

Challenges in Management, Security and Sustainability for Cloud Computing

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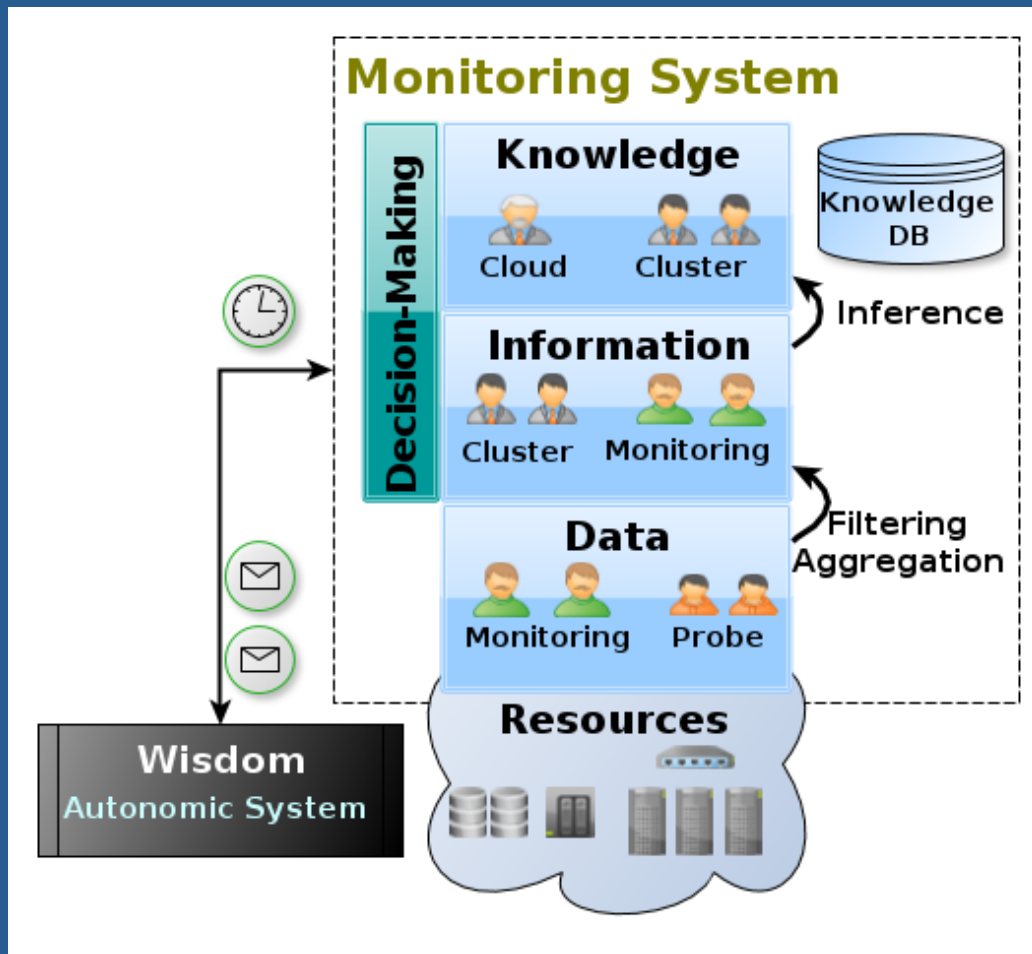
**Networks and Management Laboratory
Federal University of Santa Catarina**

1. Challenges in autonomic management for a cloud
2. Challenges in risk analysis for cloud computing
3. Challenges in risk-based access control for a cloud
4. Challenges in cloud application profiling
5. Challenges in sustainability for cloud computing

1. Challenges in autonomic management for a cloud

- Monitoring architecture devised for private Cloud, considering the information and knowledge requirements of autonomic systems.
- It focuses on providing data analytics capabilities to the monitoring system and emphasizes the following properties: scalability, resilience, adaptability, timeliness and extensibility.

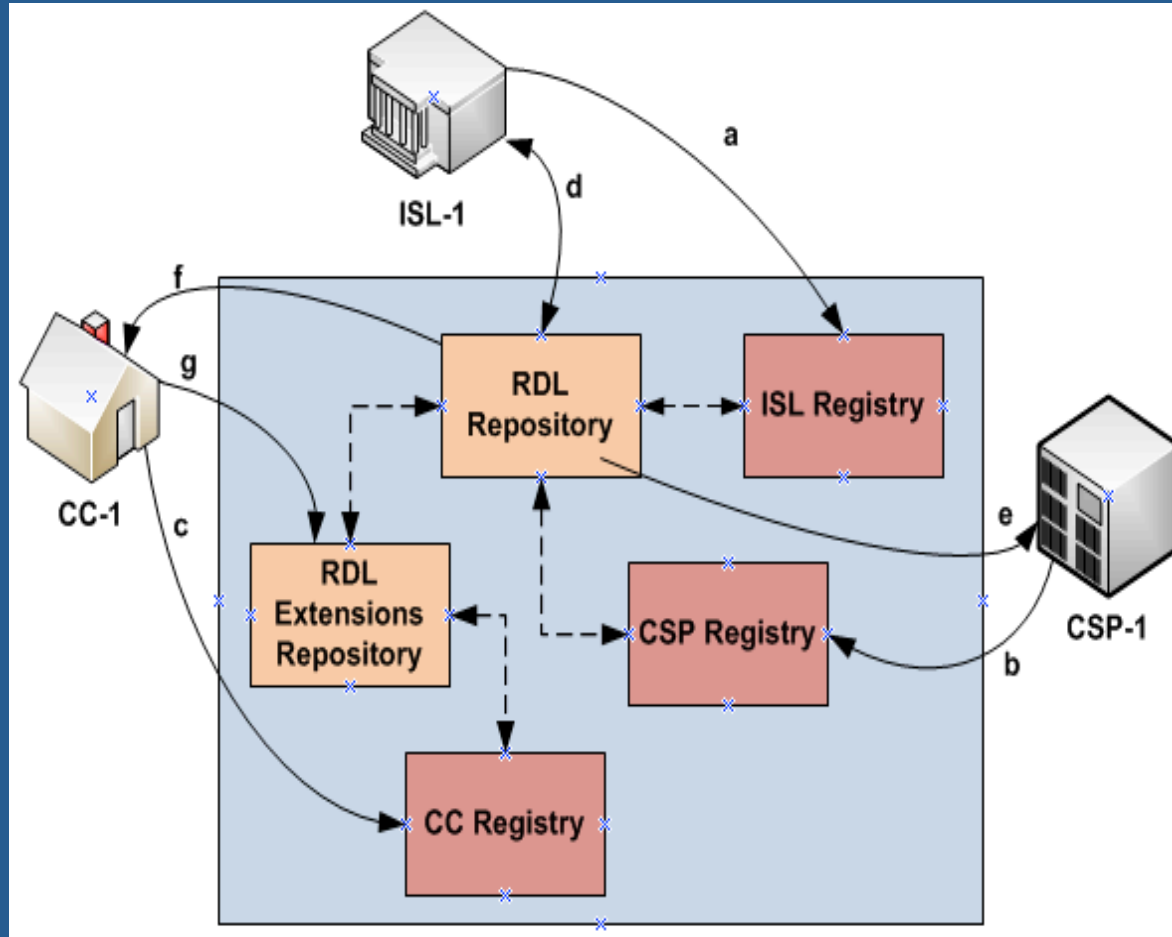
1. Challenges in autonomic management for a cloud



2. Challenges in risk analysis for cloud computing

- It proposes a model where the cloud consumer can perform risk analysis on providers before and after contracting the service.
- The proposed model establishes the responsibilities of three actors: Consumer, Provider and Security Labs.

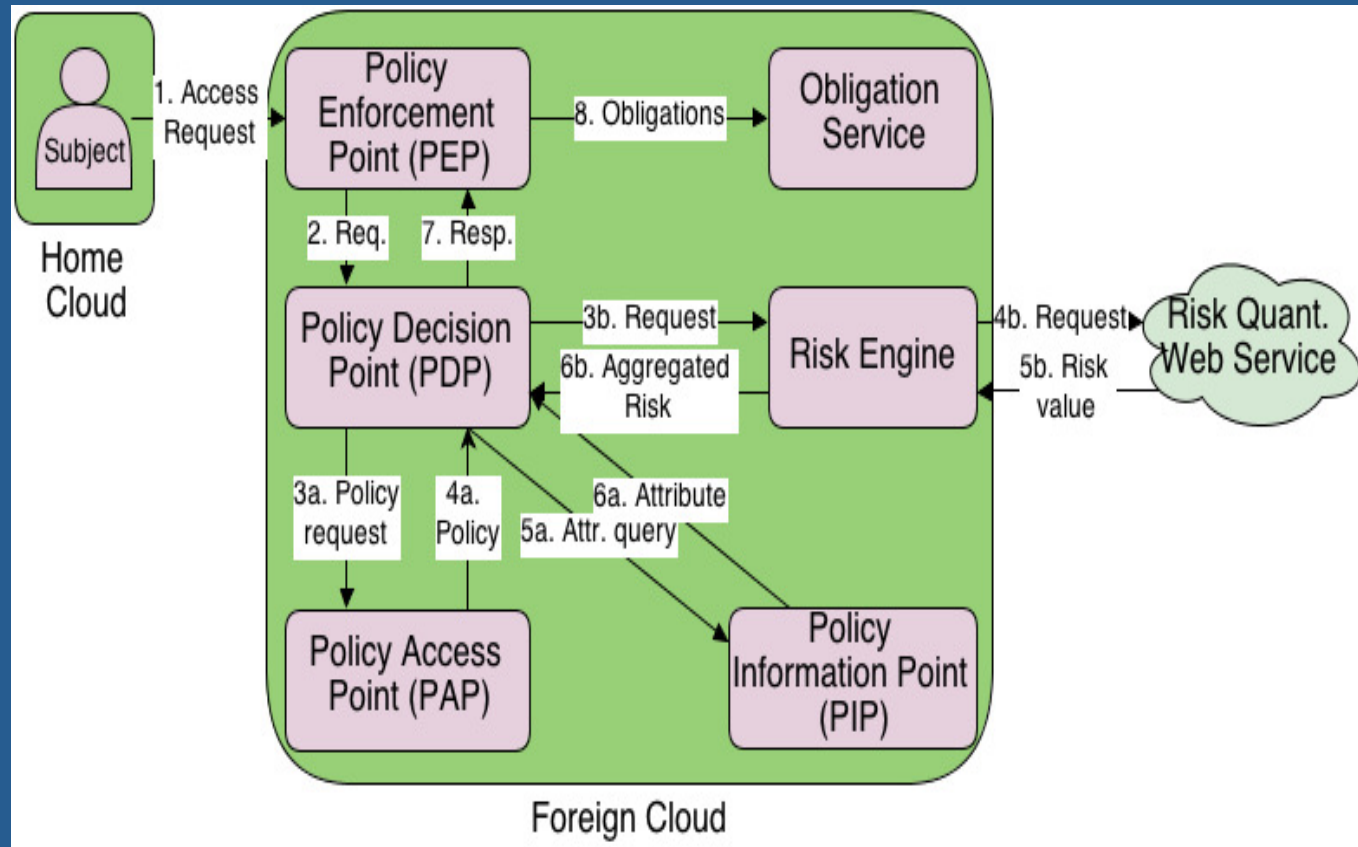
2. Challenges in risk analysis for cloud computing



3. Challenges in risk-based access control for a cloud

- One of the great challenges in the deployment of cloud federations is Identity and Access Management.
- It proposes an access control system for a highly scalable cloud federation.
- The presented system is dynamic and risk-based, allowing the use of cloud federations without the need of identity federations.

3. Challenges in risk-based access control for a cloud



4. Challenges in cloud application profiling

- There many models and tools that address the creation of an application profile to latte, then apply some predictive model to suggest the amount of resource for a workload.
- It presents a taxonomy for application profiling models and tools, presenting its main characteristics, challenges, describing and comparing such models and tool.

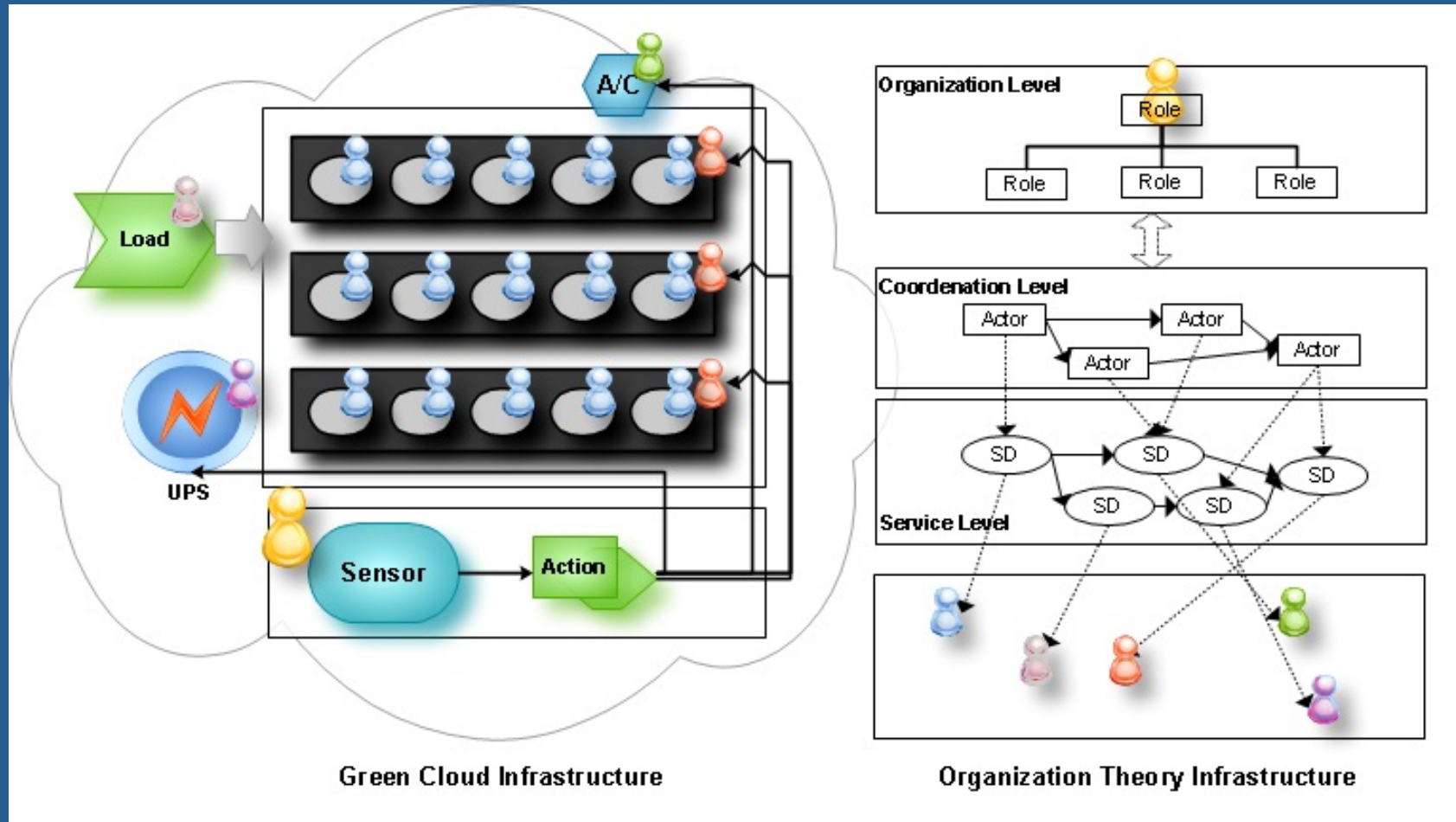
4. Challenges in cloud application profiling



5. Challenges in sustainability for cloud computing

- The aim of Green Cloud Computing is to achieve a balance between resource consumption and quality of service.
- It proposes two hybrid strategies based on a distributed system management model; it describes the base strategies, operation principles, it validates and analyzes them.

5. Challenges in sustainability for cloud computing



IAFIA ION 14

Panel on

Modern Approaches and Challenges in Networking

2/27/2014

“Robustness”

Andy Snow, PhD

School of Information & Telecommunication Systems

Ohio University

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What Do Users Demand From Network ?

• Ubiquity

- Services
- Geography

• Responsive

• Reliable

• Private/Secure

• Low Cost

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What Do Users Demand From Network ?

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 - Services ★ ★ ★ ★ ★
 - Geography ★ ★ ★ ★
- Responsive ★ ★ ★
- Reliable ★ ★ ★
- Private/Secure ★
- Low Cost ★ ★ ★ ★ ★

Will drive the future of the Internet



Privacy is Eroding

Government and Commercial interests are trumping individual privacy
Then, these interests collect information and store centrally

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Create large SPB (Single Points of Breach) that can be exploited by

- Big Data mining by the interests themselves for internal use and for sale
- Hackers/Crackers
- Thieves
- Terrorists
- Spies

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What Networks of the future will offer:

- A positive capability to improve humankind ????????????????
- A tool for slipping into totalitarianism ??????????????????

me Guesses

The movement from WWW to $\sum_{i=1}^m www_i$ where $i = \text{the } i^{\text{th}} \text{ } www \text{ Enclo}$

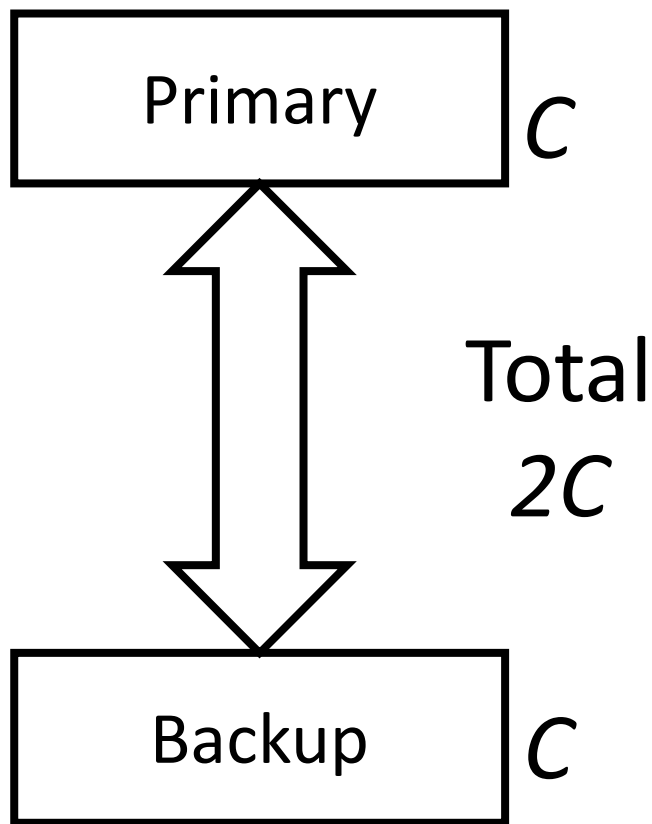
Virtual data centers will put more demands on networks from capacity, resiliency, and security perspectives

Software defined networks (SDN)

- Might SDNs make network service providers commodity providers?
- Who will own the network control plane
 - Network Service providers?
 - Users/Enterprises?

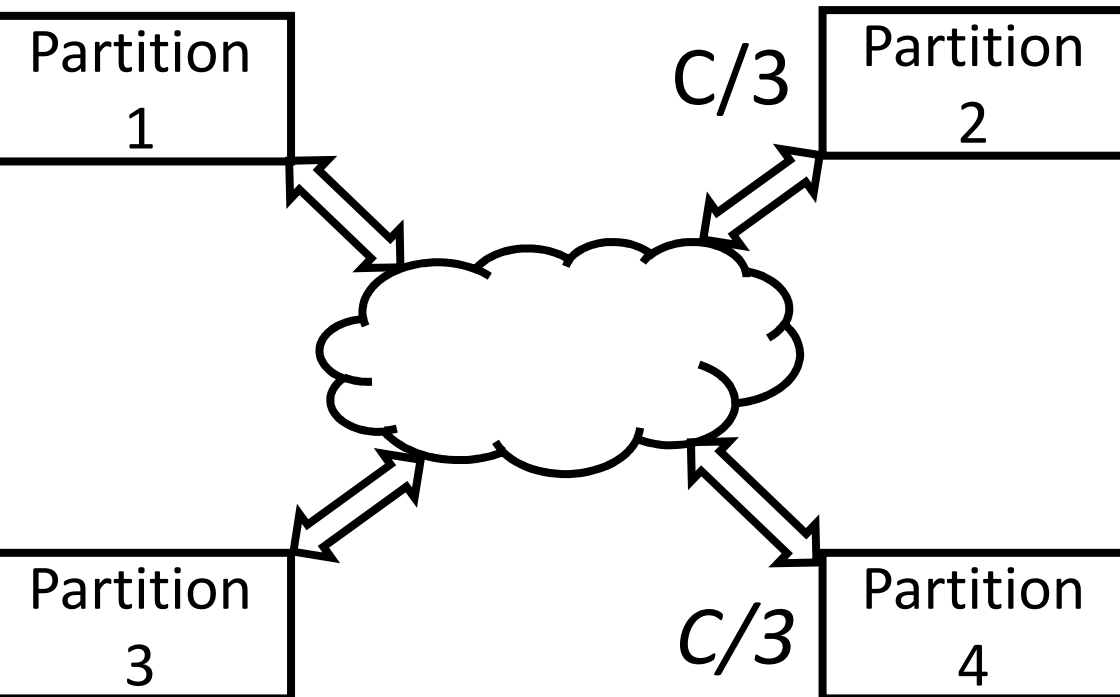
Movement from public to private clouds for business continuity and privacy/security

Data Centers: Business Continuity & Disaster Recovery Paradigms



- Capacity required is $2C$
- Only works if failures are independent
- Only works if switchover capability is perfect

Data Centers: Business Continuity & Disaster Recovery Paradigms



- Requires less capacity than primary-backup architecture
- Capacity required is less
$$C = 1/(N - 1)$$
- Only works if failures are independent
- If one data center partition fails still have 100% required capacity

D. Straub, R. Baskerville, C. Stucke, "The survivability principle: it-enabled dispersal of organizational capital", in Enterprise on Systems Assurance and System Security: Managerial and Technical Issues, Chapter 11, Idea Group Publishing, Hershey, PA