Distributed computing – ReCaS status

Domenico Del Prete, Guido Russo

The Rationale

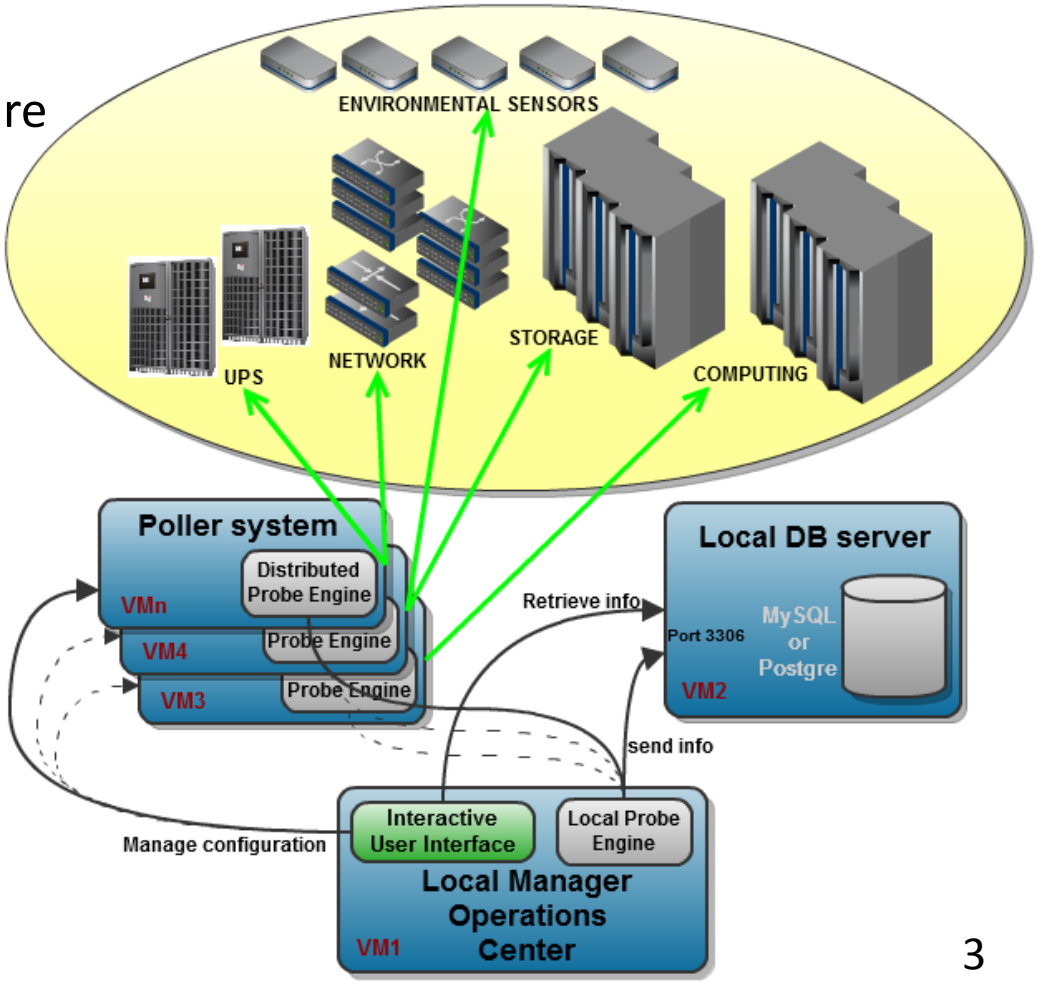
- Following the Frascati and Elba meeting, we decided to test a IaaS infrastructure for a SuperB distributed monitoring environment

- Infrastructure based over a distributed filesystem over each site
- A cloud operating system that controls compute, storage, and networking resources (cloud infrastructure)
- A Web Portal where centralize all necessary applications for management, monitoring and control (Final target: SuperB monitoring infrastructure)
- The test bed is in being set up.

Monitoring on a IaaS Cloud model infrastructure (each site)

- Nagios based (clustered) architecture
- Highly extensible and modular
- Powerful interactive Web UI
- Ready to SSO through the portal

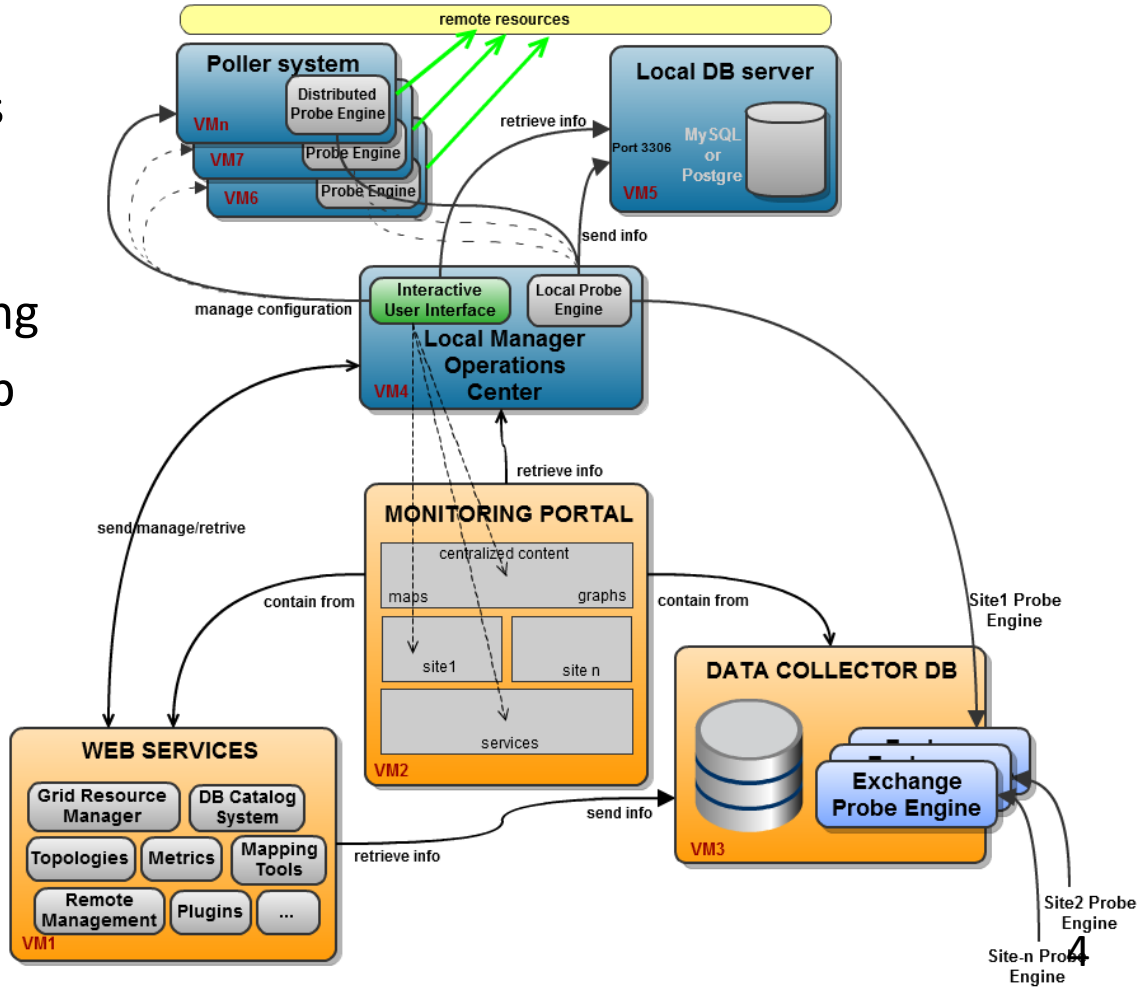
All data acquired from each site and all configurations are managed either locally or in a distributed manner



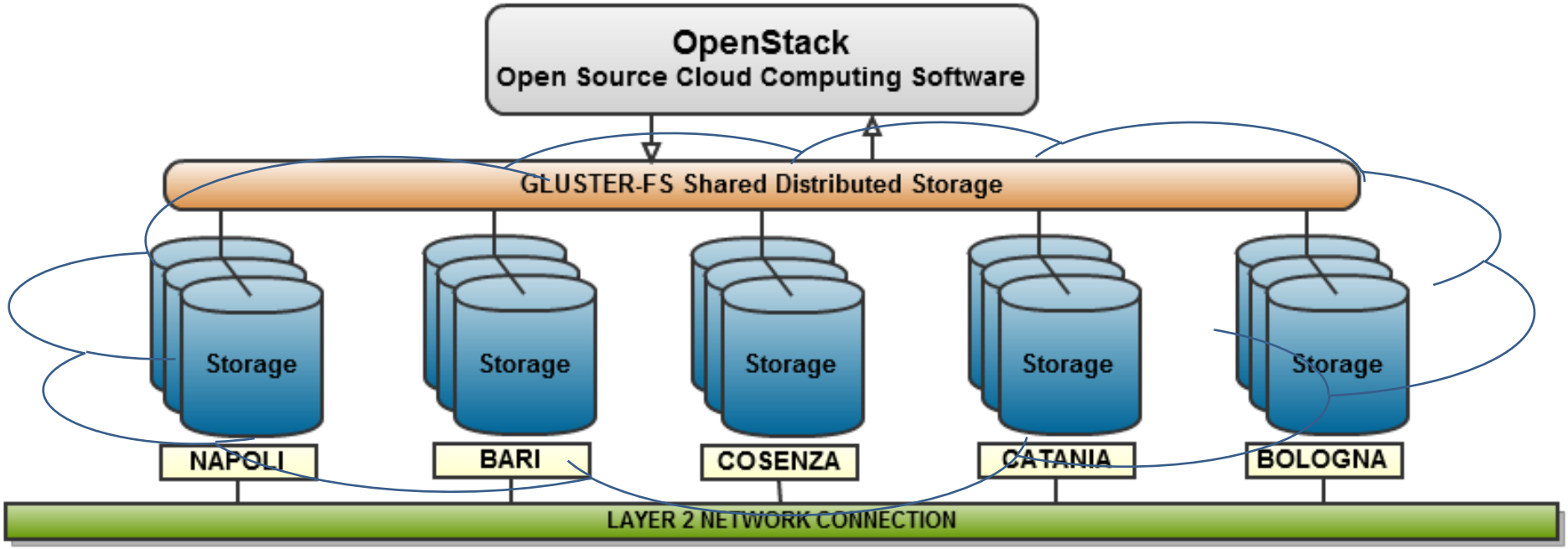
Monitoring on a IaaS Cloud model infrastructure (manager site)

- A centralized portal for all types of services and authentication
- Data collector DB: data replication and data warehousing
- A machine will contains the web application to use all services

Integration of all heterogeneous systems and data presentation

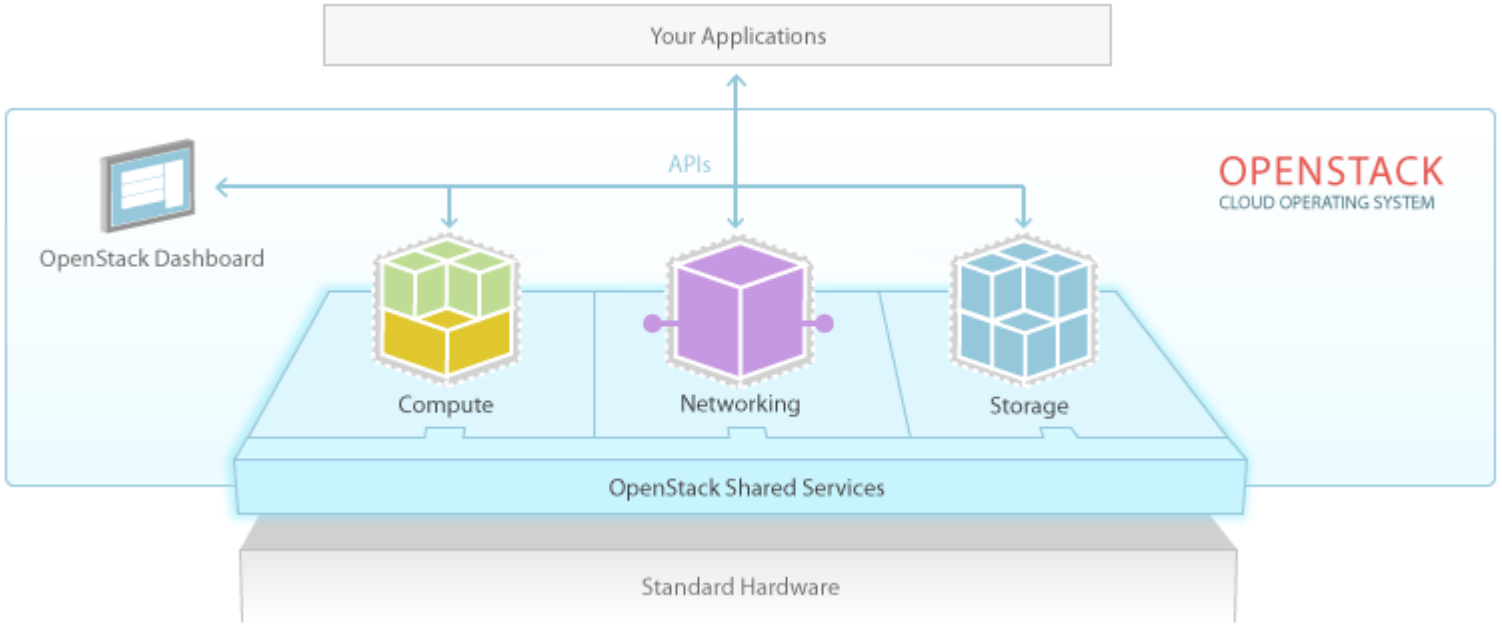


Tools and technologies 1/2



- Distributed and shared storage platform: GlusterFS
- Cloud Operating System: OpenStack
- Layer 2 Network: VPN Site-to-Site (first solution in next test)
  - Simulation between two sites connected to the GARR network: University Federico II network – INFN Naples network

Tools and technologies 2/2



- **Compute:** Allows users to manage virtual servers on which to run their applications
  - Monitoring servers, web services, user interface, web portal, …
- **Storage:** All storage services are interfaced as system object and block storage
  - V-disks, shared storage, DB, synchronization service, FileSystem, hosting data, …
- **Networking:** provide "network connectivity as a service" between interface devices
  - V-network, v-switch, VPN-aaS, firewall-aaS, IDS-aaS, data-center-interconnect-aaS
- **Supported Hypervisor:** Xen, KVM, VMware

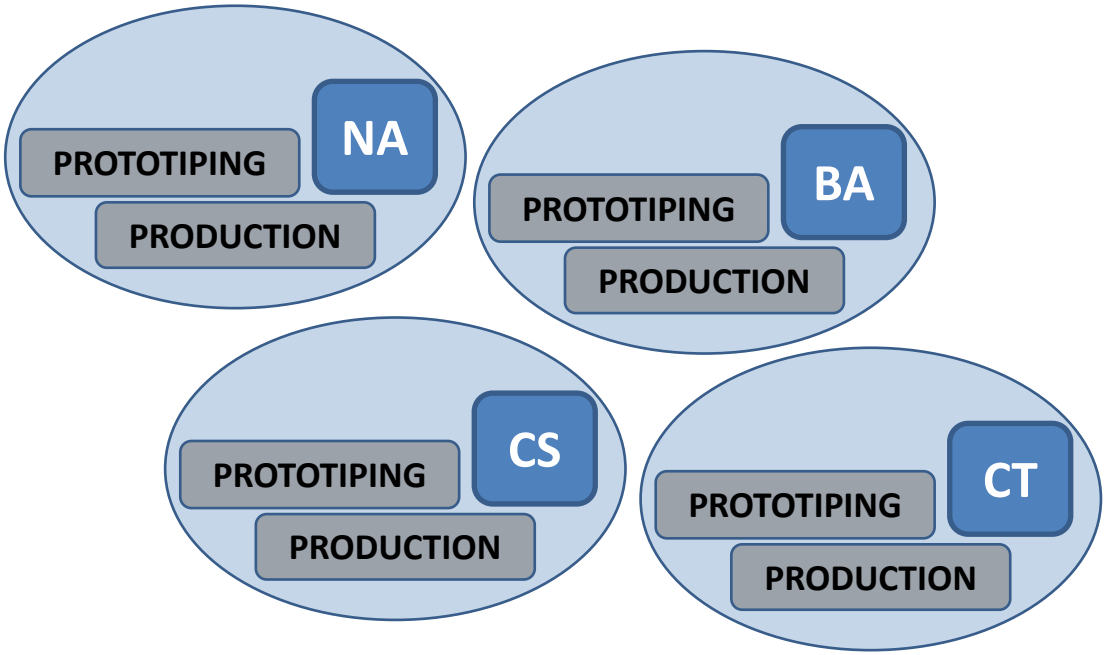
Far future infrastructure Oct 2014

The data centers will be ready to host the hardware needed by SuperB and other experiments/applications for the next years. These startup resources will be enough for the first 3 years of SuperB activities and will provide both multi and many core architectures in supporting the current R&D activities.

SITE	kHepSpec	PByte
UNINA	6	0,8
INFN-NA	2	0,3
UNIBA	10	2,5
INFN-BA	3	0,5
INFN-CT	7	0,8
INFN-CS	5	0,6
TOTAL	**33**	**5,5**

The four Data Centers will be located in Bari, Catania, Napoli and Cosenza. Part of this infrastructure is being developed in the Southern of Italy to empower also existing and well consolidated infrastructures.

Near future infrastructure Jan 2013



PRODUCTION

- ReCaS sites for running: FullSim, FastSim, etc. - Ready from Jan 2013

PROTOTIPING

- Testing for computing model SW: development, file system, GPGPU, etc.

Example: Latest Hardware Upgrade Site of Naples

Production HW & Site Services

6 Server
10Gbps network
+10 New Server

Resources	Already available	New
Core	64	200
Storage	40 TB	50 TB

Research & Development HW

14 Server
10Gbps network

Resources	Already available
Core	112
Storage	56 TB

ReCaS-Napoli site layout