

# Cloud Computing - overview

## Network Startup Resource Center



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# Main types of "cloud"

- Traditional physical server rental
  - "Metal as a Service" (MaaS)
- Virtual machine rental
  - "Infrastructure as a Service" (IaaS), e.g. EC2
- Software runtime environments
  - "Platform as a Service" (PaaS), e.g. App Engine
- Managed Applications
  - "Software as a Service" (SaaS), e.g. Basecamp

# What distinguishes IaaS from just "virtualization"?

- Self-service
  - Users create, manage and destroy their own VMs and storage
- Multi-tenant
  - Multiple users on the same infrastructure, but isolated from each other
- Resource accounting
  - Feeds into billing

# Demo of IaaS (user's view)

# Open Source IaaS cloud options

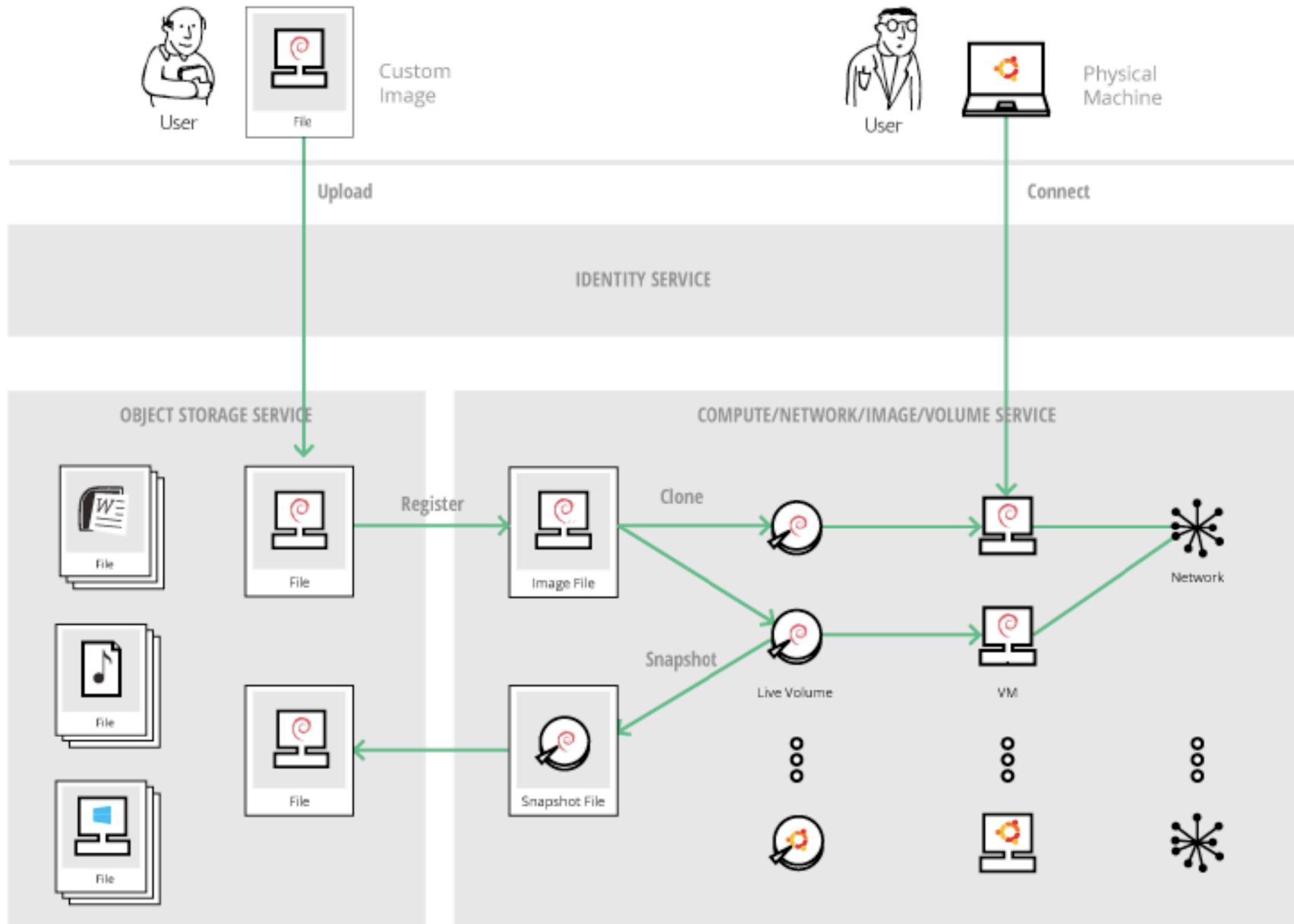
- Eucalyptus
- Openstack (*Rackspace/NASA*)
- Cloudstack (*Apache*)
- Big, monolithic stacks!
  - Difficult to understand and manage
- Driving people to write their own stacks
  - e.g. [blog.bytemark.co.uk/wp-content/uploads/2012/12/DesignAndImplementationOfBigV.pdf](http://blog.bytemark.co.uk/wp-content/uploads/2012/12/DesignAndImplementationOfBigV.pdf)

# Lightweight options

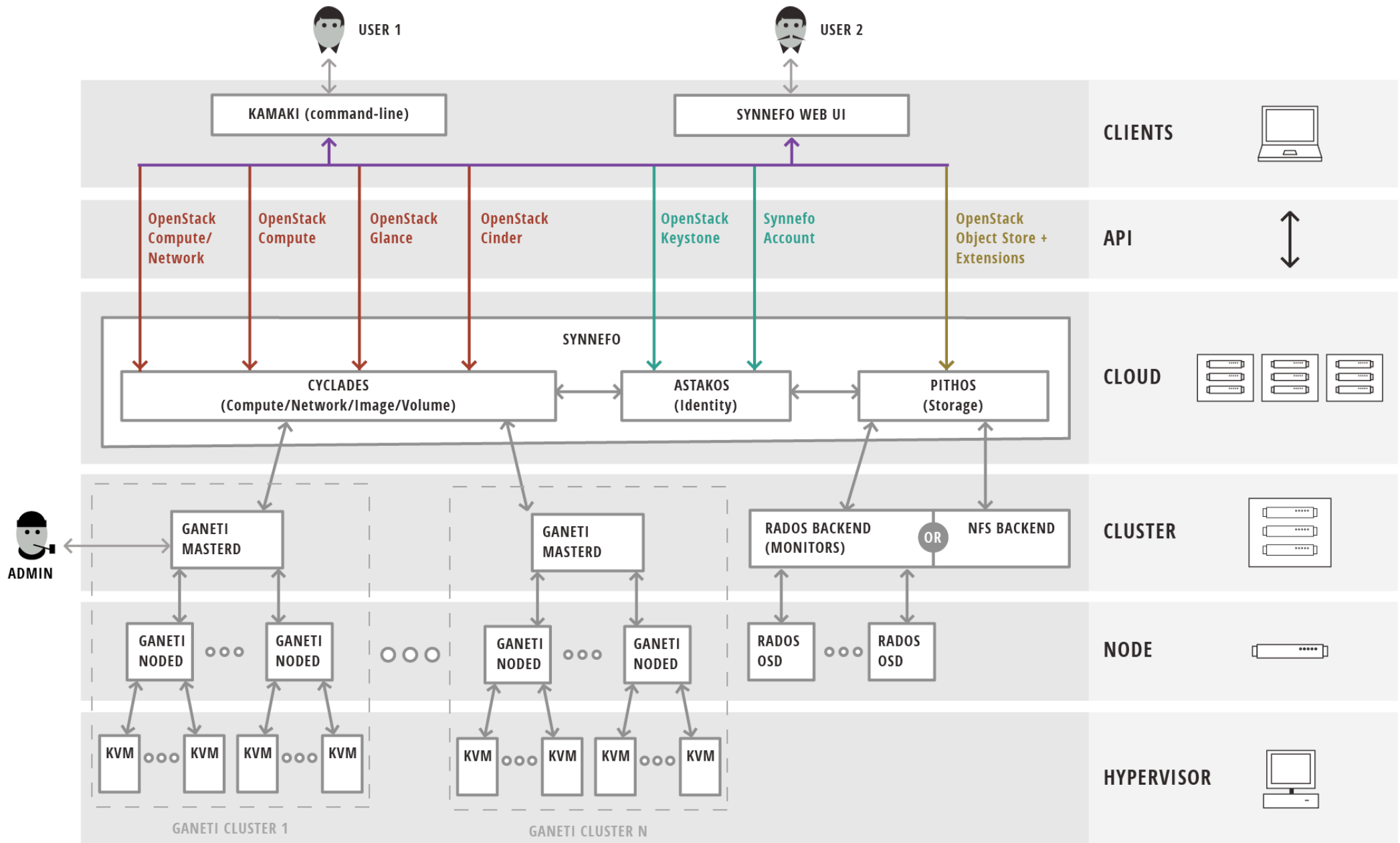
- Ganeti + ganetimgr (*as used at ViMa*)
  - Basic provisioning of VMs via web tickets
  - Thin front-end to Ganeti cluster RAPI
  - Ideal for university-type environment
- Synnefo
  - A full cloud system on top of one or more Ganeti clusters

# Synnefo components

- "Cyclades": compute, network, image, volume
  - Uses Ganeti as backend
- "Pithos": file and object storage
  - Uses Ceph (radosgw) or NFS storage
- "Astakos": identity and account services
- Provides web interface and OpenStack APIs







# Synnefo On-line Demo

- [www.synnefo.org](http://www.synnefo.org)
  - Click "TRY IT OUT"
  - Log in with your Google/Twitter account
  - Create a VM!
  - Click the console icon for access details
- Demo "live CD" also available
  - Instant single-node cluster
  - Not intended for production use