

Enterprise Grid Requirement Research Group Use Cases of Business Grid

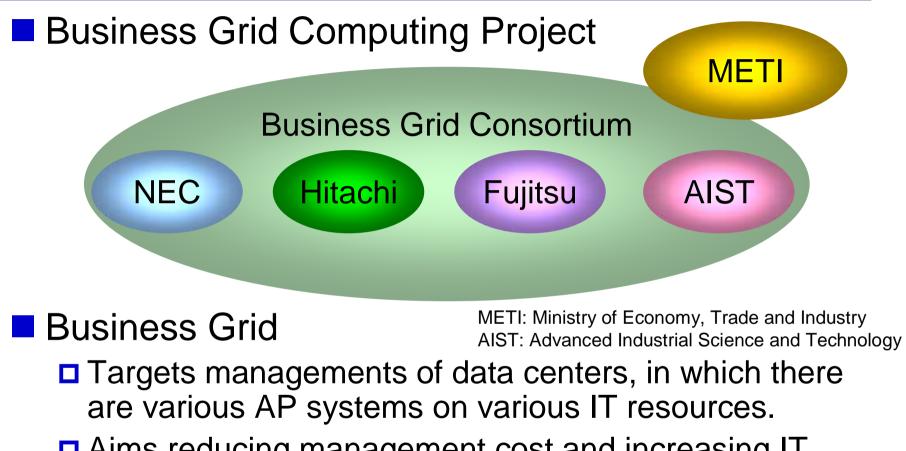
Shinya Miyakawa (NEC Corp.) Toshiyuki Nakata (NEC Corp.) Hiro Kishimoto (Fujitsu Ltd.) Nobutoshi Sagawa (Hitachi Ltd.)



- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
- Use Case 3: Disaster Recovery System



Summary of Business Grid



Aims reducing management cost and increasing IT resource utilization & business continuity for improving ROI.



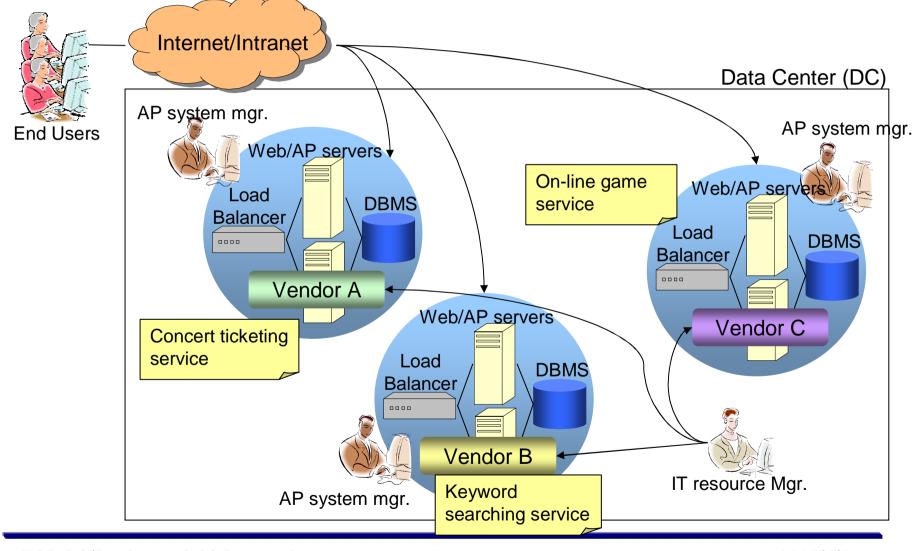
Summary of Business Grid

- Use Case 1: Multiple In-house Systems
 - □ What are in-house systems?
 - Problems of current systems
 - Expectations for grid technologies
 - Scenarios
 - Standards
- Use Case 2: Wide Area Load Balancing System
 Use Case 3: Disaster Recovery System



What are in-house systems?

Many web three-tier AP in-house systems are run on a DC





Problems of Current In-house Systems

- High management cost
 - Designing, building and managing the complex AP system by an AP system mgr
 - Learning many tools by IT resource mgr
- Ineffective IT resource utilizations
 - Preparing additional IT resources in each AP system
- Poor ROI for business continuity
 - Using expensive high availability system (i.e. HA Cluster)

Expectation for grid technologies

Requirements to resolve current problems

- Reducing management cost
 - Setting up an AP system on heterogeneous IT resources with well-formed application design
 - Providing well-defined operations of IT resources to hide their difference of vendors
- Increasing IT resource utilization
 - Sharing IT resources among several AP systems
 - Scheduling reservation of IT resources
- Improving ROI for business continuity
 - Replacing/Adding IT resources automatically with reasonable cost



Summary of Business Grid

Use Case 1: Multiple In-house Systems

- □ What is an in-house system?
- Problems of a Current System
- Expectation for grid technologies
- Scenarios
 - 1-1: Setting up an application system
 - 1-2: Sharing IT resources among several application systems
 - 1-3: Limited-time scheduled campaign

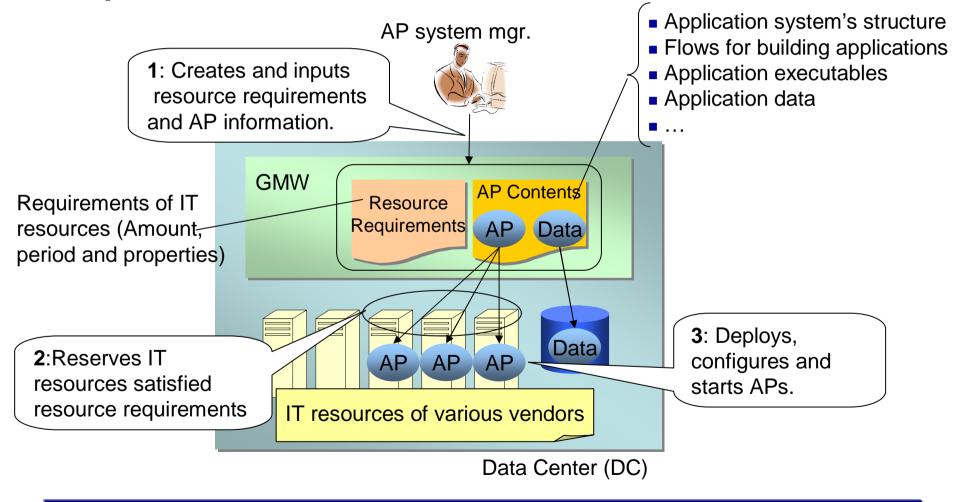
Standards

Use Case 2: Wide Area Load Balancing System
 Use Case 3: Disaster Recovery System



Scenario 1-1: Setting up an application system

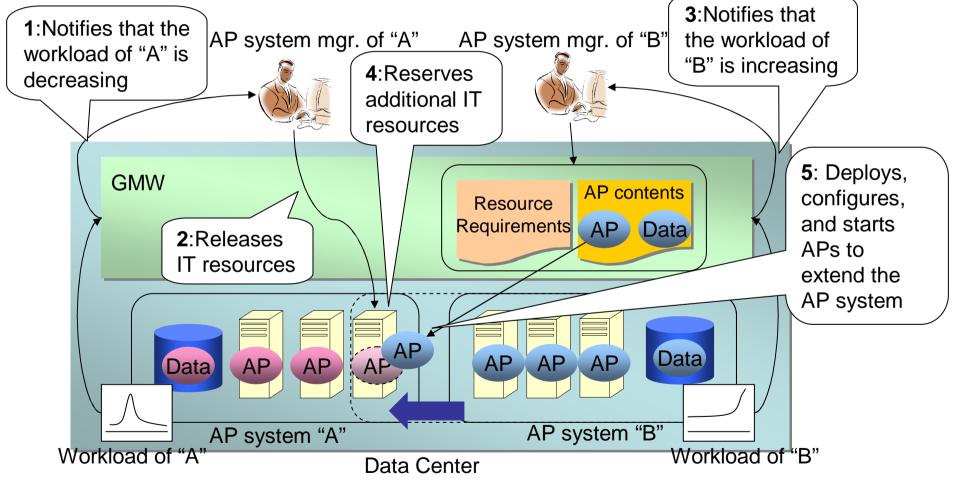
Setting up an application system in a DC with resource requirements and AP contents





Scenario 1-2: Sharing IT resources

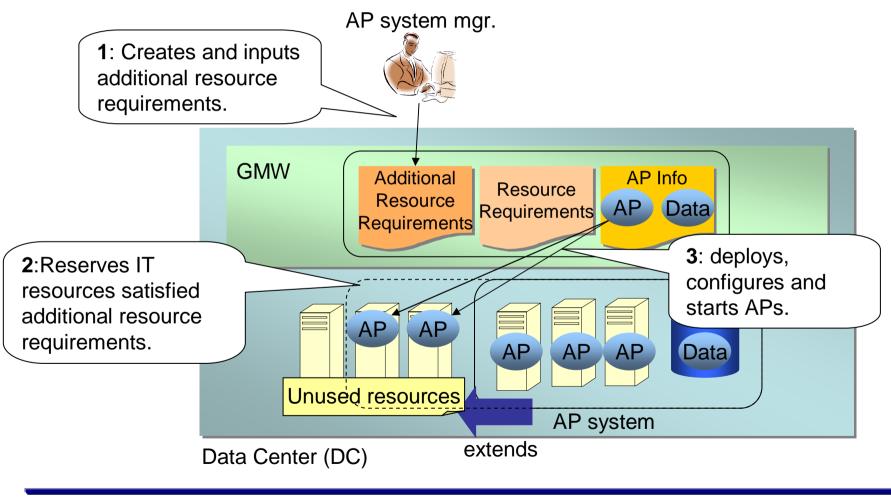
Allocating IT resources reduced from other application systems.





Scenario 1-3: Limited-time scheduled campaign

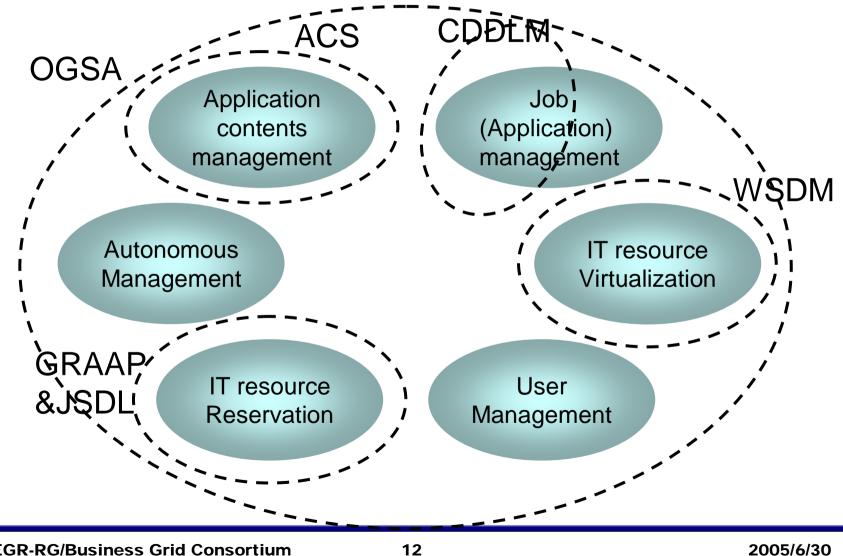
Allocating additional IT resources to an application system for a limited-time scheduled campaign.





Standards

Functional requirements derived from this use case



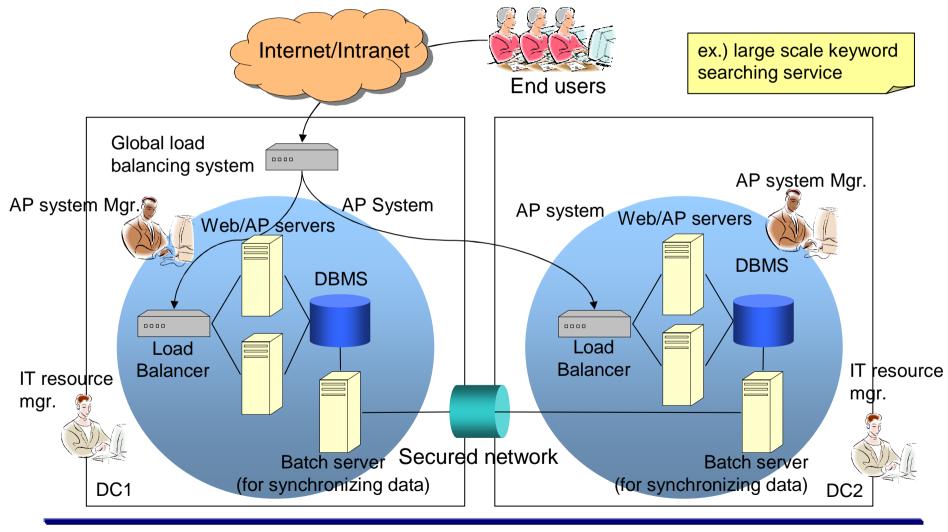


- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
 - □ What is a wide are load balancing system?
 - Problems of current system
 - Expectation for grid technologies
 - Scenarios
 - Standards
- Use Case 3: Disaster Recovery System



What is a wide area load balancing system?

A large scale web site service among several DCs



2005/6/30

Problems of Current Systems

- High management cost
 - The AP system mgr. has to perform several procedures in a data center.
 - Ex.) settling a contract, making accounts, building and managing AP system and so on.
 - ➔ It takes much cost because the AP system mgr. has to do these same procedures in each data center.
- Poor IT resource utilization
 - □ It is difficult to share IT resources among data centers.
 - Vendors of IT resources are different between data centers
 - Network configurations between DCs are very complex
 - → Data centers have to prepare enough IT resources.

Expectation for grid technologies

- Reducing management cost
 - Using same application design in several data centers.
 - Providing seamless interoperation of several data centers.
 - For example,
 - Settling a contract with just one data center called "main data center".
 - Managing application systems through the "main data center".
 - Improving IT resource utilization

Optimizing amount of IT resources among data centers.



- Summary of Business Grid
- Use Case 1: Multiple In-house Systems

Use Case 2: Wide Area Load Balancing System

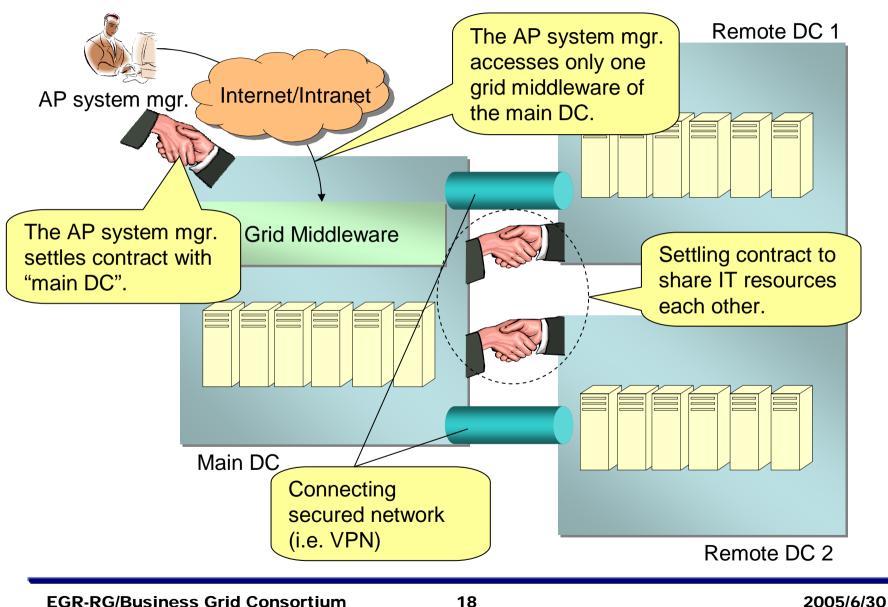
- □ What is a wide are load balancing system?
- Problems of current system
- Expectation for grid technologies
- Scenarios
 - 2-0: Pre-condition
 - 2-1: Setting up application systems
 - 2-2: Updating application systems
 - 2-3: Limited-time scheduled site extension

Standards

Use Case 3: Disaster Recovery System



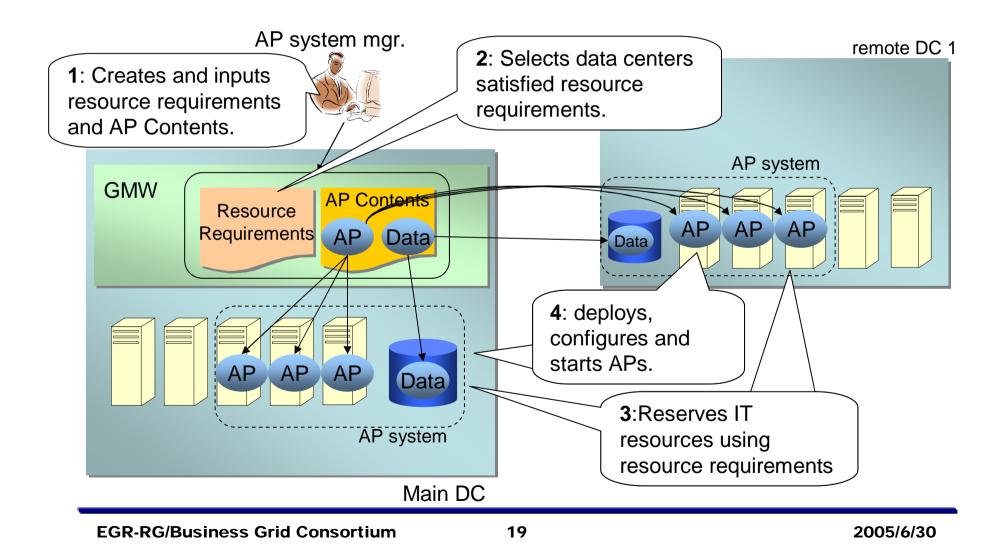
Scenario 2-0: Pre-conditions





Scenario 2-1: Setting up application systems

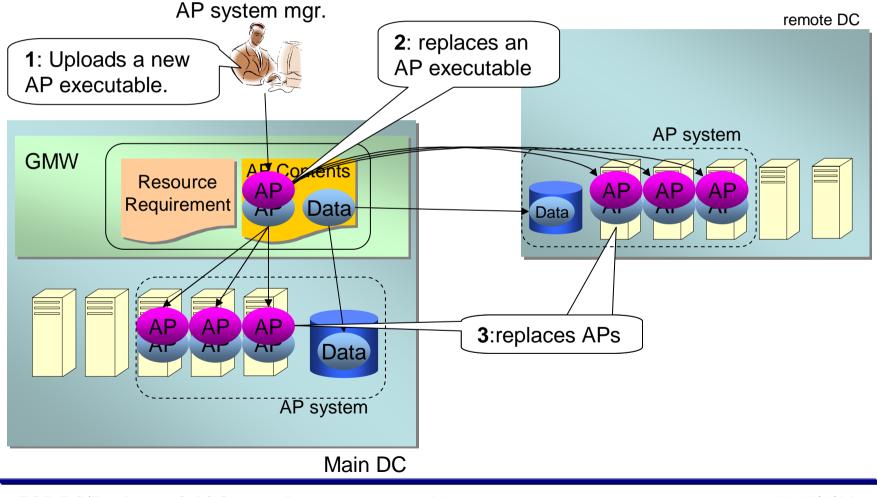
Setting up several application systems among DCs





Scenario 2-2: Updating application systems

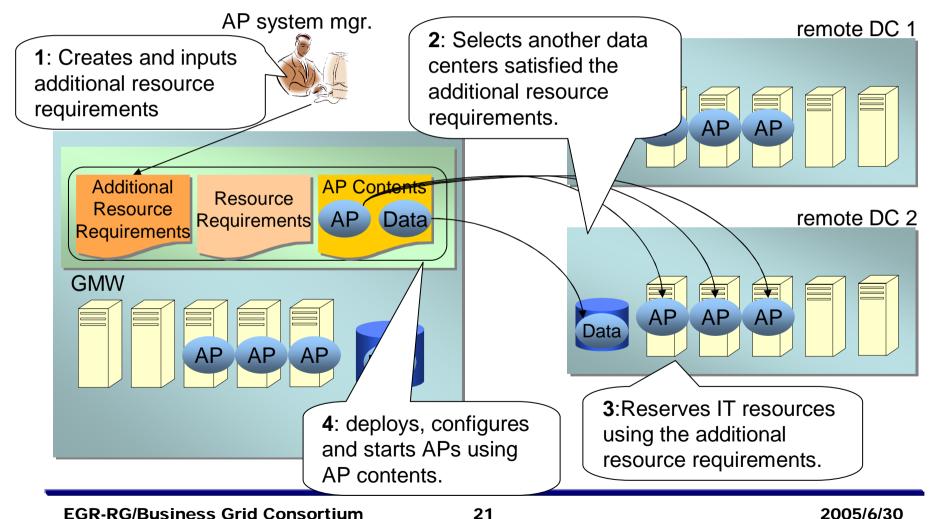
Reflecting the update of application information to all applications





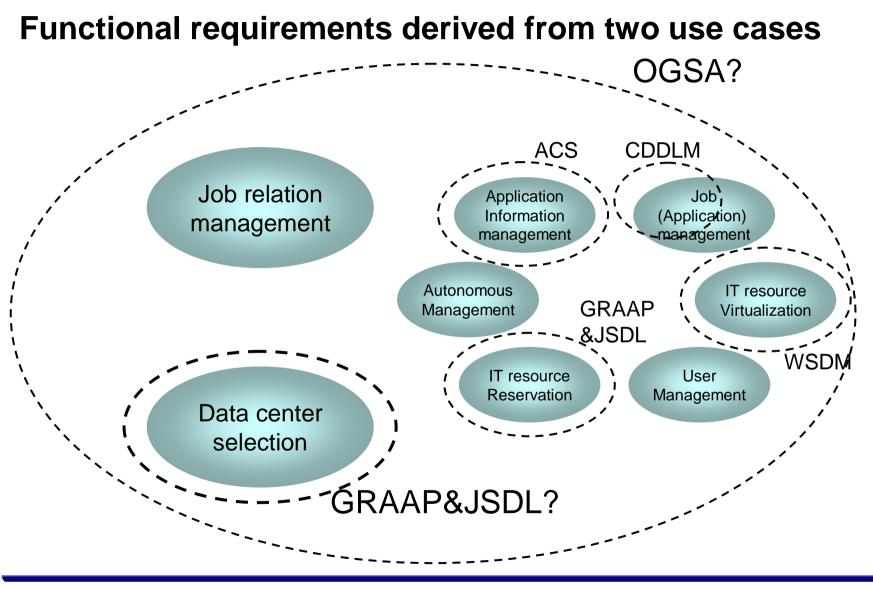
Scenario 2-3: Limited-time scheduled campaign

Setting up an additional application systems in another DCs for limited-time large scale campaign.





Standards

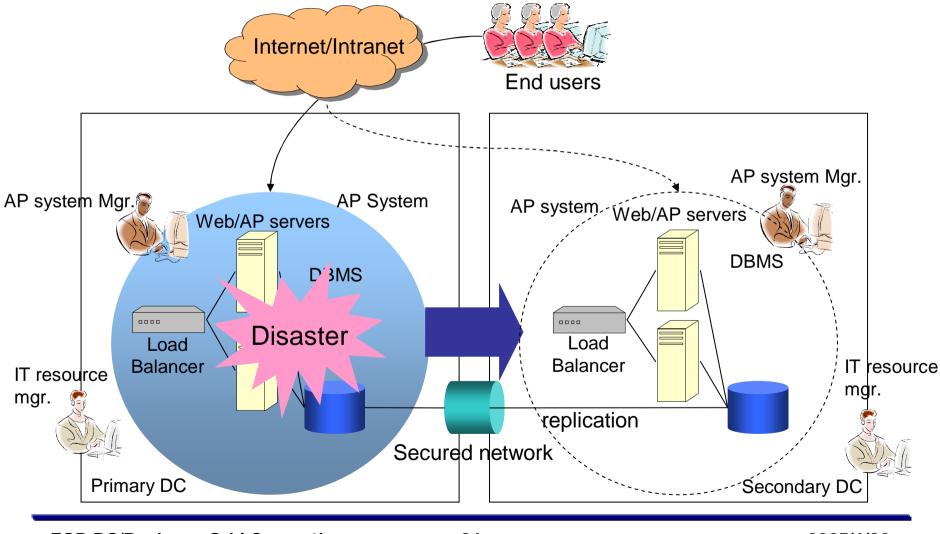




- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
- Use Case 3: Disaster Recovery System
 - Targeted disaster recovery system
 - Current disaster recovery system
 - Expectation for grid technologies
 - Scenarios
 - Standards

Disaster Recovery System

Web three-tier applications are recovered in another DC.



Current disaster recovery system

Current systems have adopts either hot standby or cold standby

- Hot standby
 - Same AP systems are deployed and run on a primary DC and a secondary DC simultaneously.
 - An application can be recovered rapidly.
 - □ It takes much cost to maintain the secondary AP system.
- Cold standby
 - Only an AP system is deployed and run on the primary DC.
 - It is after disaster that an AP system is deployed and run on the secondary DC.
 - It takes reasonable maintenance cost of the AP system on secondary DC.
 - It takes longer time than hot standby case to recover the application system.

Expectation for grid technologies

- Recovering with the reasonable speed.
 - □ Informing managers of disaster in a moment.
 - Switching to the application system at the secondary data center quickly.
- Recovering with the reasonable cost.
 - Using same application design of the primary data center to set up AP system at the secondary data center.
 - Using IT resources effectively in the secondary data center before they will be allocated recovered application systems.



- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System

Use Case 3: Disaster Recovery System

- Targeted disaster recovery system
- Current disaster recovery system
- Expectation for grid technologies

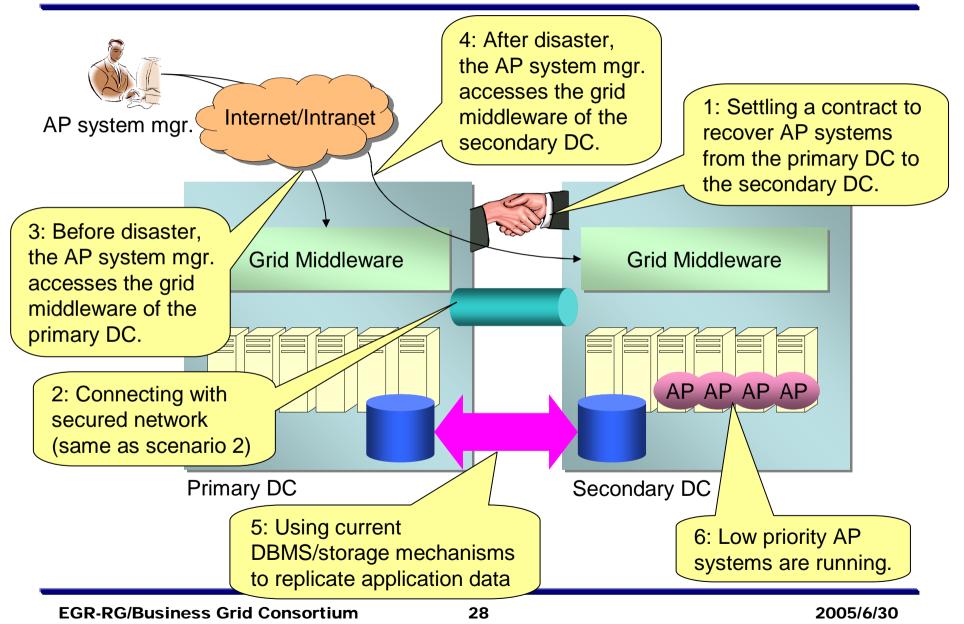
Scenarios

- 3-0: Pre-conditions
- 3-1: Setting up an application system
- 3-2: Recovering an application system

Standards



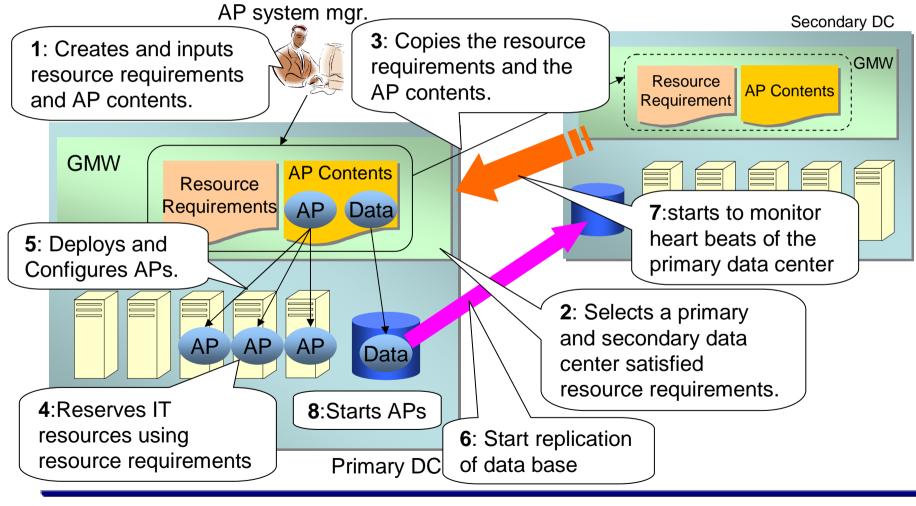
Scenario 3-0: Pre-conditions





Scenario 3-1: Setting up AP systems

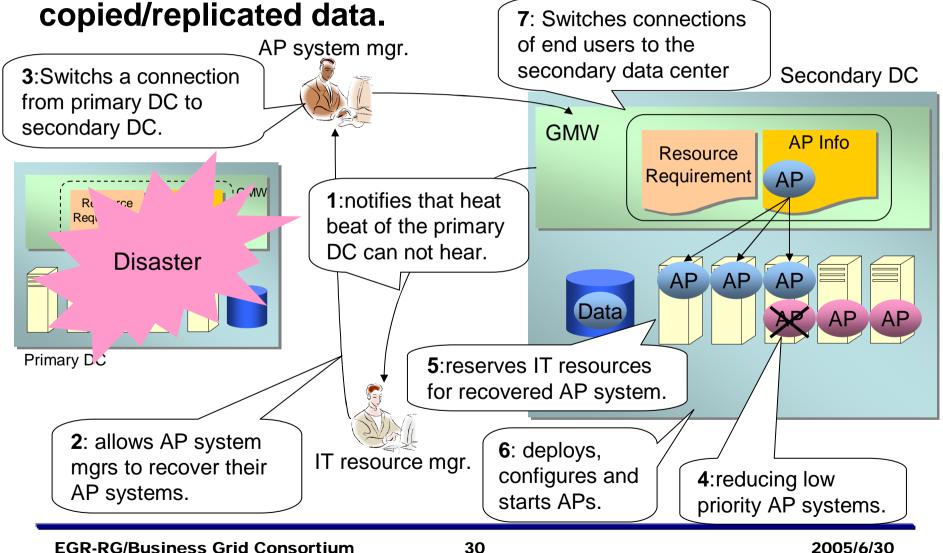
Deploying AP systems in both a primary and a secondary DC but running in the primary DC only





Scenario 3-2: Recovering an AP system

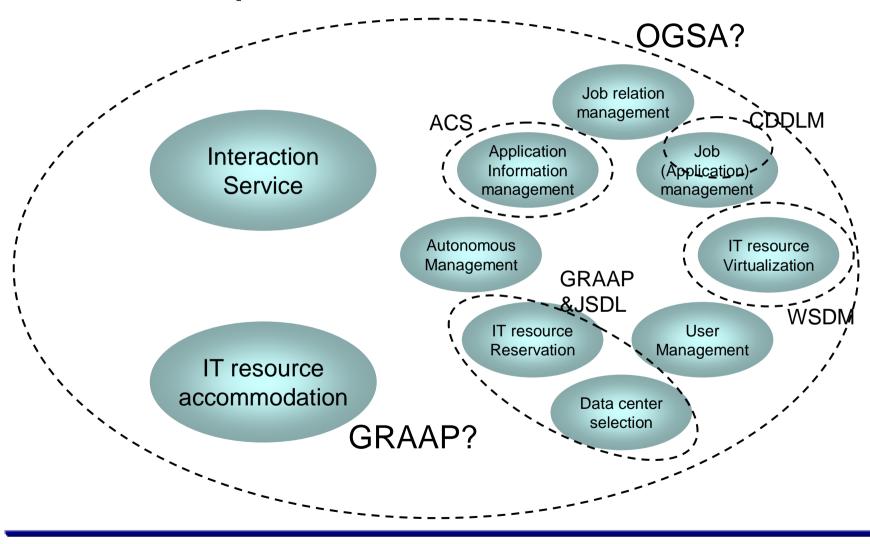
Recovering the AP system in the secondary DC with





Standards

Functional requirements derived from all use cases





End

32