GRNET Usage Report

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- GRNET NOC
- GanetiCon 2015

GRNET NOC

- Servers Team (9 members)
- Focus on Servers and Services

- Infrastructure for services that GRNET provides
- Support internal services
- Virtualization

Ganeti

- ViMa (https://vima.grnet.gr/)
  - Vanilla Ganeti
  - Django-based WebUI (ganetimgr)
  - 7 (11 really) clusters with ~1500 VMs
- Okeanos (https://okeanos.grnet.gr/)
  - Patched Ganeti running under synnefo
  - Cloud stack on top of Ganeti (still Django based)
  - 13 clusters with ~6500 VMs

ViMa: Virtual Machines

- Infrastructure support for academic institutions
- Used mainly by NOC personnel and academic researchers

- Like a VPS host, without the billing part
- Instance approval is done manually and hardware allocation is done based on needs

ViMa (Ganeti)

- Ganetiver 2.9.2 → 2.12.4 (very recently)
- Different disk templates per cluster / use case
  - DRBD,sharedfile, blockdev, (some plains)
- Mostly Routed networks (using arp-proxy and proxy-nd
  - Some bridged networks for private vlan communication and L2VPNs
- Extensive nodegroup usage

ViMa Clusters

- Bladeserver with blockdev type VMs using FC LUNS from a NetApp appliance
- 2 clusters (45 nodes) with sharedfile VMs using NFS from an EMC appliance
- 2 clusters (20 nodes) with DRBD
  - 6 nodes with SoftwareRAID
  - 4 nodes have multiple VGs to account for different disk types (SSD,SATA,SAS)
- Lots of smaller clusters for internal use

Ganetimgr (ViMa UI)

- Django based projects that leverages Ganeti RAPI
- Stateless Architecture (no VM info in DB)
- Ganeti Tags for User/VM association
- Redis backend as a cache for getting fresh data

Features

- Boot from CDROM
- WebSocket VNC console
- VM actions all done through the UI (no migration/failover)
- Instance lockdown + Network Isolationx (for security incidents)
- Upcoming: Django1.7/Jessie support, along with some code restructuring and UI update

Okeanos

- IaaS Service for the academic community
- Shibboleth Login = Students,professors,etc...

- Resources are managed with Quotas and Projects
- Hit some hardware limits due to demand, so we had to scale down the service

Okeanos (Ganeti)

- Build with Synnefo
- 12 clusters x 13 nodes each
- Ganetiver 2.10 with some custom patches
- Master(s) are non_vmcapable vms
- Seperate management cluster for synnefo and mcs
- Routed networks (w/t ProxyARP/ProxyND)
- MAC-filtered private networks (performance issues)
- Disk templates: DRBD and Archipelago (ExtStorage provider for Rados)

Ganeti Nodes

- Everything runs on Debian (still on Wheezy)
- Provisioned with FAI (base OS and disk config)
- Configuration managed with Puppet
- Different module for ViMa and Okeanos
  - Base ganeti module
- Monitoring Tools (Icinga/check_mk,Munin,ganglia,ELK)
- Custom collectd plugin to graph vm CPU and Net usage
- Ferm-based firewall that locks down the cluster

Projects

- Synnefo (https://www.synnefo.org/docs/)
  - Live Demo (https://demo.synnefo.org)
- Ganetimgr (https://github.com/grnet/ganetimgr)
- Nfdhcpd (https://github.com/grnet/snf-nfdhcpd)
- Clustertool (https://github.com/rowanthorpe/clustertool)
- Snf-Image (https://github.com/grnet/snf-image)

Closing

- We really like Ganeti :)
- Things we'd like to see in Ganeti:
  - Hooks for more actions
  - Better nodegroup allocation
  - Better logging
  - Better testing for non-DRBD setups
- TODO:
  - Implement actual OpenvSwitch support in Ganeti (openflow controller alongside Ganeti)
  - Instance allocation influenced by hardware node load
- For questions and feedback, you can find me at alexk@noc.grnet.gr