A Resource Negotiation Infrastructure for Open, Distributed Systems

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Challenges

- **Open Distributed Systems:**
  - Heterogeneous resources (systems, services).
  - Heterogeneous access/usage policies.

- **Applications:**
  - Many and diverse.
  - Heterogeneous resource demands.

- **Challenges:**
  - Framework allowing applications to access distributed resources.
    - Specifying resource requirements & usage conditions in a uniform and standardized way.
    - Maintain application and system autonomy.
Approach (1)

- Resource Negotiation Infrastructure based on:
  - 2-Tiered document-based negotiation model.
  - Mediator provides aggregate view of resources.
  - Negotiation ensures autonomy of involved parties.
  - Documents describe details of resources and levels of service agreed upon.
Approach (2)

- Negotiation Language & Protocol:
  - Web Service Agreement specification (GGF)
Approach (3)

- Extension and implementation of WSA model
  - Negotiation on 2 levels (App/DC and DC/Provider)
  - *Acceptance* phase introduced
Application areas

• AgentScape resource negotiation (demo!)
  – Agents negotiate with multiple locations
  – Within location, location manager negotiates with individual host managers to fulfill agent request.
  – Agent selects best location with best offer, and migrates to location.

• Negotiation between and within agent applications.

• Negotiation within virtual organizations.