Conclusion

This book reports about the study progress with the technology and structure to manage the network which a modern organization holds. In the existing conventional network of current organizations, the TCP/IP is used normally and with some advantages for the user. Undoubtedly, the standardized network based on this TCP/IP is very convenient. Many technologies for the management of the network are based on the TCP/IP (such as DNS, IGP such as RIP and OSPF, EGP such as BGP, F/W, NAT/NAPT, load balancing, VPN, PKI, virtualization technology, technology for operation and monitoring). Numerous studies have been conducted in this regard. However, in the operational management of the network, there are some points that should be improved. As a remedial measure, the author focused on the approach of the PBNM. In the PBNM, the way of thinking of operation and management in the network based on network policy and security policy is considered. As the existing PBNM, there is the scheme which is used to manage the whole LAN through communication control in increment of the user. As this existing PBNM manages the whole LAN by making anonymous communications non-anonymous, it becomes possible for the system administrator to identify the user who steals personal information and commits a crime swiftly and easily. In other words, the control of the network devices which are distributed and located on the network is performed automatically and intensively by the operation method and the control of the network device being expressed in the form of the policy rule. In the existing PBNM, there are two types of scheme. The first is the scheme which controls the LAN by the PEP on the network course. This PEP controls the communications which were sent from the clients. The second is the scheme which controls the LAN by the PEP on each client, that is, the communication control is performed on each client. When the management for the network of wider ranges, such as the Internet, is assumed, the second scheme is suitable. Based on the way of thinking in the second scheme, the author thought about the realization of a flexible operation and management of the organization network. At first, the study on the management for a single organization network was pushed forward. The author’s experience of the construction and management for
the information system and the network was reflected in the considerable ratio. In the author’s career, the experience of operation and management in the Toyota Technological Institute was greatly helpful. Considering that the Toyota Technological Institute is a small scale university with a few students, staff, and teachers, there are very limited budgets for computerization investment. In the environment, the intellectual experience that the author performed is tied to this study. The author started the study of the new PBNM which is called the DACS Scheme, that is in the focus of these studies. The DACS Scheme is the method that the author suggests conventionally.

This method is simple because only the software for the server and for the client are used. By the PEP which is located on each client, the communication control for the PBNM is performed. More precisely, change of the communication server and permission and suppression of the communication are performed. Through these communication controls, the network management is realized by the PBNM. However, this scheme had a weak point about security. It is possible for the client where the DACS Client is not installed to access the network server. Therefore, as the extending function of the DACS Scheme, the access control method by use of the VPN was devised. In this function, the communications between the network server and the client are performed by the VPN communications. Since the client without the DACS Client does not perform the VPN communication, the communication from the client is prevented at the network server side. By this function, the weak point of the DACS Scheme was overcome. After this, the DACS system was implemented. As the OS which moves the DACS Client, the Windows OS was adopted. As the OS which moves the DACS SERVER, the CentOS was adopted. Then, the DACS SERVER and DACS Client were developed by the JAVA language. In addition, a management system for the DACS Scheme was proposed. Considering the expansion to the future Internet, it was suggested as a Web system. Then, the user support method based on the DACS Scheme was proposed. The characteristic of this method is the point that it is effective in emergency. For example, when a computer is infected by a virus, given that the block of the port is carried out on a client-side immediately, the system administrator can perform identification and coping of the infection client. The author thinks that the DACS Scheme is a very suitable method for the current cloud environment. In other words, the author thinks that the possibility to spread this system is very big in the future.

In the network where the DACS Scheme is introduced, for example, a new personal portal system was realized. This personal portal system has a flexible user interface that the user can create by inputting the URL into the static Web page. Each user can see the information by a Web page, that is,
the static Web page is changed to the dynamic Web page and this personal portal system is realized by the use of the static Web page.

After these researches, the author will conduct incremental relevant studies aiming at realizing the PBNM in plural organizations. This is an exciting and interesting target. This is the study of the domain expansion from the existing DACS Scheme. The DACS SERVER locates on the cloud environment and the client having the DACS Client locates in the LAN of each organization. In the DACS SERVER, the DACS rules for plural organizations are stored and sent to the LAN of each organization. In such a form, the network management of plural organizations is realized. By using this scheme, the new network service may be created. For example, there are the service to perform the PBNM control for the SCM system, the PBNM control service for the community cloud, and the PBNM control service for small and medium organizations that cannot afford a system administrator.

In the future, the author will push forward this study more and intends to devise a method to manage the whole Internet system. The author believes that various problems in the current Internet are solved by the proposed scheme. The use of the Internet will become safe and convenient. This study was conducted in cooperation with various people. The author aims at developing it in future to repay this cooperation.