

Cloud activities @ INFN-Bari

//////////////////////////////////// Alessandro Italiano - Workshop di CCR sull'Infrastruttura Cloud - Napoli, 12/2014 //////////////////////////////////////

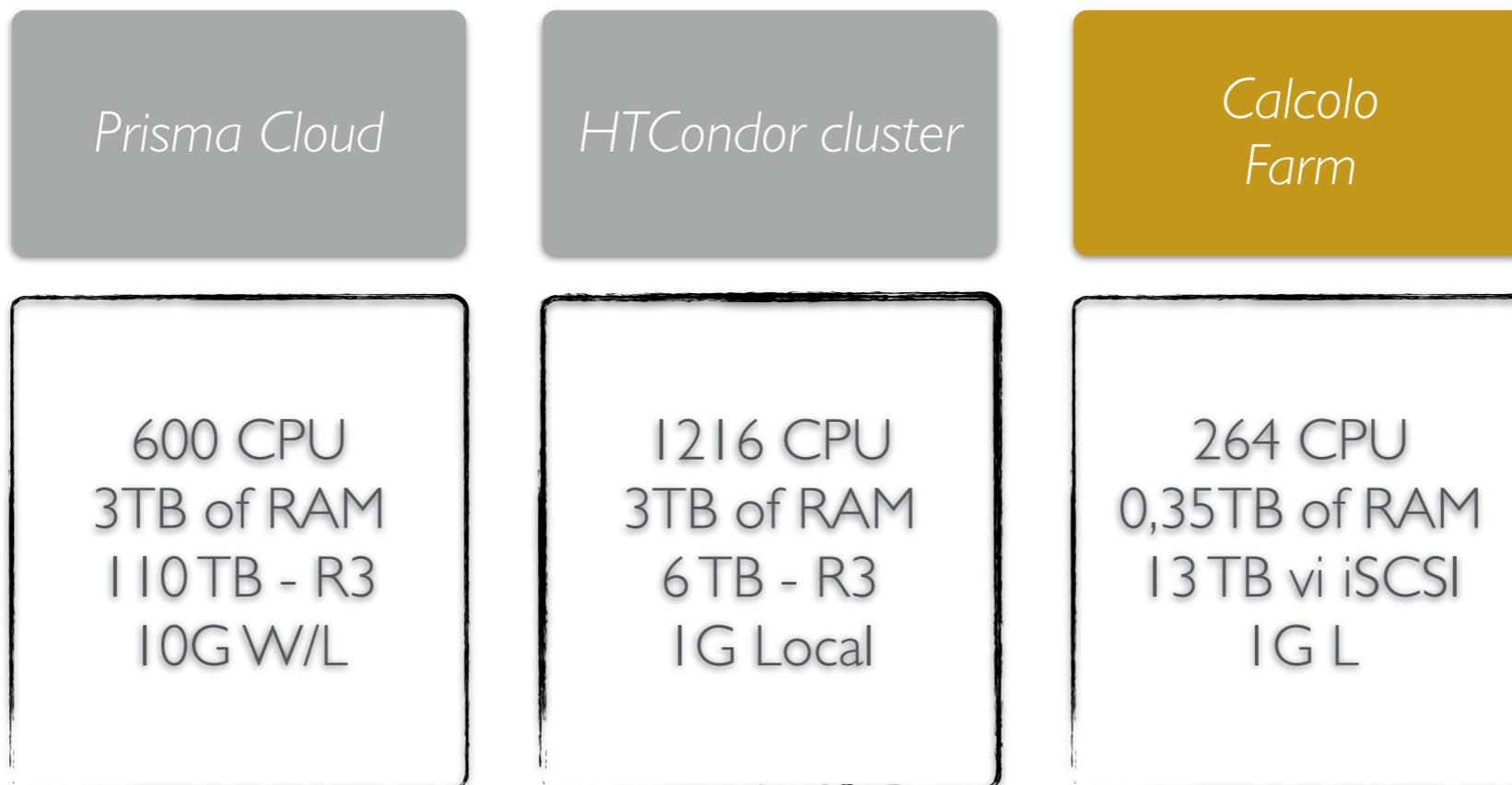
People involved

- Marica Antonacci*
- Stefano Nicotri*
- Roberto Valentini*
- Vincenzo Spinoso*
- Domenico Diacono*
- Giacinto Donvito*
- Alessandro Italiano*

Cloud layer

- *OpenStack* [*production*]
 - *PRISMA cloud*
 - *HTCondor cluster*
- *PROXMOX* [*production*]
 - *General purpose services*
- *CloudStack* [*tested*]
 - *Evaluated for PRISMA*
- *OVirt* [*tested*]
 - *Evaluated as alternative for PROXMOX*

Cloud, underlying hardware



PRISMA cloud activities

PRISMA cloud activities

The screenshot displays the PRISMA cloud monitoring dashboard. The main content area is titled 'Overview Usage Summary' and includes a date range selector (From: 2014-12- To: 2014-12-) and a 'Summary' button. Below this, it shows 'Active Instances: 208 Active RAM: 178 This Period's VCPU-Hours: 166.79 This Period's GB-Hours: 5057.80'. A 'Download CSV Summary' button is also present.

Project Name	VCPU	Disk	RAM	VCPU Hours	Disk GB Hours
dnac_torque	24	120	48GB	24.36	574.45
60i_ape	1	40	4GB	6.87	117.47
mem-test	3	60	6GB	16.24	487.22
gammuzi	8	120	8GB	16.24	874.45
DeTool	53	230	84GB	56.54	1967.89
Revy	12	120	24GB	49.80	874.45
ORCHESTRATOR	30	280	60GB	37.44	2354.91
prismanon	17	220	34GB	40.80	1786.48
sec	3	70	4GB	24.36	555.43
casarion	8	80	16GB	16.24	649.83
OCP_3	2	40	3GB	16.24	324.82
60i_FCI	70	310	136GB	243.81	5765.47
cloudy-test	2	20	4GB	8.12	152.41
mediona	16	20	20GB	8.12	162.41
External-Infomatio	148	530	384GB	146.17	4303.80
serviz_importati	3	30	4GB	16.24	243.81
TestAlenti	8	120	16GB	24.36	874.45
EUCENTER	12	240	24GB	24.36	1968.89
monitoring	10	100	16GB	32.48	812.04
dnac_test	6	60	12GB	24.36	487.22
DeMedical	16	10	16GB	8.12	81.20
manavli	4	100	8GB	16.24	812.04
TestMasuli	4	20	8GB	8.12	152.41
PRISMA-PRISMA	37	330	76GB	44.86	1967.89
VIP	3	60	6GB	24.36	487.22
swema-workshop	12	120	24GB	49.72	874.45
test-ha	13	70	25GB	32.48	555.43
QUARANTINE	3	40	4GB	16.24	324.82
PrismaDemo	10	60	34GB	32.48	487.22
IPPOCRATI	16	200	136GB	32.48	1624.08
OCP_2	49	370	97GB	89.32	3004.54
60i_ahm	6	60	6GB	8.12	487.22
admin	58	280	112GB	89.32	2273.71
test-backup	6	40	8GB	16.24	324.82
PRISMA_DEV	14	160	20GB	32.48	1299.26
Prismatemo	10	110	16GB	24.36	1380.47
steph	3	60	6GB	16.24	408.02
manafomaggi	4	10	8GB	8.12	81.20
test-ha2	6	40	12GB	16.24	324.82

PRISMA cloud activities

Project Name	VCPUs
dirac_torque	24
EGI_ops	0
mon-test	2
giannuzzi	8
BioTool	53
Reply	13
ORCHESTRATOR	39
prismamon	17
sec	3
classroom	8
OCP_3	2
PrismaInterno	10
cloudify-test	2
medicina	16
Dottorandi-Informatica	148
servizi_importanti	3
TestValentini	32
EUCENTER	12
monitoring	10
dirac_test	6
BioMedical	16
masterDi	4
TestMarzulli	4
PAAS-PRISMA	37
VAF	3

PhD students
can requests computing
resource.

Project Name	VCPUs
taverna-workshop	12
test-ha	13
	2
	12
	16
	57
	4
admin	58
test-backup	2
PRISMA_DEV	14
EGI_FCTF	68
aleph	3
marcellomaggi	4
test-heat	5
AlexisCorso	16
condor-test	4
sismic	20
amiderha	8
PRISMA-BARI-Services	52
NetworkAnalysis	22
BioInf	16
uniba_matematica	4
Dirac	22
latraccla	8
BioVel	32

EGI Federated Cloud
Task Force

PRISMA cloud activities

- BioVel:

- Biovel Portal: it is a browser-based interface that contains everything necessary to run users' workflow without user having to install anything on their own computer.
- Biovel OpenRefine: it is a powerful tool for working with messy data, cleaning it, transforming it from one format into another, extending it with web services, and linking it to databases.
- BioSTIF: it is a web map application designed for the interactive visualisation of spatio-temporal data.

- Drihm:

- Run Hydrology and Hydraulic models on the cloud
- This VO use windows VM contextualised with cloudbase

- DCH-RP: Long term preservation in the cloud.

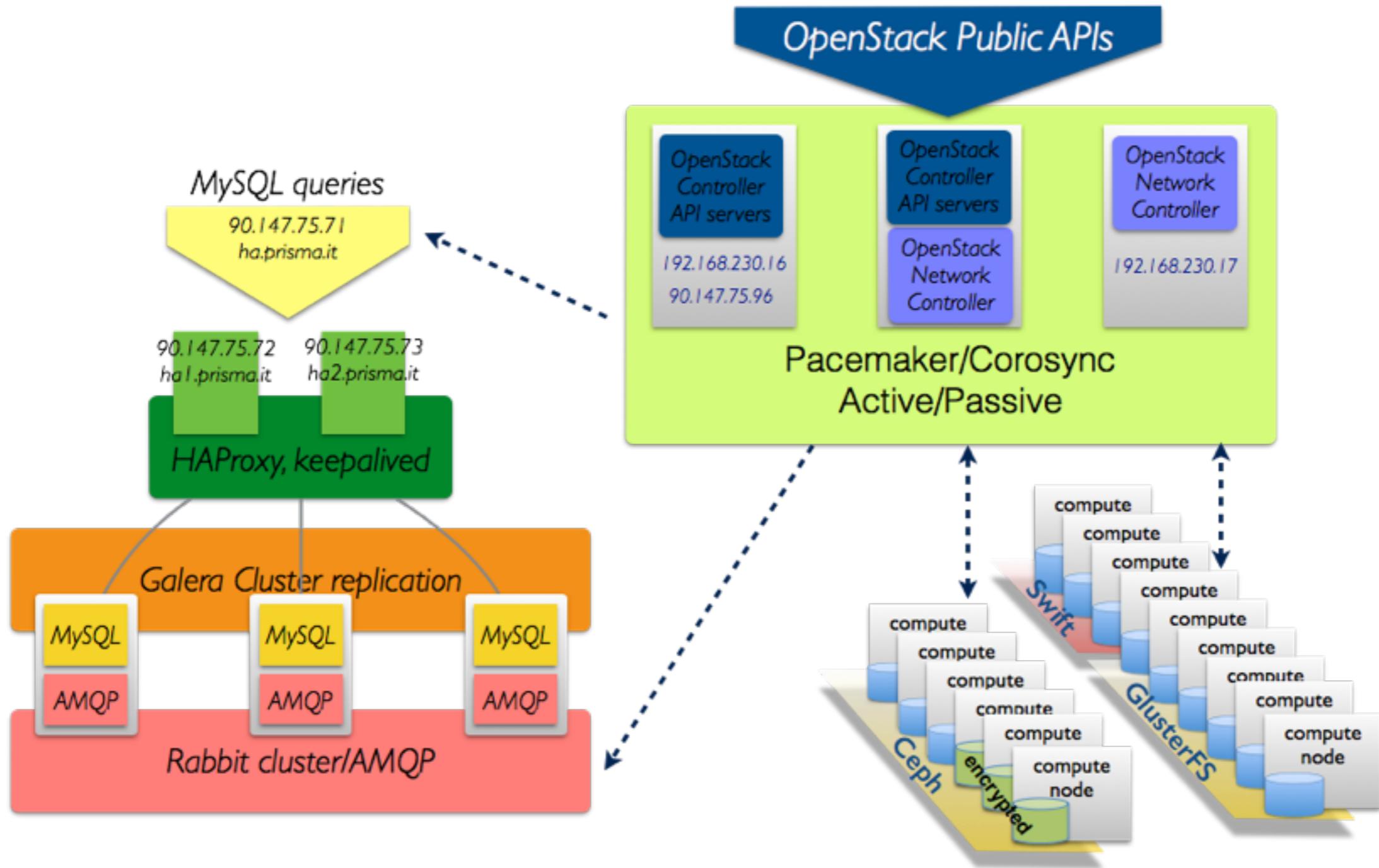
- Sul nostro sito abbiamo un'istanza della HAPPI VM:
- SCIDIP-ES HAPPI supports the archive manager and curator to capture and manage part of the Preservation Descriptive Information (PDI).

- CERN PoC: Run jobs on the EGI FedCloud through Vac/VCycle

- Chipster/Elixir:

- VM Chipster: a user-friendly analysis software for high-throughput data. It contains over 300 analysis tools for next generation sequencing (NGS), microarray, proteomics and sequence data

PRISMA Cloud consolidation



PRISMA cloud features

- Network
 - GRE and FLAT network
 - All endpoint use a secure connections
 - Keystone v3 in production. Support for domain
- Storage
 - CEPH as Cinder backend
 - SWIFT standard deployment, used mainly for image backup
- Resource allocation
 - Quality of Service using HostAggregation with different overbooking policies
- Orchestration
 - Gained experience with HEAT and Puppet. Not yet a full integration with Ceilometer

Multi-Region activities

- *Bari è una delle tre sedi (insieme a LNGS e PD) che è stata coinvolta fin dall'inizio nella sperimentazione del set-up di una cloud multi-region*
- *Le attività svolte e in corso:*
 - *installazione e configurazione dei vari componenti*
 - *debugging e troubleshooting*
 - *manutenzione (aggiornamenti, applicazione di patch, etc.)*
 - *supporto per l'integrazione delle nuove regioni*
 - *definizione di un'architettura di monitoring basata su Zabbix*
- *I test in corso a Bari:*
 - *set-up di keystone per abilitare le API V3 che consentono in particolare l'utilizzo dei domain (in Icehouse non è possibile far coesistere gli endpoint V2 e V3)*
 - *realizzazione di un repository centralizzato per le immagini virtuali (PoC)*

Multi-Region deployment

- Keystone server + mysql (nodo del cluster Galera)
 - contribuisce all'implementazione dell'identity service distribuito geograficamente (BA,LNGS,PD)
- HAProxy (load balancer dei keystone server distribuiti) - con IP inserito in DNS HA
- Swift proxy + storage nodes (release Juno)
 - contribuisce all'implementazione dell'object storage distribuito geograficamente (BA,LNGS,PD)
- Istanza di Zabbix per il monitoraggio dei servizi delle varie sedi
- Openstack region "bari":
 - 2 host fisici: 1 controller+network node; 1 compute node
 - servizi abilitati:
 - Neutron: configurazione GRE - plugin ovs, VPNaaS, LBaaS
 - Glance. Default backend: swift distribuito
 - Cinder. cinder-volume e cinder-backup con driver RBD
 - Nova. Istanze su cephFS
 - Heat.
 - Dashboard (Horizon): <http://bari-region-ctl.ba.infn.it/horizon>

HTCondor cluster

- We have exploited OpenStack in order to deploy a HTCondor cluster
- OpenStack infrastructure completely deployed and managed by Puppet
- Controller[All-In-One], Swift cluster, Compute Nodes
- Puppet config under version control
- Condor cluster | 6K slots with 0,7K VM managed by Puppet
- We have planed to test swift as storage backend for batch jobs

General purpose cloud features

- General purpose services have been deployed using PROXMOX
 - PROXMOX main features:
 - KVM/Container, CentralManagement, Backup/Restore, VM HA, Network, Storage
 - Running services:
 - IMAP, SMTP, DNS, LDAP, KERBEROS, RADIUS, ZABBIX, DCC, AFS, OwnCloud, OpenVPN, DHCP, WebServers and several user VMs
- Storage high availability
 - each Storage device has a target iSCSI on two networks
 - two 10GB switches provide connectivity
 - each PROXMOX HV is connected with both switches
 - multipaths-tools provides storage failover