INTRODUCING THE SYNNEFO OPEN SOURCE IAAS PLATFORM. VANGELIS KOUKIS TECHNICAL LEAD, ~OKEANOS
Motivation: ~okeanos

Goals

- Everything open source
- Production-quality IaaS
- Persistent VMs
- Commodity hardware – No SAN
- Large-scale Installations
- Super-simple UI

How?
# Cluster vs Cloud

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Google Ganeti

Mature, production-ready VM cluster management
- used in Google’s corporate infrastructure

Multiple storage backends out of the box
- DRBD, LVM, Files on local or shared directory, RBD (Ceph/RADOS)

External Storage Interface for SAN/NAS support

Ganeti cluster = masterd on master, noded on nodes

Easy to integrate into existing infrastructure
- Remote API over HTTP, pre/post hooks for every action!
Thin Compute layer over Ganeti
- Python/Django
- Supports *multiple* Ganeti clusters, for scaling
- OpenStack Compute API

Networking
- No restrictions on deployment – it’s the *Ganeti* side
- IPv4/IPv6 public networks, complete isolation among VMs
- Thousands of private networks, private L2 segments over single VLAN
Cyclades
Storage: Pithos

Every file is a collection of blocks
Content-based addressing for blocks
Partial file transfers, deduplication, efficient syncing
Independent of storage backend (NFS, RADOS, ...)
OpenStack Object Storage API plus extensions
An integral part of Synnefo
  - Single store for Files, VM Images
  - Uses common backend with Archipelago
Pithos
Clone

Snapshot

Ubuntu + user data
golden Debian
Volumes: Archipelago

Unified storage for Files, Images ↔ Volumes
Thin layer over the actual storage cluster
Storage backend agnostic
- NFS, RADOS, ...
Efficient syncing / sharing of Images as files on Pithos
Zero-copy cloning of volumes from Images
Archipelago

SYNNEFO

CYCLADES

PITHOS

CLOUD

GANETI CLUSTER

GANETI CLUSTER

GANETI CLUSTER

CLUSTER

ADMIN

USER

ARCHIPELAGO

ARCHIPELAGO

RADOS

FOSDEM 2013
vkoukis@grnet.gr
Current production ~okeanos

Rolling hardware and software upgrades
- Node evacuations with live VM migrations
- Cross-datacenter move, Intel → AMD, no VM downtime
- IP renumbering of all VMs

> 2600 VMs, > 1800 users
Ready to scale in beta
- 7 Ganeti clusters currently, move to > 10.000 VMs
Try it out!

http://www.synnefo.org
http://www.okeanos.io