A Best Practice Model for Cloud Middleware Systems

Ajith Ranabahu¹ and Michael Maximilien²
1.Kno.e.sis Center, Wright State University
2.IBM Almaden Research Center
Coming up..

- Cloud Middleware!
  - Why and How?
- Modeling Deployments
  - The “Best Practice” connection
- Lessons learned from TAP
Cloud Middleware ?
Fact:
Computing clouds are different and expose different Service interfaces for deployment and management
Cloud Middleware

- Abstractions over
  - Deployment Services
  - Management Services
- Altocumulus
  - The IBM Research Cloud Middleware!
Few Words about Altocumulus

- Focus on the user facing service interface!
- Abstractions over services for
  - Deployment
  - Some operational management
- Support for Amazon, Eucalyptus, Google, IBM HiPODS (IBM private IaaS software)
- Drop by our demo if you are interested :)
How do we model deployments in a cloud agnostic way?
Small Digression before we come to that ...

- Best practices?
  - Known good(working) patterns/processes
  - Avoids confusion
  - Supports reuse
Back to our discussion

- Model deployments after best practices!

- Design principles
  - Provide logical placeholders for different pieces of data.
  - Cater for different cloud paradigms
  - Balance between completeness and complexity
A Quick Glance at Components

Diagram:
- Best Practice
  - 1-to-1 relationship with Scaling Strategy
  - 1-to-1 relationship with Topology
- Topology
  - 1-to-1 relationship with Rule
  - 0-to-many relationship with Config Bundle
- Rule
  - 1-to-many relationship with Config Bundle
- Config Bundle
  - 1-to-many relationship with Configuration
- Instance Group
  - 1-to-many relationship with Topology
Cloud Best Practices

• Number of pre-made templates
  • Users can 'Instantiate' a template and fill in the blanks to customize it
  • Define what support components to install
• Possibility of migrating some systems across clouds (As Images/snapshots)
What we don't do..

- Make applications compatible!
  - We (Altocumulus) CANNOT make Google Appengine apps run in Amazon and vice versa.
Lessons Learned

• Deployed in IBM TAP
  • TAP – Technology Adoption Program
    – A portal for emerging technologies
• High interest across different groups
  • Storage
  • Database
  • Services
Lessons Learned (Cont..)

- Interest in Hybrid cloud deployments
  - Parts of the application running in different clouds
  - Some private and some public
- Interest in cloud agnostic applications
  - Ability to make applications without a consideration of the cloud
Questions ?
Thank you