A Best-effort Mechanism for Service Deployment in Contributory Computer Systems

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Outline

- Introduction
- Architecture
- Mechanisms
  - Service creation
  - Service activation
- Validation
- Conclusions
Introduction

• Contributory computer system:
  – Users provide their own resources to be used collectively.
  – The use of the resources is determined by the functionality and objective of the specific contributory application.
Introduction
Contributory systems

- Main characteristics:
  - Unpredictable individual resource availability.
  - Heterogeneity.
  - Ease of use.
Service deployment as building block for contributory applications:

- Centralized components deployed as services can make applications easier to build.

Service:

- Always available in the community,
- Offers a functionality. E.g.:

  - Web server
  - Video conversor
System model
Mechanisms
Mechanisms
Mechanisms

Service Manager

Service Manager Replica

Storage Node

Worker node

Client
Service creation
Service activation
Service activation
Validation

- Implemented in DHT simulator PlanetSim.
  - Chord DHT.
- Centralized resource prospector.
- No specific resource requirements.
- Different configurations
  - Node availability: 30%, 50%, 80%
  - Community size: 100, 500, 1000, 5000 nodes
Validation

Mean length of availability intervals

Community size

- 30% node av.
- 50% node av.
- 80% node av.
Conclusions

- We have presented a best effort mechanism for service deployment.
- Offer good availability for services from multiple low-availability resources.

Future work:
- Test its performance with a variety of requirements and resources.
- Choose an scalable mechanism for resource discovery.
Thanks for your attention