

# Enterprise Grid Patterns

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# Patterns for the enterprise grid

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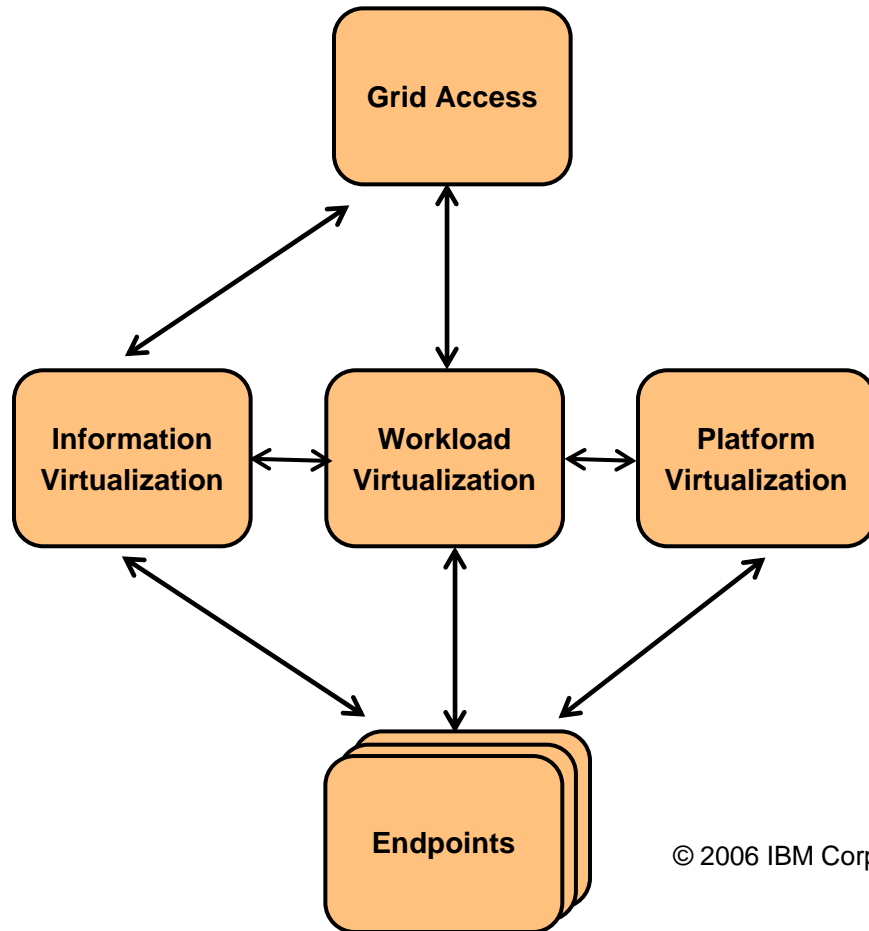


- Common designs that can be used / reused to develop solutions meeting an organization's requirements
- More info at <http://www.redbooks.ibm.com/abstracts/sg246682.html?Open>

# Approach

- Define runtime patterns to describe how grid management service components interact to support a controlled and flexible execution of application workloads: depict major middleware components, their roles, and the interactions between those components.
- Composite pattern
  - Access (user access to grid: portal/authn/authz)
  - Workload virtualization (scheduling & workload mgmt)
  - Information virtualization (local/remote data access)
  - Platform virtualization (resource mgmt & provisioning)
- Apply to case study scenarios to validate / produce solutions

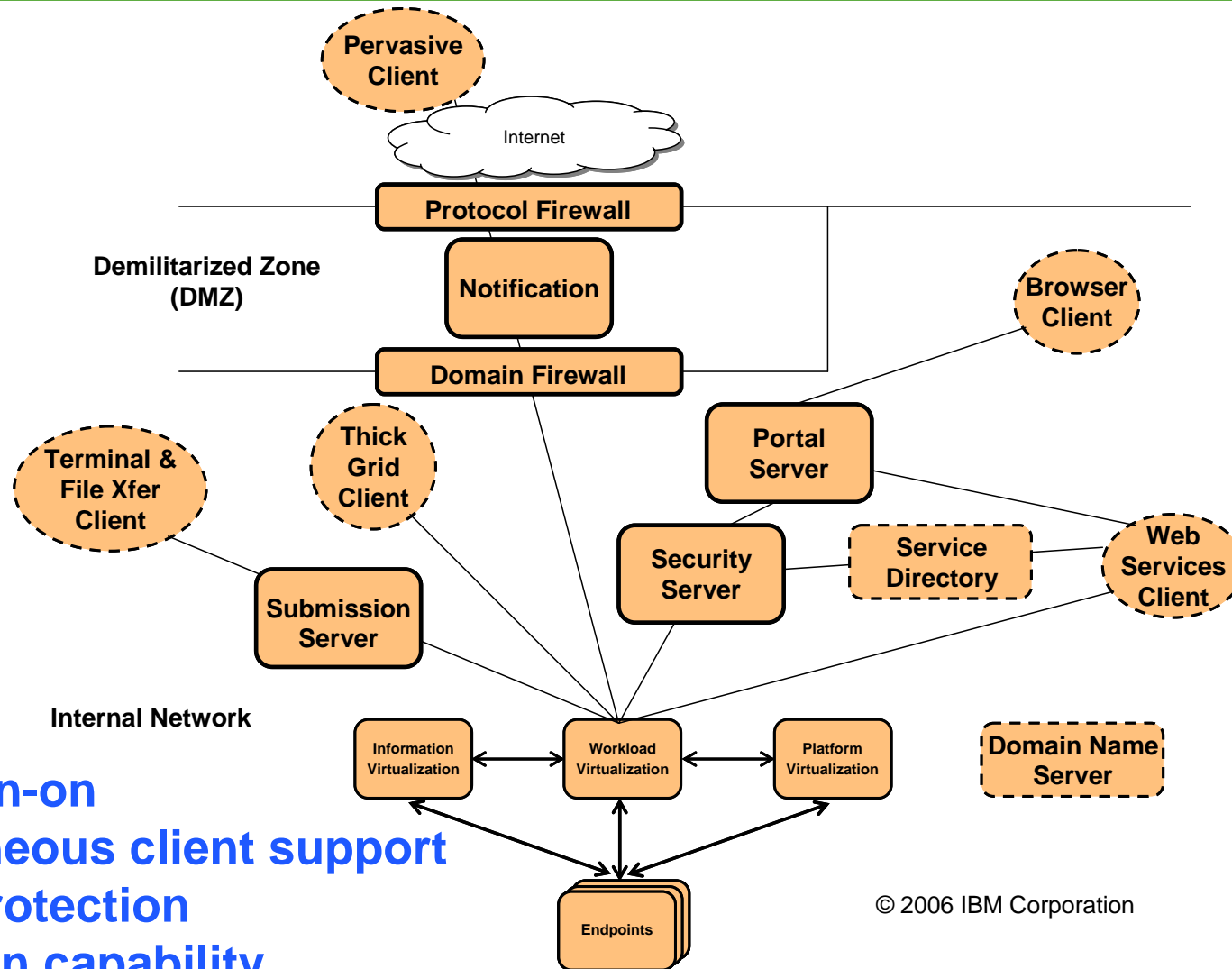
# Composite pattern



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- Access patterns
  - Extended single sign-on
  - Directly integrated single channel
  - Store and retrieve
  - Replica location
- Workload virtualization patterns
  - Basic scheduler
  - Meta-scheduler
  - Peer-to-peer scheduler
- Platform virtualization patterns
  - Basic manage resources
  - Intelligent manage resources
  - Dynamic manage resources
- Information virtualization patterns
  - Local data access
  - Remote data access
  - Remote access to local data

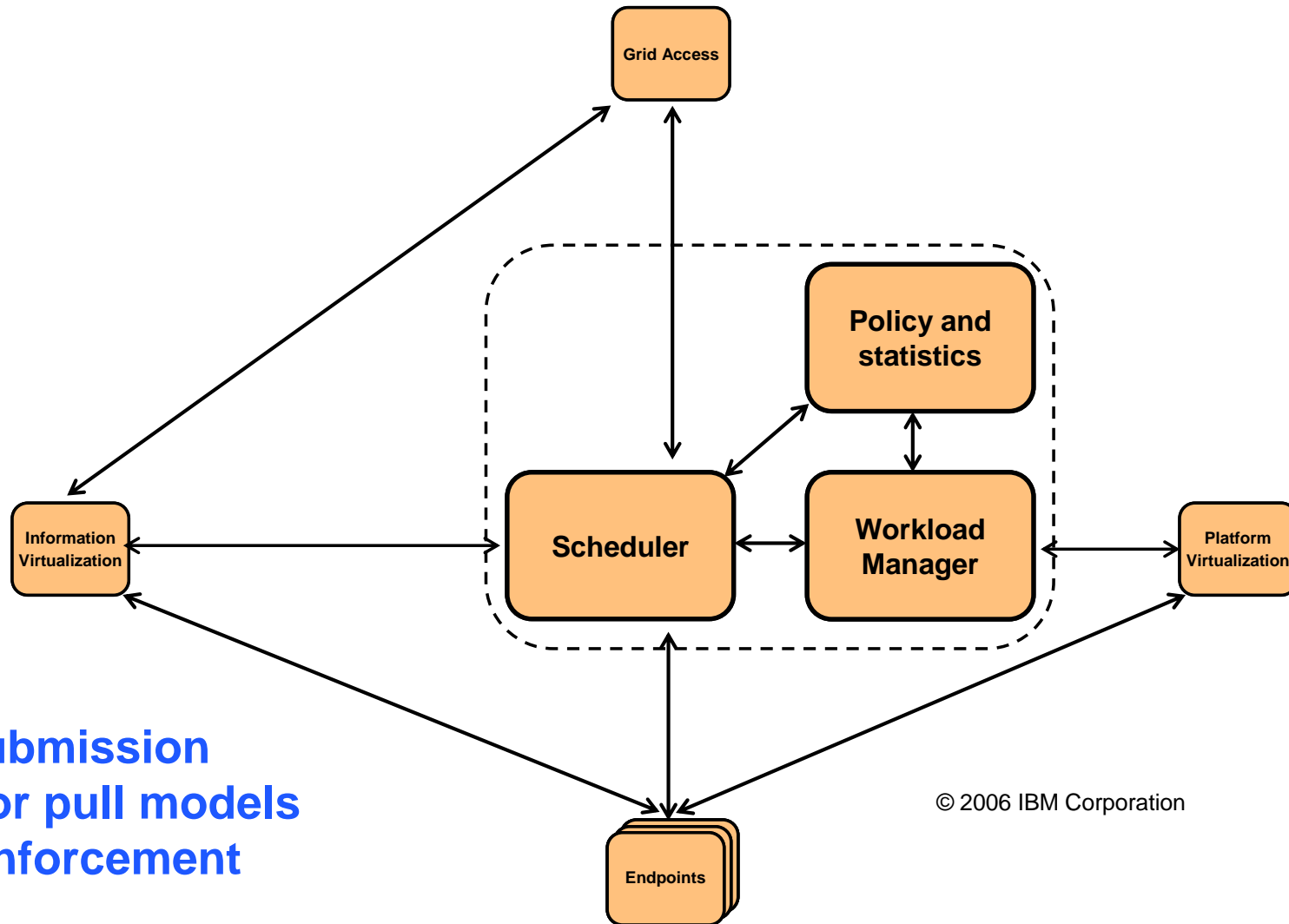
# Grid access pattern



**Single sign-on**  
**Heterogeneous client support**  
**Domain protection**  
**Notification capability**

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# Workload virtualization pattern

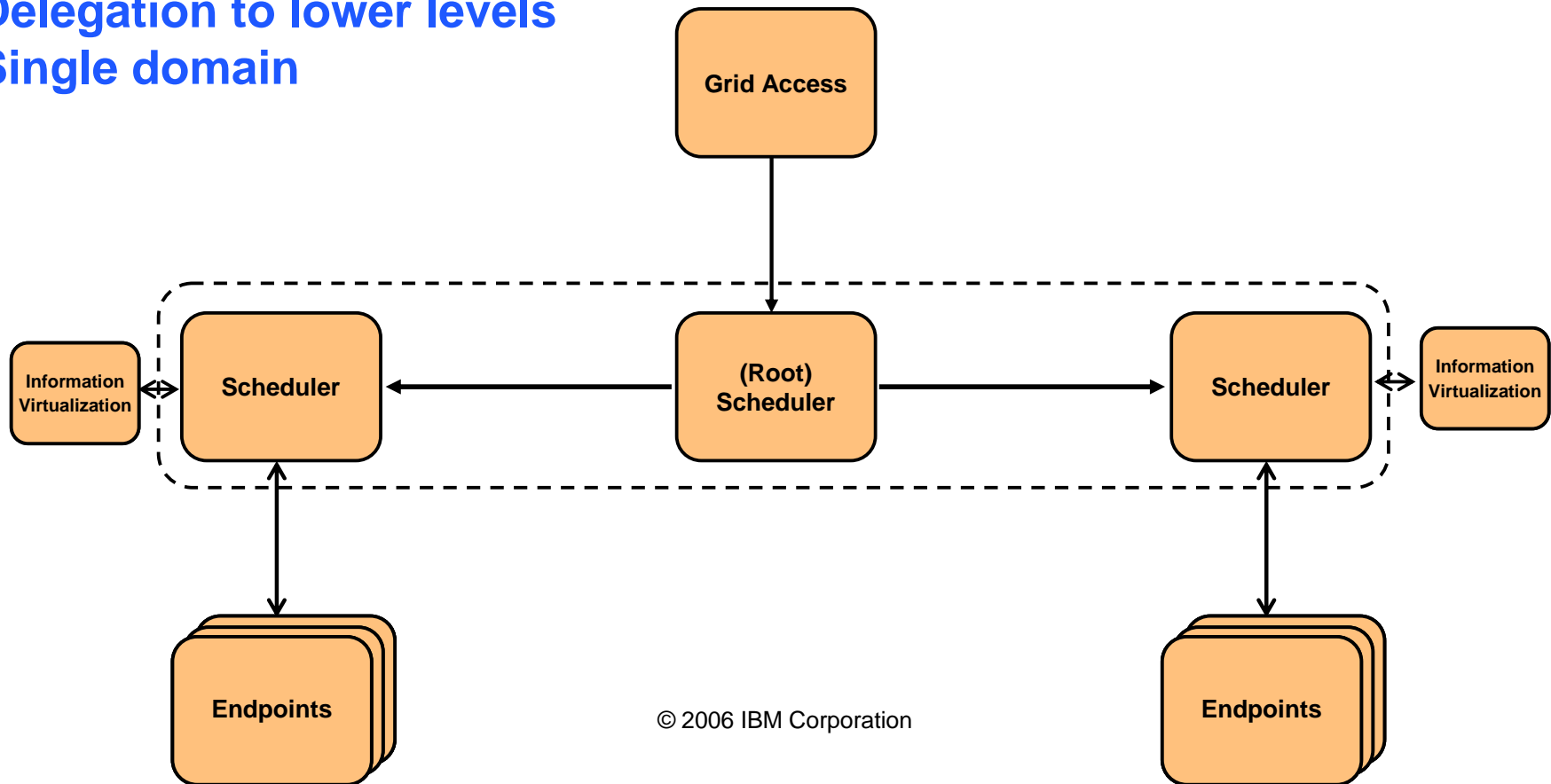


**Job submission**  
**Push or pull models**  
**SLA enforcement**

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# Meta-scheduling pattern

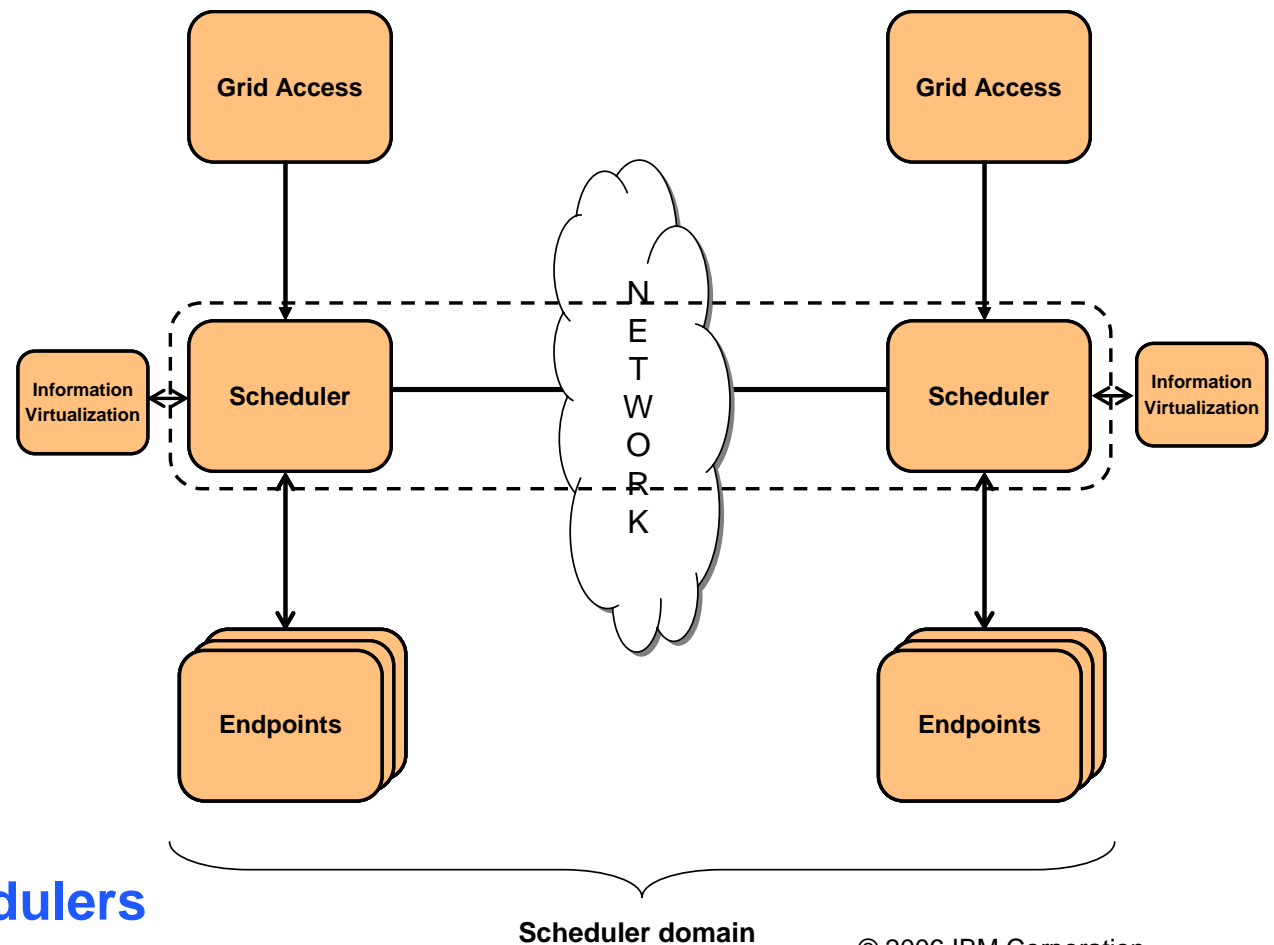
**Centralized control**  
**Delegation to lower levels**  
**Single domain**



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# Peer-to-peer scheduling pattern

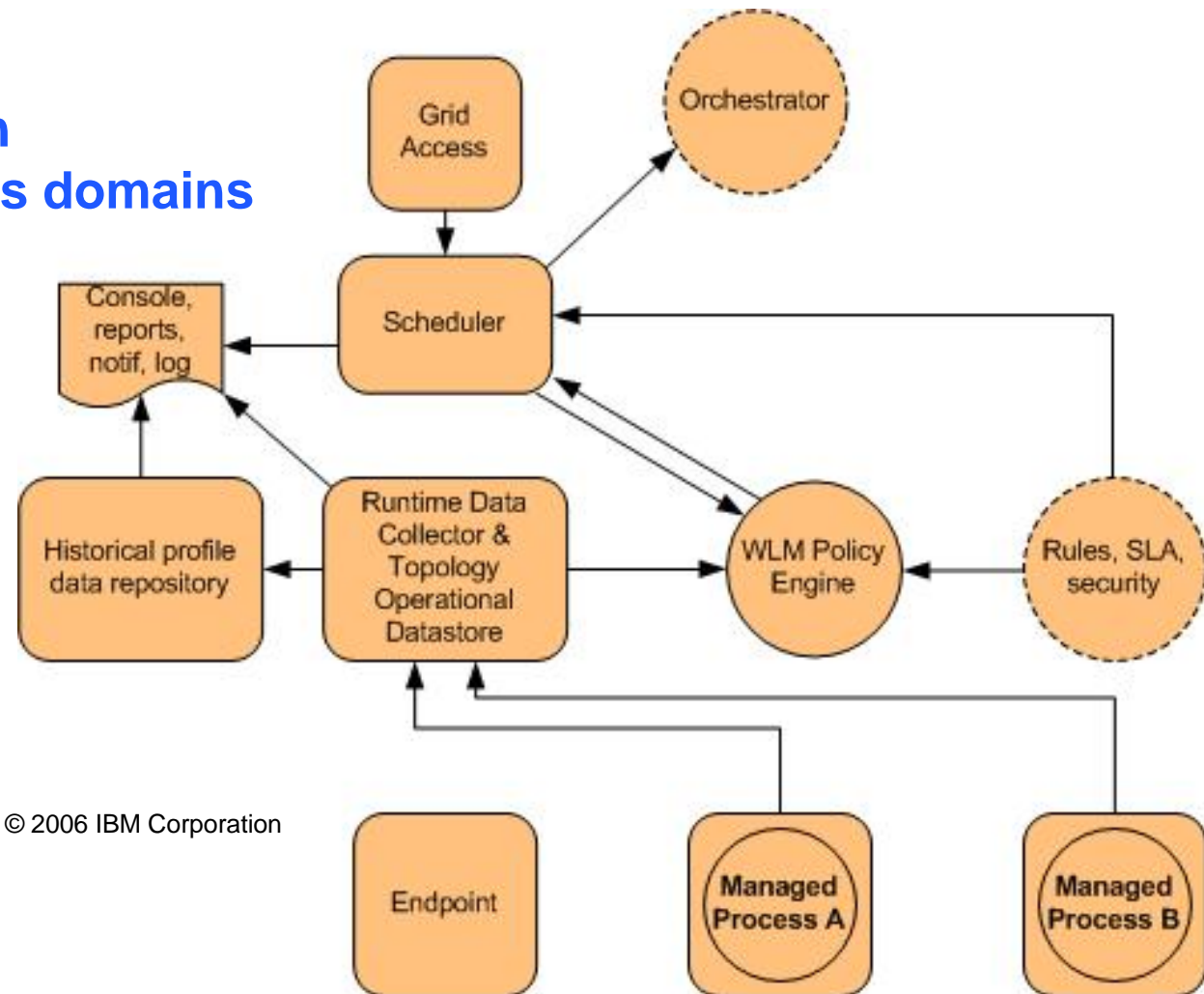


**Distributed control**  
**Negotiation across schedulers**  
**Limited trust**  
**Multiple domains**

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# Scheduling and workload management pattern

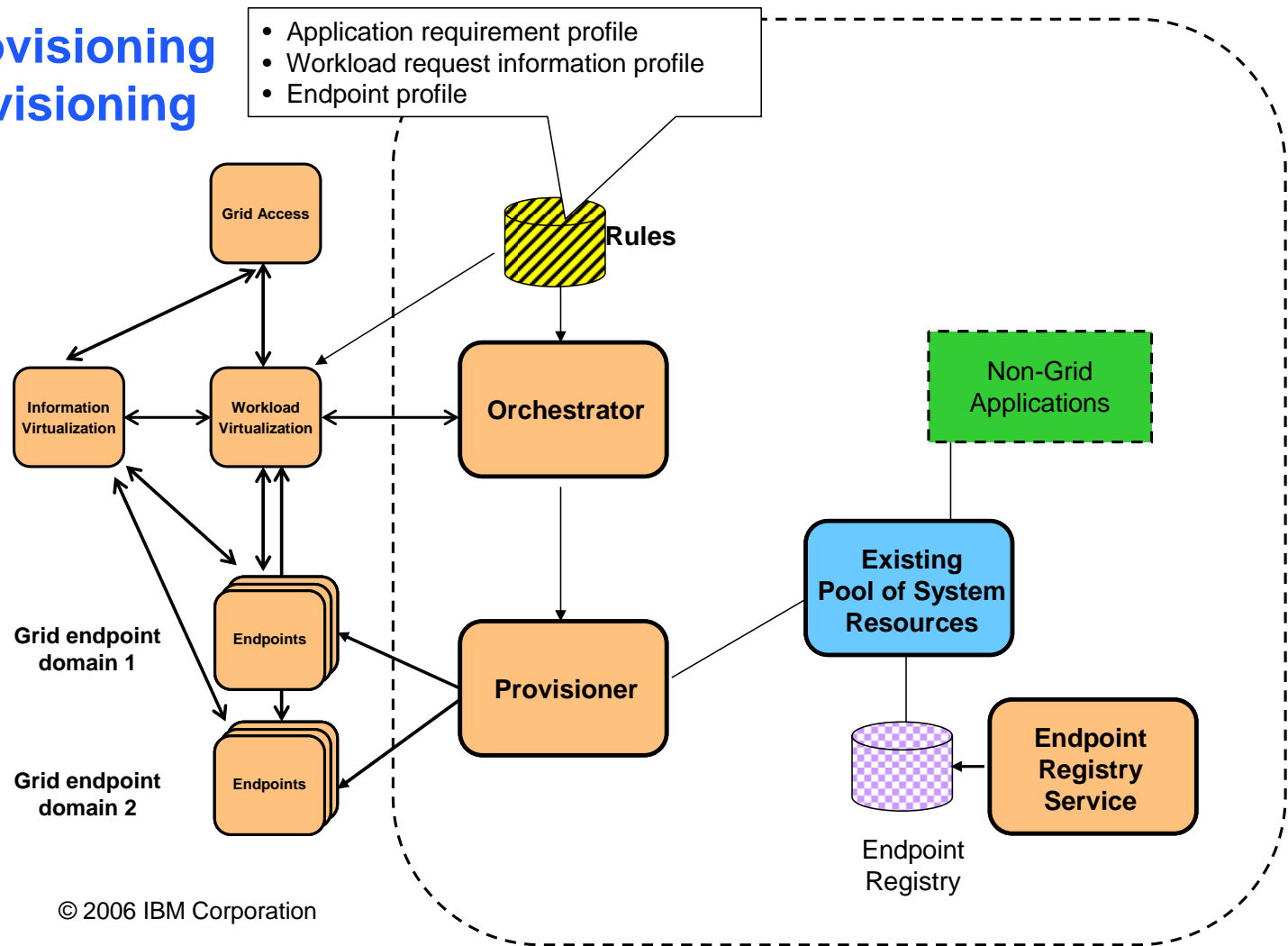
**SLA management**  
**Predictive allocation**  
**Orchestration across domains**



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# Platform virtualization pattern

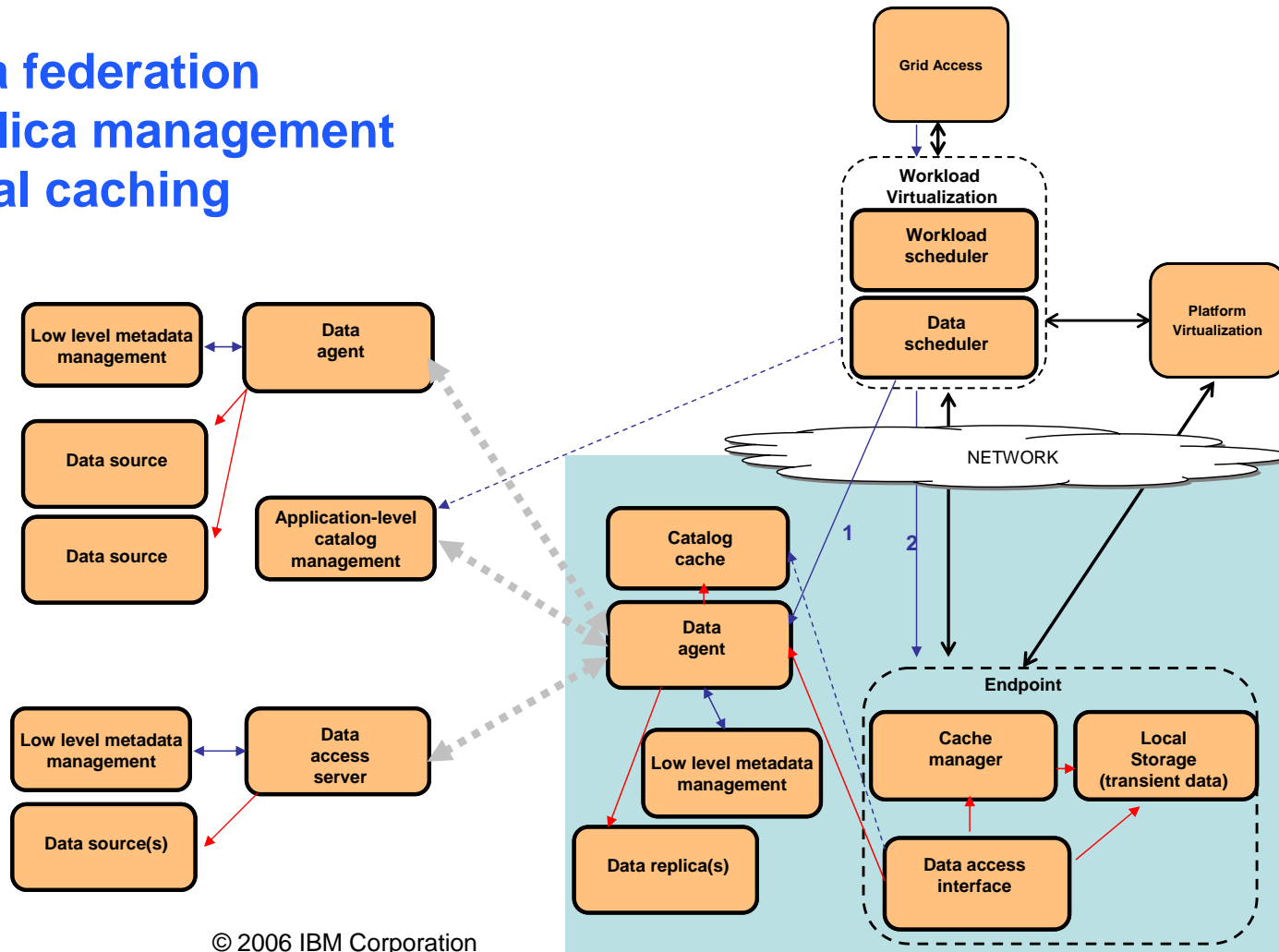
**Dynamic (de)provisioning**  
**Incremental provisioning**



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# Remote access to local data with managed replicas

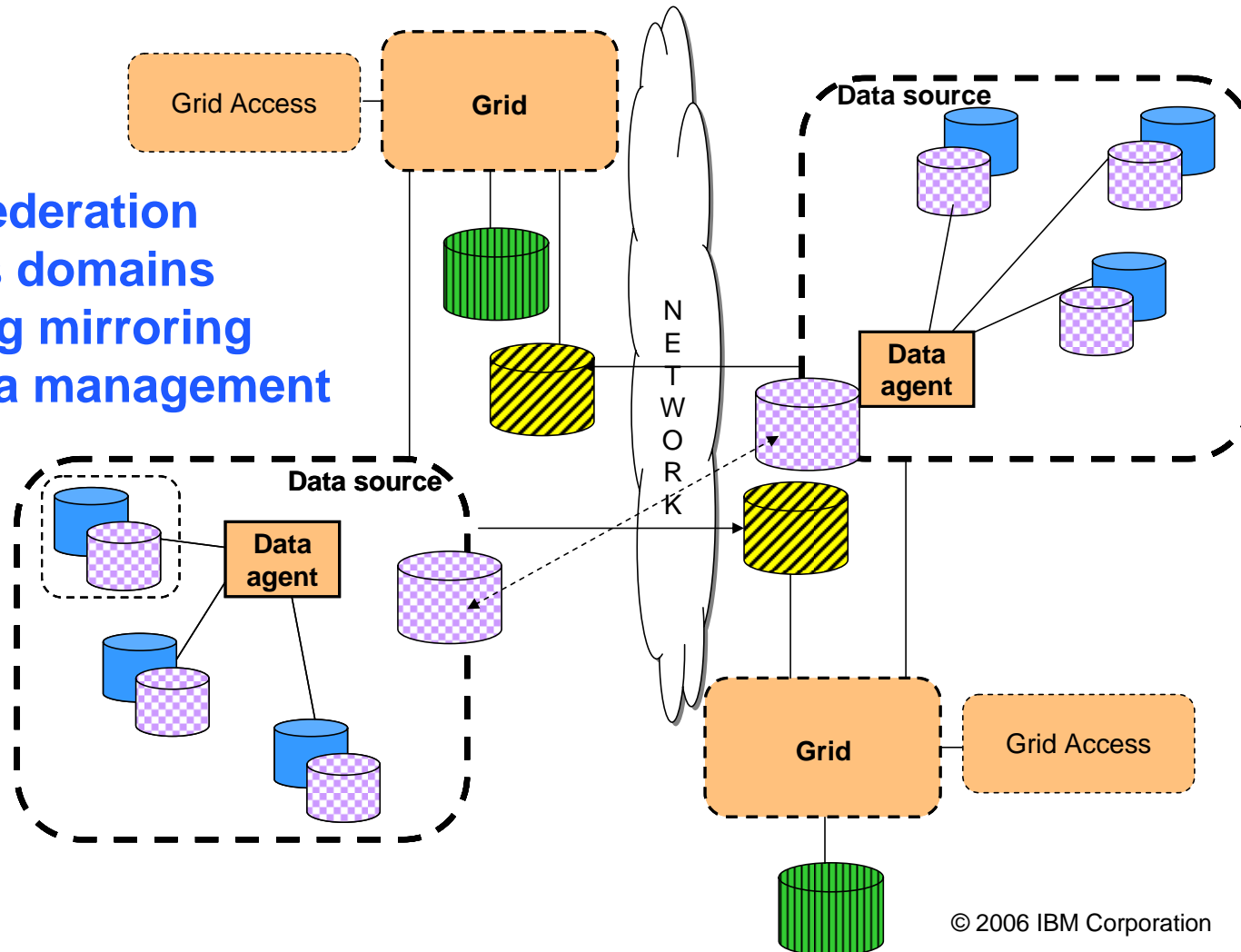
Data federation  
Replica management  
Local caching



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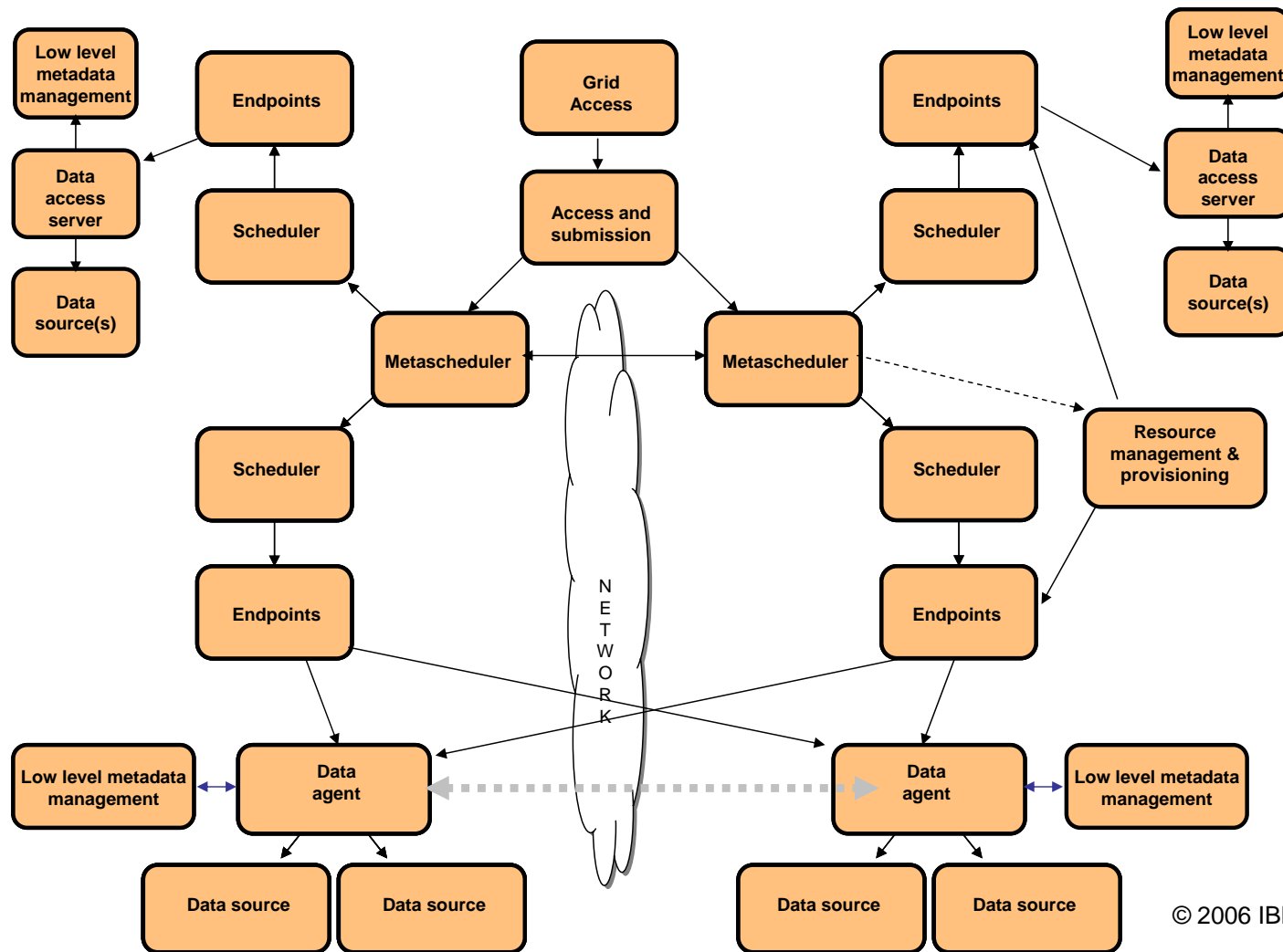
# Multi-domain federated database pattern

**Data federation  
across domains  
Catalog mirroring  
Replica management**



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# Composing the patterns to build a solution



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