



Distributed Multi-Architecture Complexes and Management Tooling for Linux

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Lawyer Food

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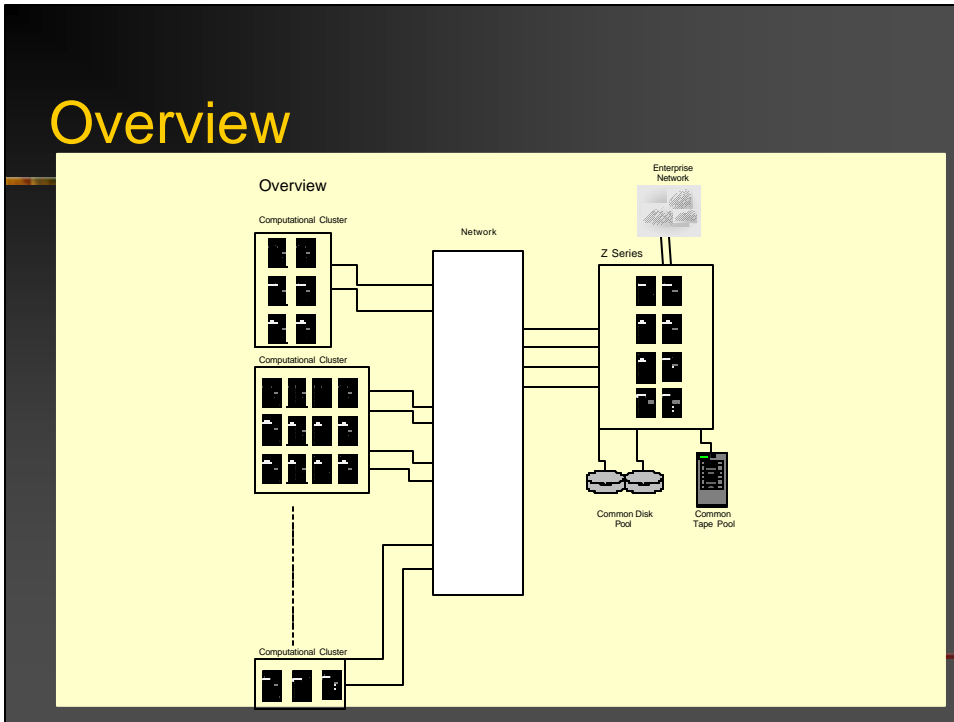
Topics

- Why Do This?
 - Construction and Employment of Distributed Resource Groups and Intra-Company Grids
 - Implications for Current Infrastructure
 - Management Function and Tooling
 - A Proposal for Multi-Architecture User Management Tools
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Why Do This?

- Building on top of the virtual server farm in a can idea, leverage other resources that are already present
 - Bridge application availability on platforms where vendor has not yet certified or ported.
 - Begin building architecture for “task fitting” and workload management across:
 - Internal assets
 - Commercially purchased assets
 - Cross-organization assets
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Overview



Tooling

- Elements from Grid
 - Globus 2.0 & 2.2
 - GRAM
 - MDS
 - GridFTP
 - GSS/MDS Integration
- Other Tools
 - Heimdal Kerberos
 - Enterprise file system
 - AFS
 - NFS v3/NIS (ugh!)

Globus Services

Resource
Mgmt

Info Svs
Mgmt

Data
Mgmt



Common Toolkit Services (GSI, etc)

Resource Management

- GRAM
 - Resource Specification Language
 - Resource Broker (Globus 2.2 and above)
 - Local AND Global Resource Allocator
 - Resource Coordinator API (DUROC)

Detail Descriptions:

http://www.globus.org/gram/rs1_spec1.htm

<http://www.globus.org/gram/>

<http://www.globus.org/duroc/frames.html>

Info Svc Mgmt

- MDS
 - MDS uses the LDAP protocol as a uniform means of querying system information from a rich variety of system components, and for optionally constructing a uniform namespace for resource information across a system that may involve many organizations.
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Data Mgmt Services

- Currently concentrated on data transfer and location
 - Area for significant investigation
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General System Services

- GSI (General Security Infrastructure)

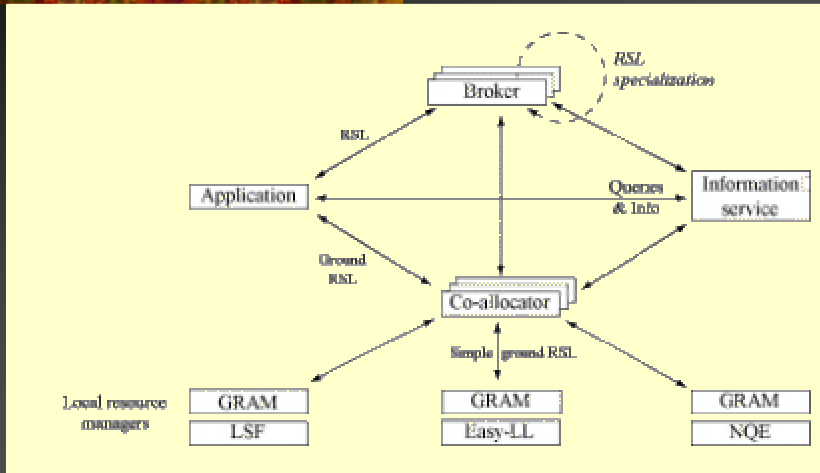
The primary motivations behind the GSI are:

- The need for secure communication (authenticated and perhaps confidential) between elements of a computational Grid.
 - The need to support security across organizational boundaries, thus prohibiting a centrally-managed security system.
 - The need to support "single sign-on" for users of the Grid, including delegation of credentials for computations that involve multiple resources and/or sites.
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GSI Implementation

- GSI is based on public key encryption, X.509 certificates, and the Secure Sockets Layer (SSL) communication protocol. Extensions to these standards have been added for single sign-on and delegation.
 - The Globus Toolkit's implementation of the GSI adheres to the Generic Security Service API (GSS-API) promoted by the Internet Engineering Task Force (IETF).
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Operation



Implications

- No longer necessary to dedicate machines to applications.
- Detail documentation of resource utilization and expectations
- Preamble to cross-platform WLM
- Platform subsidiary to requirements
- Extension of existing tools to new environments
- Cooperative applications possible

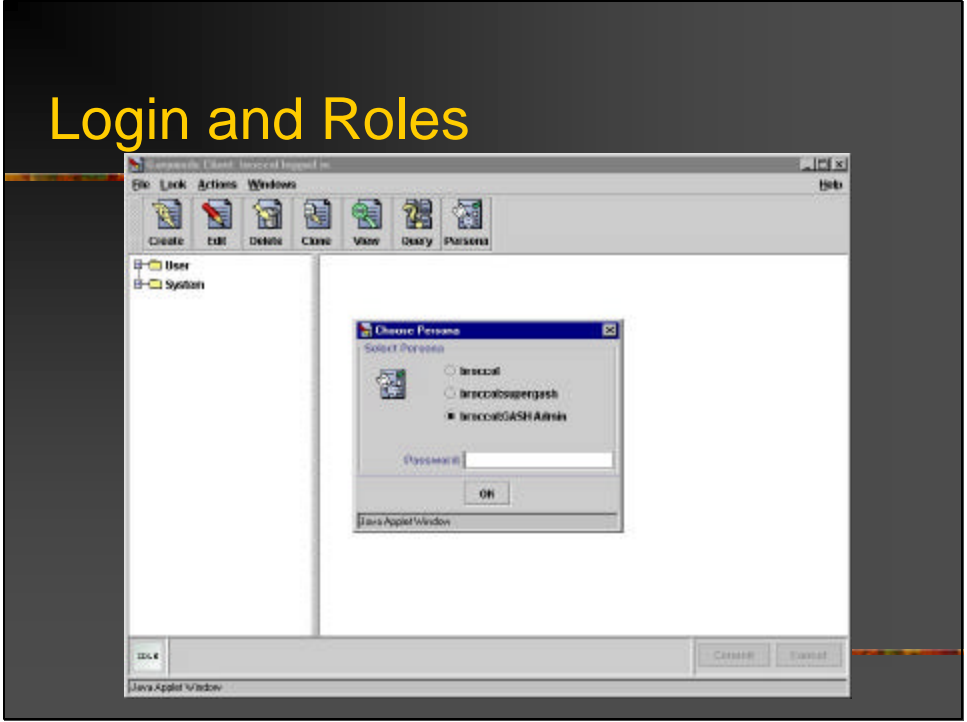
Management and Control

- Partially goal of ADS
- But, lock-in to MS and MS strategy! (boo!)
- Characteristics of desirable tool:
 - Cross platform
 - Open source
 - No vendor lock-in
 - Integration with existing security and provisioning tools

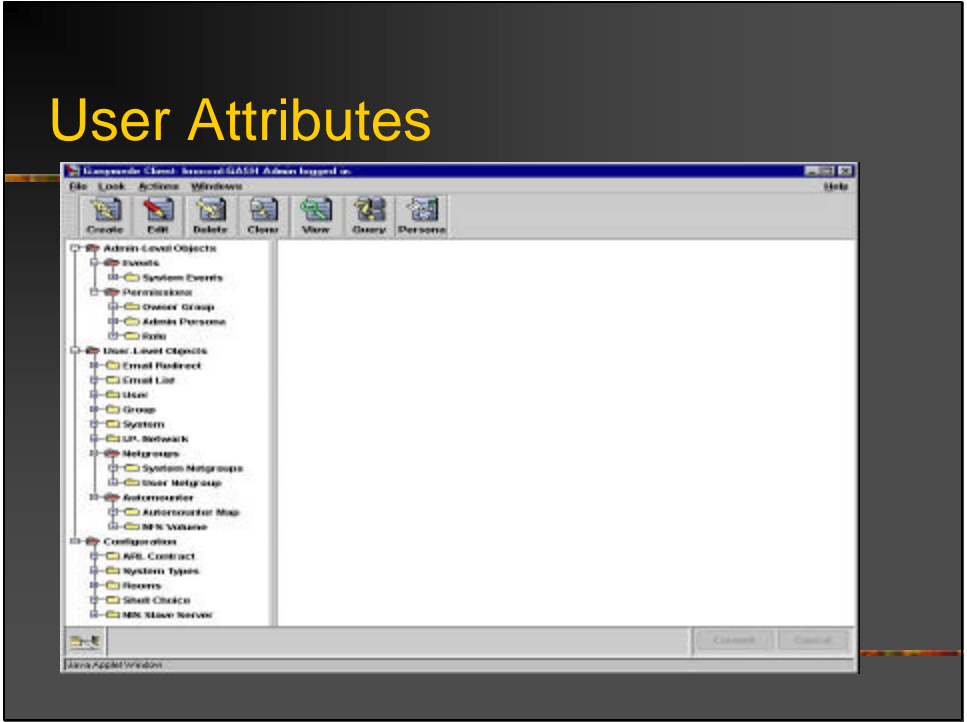
Ganymede

- UT Arlington project
 - Enhanced classes for grid, CMS, Linux management, LDAP support, Linux virtual machine creation and deployment supplied by others
- Java based
- Open source
- Freely available
- Cross platform
 - Windows Domain and ADS
 - NIS
 - CMS
 - zOS (coming soon)
- Coordinates user and system deployment across multiple systems with multiple administrators
- GUI and command line interfaces provided
- Tested at 350,000 managed objects

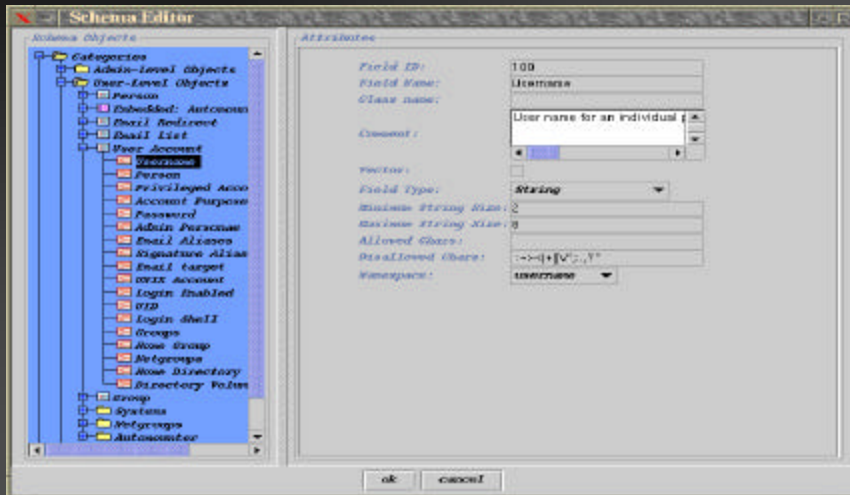
Login and Roles



User Attributes



Attribute Definition



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