### Security Policy Management in Federated Systems

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#### THESIS DESCRIPTION

- Java Virtual Machine (JVM) security policy can be modified even by unauthenticated and unauthorized personnel in a federated metacomputing system.
- Managing policies stored on each JVM in the metacomputing system doesn't scale.
- Centralized policy management systems generate one-point failure.

*Centrally and securely managed policies but stored in multiple replicated providers are needed in metacomputing systems.*

#### OBJECTIVE/ APPROACH

**Objective**

- Service-oriented security policy methodology for centrally managed, scalable and distributed policy management in metacomputing systems.

**Approach**

- Define data structures and storage representation for centrally managed policies.
- Define policy management framework requirements.
- Define security requirements for authorized administrators.
- Develop the policy service provider (Policer).
- Develop the policy base synchronization service provider for replicated Policers (Synchronizer).
- Develop the policy management interfaces with enforced authentication, authorization and confidentiality.
- Validate the policy management methodology and framework using the SGrid environment.

#### SCHEDULE

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#### BENEFITS

- Uniform authentication and authorization for all service providers.
- Uniform access control for all service providers.
- Ease of updating and maintaining centrally managed policies.
- Consistency and integrity of policy information.
- Friendly user interface to create and update policies.
- Scalable policy management system.
- Self-healing policy management system.
- Autonomic policy management system.