A holistic Service Provisioning Solution for Federated Cloud Infrastructures

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Introduction

Cloud computing allows:

- Outsourcing the infrastructure to an external provider (IaaS)
- Constructing extensible service-based applications
- Utilizes the latest achievements of Grid Computing, Service-oriented computing, business-processes, and virtualization

Highly dynamic service environments require a novel infrastructure to handle on demand deployment and decommission of service instances.
Introduction

1. upload

Virtual Appliance

2. delivery

Repository

IaaS

3. deployment

Virtual Appliance

Support

Libs

Service + OS

Environment

VM

Instantiation

VA

VMM

Host

4. access

user
Introduction

cloud A

cloud B

cloud C
Federated Cloud Management (FCM)
Federated Cloud Management (FCM)

GENERIC META-BROKER SERVICE

cloud broker
(....)
cloud broker

cloud 1
cloud N

Repository
VA

SALMon
Monitors QoS of services
Federated Cloud Management (FCM)

- Top-level brokering
- Autonomously manage the interconnected cloud infrastructures
- Forms a federation with the help of Cloud Brokers

**GENERIC META-BROKER SERVICE**

- cloud broker → (…) → cloud broker
- cloud 1
- cloud N
- Repository
- VA
- SALMon
- Monitors QoS of services
Federated Cloud Management (FCM)

- Interacts with a single IaaS system
- Manages resources
- Schedules service calls

**GENERIC META-BROKER SERVICE**

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Federated Cloud Management (FCM)

- Manages VA distribution among the various cloud infrastructures
- Automated federation-wide repository content management
- Offers current VA availability and estimates its future deployment

**GENERIC META-BROKER SERVICE**

- Manages VA distribution among the various cloud infrastructures
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**SALMon**

- Monitors QoS of services

Cloud brokers are connected to a repository, which distributes VA among cloud infrastructures. The repository manages VA distribution, automated federation-wide repository content management, and offers current VA availability and estimates future deployment.
Monitoring the cloud

SBA to monitor the QoS

- Monitors the QoS of Services & cloud infrastructure
- Offers the results to select the most convenient cloud

- Availability
- Computing capability (CPU)
- Data transfer capability (bandwidth)
Conclusions

- We have designed a **Federated Cloud Management** solution that acts as an **entry point** to cloud federations
  - Meta-brokering, cloud brokering and on-demand service deployment
- Transparent service execution for the users by allowing the system to interconnect the various cloud broker solutions managed.
- We have *extended* FCM with *enhanced monitoring* capabilities with SALMon
Thank you for your attention!

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