OpenCloud: A Unified Service Framework

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The Cloud is about services

Can we create a similar ecosystem of research services?
OpenCloud’s goals

- Build and operate a “meta-Cloud”
  - Support long-running services
  - Integrate with commodity clouds (e.g., EC2), research clouds (NSF Cloud), testbeds (GENI, PlanetLab)
  - Spans data centers, network PoPs, edge sites
- With a unifying architecture
  - Designed around composable services
  - Key principle: XaaS - Everything as a Service
- Leveraging open-source software
  - XOS, OpenStack, OpenVirteX
Software architecture

OpenCloud Management System

XOS

SaaS

CaaS (Nova)

NaaS (Neutron)

IDaaS (Keystone)

PaaS

OpenVirteX

OvS

Libvirt

Node

OvS

Libvirt

Node
The meta-cloud

OpenCloud XOS

Amazon AWS

Google Cloud Platform

Commodity Clouds

Data Centers (NSF Cloud)

Internet2 PoPs

Edge sites

End users

Nintendo Wii

VM

VM

VM

VM

VM

VM

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VM

VM
Desired NSFCloud capabilities

* We want *long-term resources*
  * Clusters of bare metal servers at multiple sites
  * Programmable OF inter-cluster networks
  * Dependable BW between clusters
* We hope to *grow the clusters and BW over time*
  * Can start small (~10 servers per site)
  * Expand when we see growth in our user base, services

http://www.opencloud.us