

INFN Corporate Cloud

Use cases, architecture and roadmap for the INFN Corporate Cloud

http://wiki.infn.it/cn/ccr/cloud/inf_n_cc/documento_architetturale

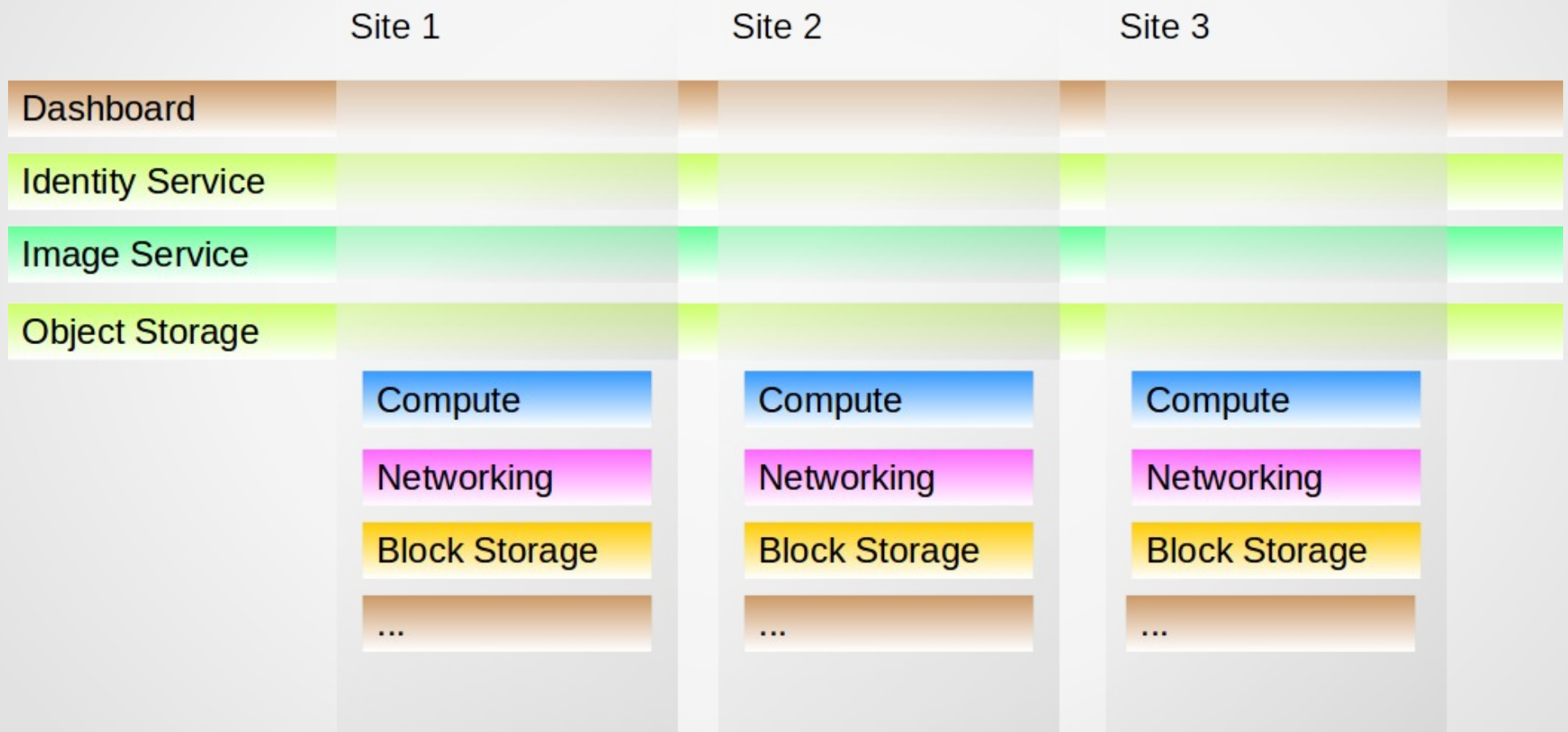
Where did all come from

- The INFN Cloud Working Group has now been active for almost three years within the INFN Commissione Calcolo e Reti (CCR).
- A number of projects related to Cloud Computing started in INFN thanks to the knowledge and expertise that were the outcome of the activity of the Cloud Working Group.
- Since almost two years a restricted team, the INFN Corporate Cloud (INFN-CC) working group, has been planning and testing possible architectural designs for the implementation of a distributed private cloud infrastructure and realized a prototype that is described in the document mentioned in the title page.

Overview

- **INFN-CC is a multi-regional OpenStack installation** where some services are centrally managed and common to all regions while other services are local and associated to a single region.
- The main goal is to provide users with standard IaaS interfaces to an homogeneous but distributed cloud environment **focused on the deployment of highly available, distributed network services and applications.**
- Based on our previous experience, we understood that it is extremely difficult to have a multi-regional setup working when the number of regions is large, so we decided, at least for the time being, to limit to three sites (two working already, one soon to start).

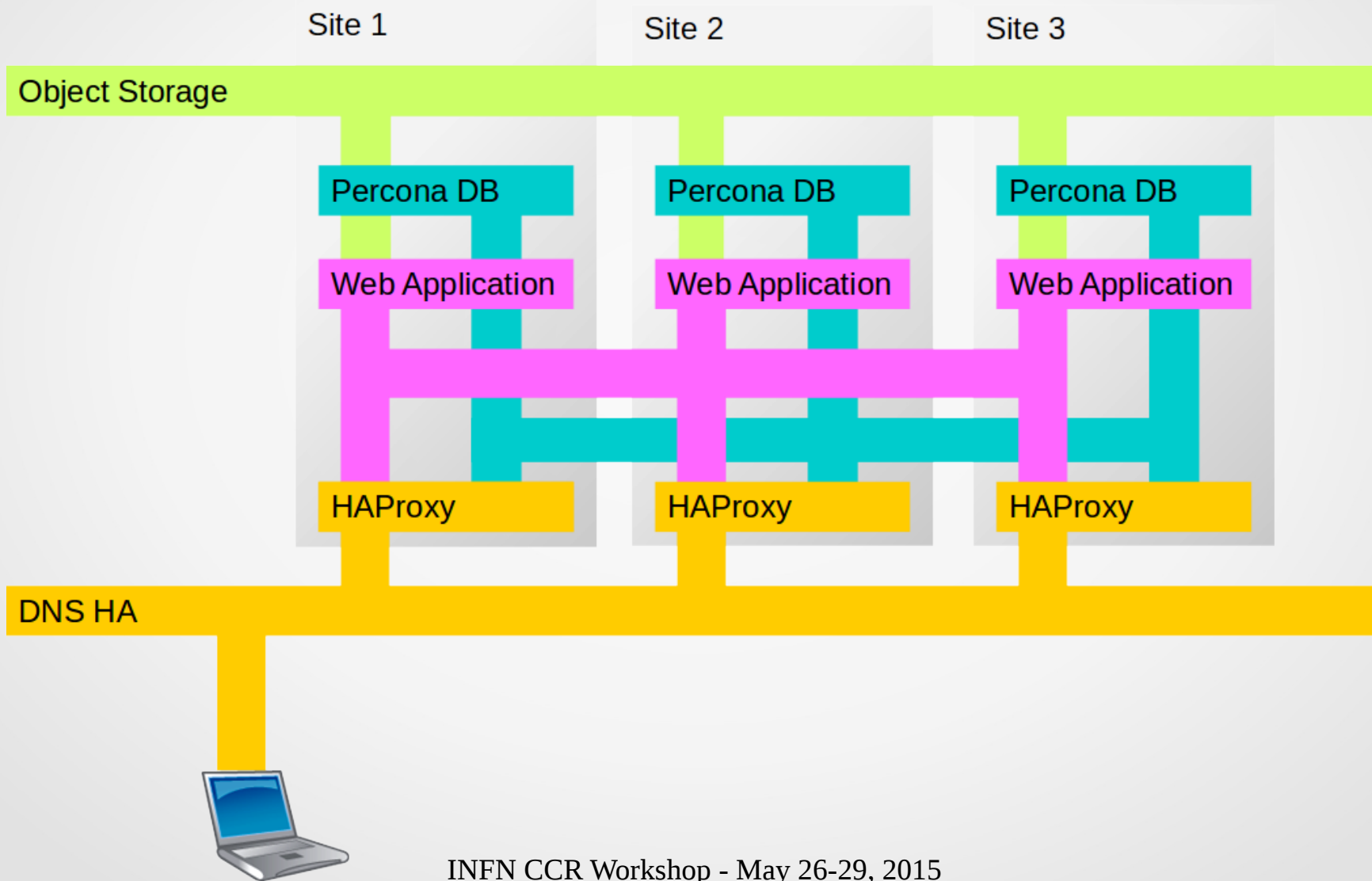
Architecture



Use cases

- The architecture of INFN-CC is particularly fit for a wide range of use cases where a strict relation exists between resources that are distributed over different sites.
- Most of these use cases are related to the **delivery of computing services for the INFN community**, be they of local interest for users belonging to a single INFN site or of general interest for the whole community.
- This does not mean that scientific computing is unfit for the INFN-CC, but often scientific computing environments do not need the high availability features provided by INFN-CC and can take advantage of other cloud deployments.

Use cases



Highlights

- Common, **distributed Identity Service backed by the INFN AAI LDAP**. A stricter interaction with the AAI staff is needed.
- Common, **distributed Swift Object storage** for
 - VM image/snapshot repository
 - Block device backup
 - Personal data
 - ...
- Common, **distributed Image Service** backed by the above Object Storage
- **DNS HA** + cloud.infn.it DNS domain

We are working on...

- Third site up and running
- Log collection and analysis
- Infrastructure automation
- Infrastructure management
- Infrastructure monitoring (nagios → zabbix)
- Deployment of use cases

Roadmap

The goal of the INFN-CC working group is to have a working and functional prototype by **September 2015**, possibly giving access to the first testers by **June 2015**.

A fully production-level infrastructure might be ready in **2016**, provided adequate human and financial resources will be available.

Conclusions

- We still have a **LOT OF WORK** to do and we need your contribution.
- We look for a few persons/groups interested in having a tenant set up and try the system.
- How do we relate to the other Cloud projects in INFN?
How do we make interaction and information exchange systematic rather than incidental?