PA200 - Cloud Providers

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Recap of Cloud Types

- More detailed in Cloud Service Deliver Models
- Datacenter Virtualization – oVirt
- IaaS – Infrastructure as a Service – OpenStack
- PaaS – Platform as a Servise - OpenShift
- SaaS – Software as a Service – Microsoft Dynamics CRM – mostly abandoned
- xPaaS – extended PaaS – integrates aPaaS (Application), iPaaS (Integration), dvPaaS (Data Virtualization), bpmPaaS (Business Process Management), mPaaS (Mobile)

Amazon

AWS

- Amazon Web Services
- Web service backend providing libraries for majority of modern web programming languages
- Provides also database access and storage
- Features mobile platform as well
- REST-style HTTP, SOAP

S3

- Simple Storage Service
- Provides API-driven Object storage
- Stored files are abstracted all the way to objects and are easy to represent in high-level programming languages
- REST-style HTTP, SOAP, BitTorrent

EC2

Google

Cloud Platform

- Rich platform exposing functionality over REST
- Primarily developed to support Google's core services (search, youtube, gmail)
- Later extended with the business needs driven by Android, its integration with services
- Nowadays featuring rich set of programming frameworks, hosting services and database engines

App Engine

- Web apps on Google's infrastructure (PaaS)
- Python, Java (JVM), Go, PHP, Node.js
- Easy deploy, monitoring, scaling
- Limited languages and tools (SQL vs. GQL)

Compute Engine

- IaaS
- Compute Engine Unit (GCEU) - abstraction of computation power
- at the backend kvm based

Storage

- IaaS for storage
- REST-like HTTP access
- compatible with Amazon S3

BigQuery

- web service (with REST-like interface)
- work with Storage
- SQL dialect, returns JSON
- can be integrated via HTTP (Spreadsheets)

Red Hat

- Provider of solutions that can serve either as a private or public cloud
- Also provider of PaaS/xPaaS solution (OpenShift)
- Involved in development of cloud-oriented apps ranging from Level 1 (kernel, KVM), through management software (OpenStack, oVirt) and PaaS up to application level (Jboss Enterprise Application Platform, Data Virtualization, etc.)

oVirt

- open source upstream for Red Hat Virtualization
- can manage networks, CPUs, storages
- with VM it can do live migration, live snapshots
- integrate with many open source projects (OpenStack, Foreman, ManageIQ, . . .)

oVirt Engine

- Java (GWT, WildFly)
- REST-style HTTP API
- can integrate with LDAP or AD

oVirt Node

- RHEL, CentOS, Fedora or Debian with KVM
- VDSM (Python daemon) manages resources and VMs
- gets commands from Engine and reports back to it

OpenStack

- open source platform for cloud computing (mainly IaaS)
- written in Python
- each Project aims to solve one part of cloud computing needs
- pluggable w/r/t backends and between Projects

Identity (Keystone)

- central user management and authentication service
- can use directory service backend (LDAP)

Compute (Nova)

- layer on top of hypervisor(s)
- manages compute resources - VMs and containers

Networking (Neutron)

- manages networks and IP addresses for VMs
- can use SDN technologies (OpenFlow)

OpenShift

- PaaS
- container based deployment and management
- Kubernetes with Docker images
- written in Go

Recap