

Enterprise Grid Requirement Research Group Use Cases of Business Grid

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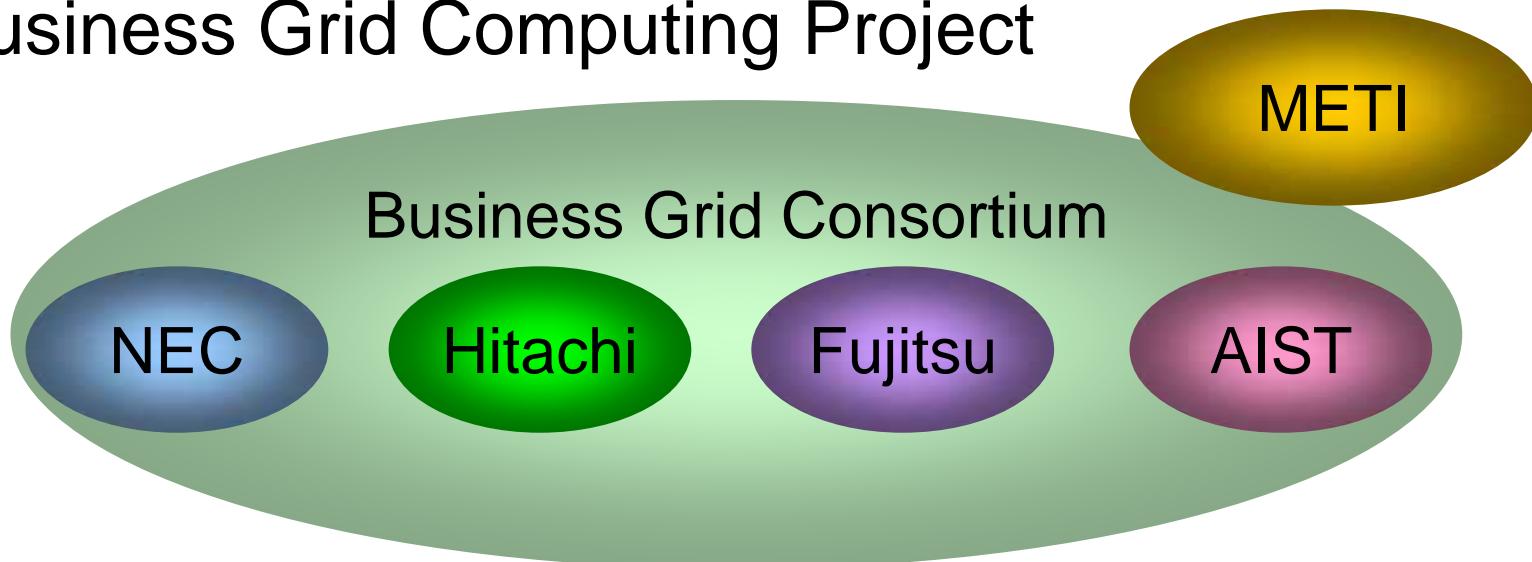
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- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
- Use Case 3: Disaster Recovery System

Summary of Business Grid

■ Business Grid Computing Project



■ Business Grid

METI: Ministry of Economy, Trade and Industry
AIST: Advanced Industrial Science and Technology

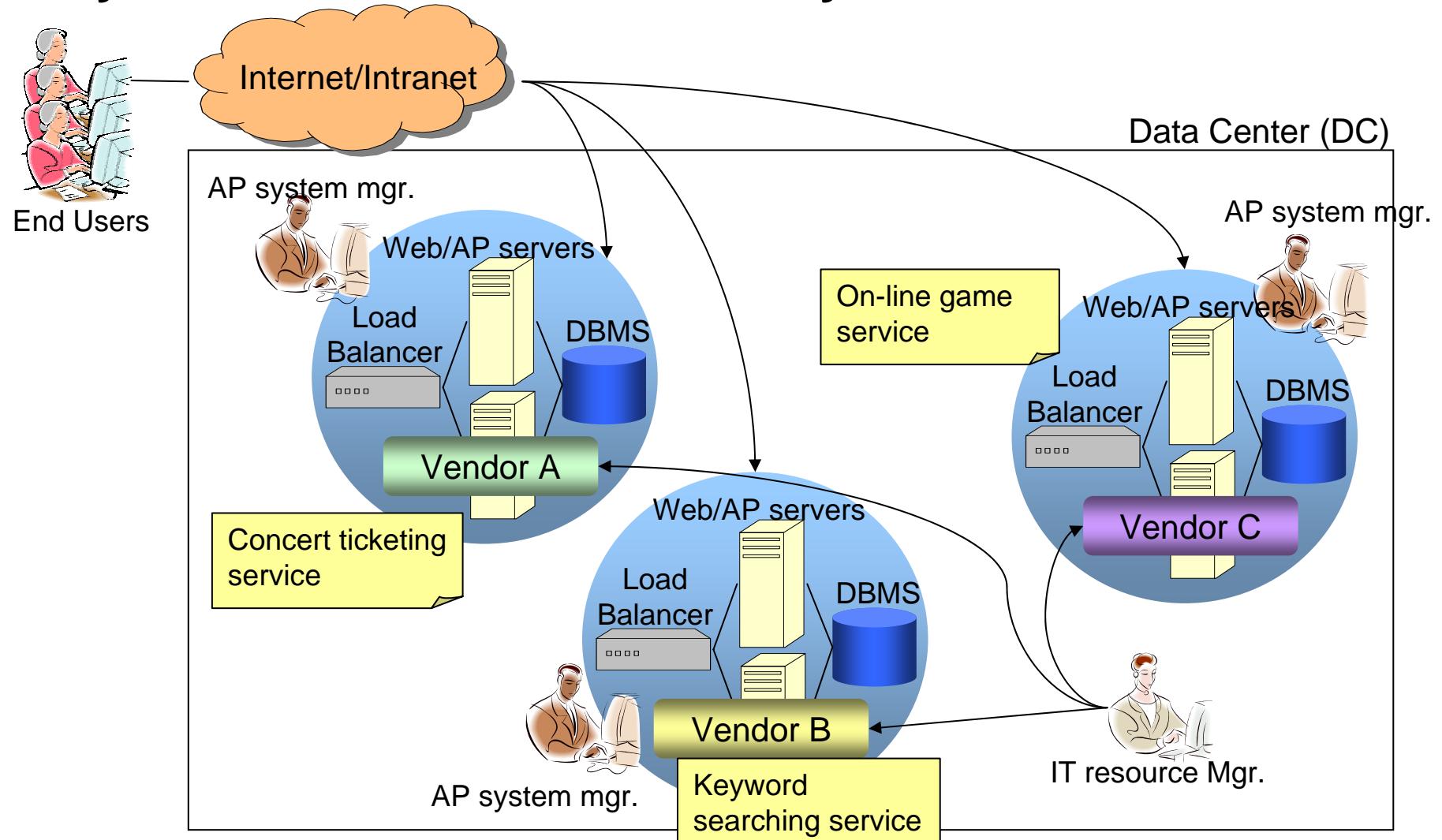
- Targets managements of data centers, in which there are various AP systems on various IT resources.
- Aims reducing management cost and increasing IT resource utilization & business continuity for improving ROI.

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- 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

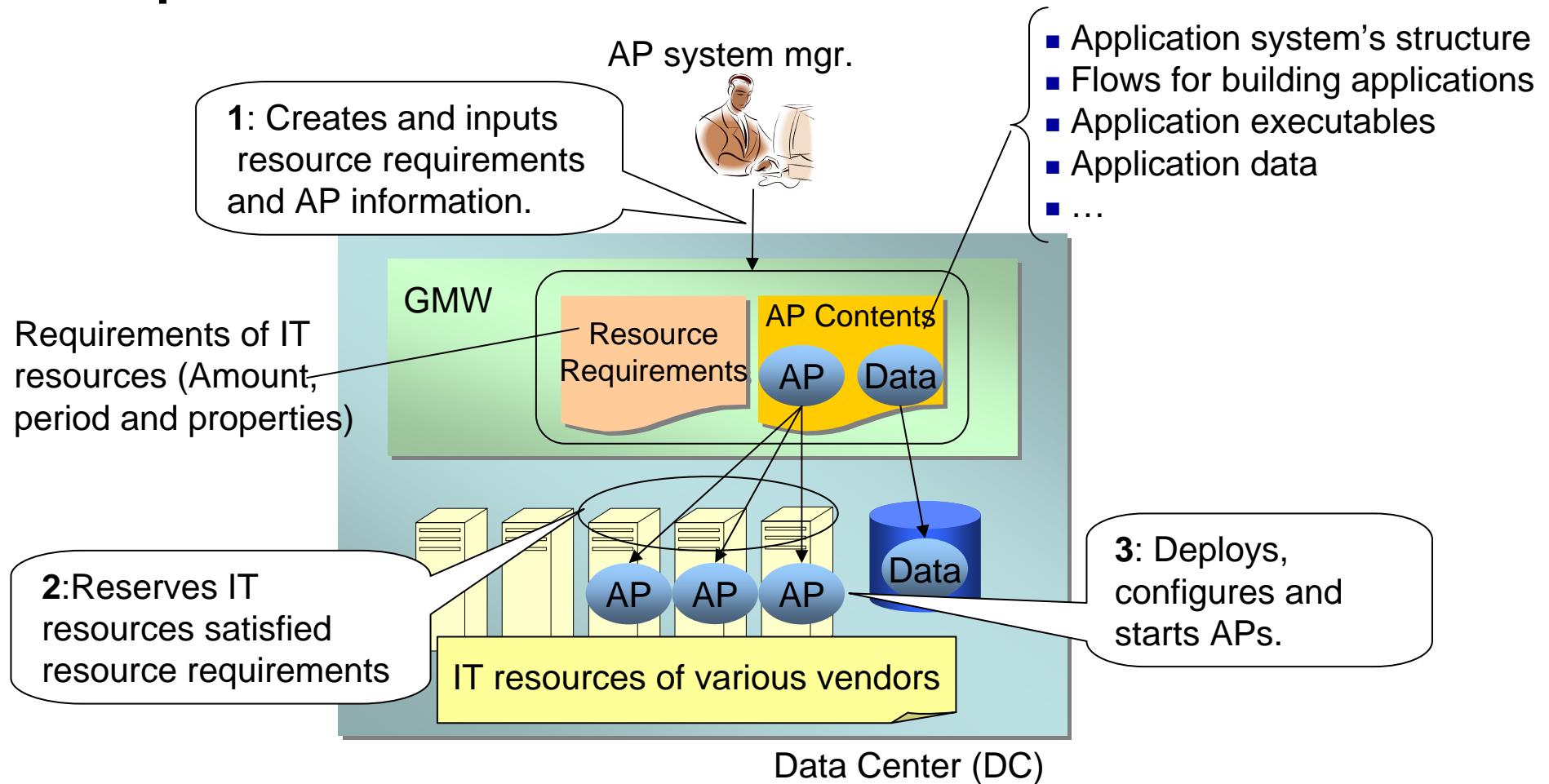
- Reducing management cost
 - Setting up an AP system on heterogeneous IT resources with well-formed application design
 - Providing well-defined operations of IT resources to hide their difference of vendors
- Increasing IT resource utilization
 - Sharing IT resources among several AP systems
 - Scheduling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

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 - Standards
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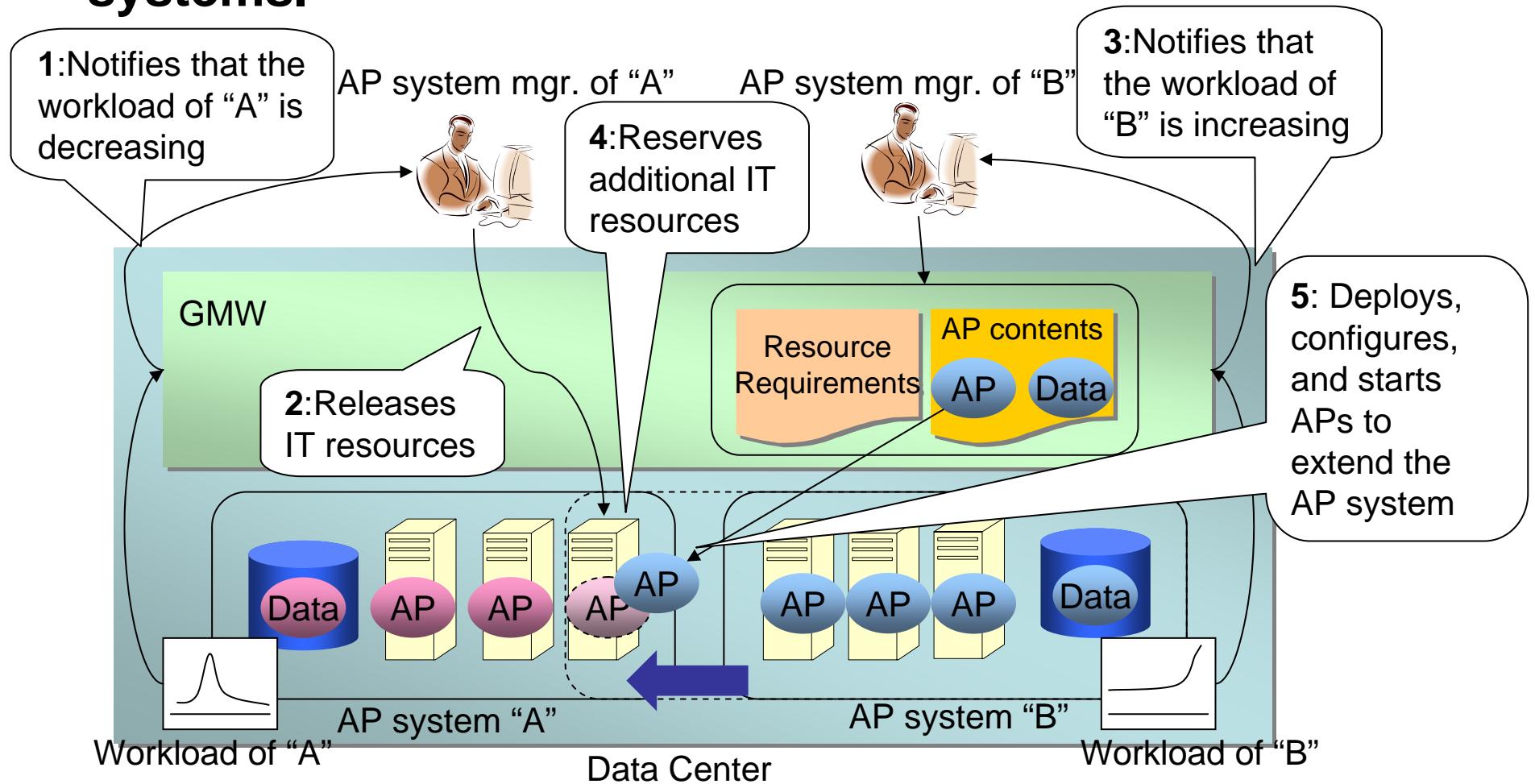
Scenario 1-1: Setting up an application system

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



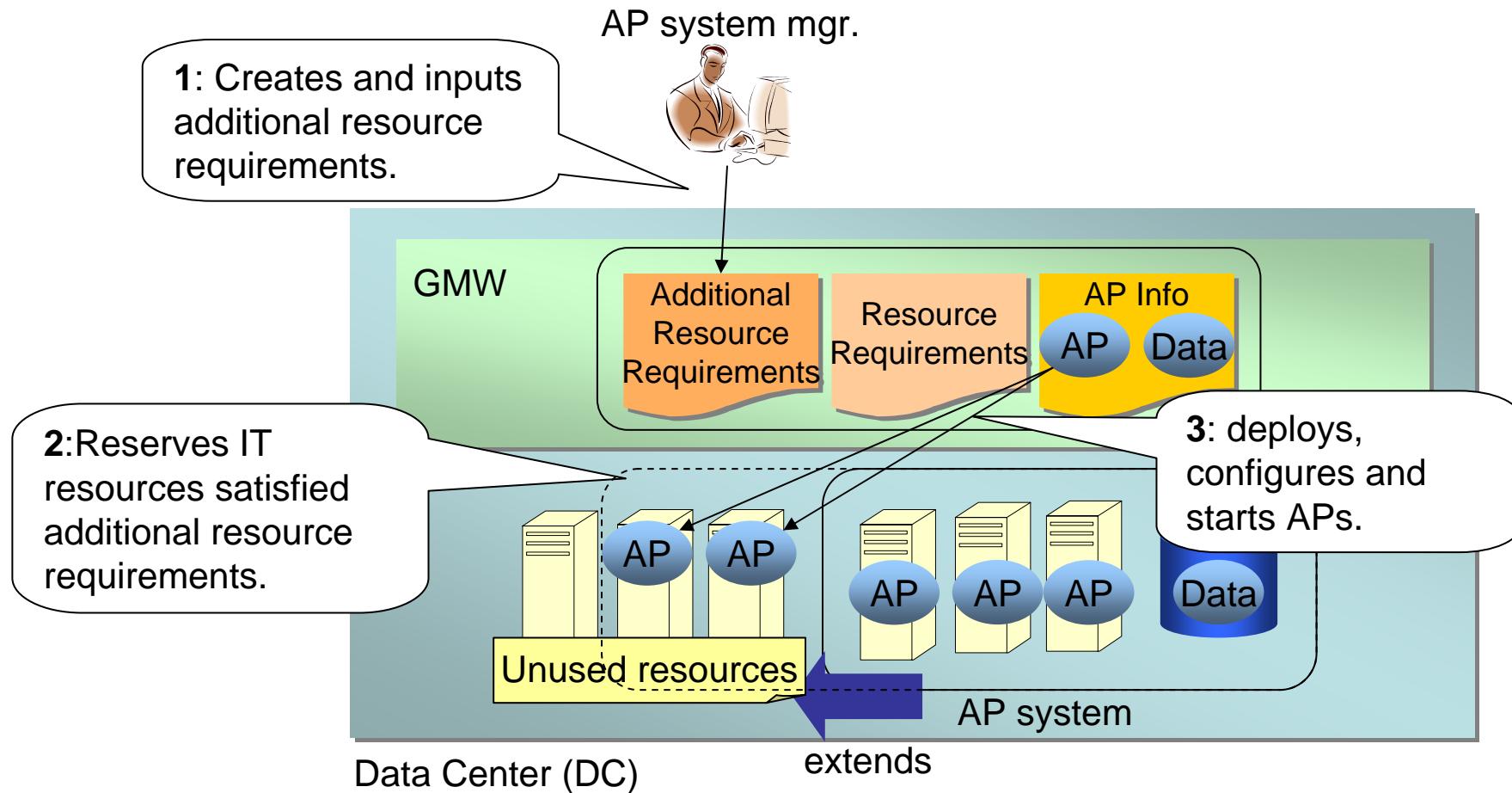
Scenario 1-2: Sharing IT resources

Allocating IT resources reduced from other application systems.



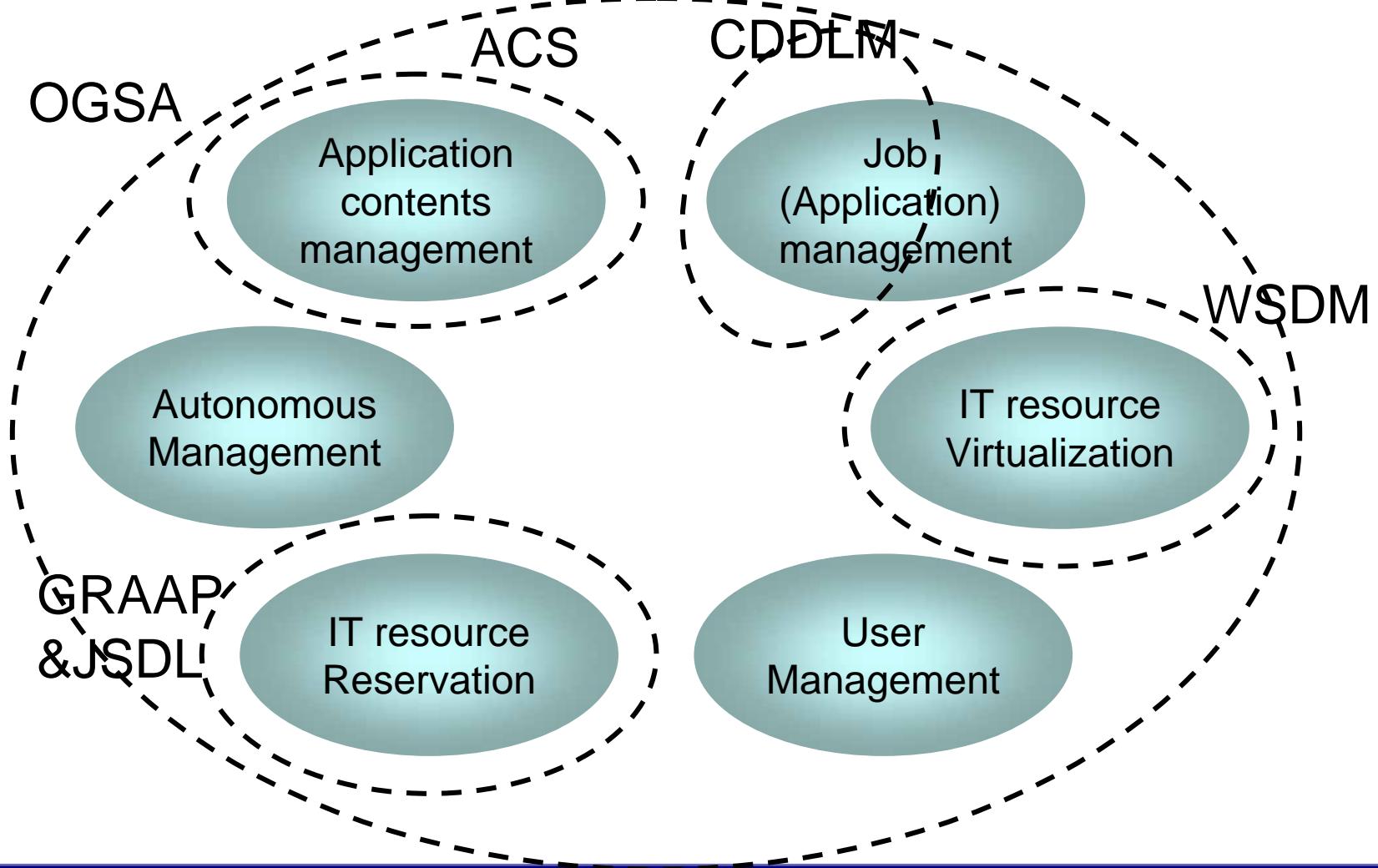
Scenario 1-3: Limited-time scheduled campaign

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



Standards

Functional requirements derived from this use case

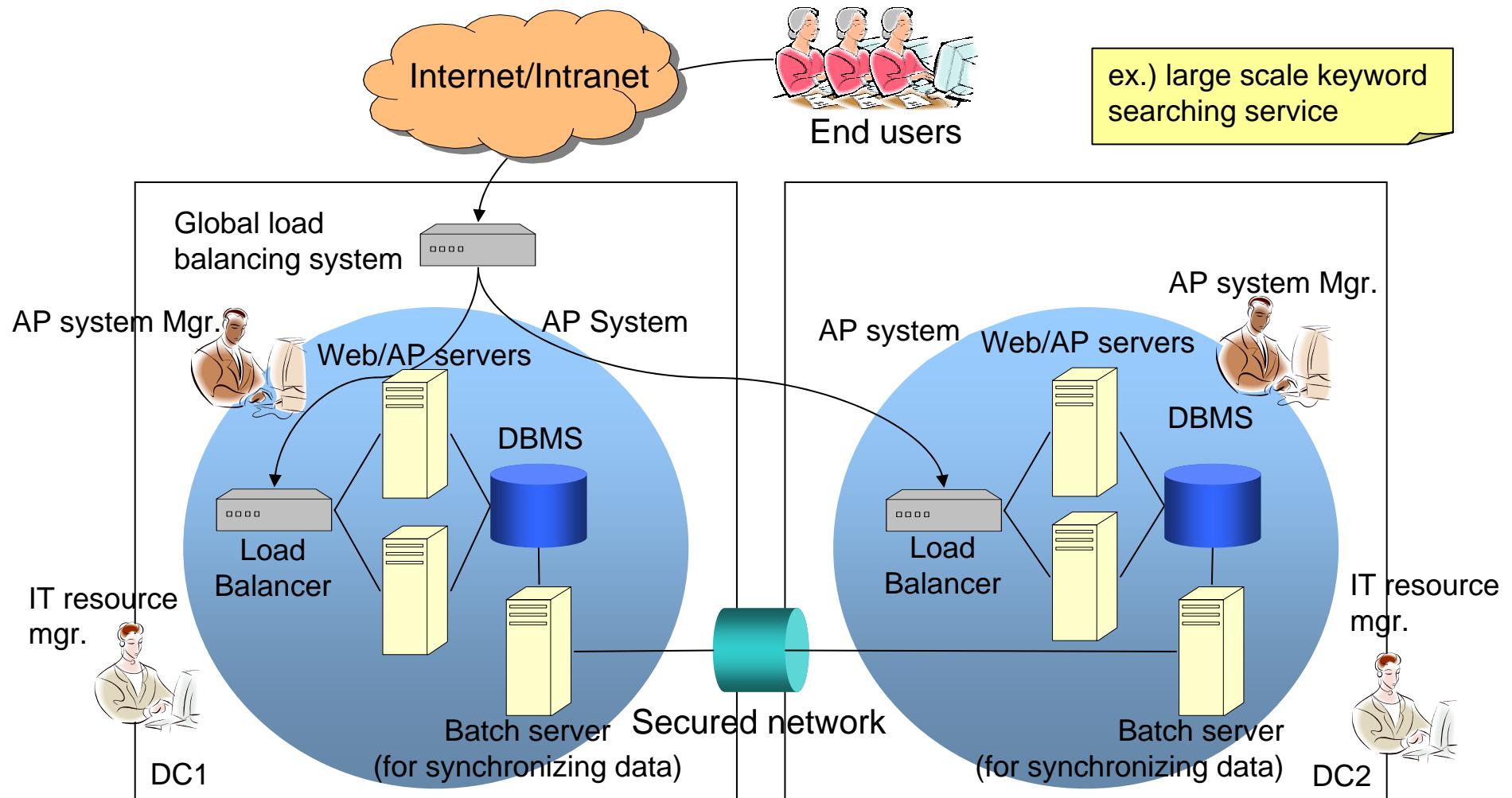


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What is a wide area load balancing system?

A large scale web site service among several DCs



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”.

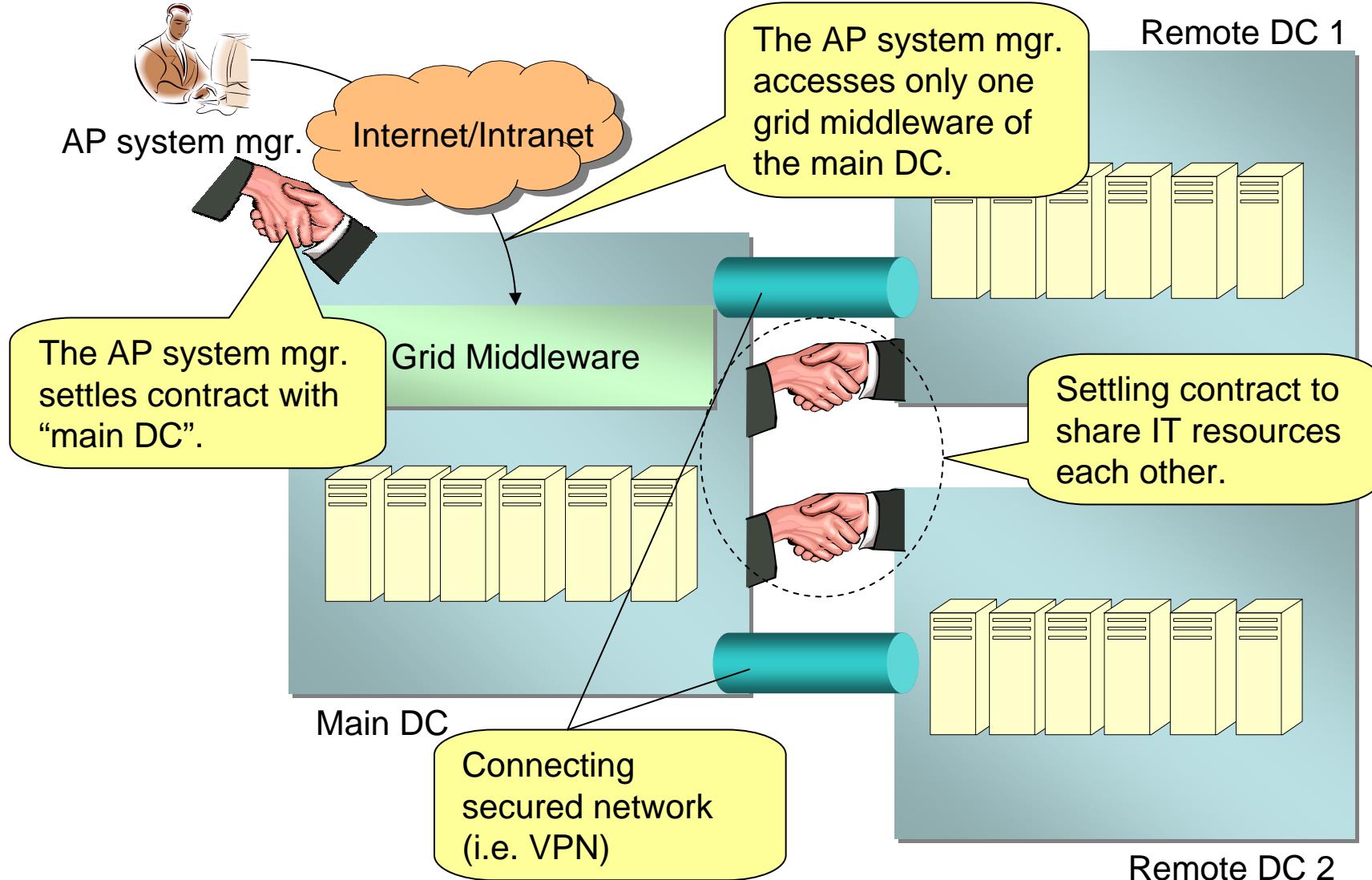
■ Improving IT resource utilization

- Optimizing amount of IT resources among data centers.

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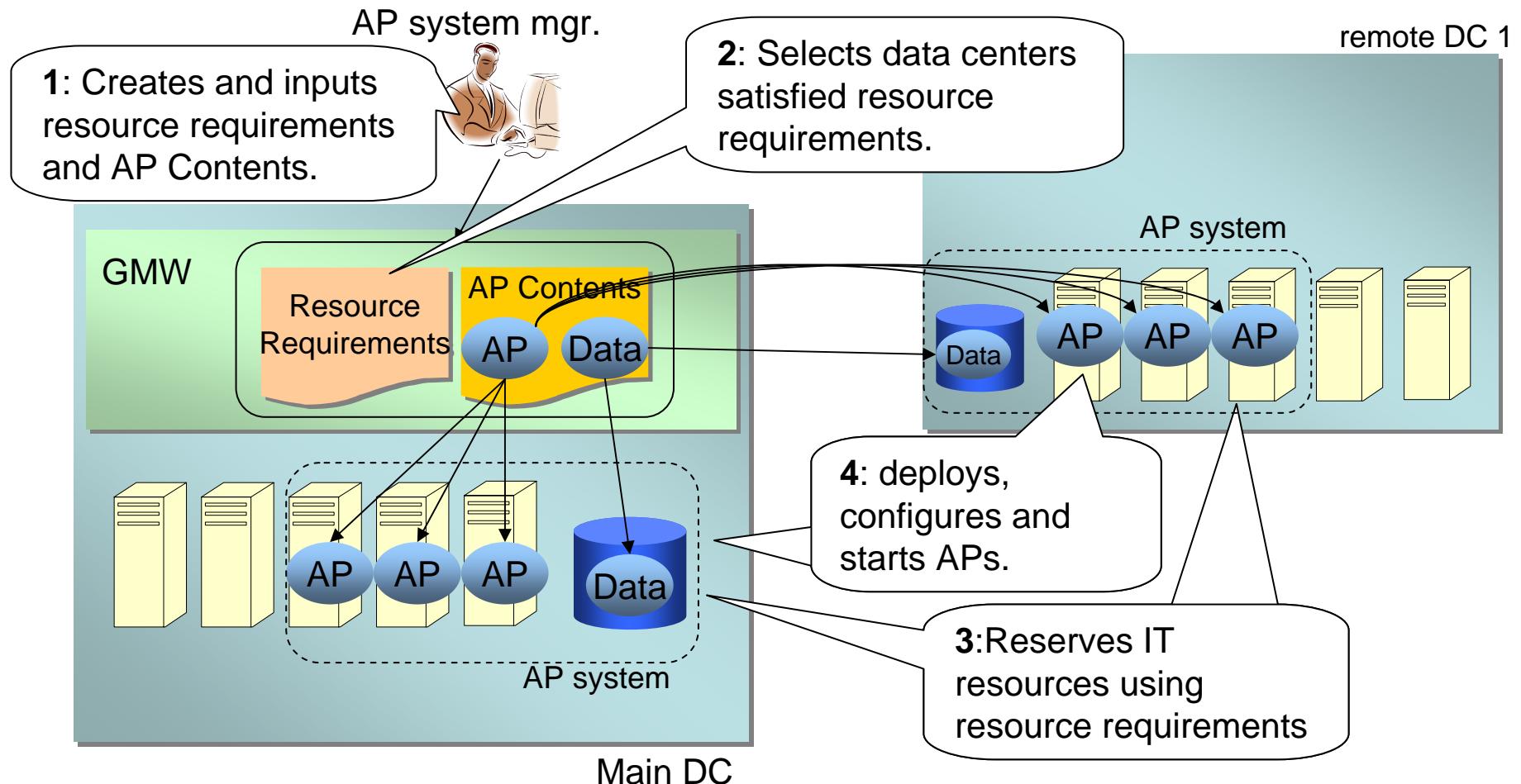
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Scenario 2-0: Pre-conditions



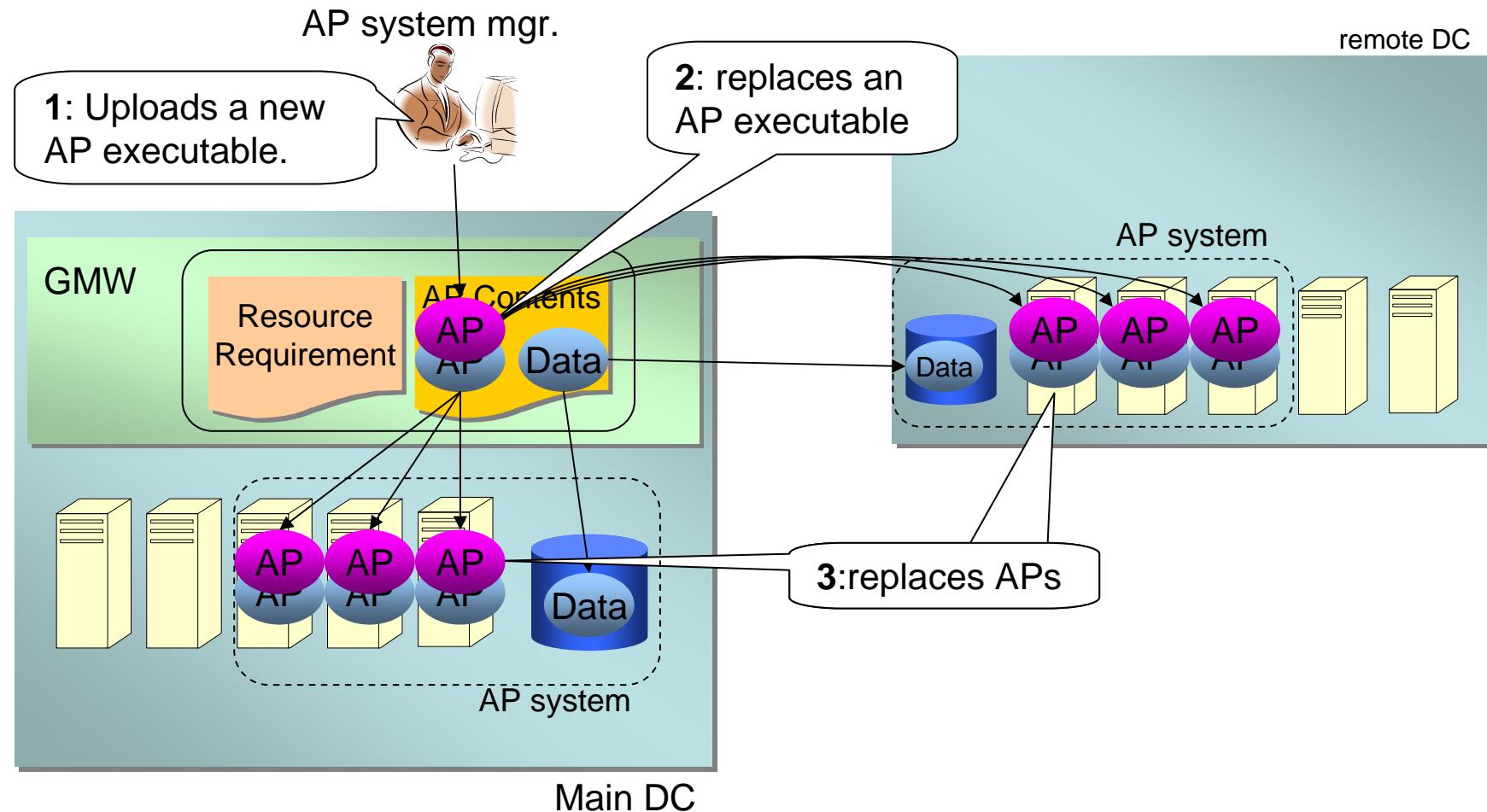
Scenario 2-1: Setting up application systems

Setting up several application systems among DCs



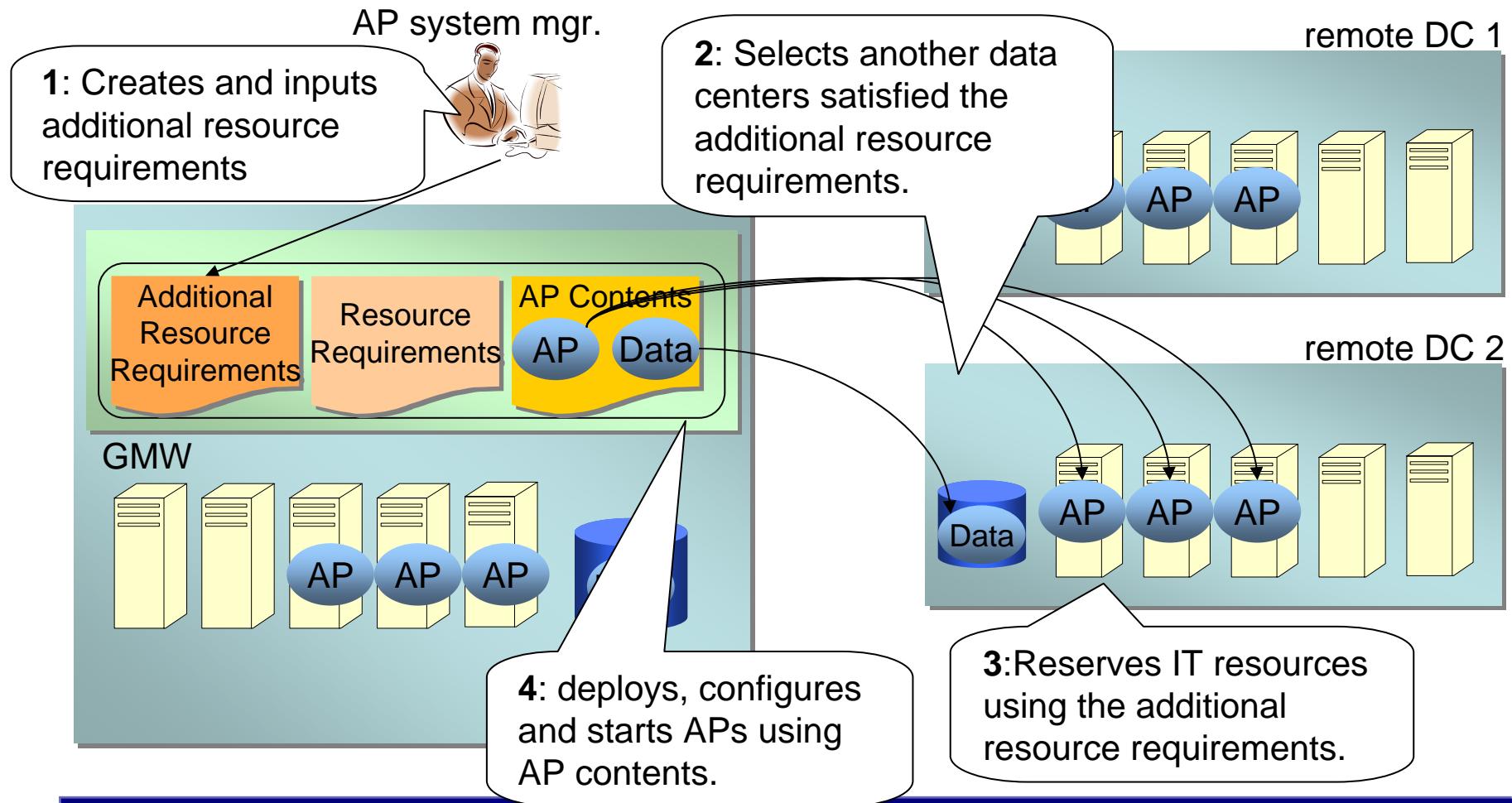
Scenario 2-2: Updating application systems

Reflecting the update of application information to all applications



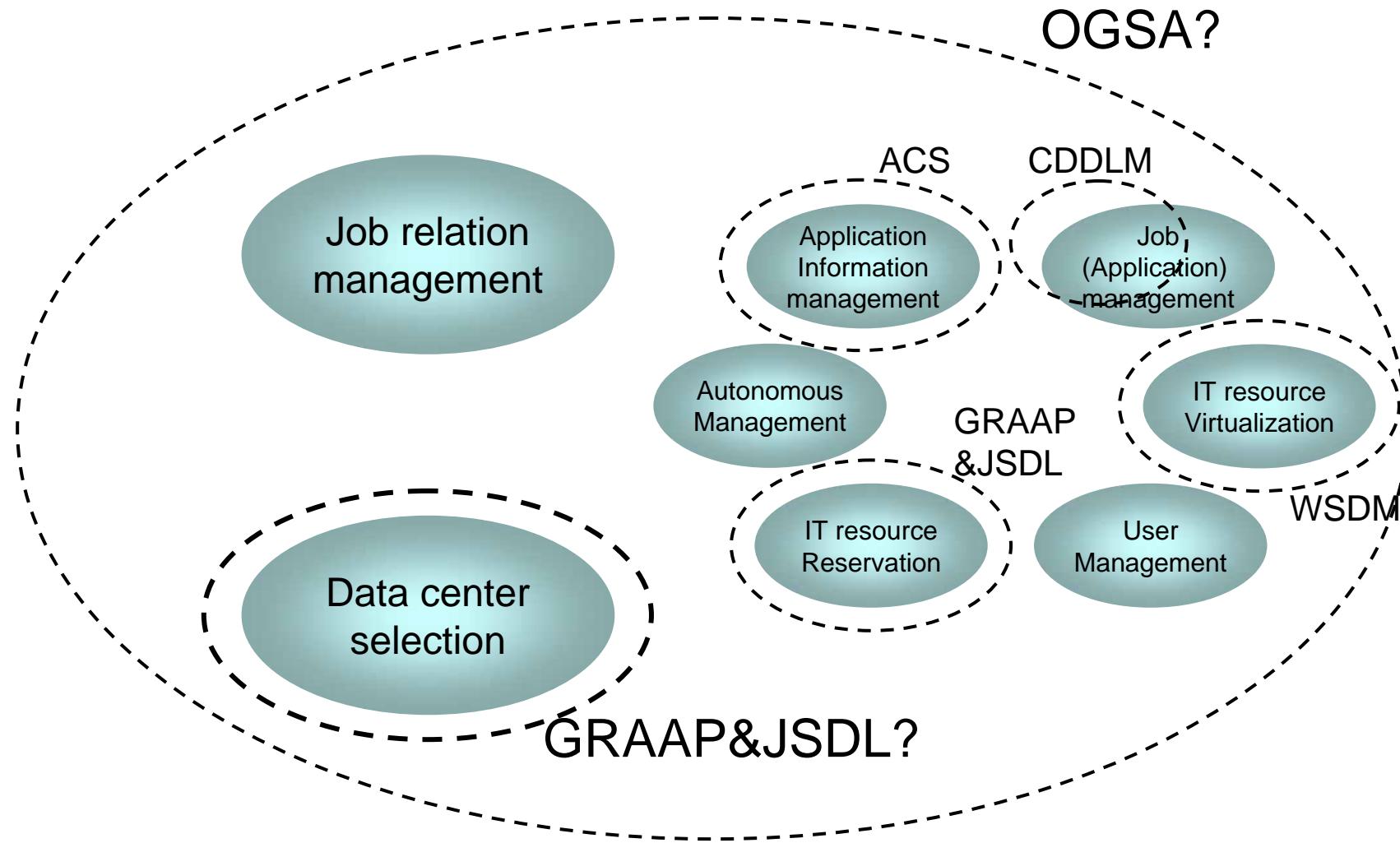
Scenario 2-3: Limited-time scheduled campaign

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



Standards

Functional requirements derived from two use cases

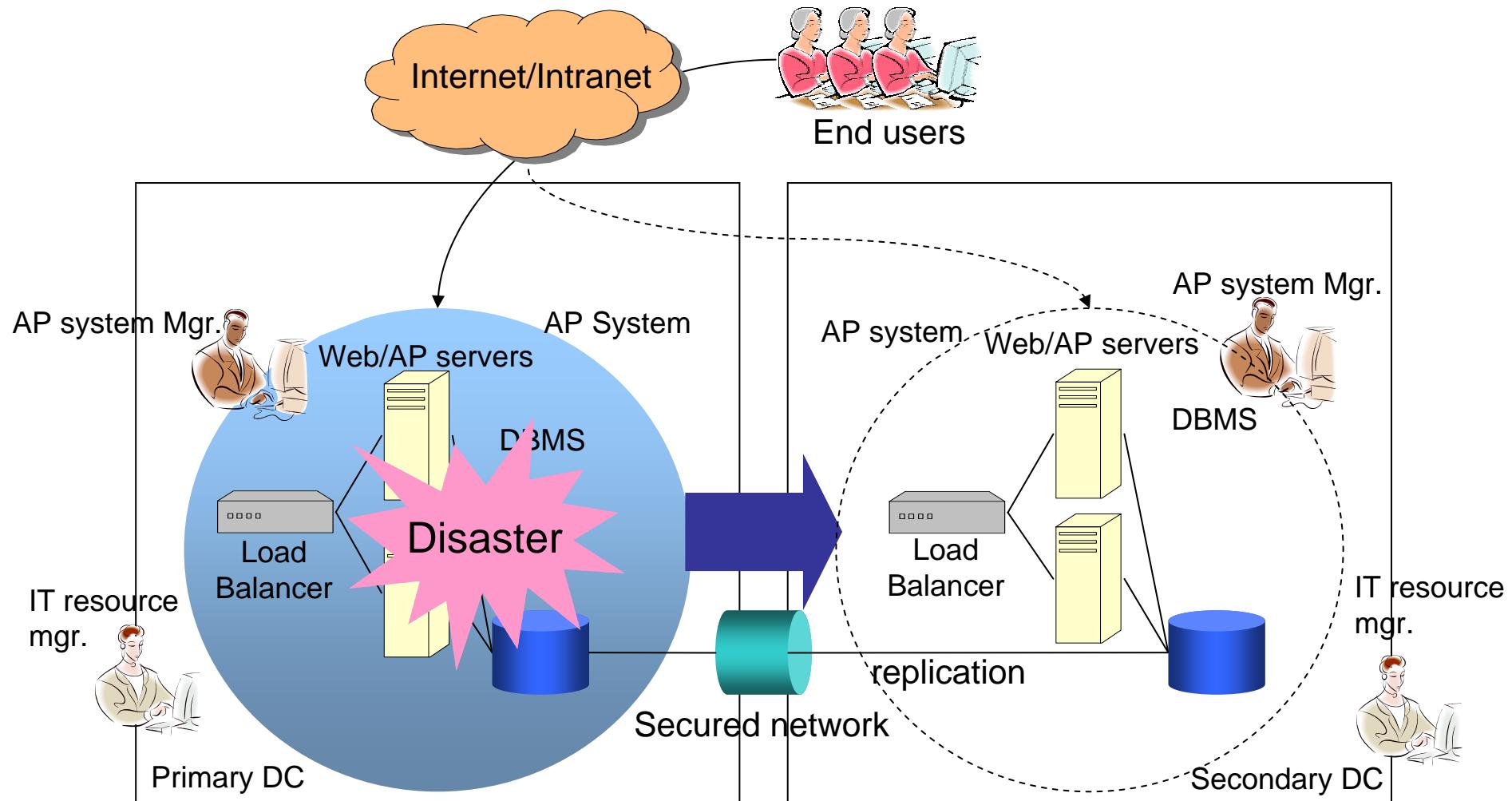


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Disaster Recovery System

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.

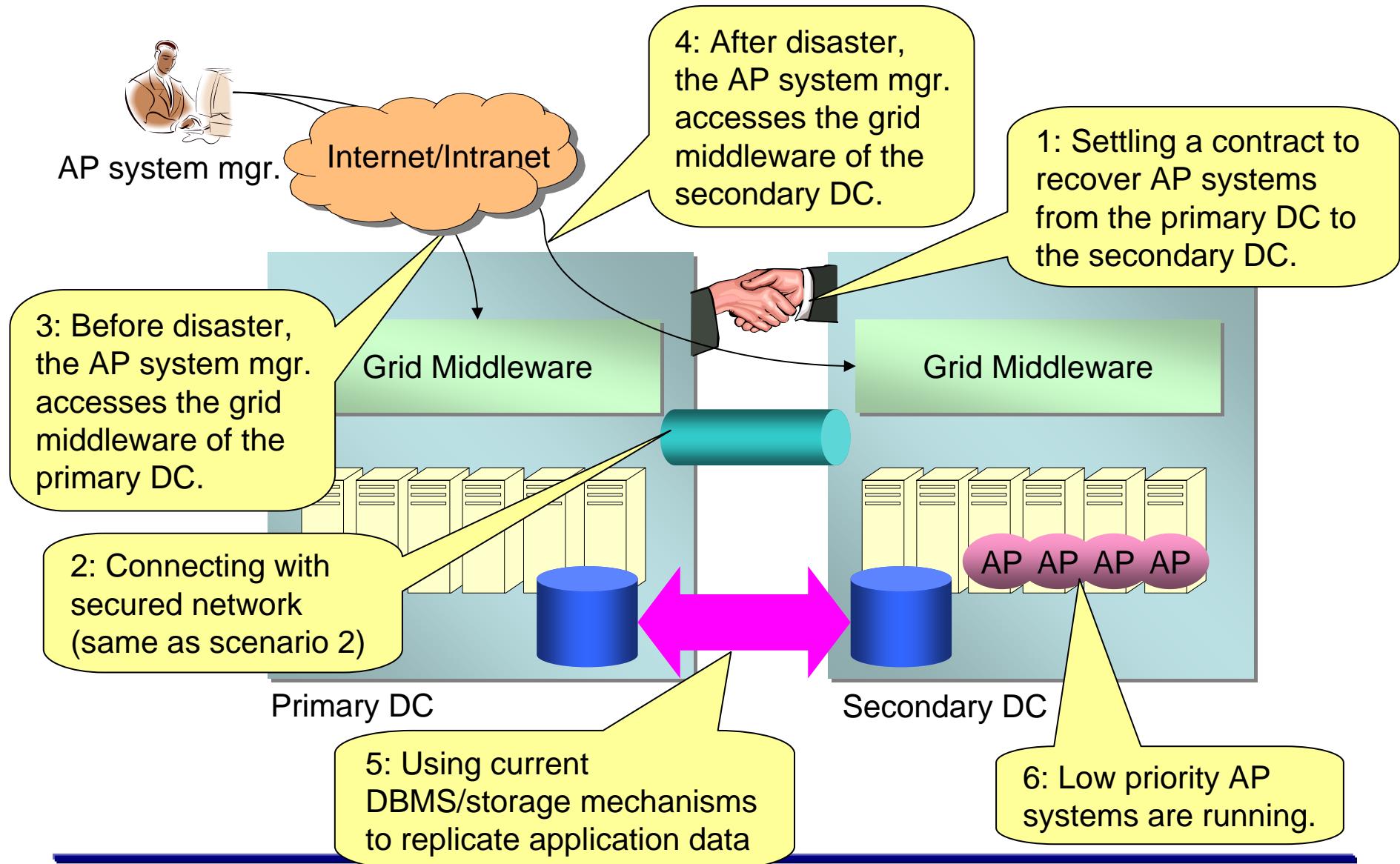
Expectation for grid technologies

- 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.

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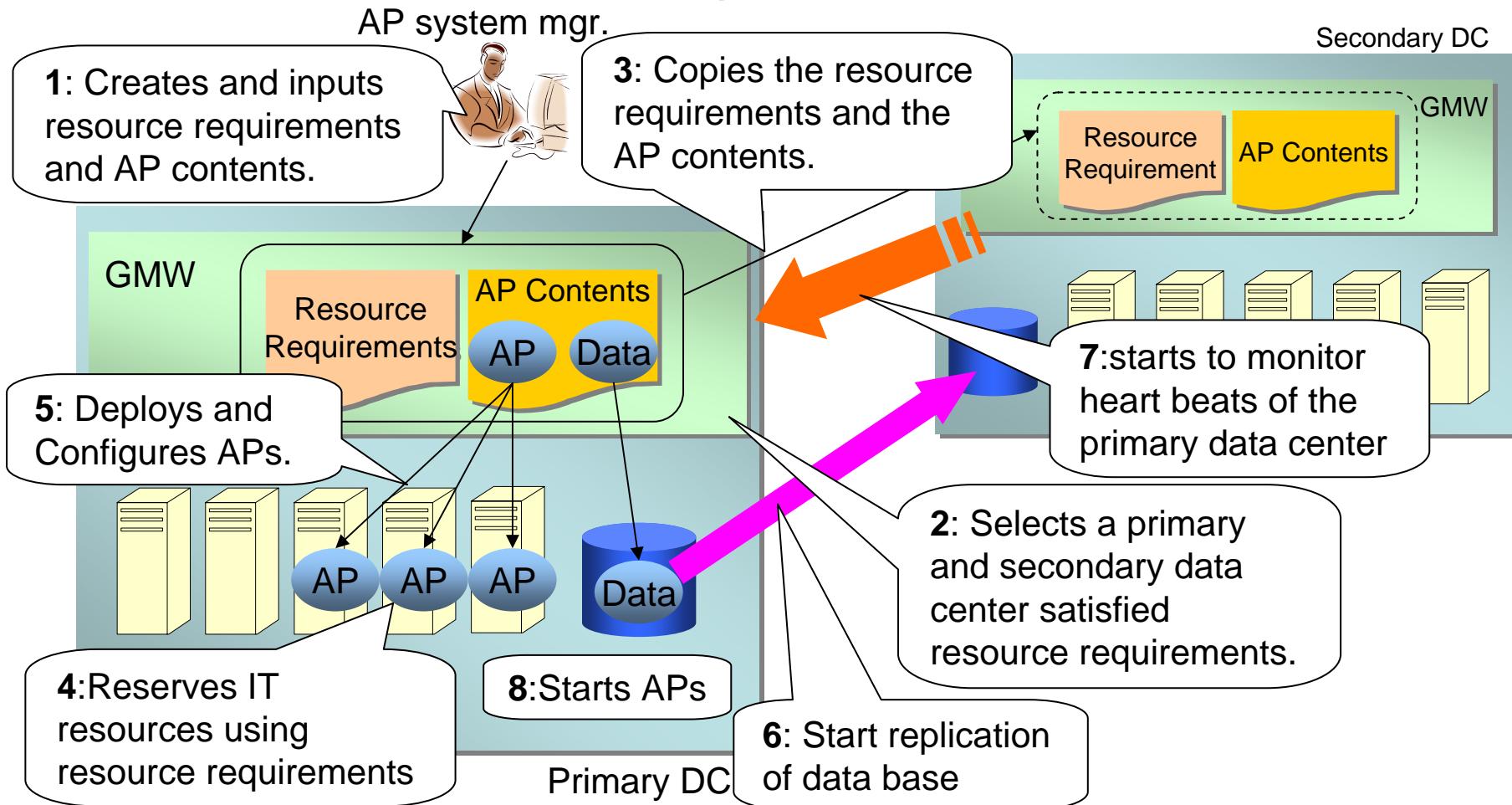
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Scenario 3-0: Pre-conditions



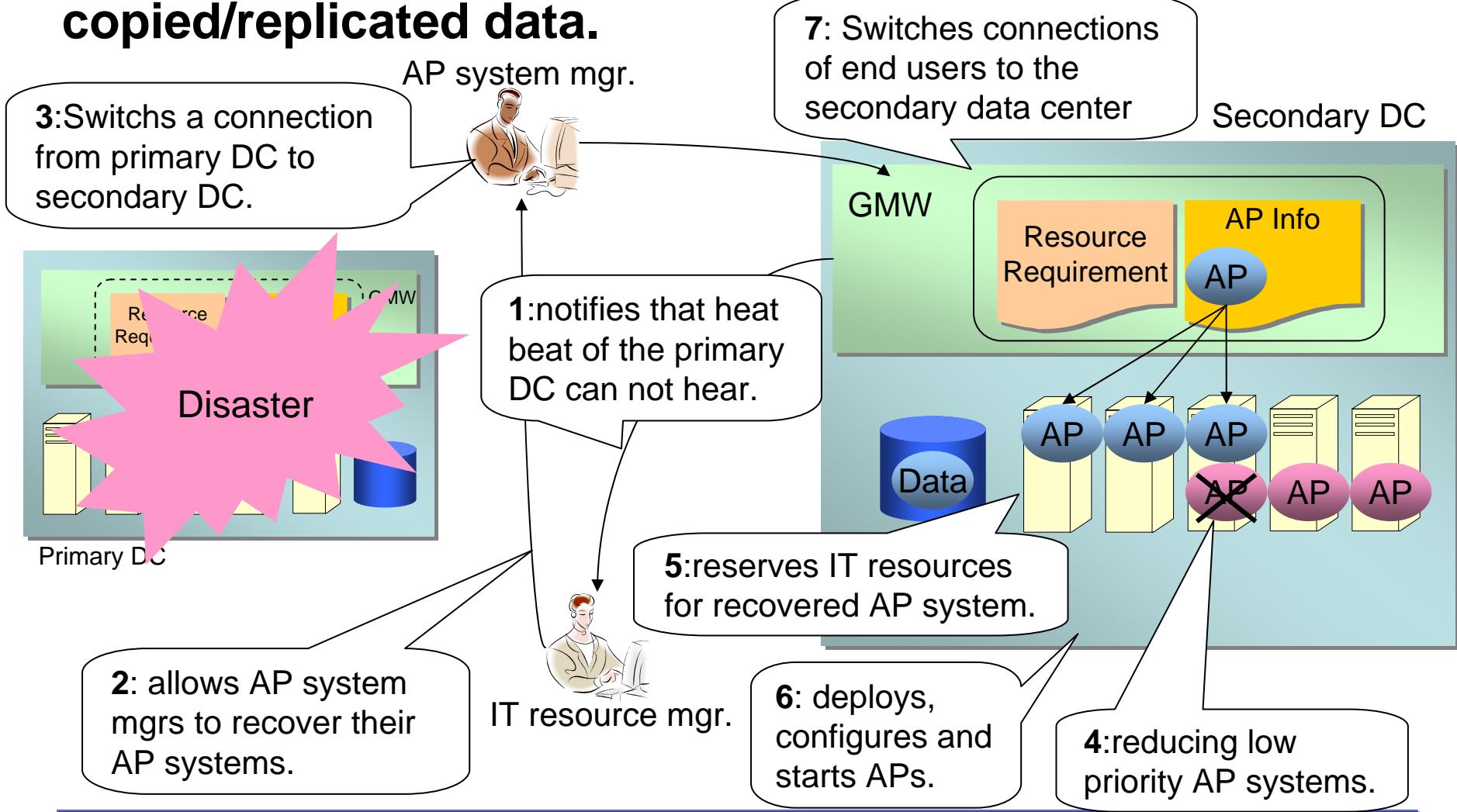
Scenario 3-1: Setting up AP systems

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



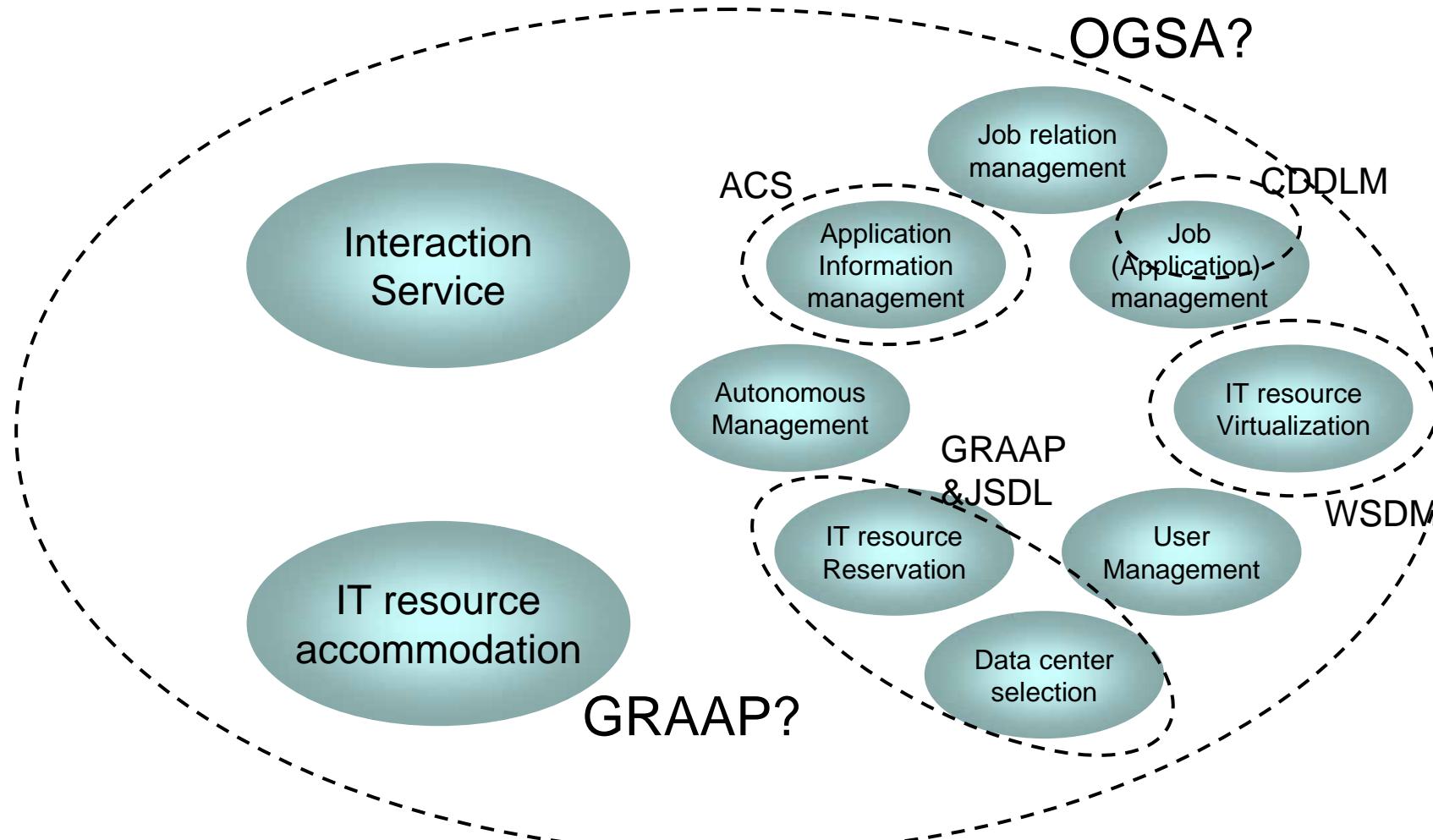
Scenario 3-2: Recovering an AP system

Recovering the AP system in the secondary DC with copied/replicated data.



Standards

Functional requirements derived from all use cases



End