Chapter 4
DACS Scheme as PBNM for a Single Organization

This chapter becomes the contents which reconstituted my past papers in the journal and international conference. Those articles are listed in a column of Reference. Specifically, they are the papers that "Kazuya Odagiri" was listed in as a first author.

BACKGROUND AFTER STARTING THE STUDY OF THE DACS SCHEME

The operation and management of a university's network system is characterized as follows. In the university network, generally, there are a great variety of people with different membership and position, as students, faculties, and external persons, who use the network services comparatively freely.

It is comparatively easy to spread the information of the network usage based on a network policy or a security policy in a business corporation. Relevant examples are:

1. Free mail for business purposes is not permitted.
2. Security software must be installed in a computer when it is connected to a corporate network.
3. The computer connected to the corporate network must activate a personal fire wall.
4. Accesses for dangerous Internet sites are not permitted.

5. Usage of a SMTP server from the outside of the corporate network is not permitted.

However, it is difficult to have the policies respected forcibly in a university network. This is because the computer management chapter does not perform all operation and management for the respective needs. System administrators of the computer chapter carry out management and operation of most of the network infrastructure and servers. On the other hand, users mainly perform the management of their clients. Operation and management of the network system are conventionally focused on the control in the infrastructure or server side, for example:

1. DNS round robin.
2. Control using the load balancer and load distribution of the server.

When the configuration is changed at a server side, it is often necessary to make a setup change at the client side. For instance, when each user has to access the Internet through a different course, it becomes necessary to change the setting of the client. As an example, a specific group, such as a laboratory group, uses a route that does not go through a proxy server and the other group uses a route through PROXY Server. In this case, if the system administrator is able to control the communication freely by the user unit, it is not necessary to make setup change at the client side to modify the configuration of a server.

In this chapter, a new DACS Scheme for the university network services is described. The DACS Scheme performs the effective network management through the communication management. A characteristic of the DACS Scheme is that only the setup modification is required by the system administrator, when the configuration change is needed in the network server. Then, the setup modification is unnecessary for the user, which shows an advantage for both a system administrator and a user. The following section describes the design of the DACS Scheme.

DACS SCHEME

Basic Principle of the DACS Scheme

Figure 1 shows the basic principle of the network services by the DACS Scheme. At the timing of the (a) or (b) as shown in the following, DACS

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