

Enterprise Grid Requirement Research Group

Use Cases of Business Grid

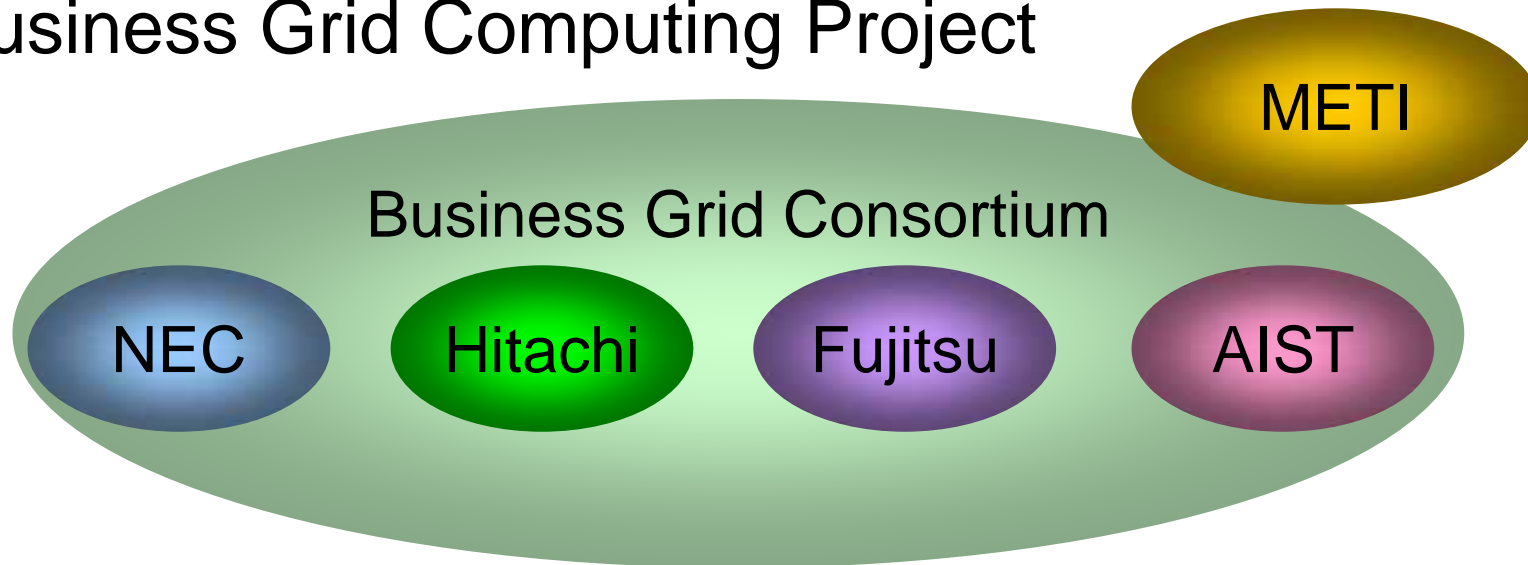
Shinya Miyakawa (NEC Corp.)
Toshiyuki Nakata (NEC Corp.)
Hiro Kishimoto (Fujitsu Ltd.)
Nobutoshi Sagawa (Hitachi Ltd.)

Contents

- 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

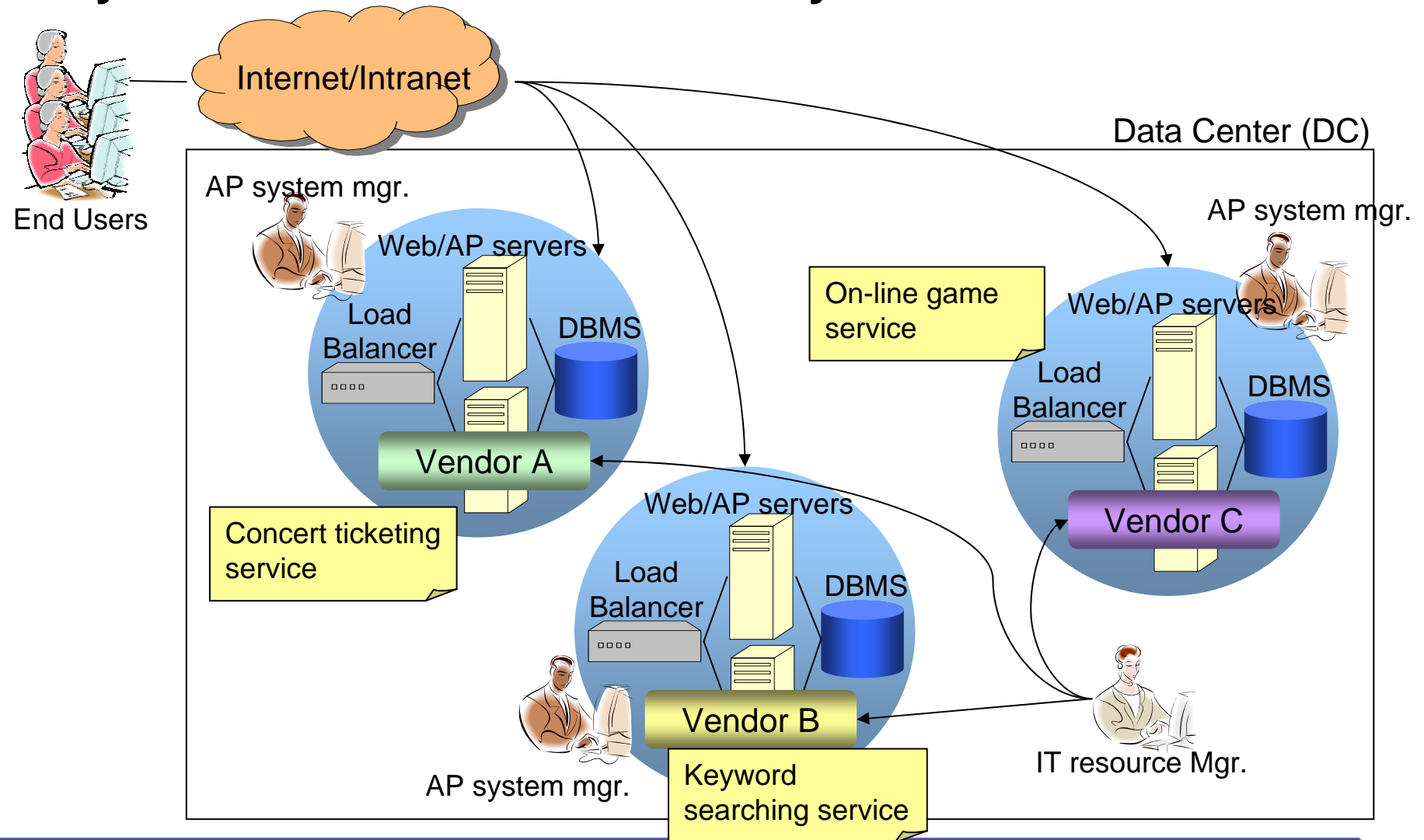
- Targets managements of data centers, in which there are various AP systems on various IT resources.
- Aims reducing management cost and increasing IT resource utilization & business continuity for improving ROI.

Contents

- 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

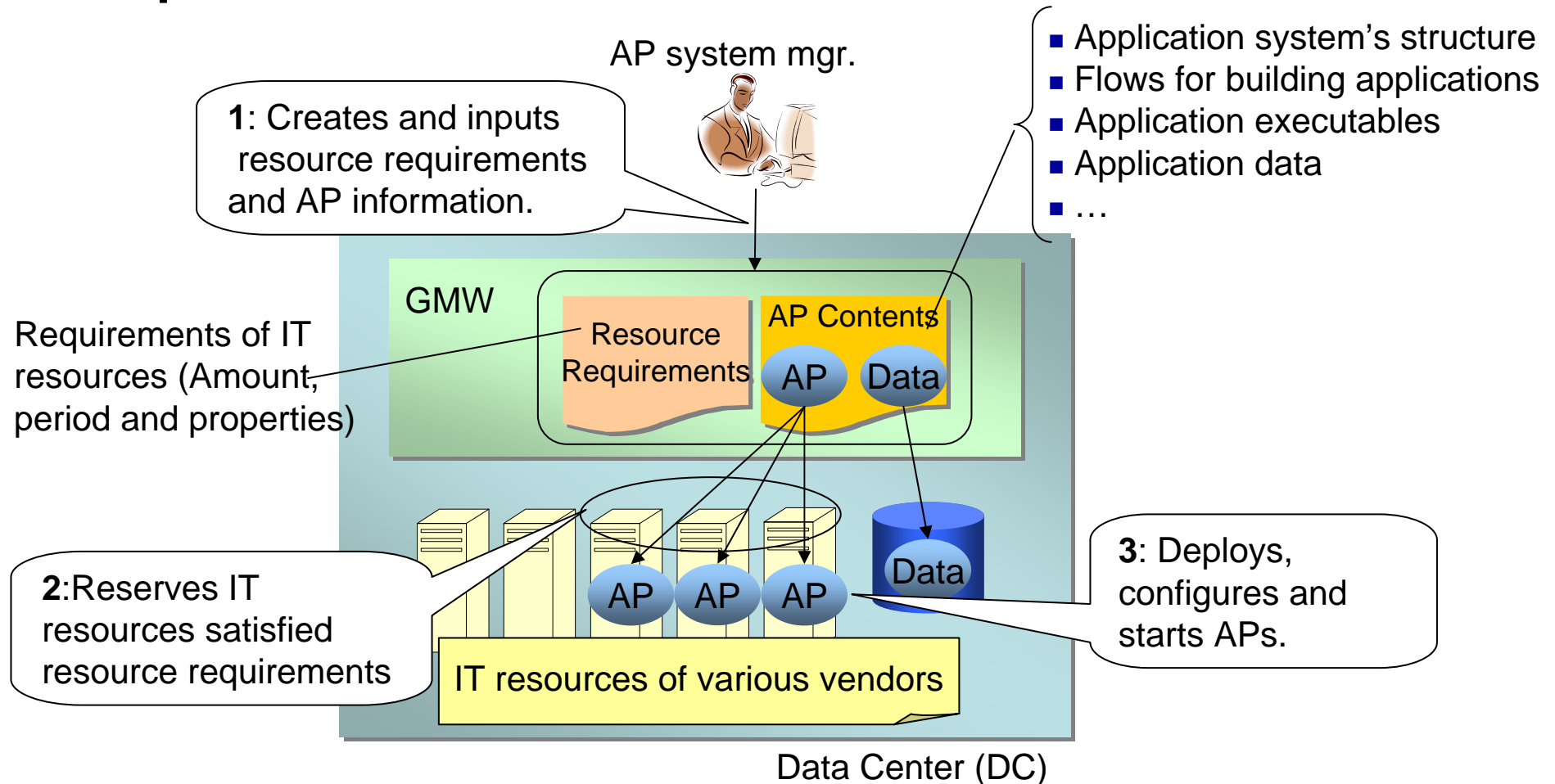
- Reducing management cost
 - Setting up an AP system on heterogeneous IT resources with well-formed application design
 - Providing well-defined operations of IT resources to hide their difference of vendors
- Increasing IT resource utilization
 - Sharing IT resources among several AP systems
 - Scheduling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

Contents

- 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

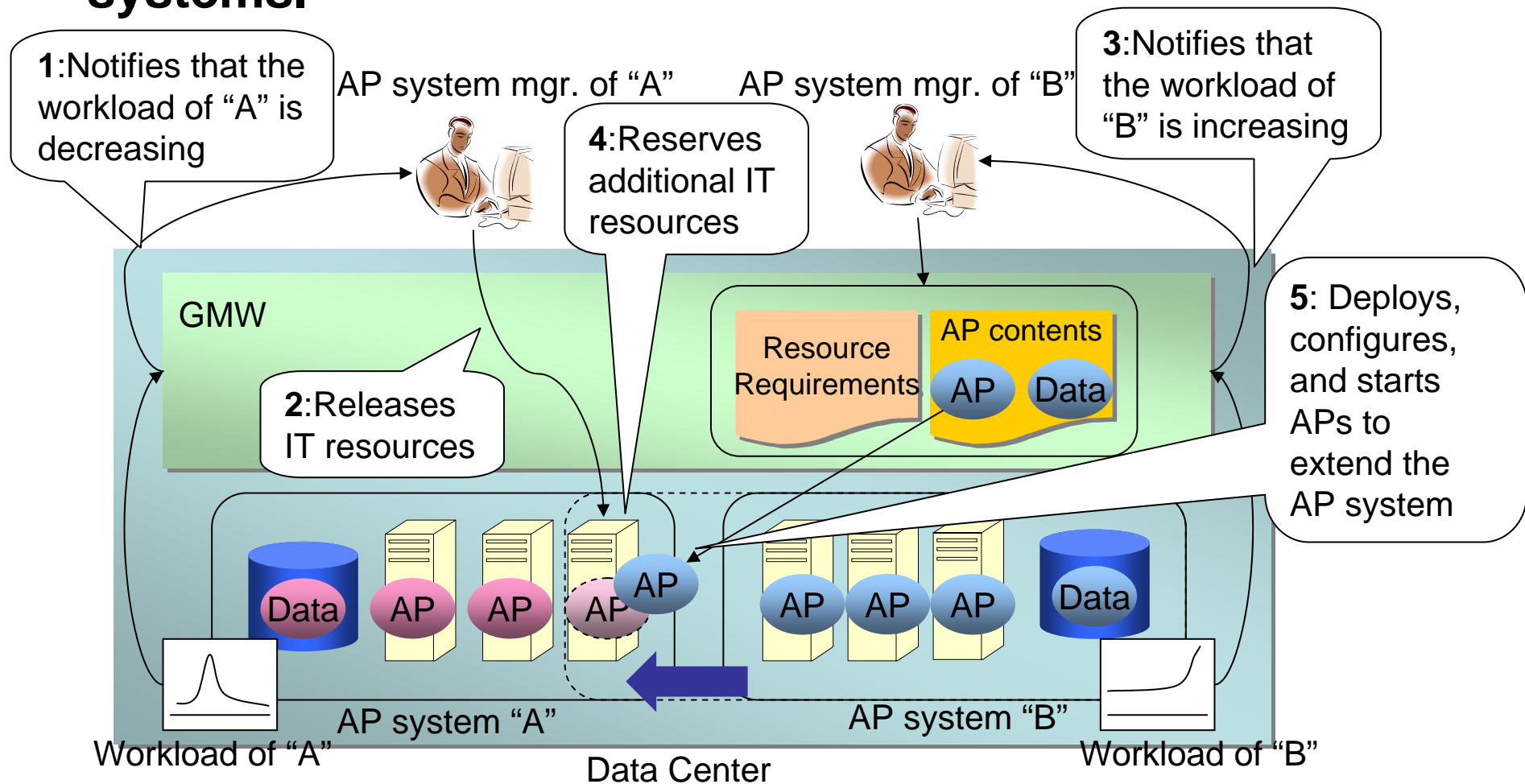
Scenario 1-1: Setting up an application system

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



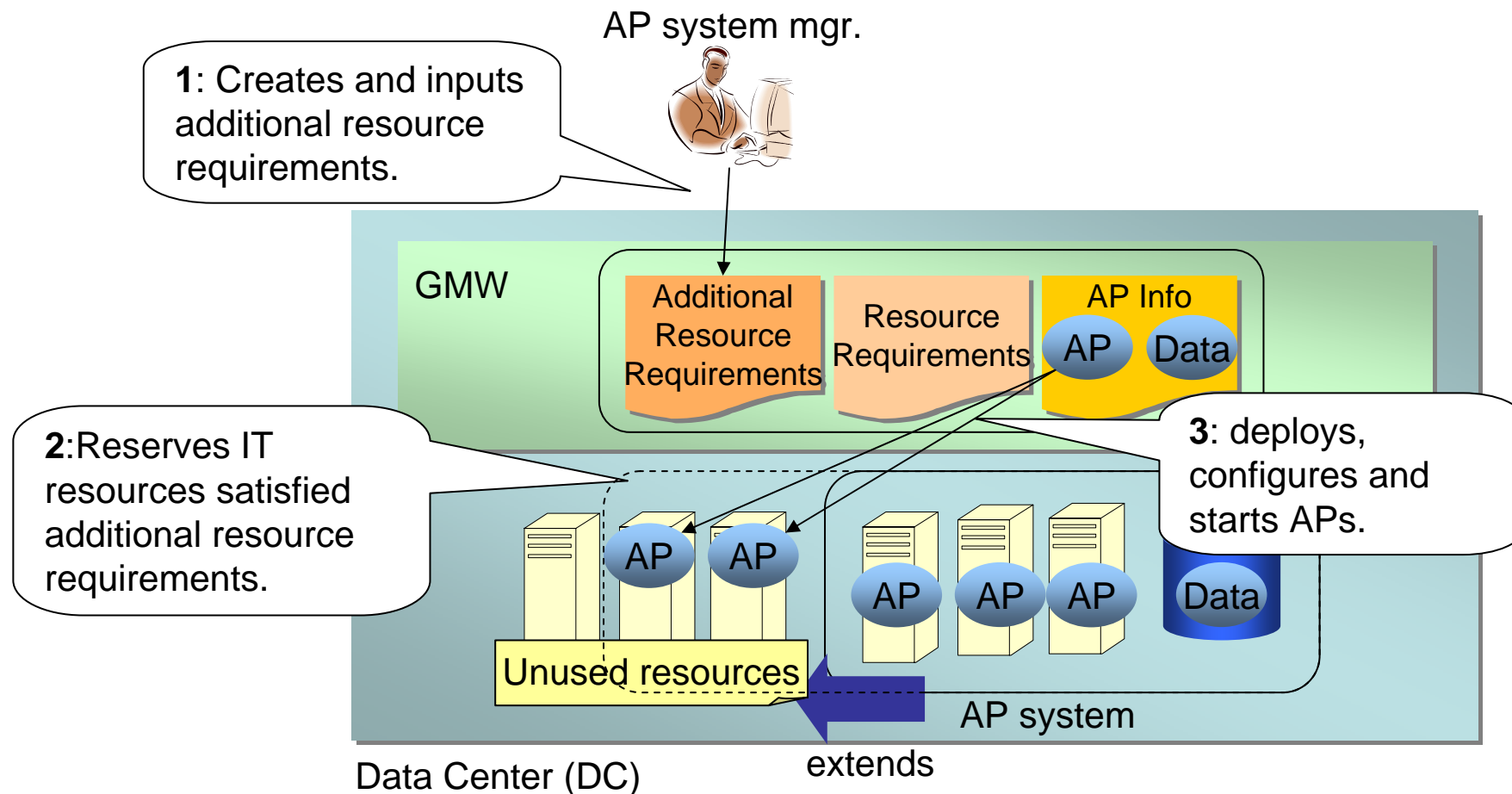
Scenario 1-2: Sharing IT resources

Allocating IT resources reduced from other application systems.



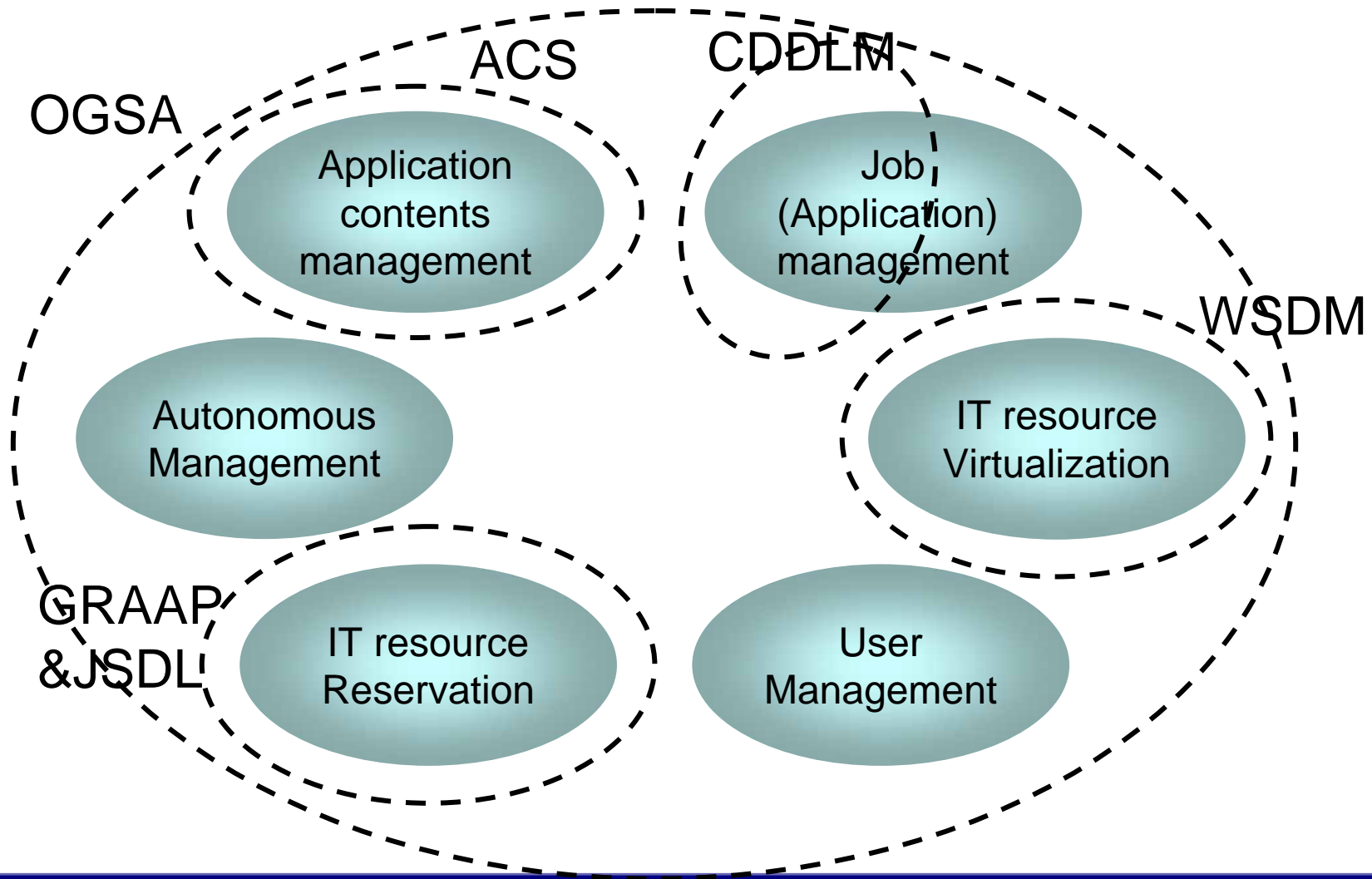
Scenario 1-3: Limited-time scheduled campaign

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



Standards

Functional requirements derived from this use case

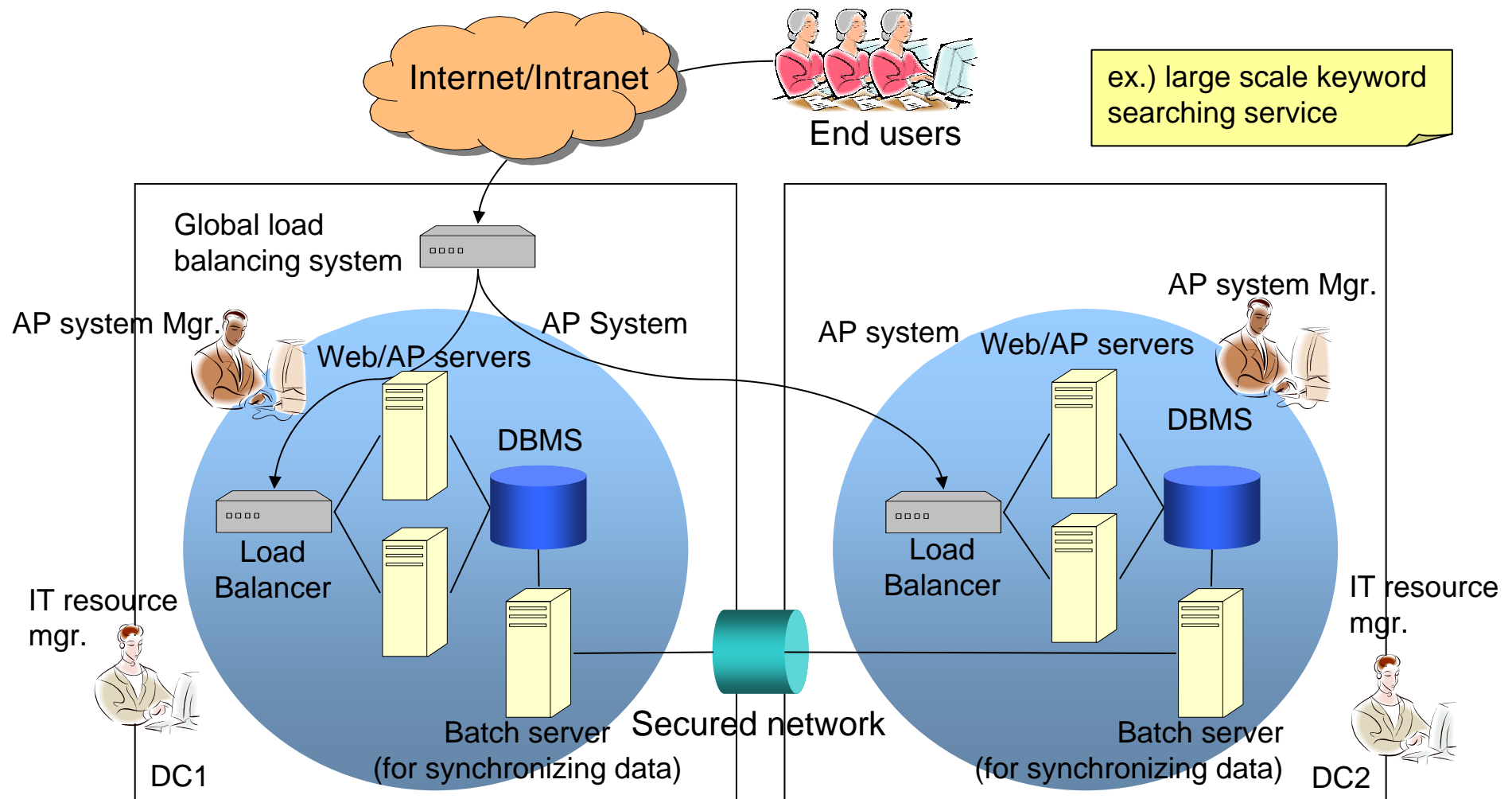


Contents

- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
 - What is a wide area 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



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”.

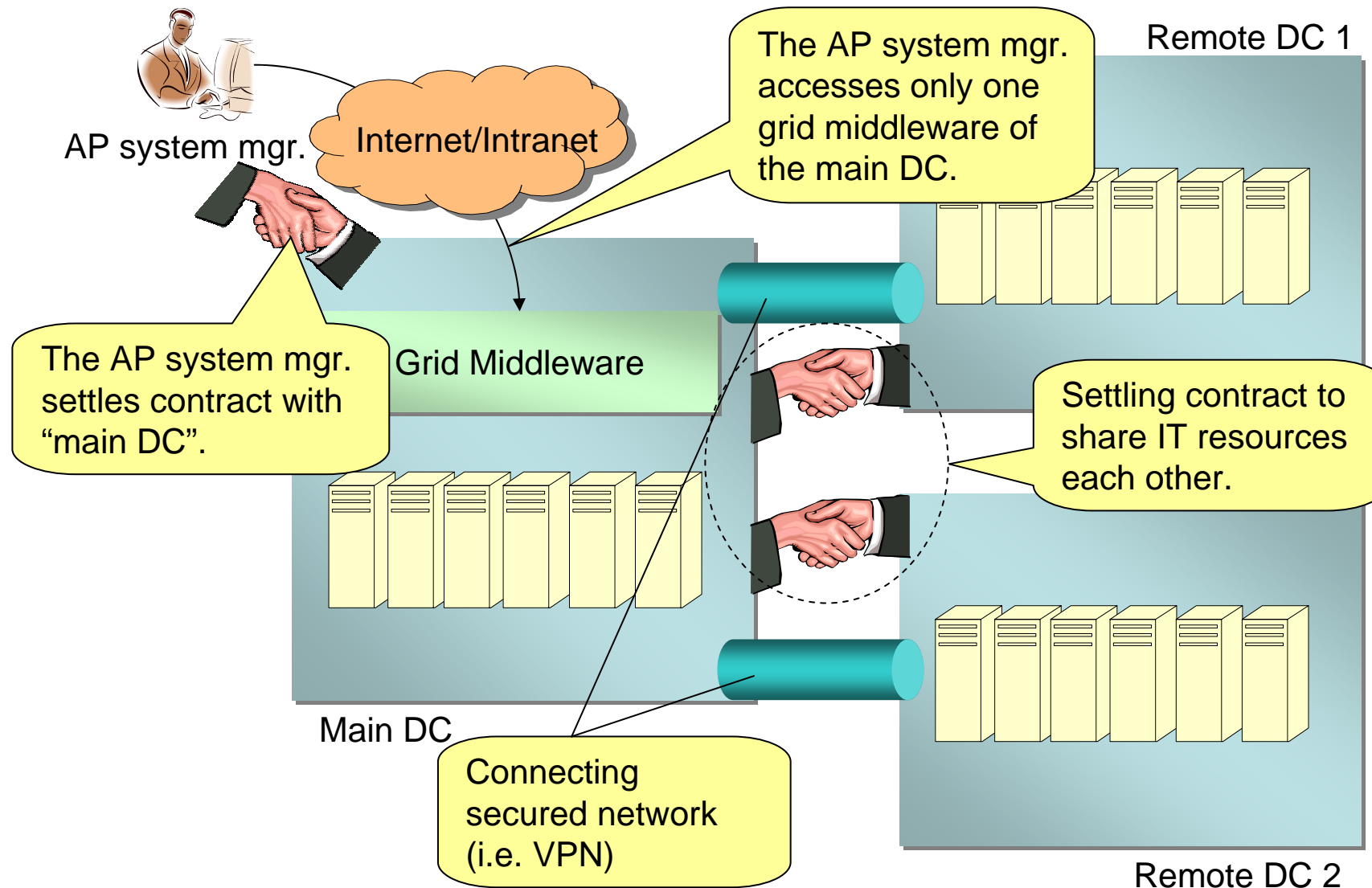
■ Improving IT resource utilization

- Optimizing amount of IT resources among data centers.

Contents

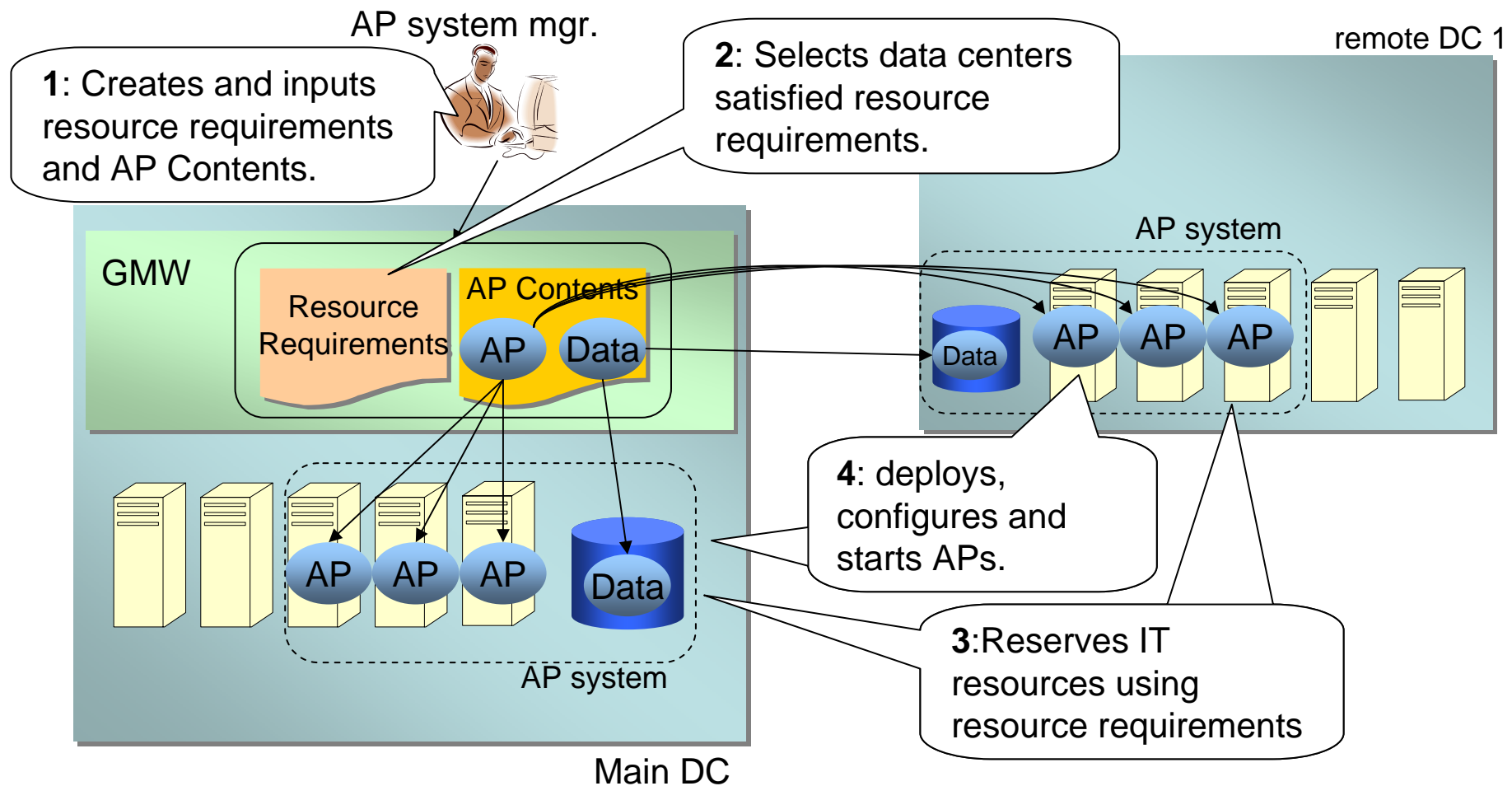
- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
 - What is a wide area load balancing system?
 - Problems of current system
 - Expectation for grid technologies
 - Scenarios
 - 2-0: Pre-condition
 - 2-1: Setting up application systems
 - 2-2: Updating application systems
 - 2-3: Limited-time scheduled site extension
 - Standards
- Use Case 3: Disaster Recovery System

Scenario 2-0: Pre-conditions



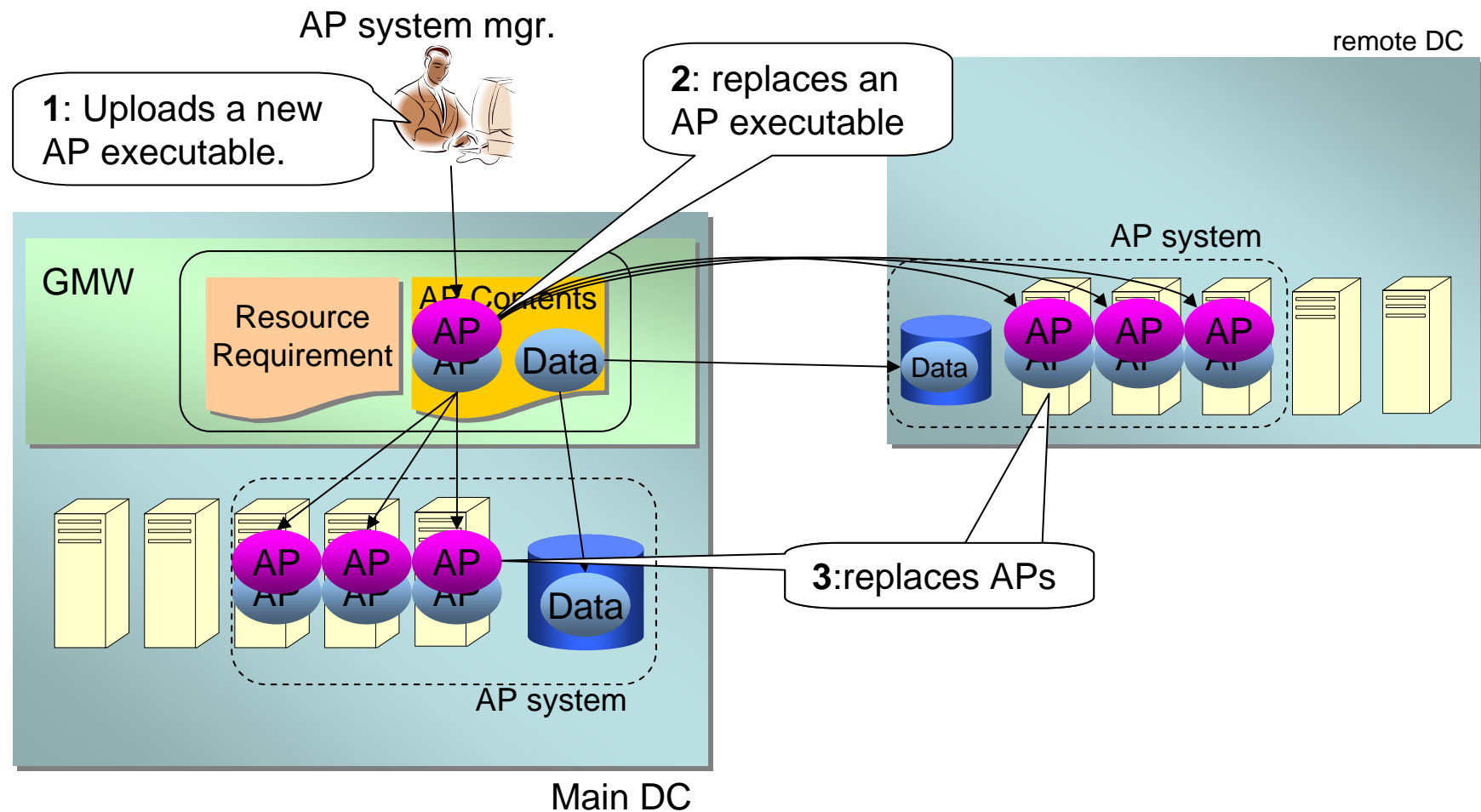
Scenario 2-1: Setting up application systems

Setting up several application systems among DCs



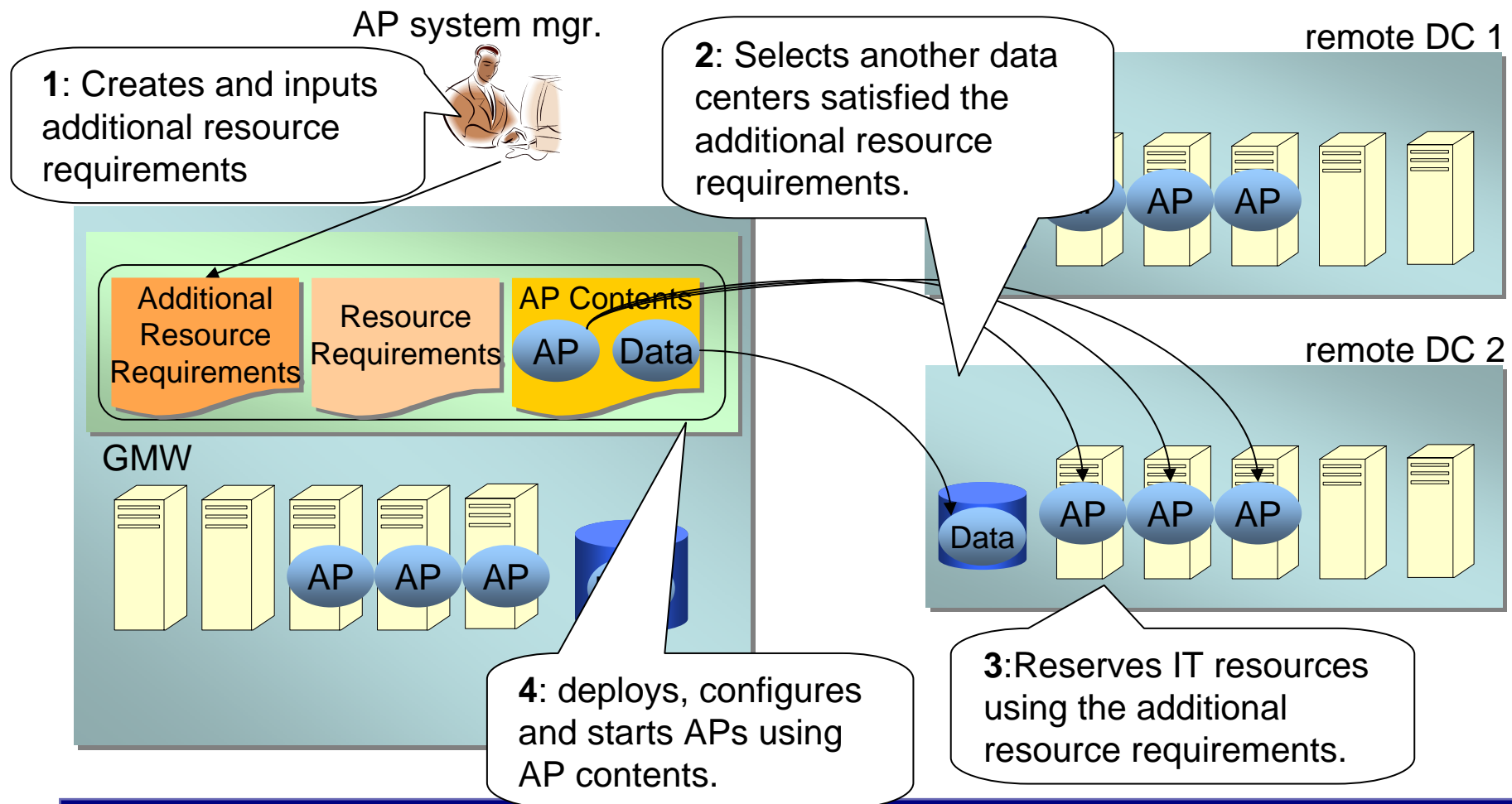
Scenario 2-2: Updating application systems

Reflecting the update of application information to all applications



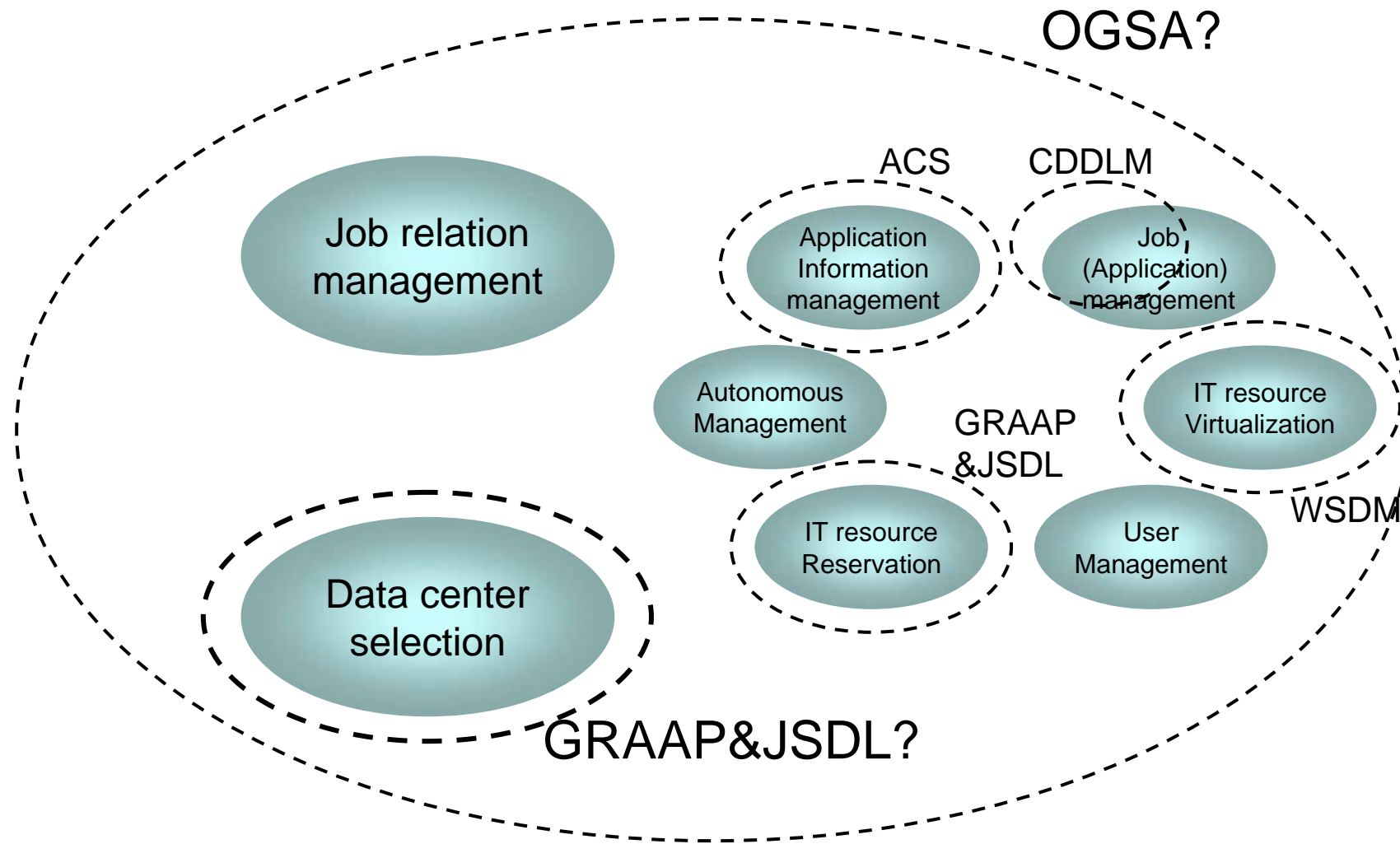
Scenario 2-3: Limited-time scheduled campaign

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



Standards

Functional requirements derived from two use cases

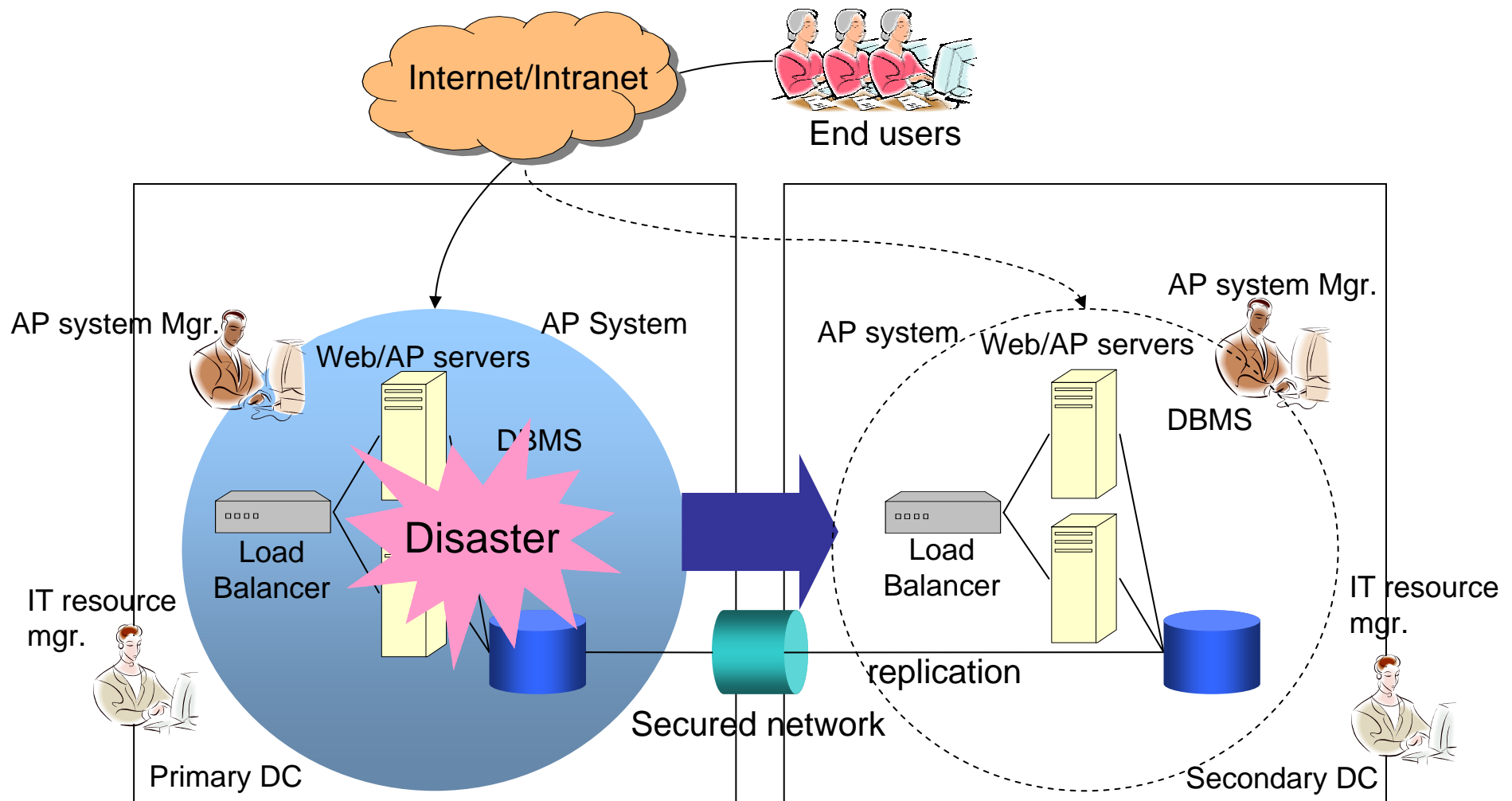


Contents

- 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.

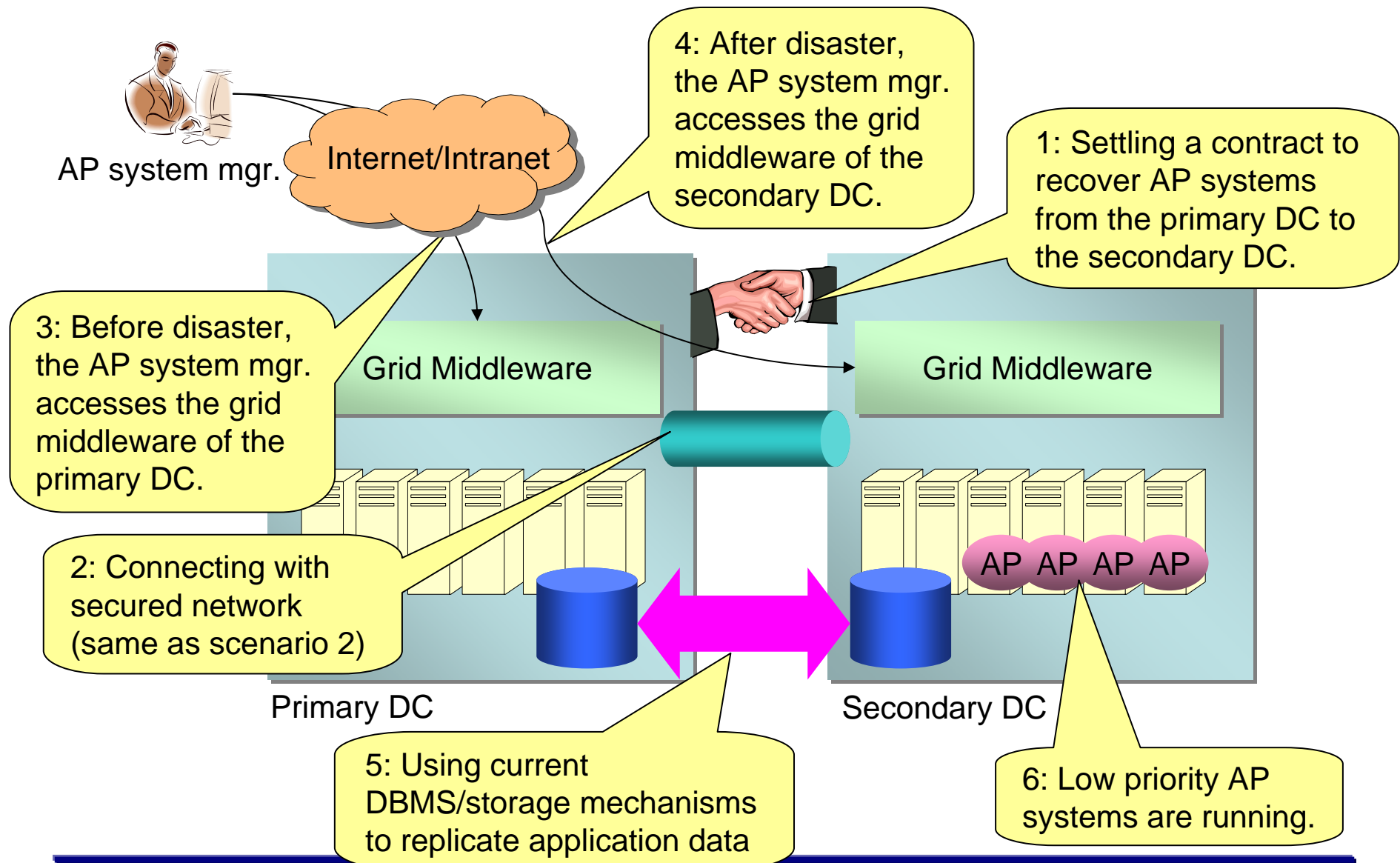
Expectation for grid technologies

- 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.

Contents

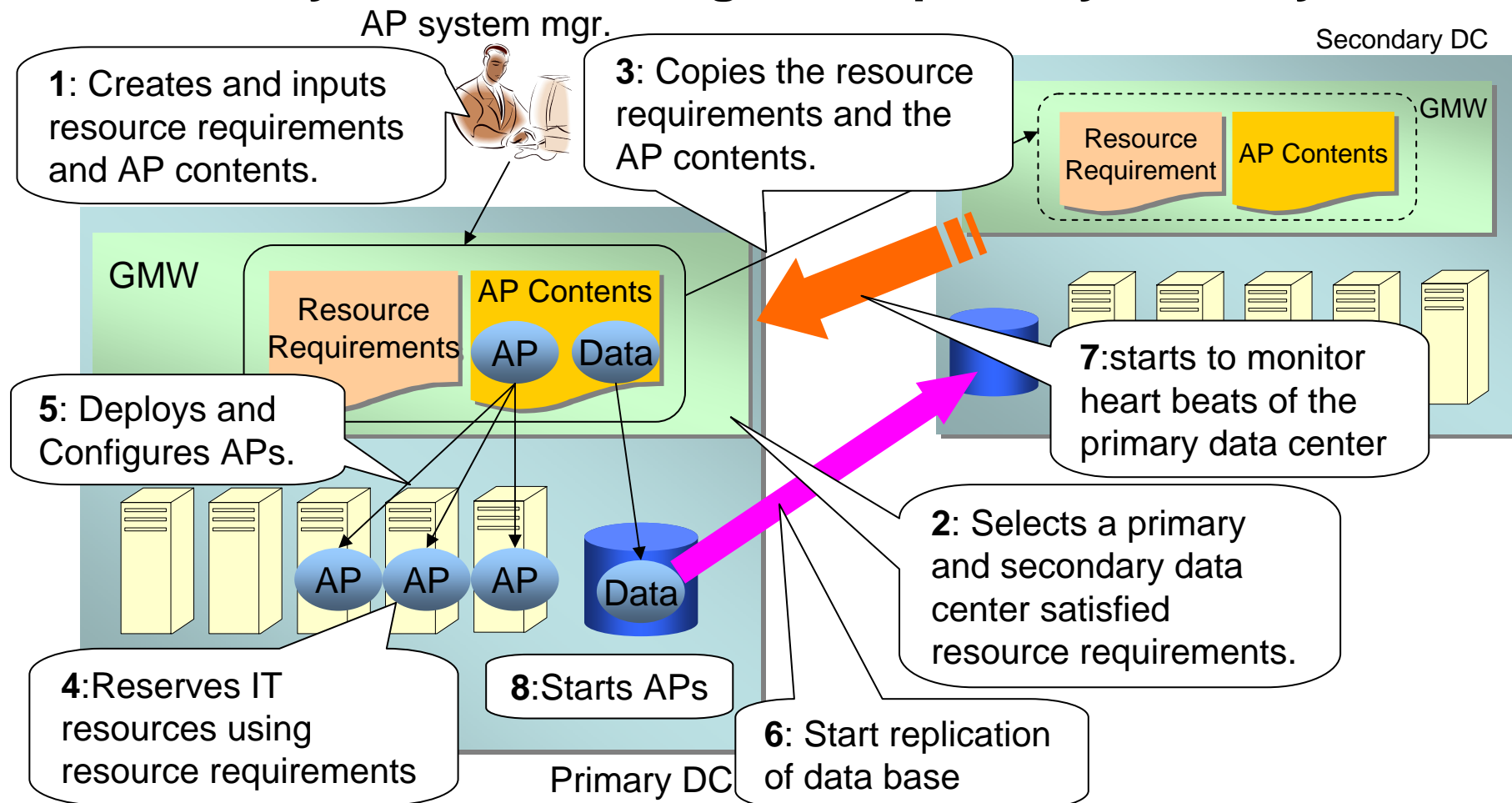
- Summary of Business Grid
- Use Case 1: Multiple In-house Systems
- Use Case 2: Wide Area Load Balancing System
- Use Case 3: Disaster Recovery System
 - Targeted disaster recovery system
 - Current disaster recovery system
 - Expectation for grid technologies
 - Scenarios
 - 3-0: Pre-conditions
 - 3-1: Setting up an application system
 - 3-2: Recovering an application system
 - Standards

Scenario 3-0: Pre-conditions



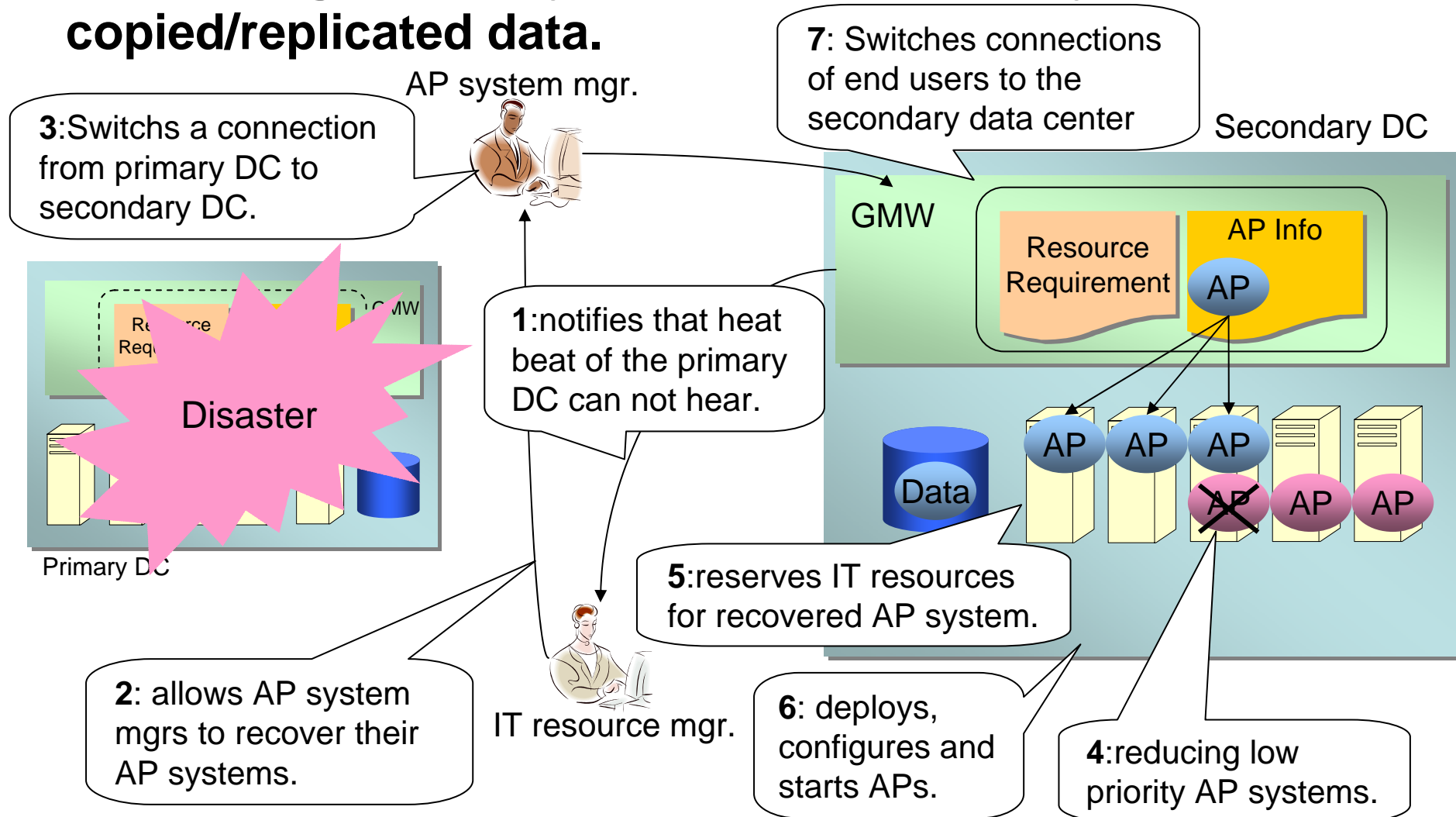
Scenario 3-1: Setting up AP systems

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



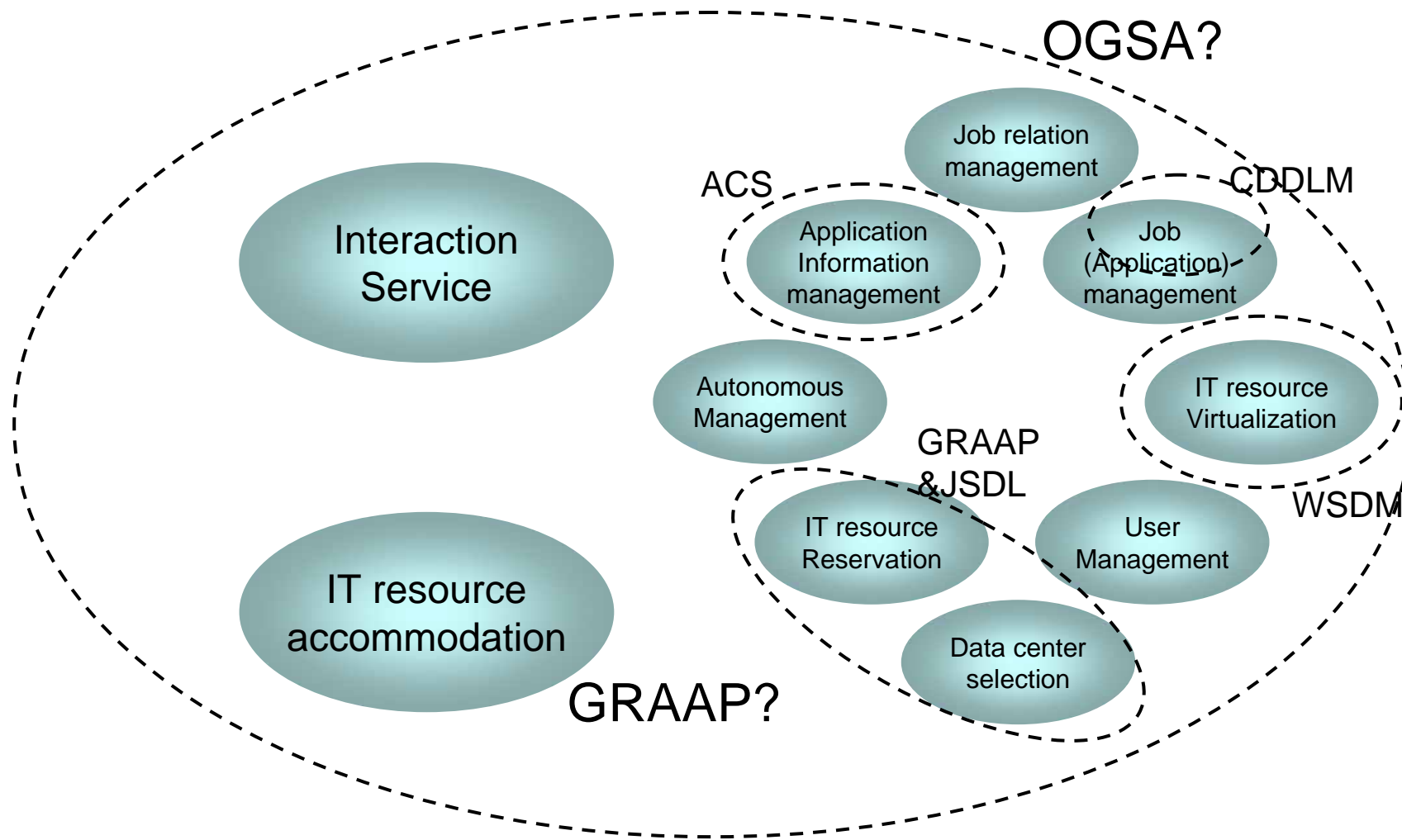
Scenario 3-2: Recovering an AP system

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



Standards

Functional requirements derived from all use cases



End