

Testing an Open Source installation and server provisioning tool for the INFN-CNAF Tier1 Storage system

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Introduction

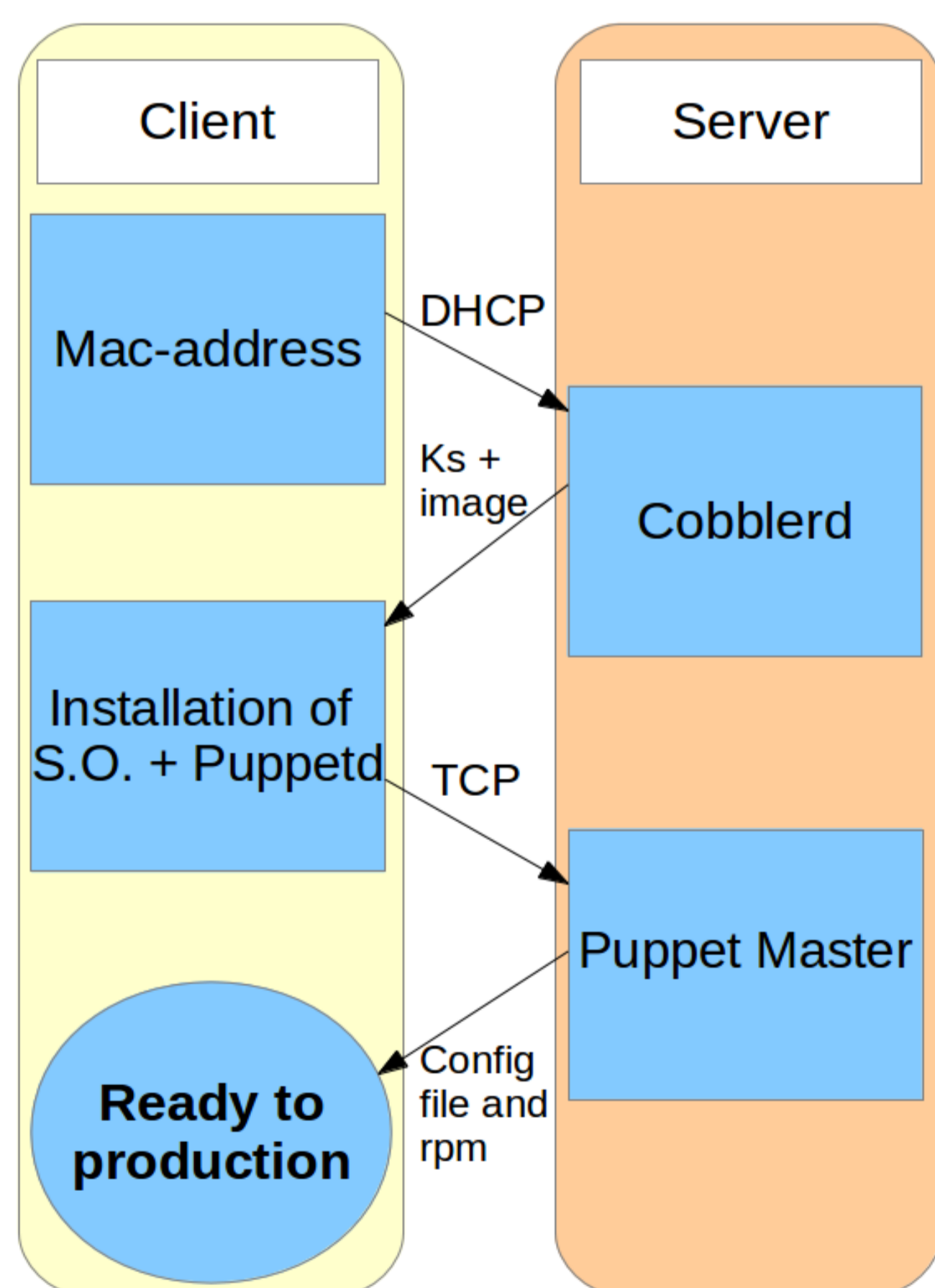
In large computing centers, such as the INFN-CNAF Tier1, is essential to be able to set all the machines, depending on use, in an automated way. For several years at the Tier1 has been used Quattor, a server provisioning tool, which is currently used in production.

We have recently started a comparison study involving other tools able to provide specific server installation and configuration features and also to offer a proper full customizable solution as an alternative to Quattor. Our choice fell on integration between two tools: Cobbler, for the installation phase, and Puppet, for the server provisioning and management operation.

The tool should provide the following properties in order to replicate and gradually improve the actual system features:

- 1) Implement a system check for storage specific constrain such as kernel modules black list at boot time to avoid undesired SAN access during disk partitioning.
- 2) A simple and effective mechanism for kernel upgrade and downgrade.
- 3) The ability of setting package provider using yum, rpm or apt.
- 4) Virtual Machine installation support including bonding and specific Ethernet configuration.
- 5) Scalability for managing thousands of nodes and parallel installation.

How system works



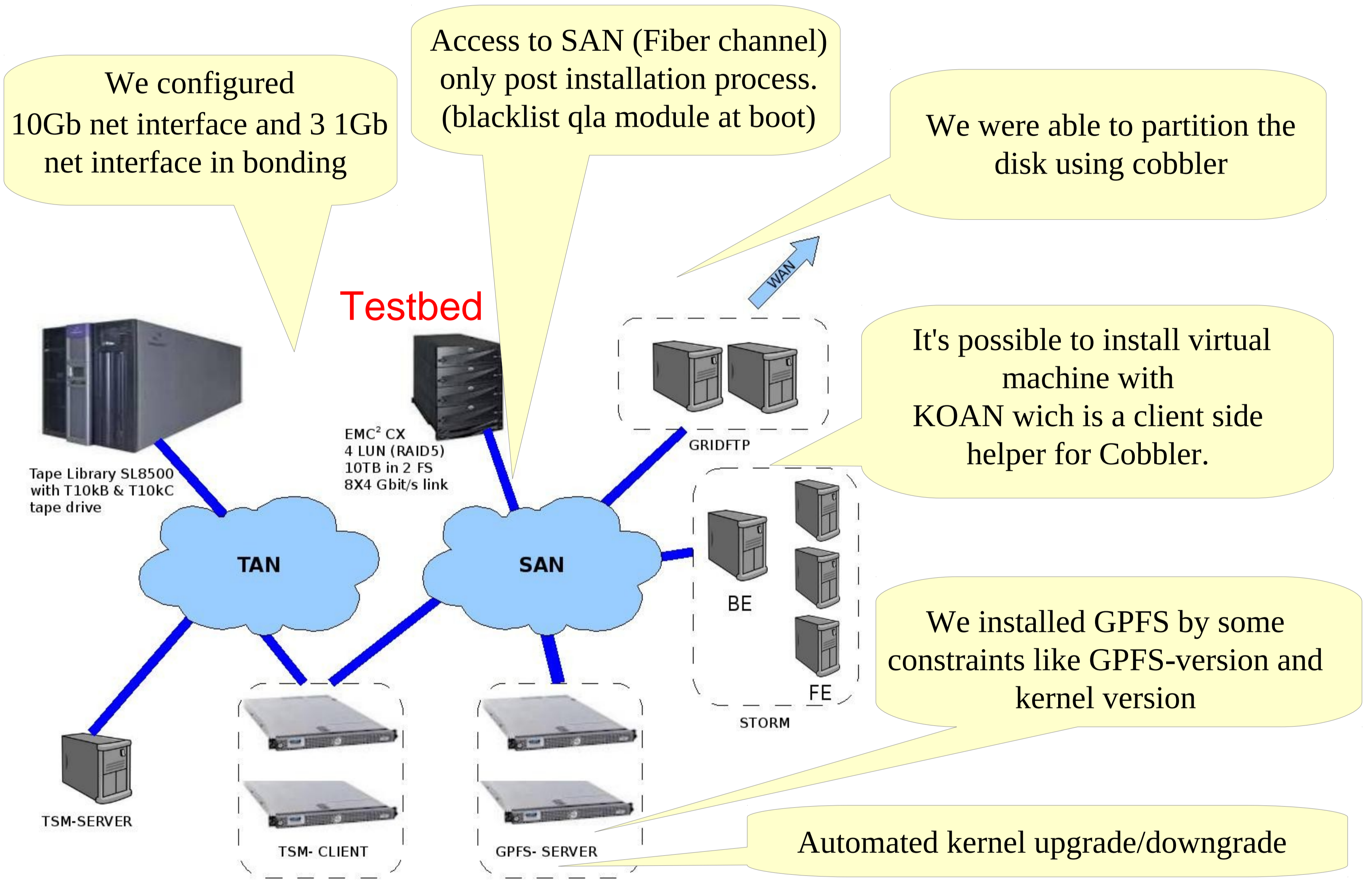
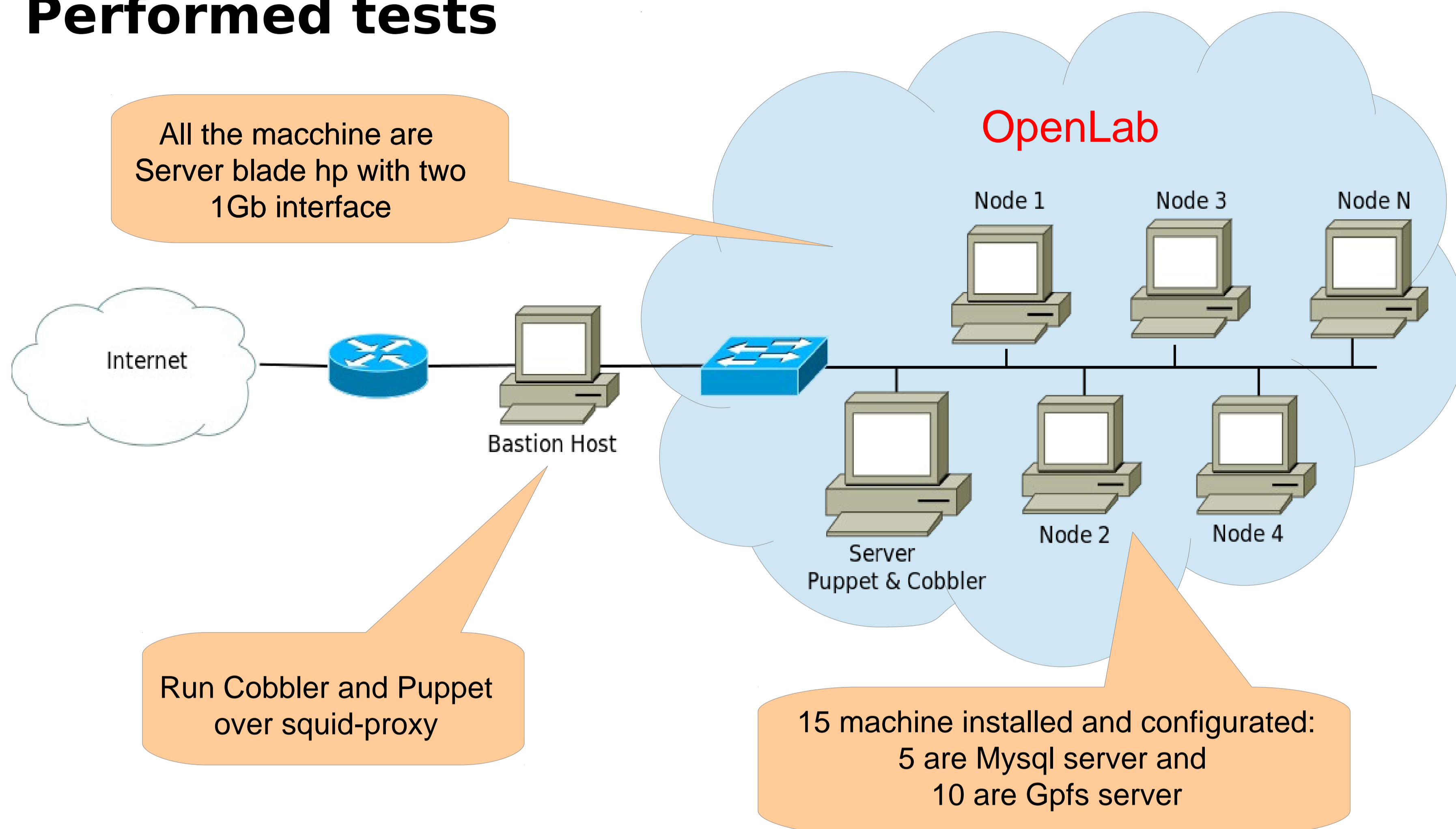
Setup sequence : from mac-address to configuration

1-The machine sends a DHCP request

2-Cobbler service, on the server, responds: it installs on client machine operative system, "Puppet daemon" and configures the network.

3-After the installation process, before the reboot, the Puppet daemon on client contact the "Puppet Master" on the server and download the configuration from it.

Performed tests



Achievements

- 1) We are able to integrate the two software and we managed to get them to work together.
- 2) We have created modules to manage the network interfaces in bonding, access to the SAN, kernel and GPFS in a dynamic way: the configuration depends on some constraints like the number of net interface.
- 3) The parallel installation of ten machines requires on average 10 minutes: the same time is required for a single machine.
- 4) Cobbler is able to install virtual machines via Koan: the profiles of the virtual machines are managed in the same manner as the real ones.
- 5) Now we use Cobbler and Puppet to manage the test area(Openlab).

Reference

Puppet : www.puppetlabs.com
Cobbler : www.cobblerd.org



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