Realization of a Lightweight Account Management System Supporting Campus Members with Various Status

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Agenda

1. In General
   - User account, Authentication and Authorization
   - User account management process
2. In (Japanese) Universities
   - Peculiar circumstance and problems
   - Our idea and system design
   - Our account management system

User account

- Allowing a user to authenticate to system service
- Being granted authorization to access system service
- Typically method:
  Using a combination of a user ID and their secret password

Authentication and Authorization

- Authentication
  - Checking a proof of identity
  - Checking the requisite attributes
- Authorization
  - Specifying access rights to resources
  - Typically method:
    Using the defined access control rules
    (an access control list / capability)

User account management process

- For various information services,
  - Issuing a new account
  - Changing its authorities (as necessary)
  - Changing its attributes (as necessary)
  - Disabling or deleting the account

    ...

Who can get the account ?

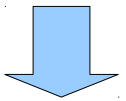
- In universities:
  - Students
    - Regular students, short-term exchange students, ...
  - Faculties and Staff
    - Regular employment, Irregular (ex. part-time) employment, ...
  - Others
    - Visiting researchers, secretaries who are paid by private funds, ...

Members in our university (TUAT)

- Students: 6000
- Faculties and staff: 1700
  - Regular employment: 700
  - Irregular employment: 1000
- Others: ? (not accurately grasped)

Our circumstances

- No explicit definition for campus members
  - Various status members are managed by each section by their own policy
- No explicit policy for account management
  - Various information services are managed by each section by their own policy

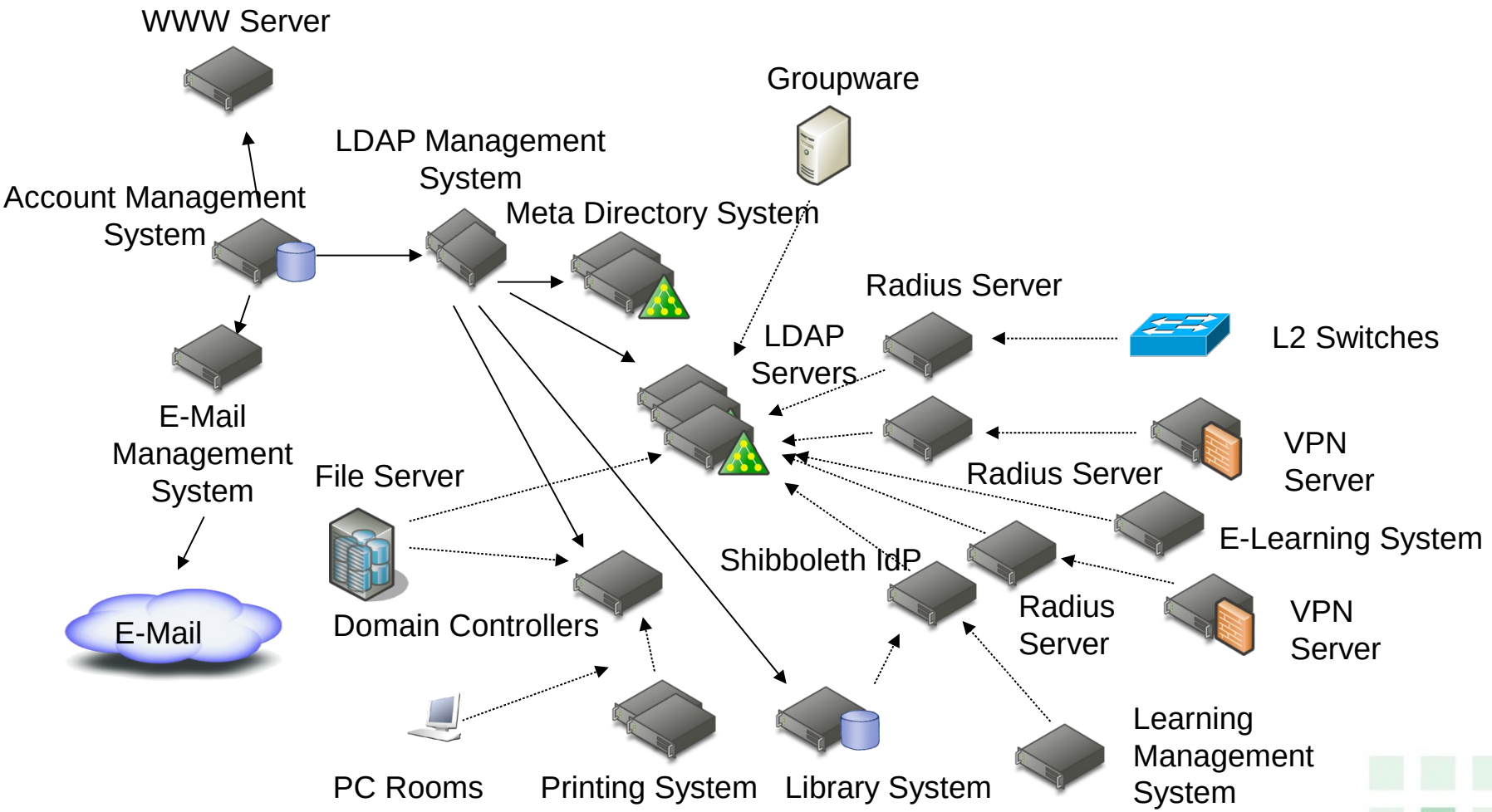


- Short-term exchange students; yes or no ?
- Part-time employment staffs; yes or no ?

Problems in our circumstance

- Constructing trusted databases for human resources is not easily.
- Different operation policies often make some exceptions (irregular operations by manually).
- Getting data for authentication and authorization is not easily.

Our main services



Example of member's status

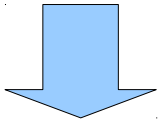
Status	Staff A	Staff B	Staff C
Management Section	Section *a*	Section *b*	Section *a*
Available Services	Educational affairs, E-mail, Financial affairs, Network, PC room, Groupware, Shared storage	E-mail, Financial affairs, Network, Shared storage	E-mail, Network

If a user makes an application for his or her account, ...

- Checking which section manages an applicant
- Checking whether an applicant can use the service or not
- Checking attributes (personal data) that service requires and getting them from each section
- Converting raw data to adapt to the system
- Registering converted data to the system and creating applicant's account
- Issuing user ID and password to an applicant

Ideal system

- Explicit definition for campus members
- Unique trusted database
- Unified policy for issuing an account
- Unified authentication and authorization scheme



Users could access each service by their own single account

Ideal system

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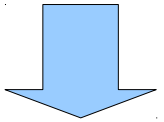
Could not



Users could access each service by their own single account

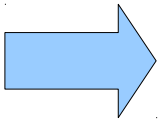
Why we could not ?

- It is too difficult to unify:
  - Databases storing personal data in each section
  - Management policies for services or systems in each section
  - Operation policies for services or systems in each sections

We do not have enough resources ...

Our idea

- A lightweight system;
  - Be adaptable to campus members with various status.
  - Be adaptable to databases storing personal data managed by different polices.
  - Be adaptable to services or systems managed by different policies.



Mediating between the different policies

System design

- Web-based user interface
  - For users and operators
- Compact database
  - No replications of original data
- Simple data format for the registration
  - For various services

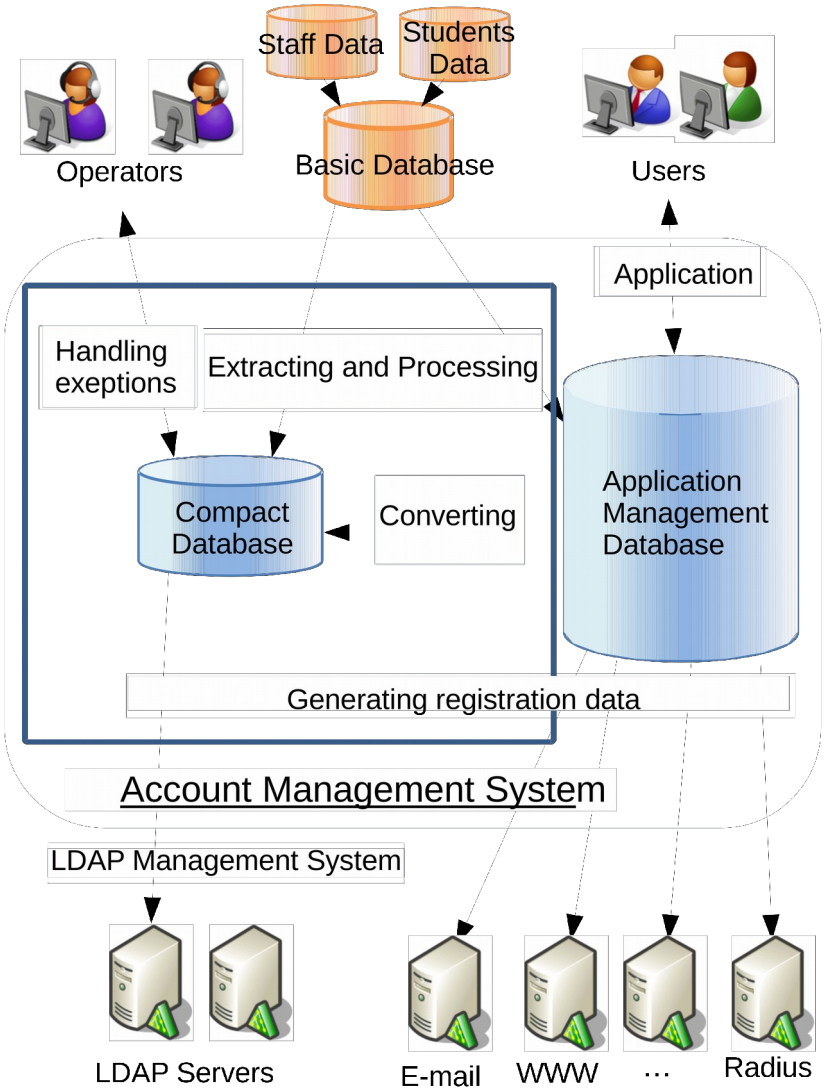
Basic functions

- Accepting user's requests
  - Issuing a new account
  - Changing user's password
  - Disabling user's account
- Assigning (or removing) an account to a service
- Registering (or excluding) user's ID and password to authentication systems

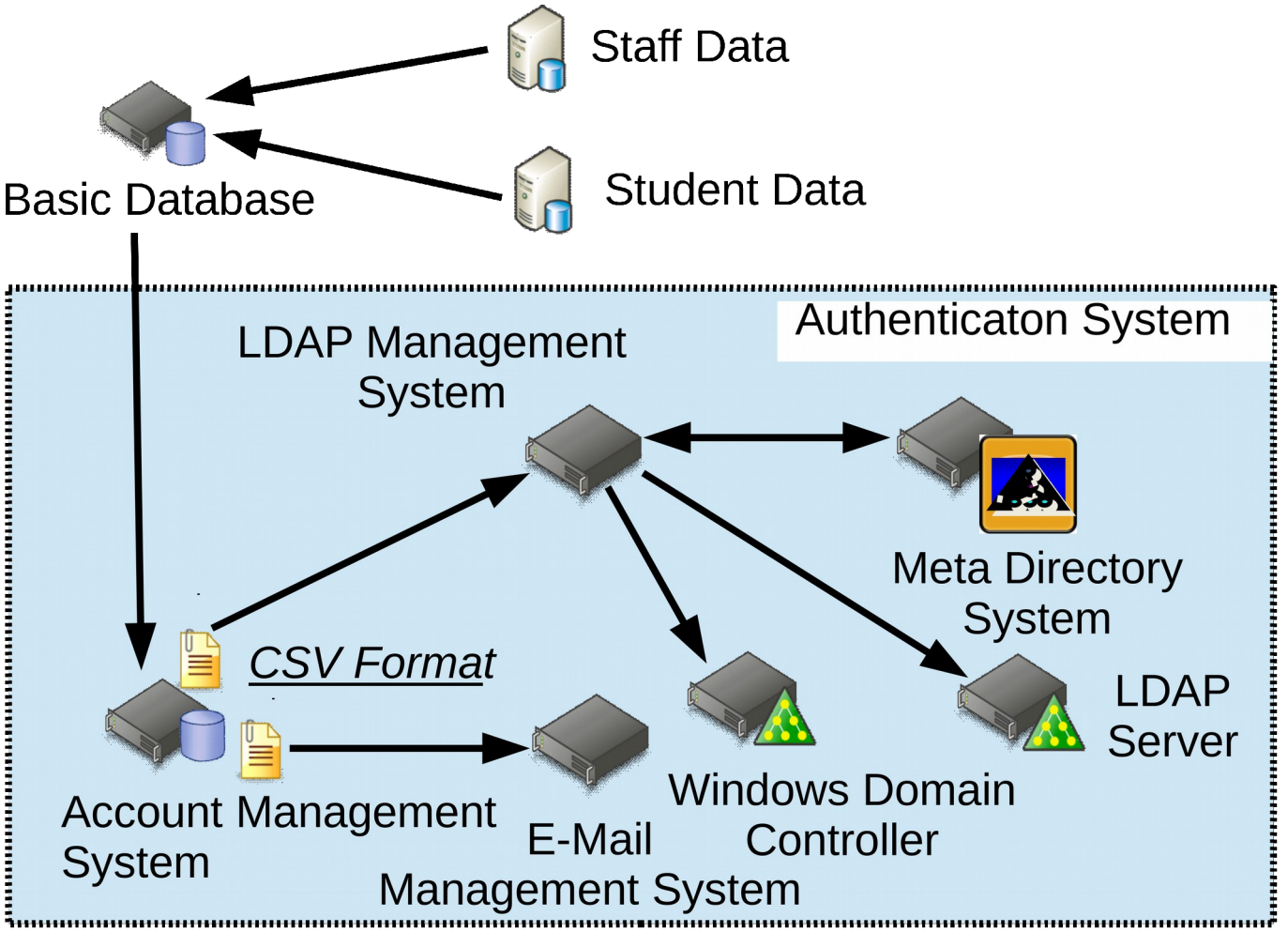
Features

- Gathering raw data for accounts from each management section
- Processing raw data, in order to adapt requirements of the system automatically by predefined rules
- Sending registration data in the form of a simple CSV file to each system
- Being able to handle exceptions
  - For invalid data, special treatments, ...

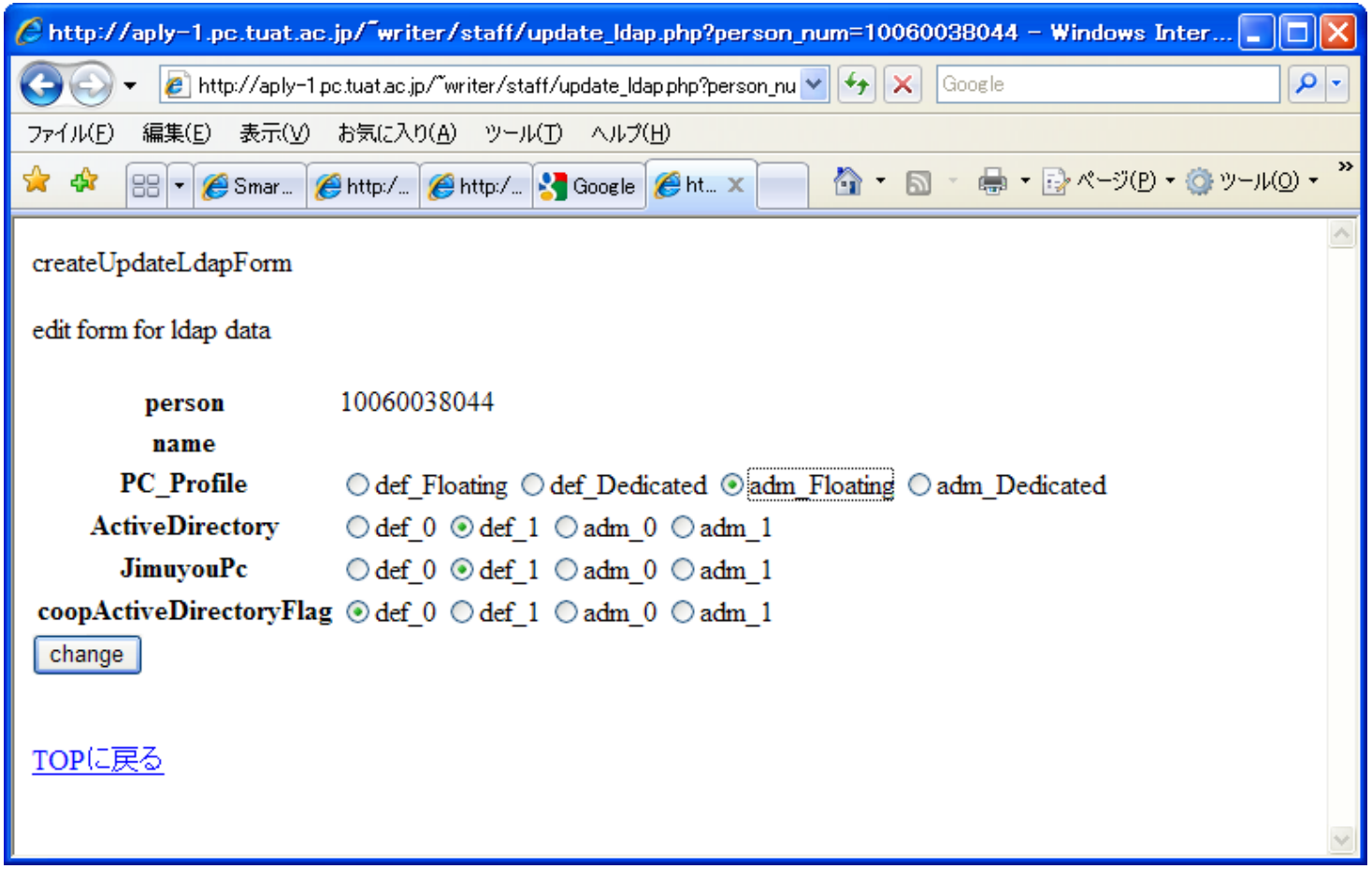
Our account management system



Process of issuing an account



Web-based user interface



Furthermore

- Improving the system robustness (such as system redundancy)
- Improving the unification of authentication
- Improving the adaptability to “GakuNin” (Academic access management federation in Japan)
- Coping with Single Sign-On

Conclusion

- We have developed a lightweight account management system.
  - This can support various kinds of services and systems.
  - It is possible to cooperate with a new system which will be provided in near future.
  - We did not reconstructing databases storing personal data.