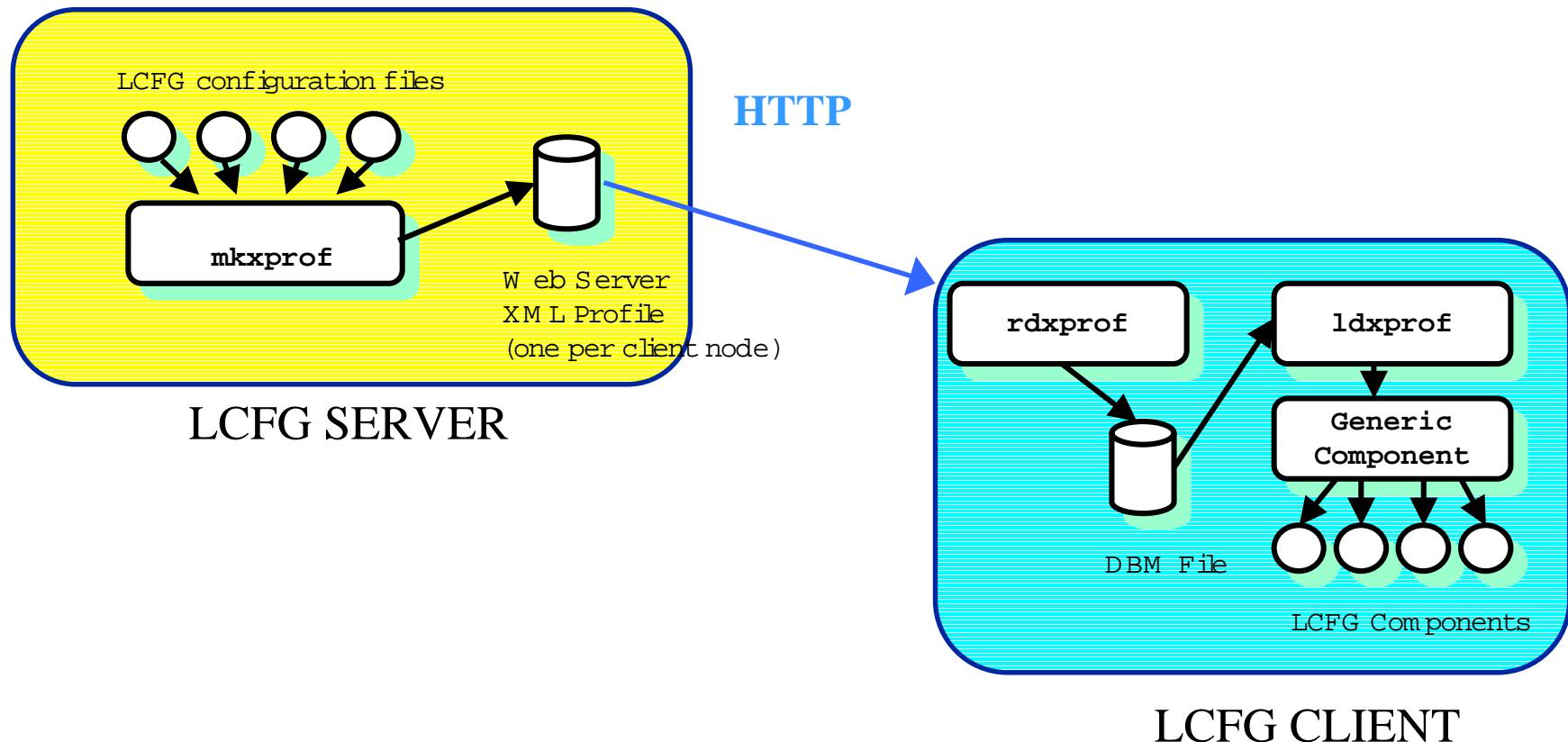


## LCFG , Local Configuration system

- ◆ Purpose : handle automated installation and configuration in a very diverse and evolving environment
- ◆ Mechanism :
  - Abstract configuration parameters are stored in a central repository located in the LCFG server.
  - Scripts on the host machine (LCFG client) read these configuration parameters and either generate traditional configuration files, or directly manipulate various services.

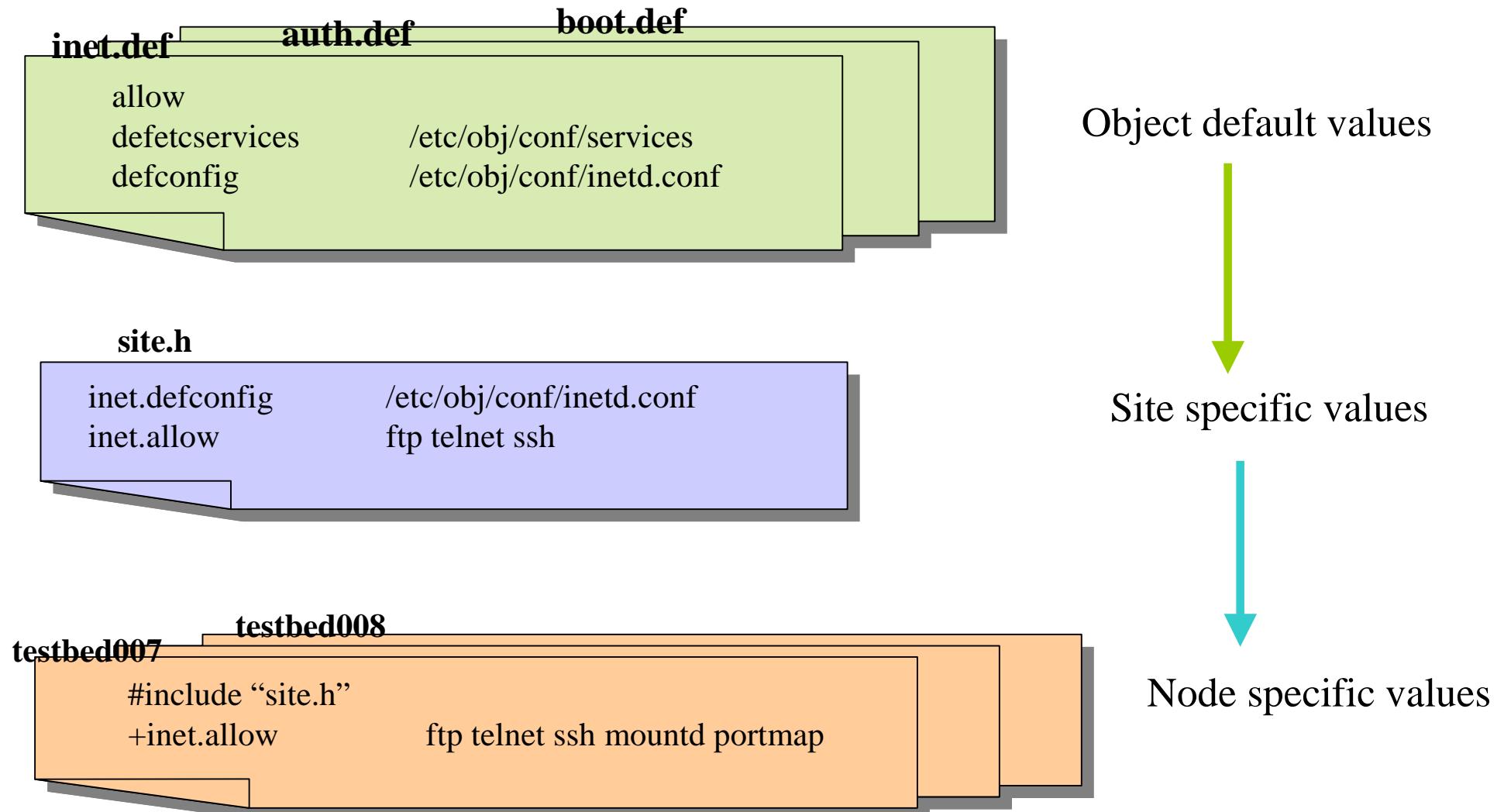


## LCFG : system architecture





## LCFG : source configuration files





## LCFG : XML configuration profiles

- ◆ A daemon in the LCFG server (`m kxprof`) polls for changes in the source files and converts them into XML profiles; one XML profile per client node
- ◆ The XML profiles are published into a web server
- ◆ LCFG clients can be configured to poll at regular intervals, or to receive automatic change notifications or they can fetch new profiles in response to an explicit command.
- ◆ A daemon in each LCFG client (`rdxprof`) reads its associated XML profile from the web server and caches it locally (DBM file)
- ◆ LCFG scripts access the local cache to extract the configuration values and execute changes accordingly



## LCFG : RPM configuration

- ◆ The list of RPMs to be installed on a node is defined in text files stored in the LCFG server
- ◆ These RPM lists can be shared by several nodes; the LCFG configuration associates one list to each node
- ◆ These files must be accessible to the clients using a remote file system (NFS)
- ◆ The RPMs themselves must be also accessible via NFS
- ◆ Any RPM installed manually in the client without being included in the files will be **AUTOMATICALLY REMOVED**



## Image installation 1/2

- ◆ Purpose: quick and easy first installation of identical machines in large clusters
- ◆ Mechanism:
  - Based on the simple copy of system images from reference nodes
  - A different image needed per different HW configuration
  - 2 servers needed: boot server + repository server; both can be physically the same machine; easy to setup
  - The installation process has 2 phases:
    - Creation of reference images
    - Installation of the reference image in the new nodes



## Image Installation 2/2

