A Corporate Cloud for Scientific Research

INFN
INFN Corporate Cloud

M. Antonacci[1], G. Donvito[1], D.C. Duma[2], S. Stalio[3]
INFN-Bari, INFN-CNAF, INFN-LNGS

INFN Corporate Cloud (INFN-CC) is INFN's geographically distributed private Cloud infrastructure. It provides services starting from the IaaS level and it is based on OpenStack.
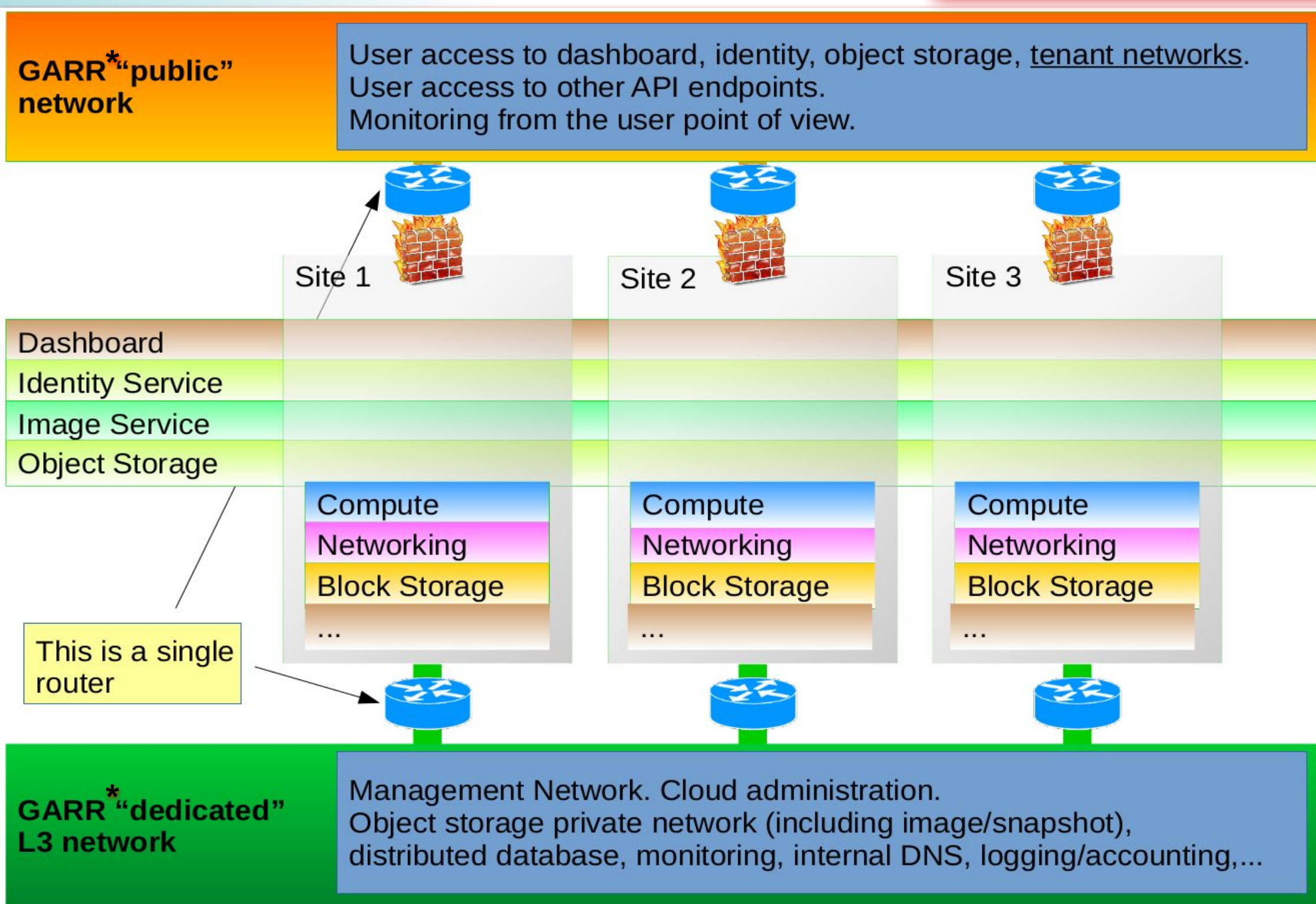
It proposes itself as a platform on which to **implement IT services**, especially where **high reliability** and **geographic failover** are required, for use by the institution's computing centers and, more generally, by the INFN scientific community.

INFN Corporate Cloud is of strategic importance for the INFN computing ecosystem in the next few years as it:
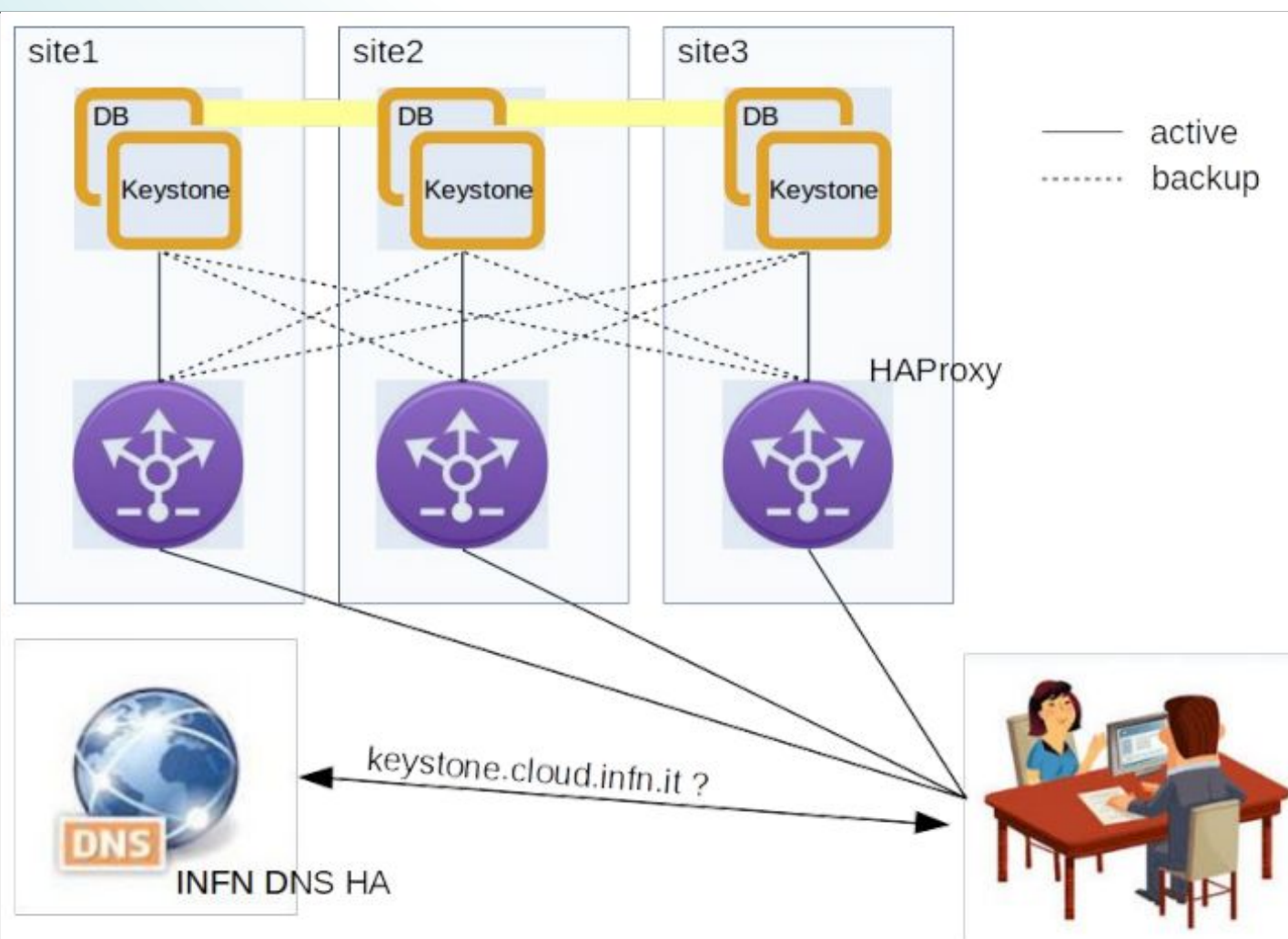
- allows for an easier deployment and administration of network services needed for the institutes' methabolysm
- is a platform for testing and deploying computing applications based on new technologies
- eases interaction and co-working between people belonging to different INFN sites

INFN-CC Highlights

- multi-region OpenStack layout
- dedicated WAN for distributed storage and management
- geo-distributed:
  - API endpoints
  - Object Storage
  - Image Repository
  - Volume Replicas
- off-line geographic VM migration with no DNS change

GARR*"public" network

User access to dashboard, identity, object storage, tenant networks. User access to other API endpoints. Monitoring from the user point of view.

Site 1   Site 2   Site 3

Dashboard
Identity Service
Image Service
Object Storage

Compute / Networking / Block Storage ...

This is a single router

GARR* "dedicated" L3 network

Management Network. Cloud administration. Object storage private network (including image/snapshot), distributed database, monitoring, internal DNS, logging/accounting,...

* GARR is the italian NREN

The INFN-CC model for geographic redundancy of critical services

INFN-CC sites: INFN data centers in Bari, Bologna and near Rome.

INFN-CC PaaS supported by INDIGO-Datacloud solutions

The PaaS Core services are used to automate the deployment of complex clusters of services on-top of INFN-CC and/or others Cloud infrastructures external to INFN-CC.
This approach provides an easy and transparent federation of heterogeneous IaaS resources. Moreover the end users will focus only on the usage of the services and not their configuration.