2.2　Private IP address

2.2.1　Use of private IP addresses

NACCS user network assigns private IP addresses for the following purposes:
(If the connection form between the NACCS center server and each user system is the Internet (netNACCS connection, WebNACCS connection, or gateway connection (ebMS processing mode), a NACCS center IP address is not granted.)

[1] To employ a logically closed network for the NACCS user network.
[2] To prevent unauthorized access by non-NACCS users.
[3] To be unbound by global IP address exhaustion.

The TCP/IP network layer protocol at NACCS is IPv4 (Internet Protocol version 4).
No support is provided for IPv6 (Internet Protocol version 6). The user's existing LAN needs to be IPv4-based to connect to the NACCS Center server. Connection to the NACCS user network via a IPv6-based LAN is not allowed. Nevertheless, connection is allowed if a gateway computer is set up at the border between IPv6-based LAN and NACCS user's network to translate IPv6 to IPv4.

> **!** An IP address is a numerical address used to identify each computer connected to the network, and is required when building a computer network using TCP/IP.

> **!** A private IP address is an IP address assigned in accordance with unique structure This is used for such networks as a network closed within the company.

> **!** A global IP address is a globally unique assigned and managed IP address.
> IANA (JPNIC in Japan), an IP address management body, assigns numbers to users to avoid address overlaps.
> Recently, the number of assigned addresses has almost reached the upper limit of numbers which can be assigned, so running out of addresses has become an issue.

2.2.2 Private IP address architecture

The IP address is expressed by 4 fields separated by "." (periods).

VVV .   XXX .   YYY .   ZZZ
(Field A)   (Field B)   (Field C)   (Field D)

The IP address architecture used by NACCS is shown in Table 2.2.1:

Table 2.2.1   IP address architecture

	Field A	Field B		Field C	Field D
Range of assignment	10	user	20 - 98	1 - 254	1 - 254
			100 - 177		
			180 - 189		
Assignment method	Fixed	designated by NACCS Center		designated by NACCS Center	designated by NACCS Center

### 2.2.3 Relationship between IP address and subnet mask

The following value is applied as the subnet mask required for IP address setting (common to all users).

255. 255. 255. 0

An IP address is composed of a network address that represents the network the computers and other devices belong to, and a host address that represents those computers and other devices within the network.
The subnet mask works as a marker to separate the network address and host address parts within the IP address.
For example, when the following is set,

IP address :   10. 169. 254.   3
subnet mask: 255. 255. 255.   0

Network address part Host address part
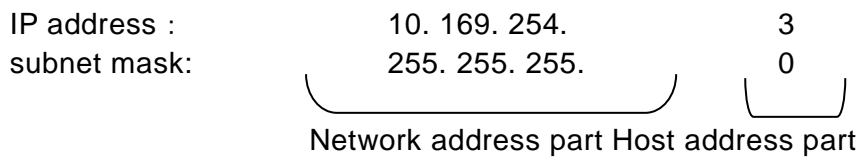
the IP address "10. 169. 254" represents the network address part, while "3" represents the host address part.
The same network address will applied to computers connected to the same LAN.
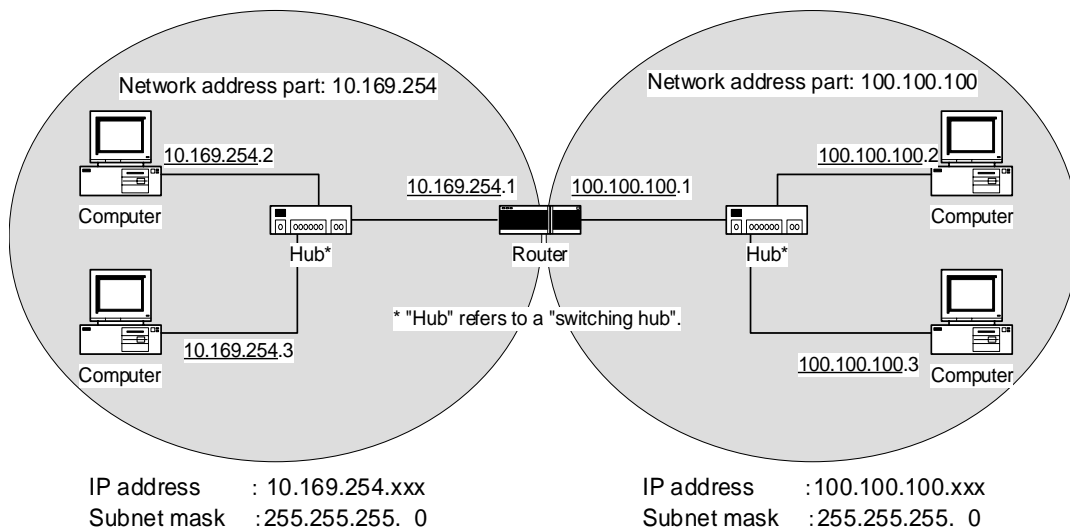Each device connected to the same LAN is distinguished by the host address part.

Figure 2.2.1   Subnet Mask and the Network

2.2.4　IP address assignment by NACCS Center

Since NACCS is a system for administrative procedures, users' computers that connect to the NACCS Center server to process export/import and port related procedures must be identified. NACCS Center, for this purpose, will manage IP addresses of NACCS user computers and provide a unique address for each user computer.

The user computer to which an IP address will be assigned by NACCS Center must be located in Japan.

The same applies to users who already have their own private IP addresses: They, too, must use the IP address uniquely determined and managed by NACCS Center to receive NACCS services.

If, however, the IP address of a user's in-house system overlaps with the one assigned by NACCS Center, the Center shall make adjustment by assigning a separate private IP address which does not overlap with that of the user's system, provided that there is no adverse effect on system operation.

Note that it is allowable that a private IP address assigned by NACCS Center is converted to another IP address at user's network and is assigned to user's computer with the precondition that the IP address uniquely corresponds to the IP address assigned by the NACCS Center. When converting an IP address for use, correspondence between the IP address assigned by NACCS Center and the IP address after conversion should be immediately presented when NACCS Center requests.

For example, when converting an IP address on the communication equipment installed by the user using the NAT function, the setting is configured so that static conversion (conversion where converted IP address is always converted to the same IP address if original IP address is the same) is carried out, and setting details can be presented to the NACCS Center.

> ⚠ Although it is possible to use cloud services as a user-side Gateway computer, when it is necessary to use systems based on EDI specifications and business specifications, such as installing user-side Gateway computers (region, etc.) and NACCS connection routers to which the NACCS center assigns IP addresses in Japan, it is the same as the case of on-premise systems.

2.2.5　Where to assign the IP address

An IP address is assigned according to the type of user connection:

(1) Peer-to-peer connection
    router, user-side computer

(2) Router connection
    router, user-side computer

(3) Gateway connection*
    router, user-side gateway computer

* Gateway connection refers to SMTP two-way connection and to SMTP/POP3 connection.

2.2.6 IP address allocation rules

(1) IP address for NACCS user computer

NACCS Center will assign IP addresses, with all the values in the fields from A to D being specified, to user-side computers and gateway computers that connect to the NACCS Center server.

(2) IP address for computer of intraoffice use located within the same LAN as the NACCS user computer

NACCS Center will specify fields A to C for computers connected to the same LAN as the NACCS user computer but only for intra communications (not used for NACCS service). As for field D, the user will assign any value that does not overlap with the IP address of any NACCS user computers.

(3) Limitation on IP address assignment to user computers

In field D, NACCS Center will assign the value "1" for the router. Users may not assign "1" in field D to their computers.
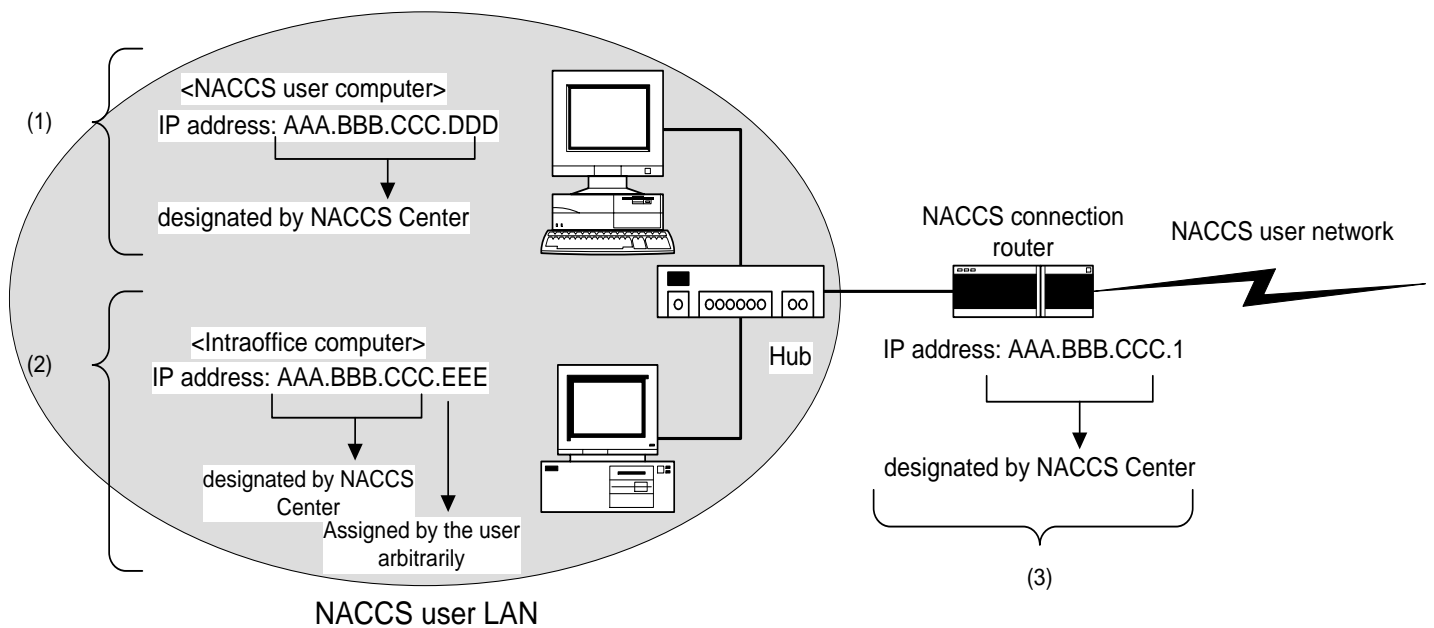

Figure 2.2.2   IP Address Assignment (router connection)

2.2.7 User LAN setup (typical cases)

Table 2.2.2 shows the typical cases in setting up a user LAN to be connected to NACCS when an intraoffice network is already provided with a user's unique IP address.

2-2-6

Table 2.2.2   Variations of User LAN Configuration

	NOT connecting to intraoffice network from NACCS user LAN	Connect to intraoffice network from NACCS user LAN	
Build new NACCS user LAN		**Case 3** Separate NACCS user LAN and intraoffice network by setting up user router	
		Case 4 Use 2 LAN cards (NIC) for computers connecting to NACCS	**Case 5** Create 2 logical subnets on 1 LAN by setting up user router corresponding to secondary IP
Utilize existing intraoffice network	**Case 1** Physically separate NACCS user LAN and intraoffice network	**Case 2** Switch all IP addresses on NACCS user LAN to NACCS-designated addresses	

CASE 1
  User's current LAN setup
    Simple LAN setup using a hub

existing computer A
IP address: 100.100.100.1

existing computer B
IP address: 100.100.100.2

existing computer C
IP address: 100.100.100.3

hub

Designate existing computer A as the
NACCS user computer, and B and C for
intraoffice communications only.

Figure 2.2.3   Case 1: Current LAN Configuration

New user LAN configuration
[1] Set up a NACCS connection router designated by NACCS Center. The Center assigns an
    IP address for setting up the router.
[2] The user changes the IP address of existing computer A to a private IP address
    designated by NACCS Center.
[3] As for existing computers B and C, the user changes the IP address in Fields A to C to
    private the IP address designated by NACCS Center and sets an arbitrary value in Field
    D.

NACCS user LAN

Changed to NACCS
designated address

Changed to NACCS
designated address

Set arbitrary by the user

IP address: 10.169.254.2

IP address: 10.169.254.3

IP address: 10.169.254.4

existing computer A
(NACCS user
computer)

existing computer B
(for intraoffice use)

existing computer C
(for intraoffice use)

NACCS user network

Hub

NACCS connection router
IP address: 10.169.254.1

Designated and setup by NACCS Center

Figure 2.2.4   Case 1: New LAN Configuration

CASE 2
User's current LAN setup
Communication within network outside NACCS user LAN (LAN, WAN) using router

existing computer A
IP address: 100.100.100.2

existing computer B
IP address: 100.100.100.3

User's own network
(LAN, WAN)

IP address:
100.100.100.1

User's router

Hub

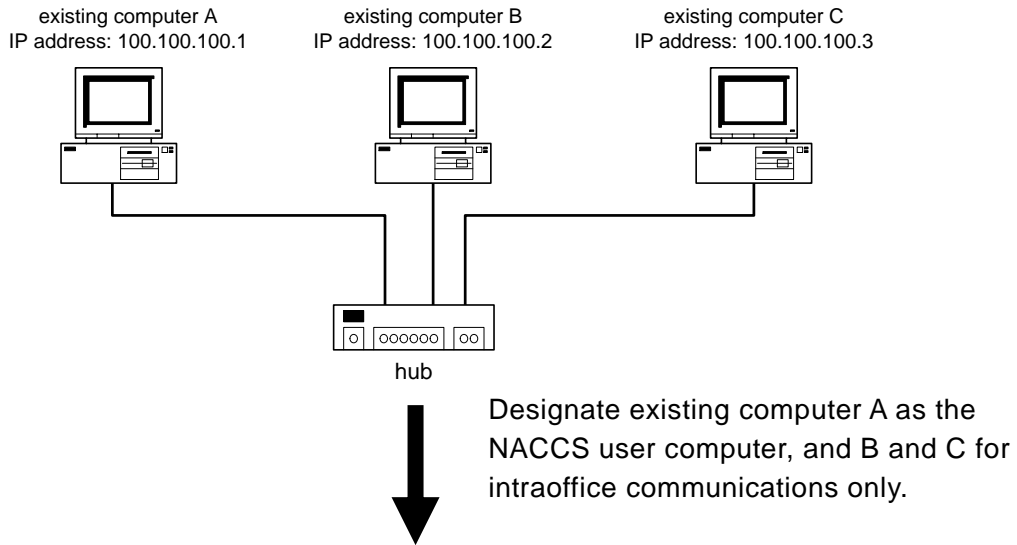Existing computer A is for intraoffice communications only. Use existing computer B as NACCS user computer.

Figure 2.2.5 Case 2: Current LAN Configuration

New user LAN configuration
[1] Set up a NACCS connection router designated by NACCS Center. The Center assigns an IP address for setting up the router.
[2] The user changes the IP address of the LAN connected to the NACCS user computer (existing computer B) to the NACCS IP address architecture.
[3] The user changes the IP address of the NACCS user computer (existing computer B) to the private IP address designated by NACCS Center.
[4] As for existing computer A and the user's router, the user changes the IP address in Fields A to C to a private IP address designated by NACCS Center and sets an arbitrary value in Field D.

NACCS user LAN

Arbitrarily designated by the user

Changed to NACCS designated address

* This will not apply when user's own network is using the same architecture as the IP address newly assigned by NACCS Center, in which case a separate report to NACCS is required.

IP address: 10.169.254. 4
existing computer A
(for intraoffice use)

IP address: 10.169.254.2
existing computer B
(NACCS user computer)

Arbitrarily designated by the user

IP address:
10.169.254. 3

* User's own network
(LAN, WAN)

Hub

User's router

Change to NACCS designated address

NACCS user network

NACCS connection router
IP address: 10.169.254.1
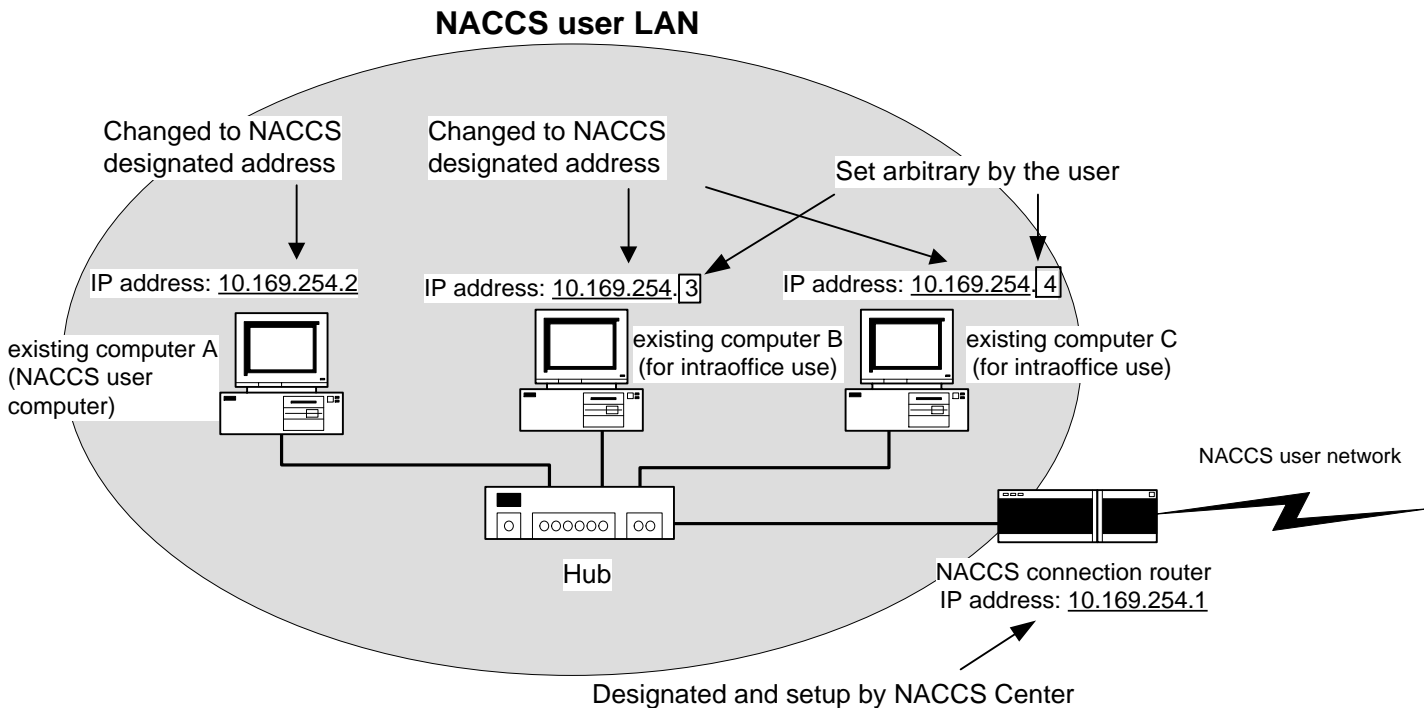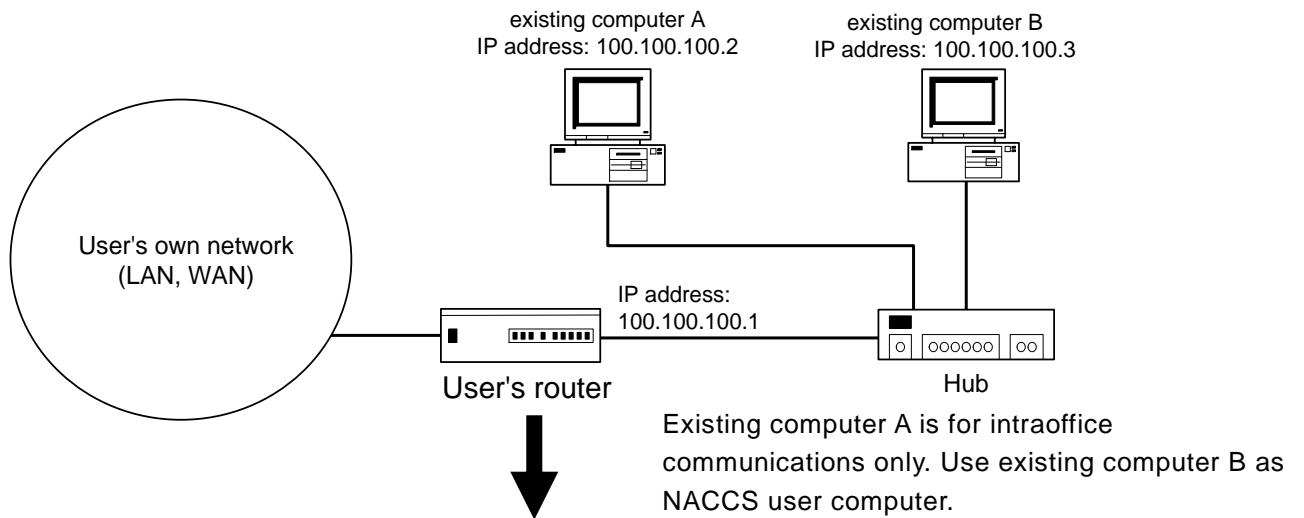Designated and setup by NACCS Center

Figure 2.2.6   Case 2: New LAN Configuration

CASE 3
User's current LAN setup
Communication within network outside NACCS user LAN (LAN, WAN) using router

existing computer A
IP address: 100.100.100.2

existing computer B
IP address: 100.100.100.3

User's own network
(LAN, WAN)

IP address:
100.100.100.1

User's router

Hub

Set up new LAN for NACCS without changing
existing LAN settings.

Figure 2.2.7   Case 3: Current LAN Configuration

New user LAN configuration

[1] Set up a NACCS connection router designated by NACCS Center. The Center assigns an
     IP address for setting up the router.
[2] The user arranges a NACCS user computer, new hub, and new user router to connect to
     the NACCS user LAN and sets a private IP address designated by NACCS Center for the
     new user router and NACCS user computer.
[3] Connect NACCS user LAN and existing LAN with new user router. This requires no
     change in the IP address architecture of the user's existing LAN.

existing computer A
IP address: 100.100.100.2

existing computer B
IP address: 100.100.100.3

* User's own network
(LAN, WAN)

IP address:
100.100.100.1

User's router

Hub

* This will not apply when user's own
network is using the same architecture as
the IP address newly assigned by NACCS
Center, in which case a separate report to
NACCS is required.

IP address: 100.100.100.4

Set arbitrary by the user
according to intraoffice IP
address structure

User's new
router

Setup as designated by
NACCS Center

IP address:
10.169.254.3

NACCS user LAN

Set arbitrary by the user

NACCS user network

IP address: 10.169.254.2
NACCS user computer

New hub

NACCS connection router
IP address: 10.169.254.1
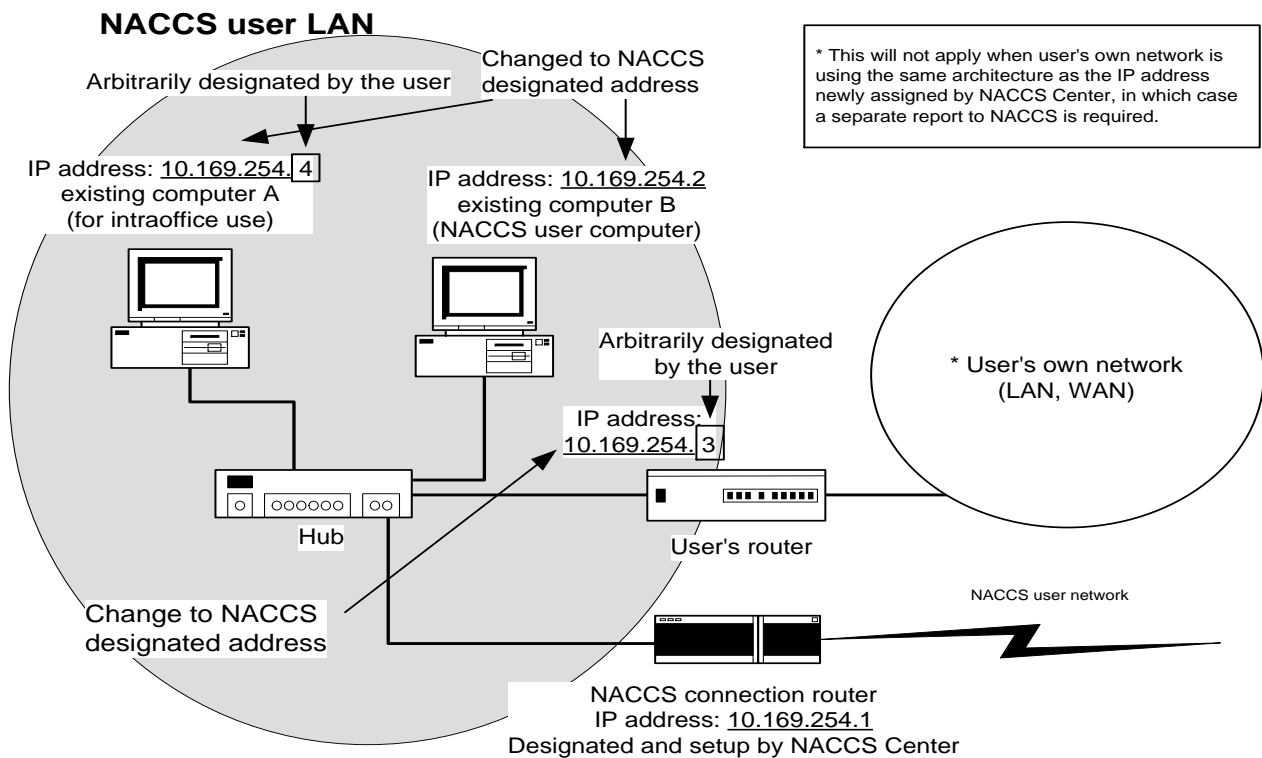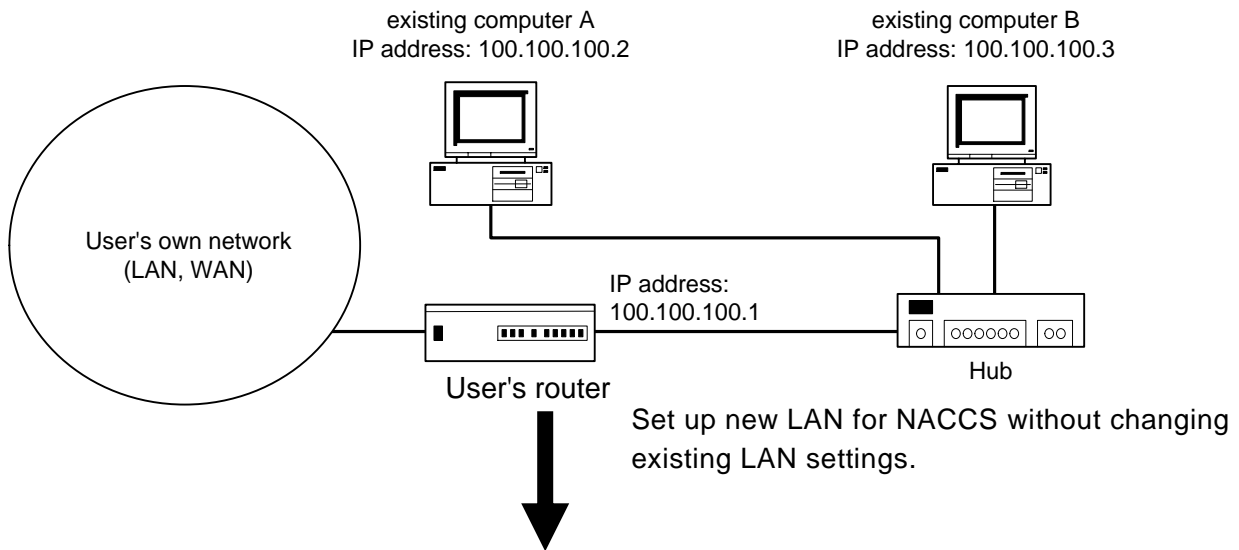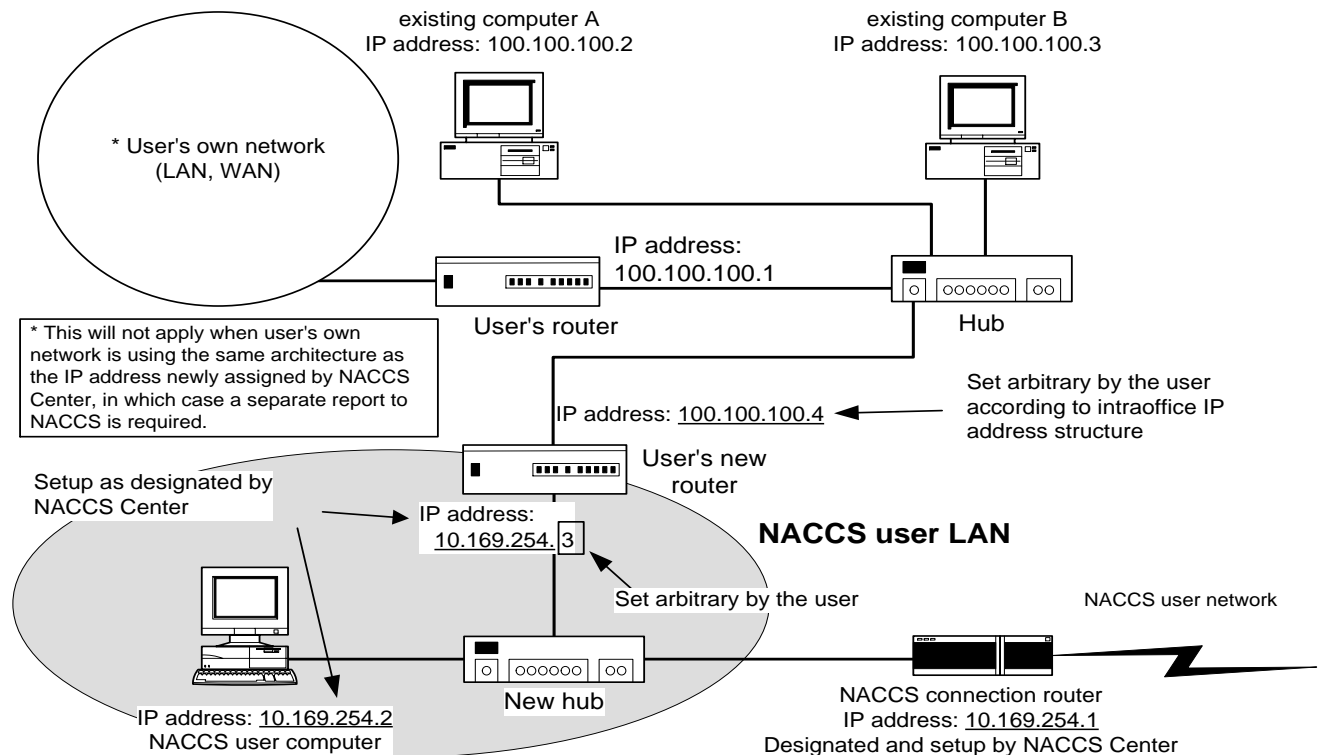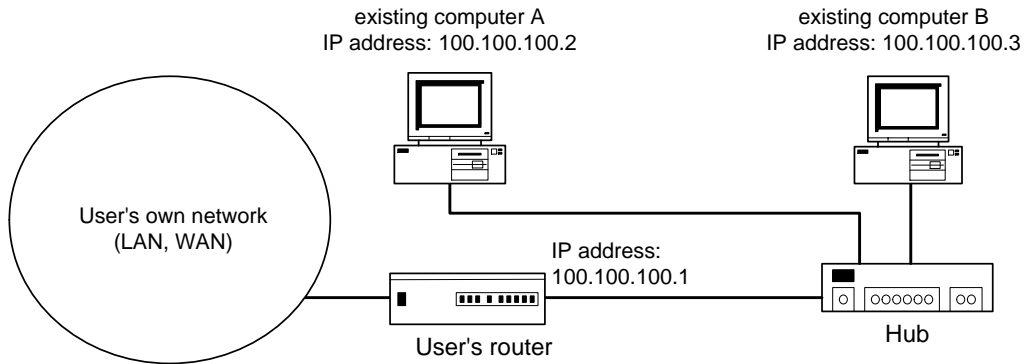Designated and setup by NACCS Center

Figure 2.2.8 Case 3: New LAN Configuration

CASE 4
　User's current LAN setup
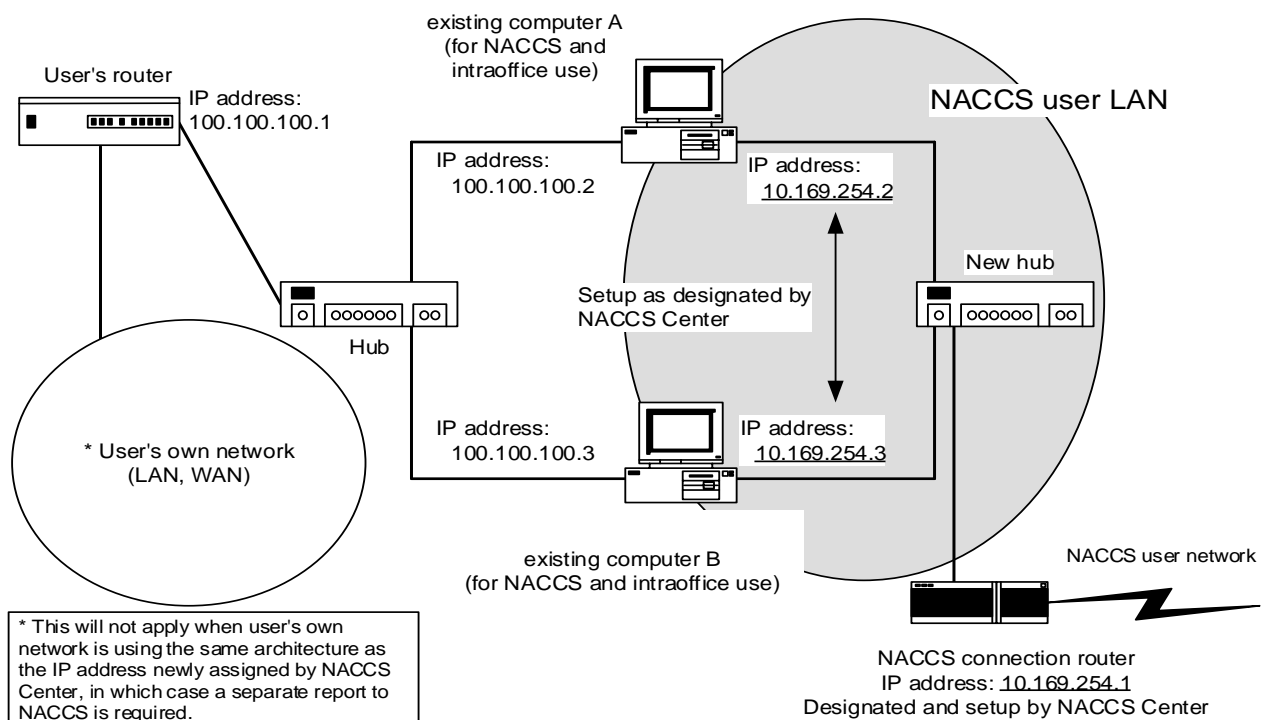　　Communication within network outside NACCS user LAN (LAN, WAN) using router

existing computer A
IP address: 100.100.100.2

existing computer B
IP address: 100.100.100.3

User's own network
(LAN, WAN)

IP address:
100.100.100.1

User's router

Hub

Set up new LAN for NACCS without changing existing LAN settings.

Figure 2.2.9 Case 4: Current LAN Configuration

New user LAN configuration
[1]　Set up a NACCS connection router designated by NACCS Center. The Center assigns an IP address for setting up the router.
[2]　Set up a new hub to build a NACCS user LAN, and insert the LAN card (NIC) for using NACCS into the existing computer. The user sets up a private IP address designated by NACCS Center for the newly inserted LAN card.
[3]　Connect the newly inserted LAN card and NACCS connection router via the new hub. It is not necessary to change the IP address structure of the user's existing LAN.

User's router

IP address:
100.100.100.1

existing computer A
(for NACCS and intraoffice use)

NACCS user LAN

IP address:
100.100.100.2

IP address:
10.169.254.2

New hub

Hub

Setup as designated by NACCS Center

* User's own network
(LAN, WAN)

IP address:
100.100.100.3

IP address:
10.169.254.3

existing computer B
(for NACCS and intraoffice use)

NACCS user network

* This will not apply when user's own network is using the same architecture as the IP address newly assigned by NACCS Center, in which case a separate report to NACCS is required.

NACCS connection router
IP address: 10.169.254.1
Designated and setup by NACCS Center

Figure 2.2.10 Case 4: New LAN Configuration

CASE 5

User's current LAN setup

Communication with network outside NACCS user LAN (LAN, WAN) using user router supporting secondary IP function

existing computer A
IP address:
100.100.100.2

existing computer B
IP address:
100.100.100.3

existing computer C
IP address:
100.100.100.4

User's own network
(LAN, WAN)

IP address:
100.100.100.1

User's router supporting
secondary IP function

Hub

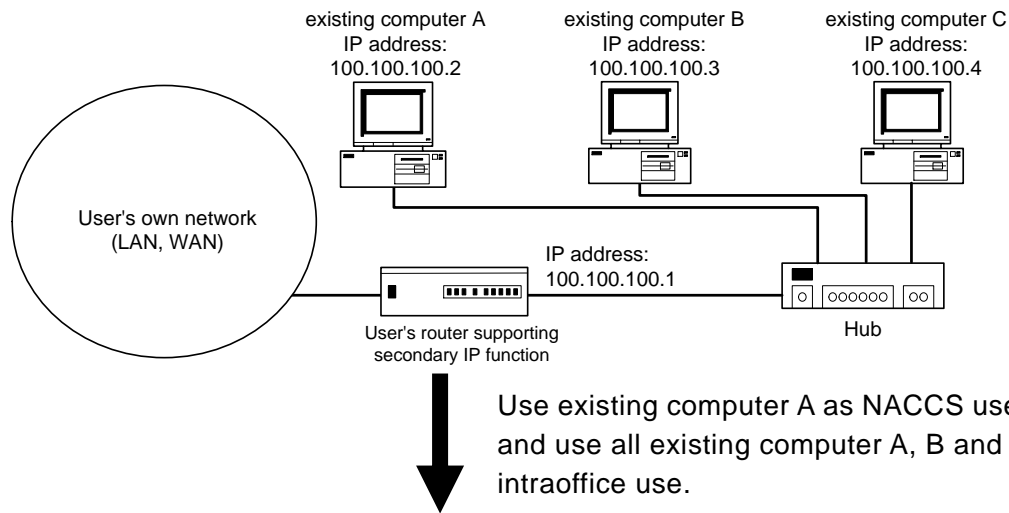Use existing computer A as NACCS user computer, and use all existing computer A, B and C also for intraoffice use.

Figure 2.2.11 Case 5: Current LAN Configuration

New user LAN configuration

[1] Set up a NACCS connection router designated by NACCS Center. The Center assigns an IP address for setting up the router.

[2] Set up a network address designated by NACCS Center as the secondary address for the user router supporting the secondary IP functionality (capable of setting up multiple logical subnets on a single physical port).

[3] Use the user router as a default gateway and set routing information for NACCS to static.

[4] Set a private IP address designated by NACCS for the user computer.

existing computer A
(for Air-NACCS and intraoffice use)
IP address: 10.169.254.10NACCS

existing computer B
(for intraoffice use)
IP address: 100.100.100.3

existing computer C
(for intraoffice use)
IP address: 100.100.100.4

* User's own network
(LAN, WAN)

Set default gateway as
user's router

User's router

Hub

Set packet for NACCS
Center server alone as
static

* This will not apply when user's own network is using the same architecture as the IP address newly assigned by NACCS Center, in which case a separate report to NACCS is required.

2 logical subnets
(100.100.100.0, 10.169.254.0)
both processable

NACCS user network

NACCS connection router
IP address: 10.169.254.1
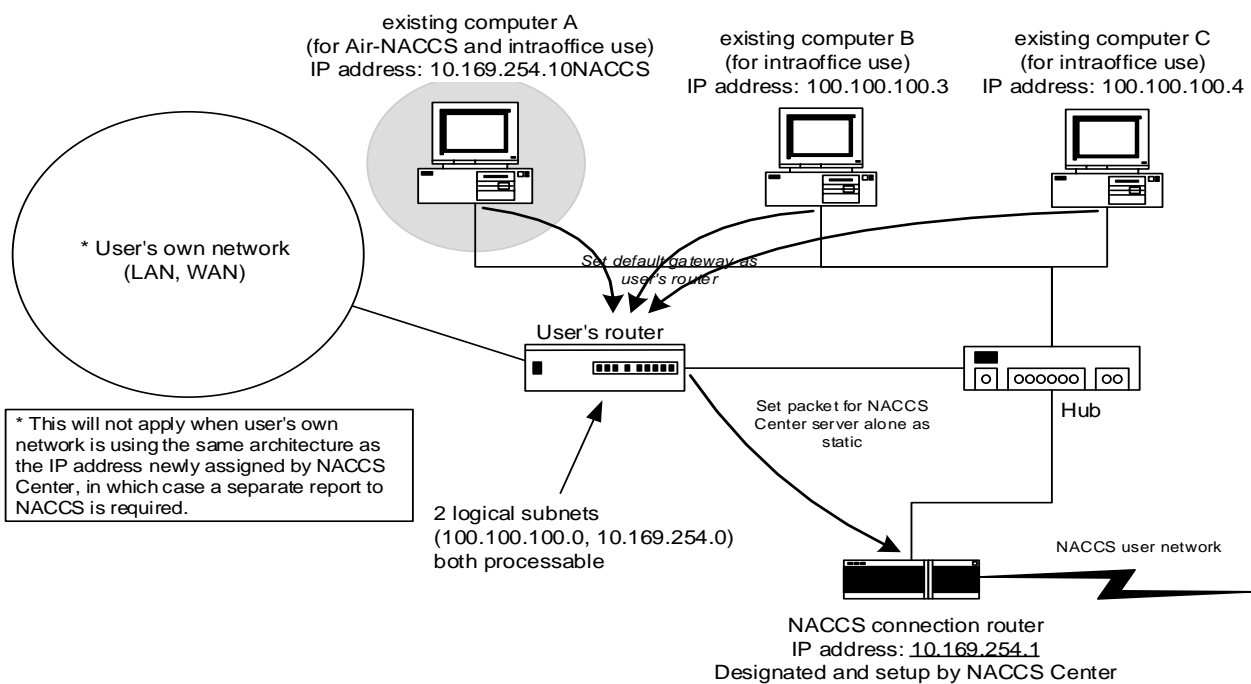Designated and setup by NACCS Center

Figure 2.2.12 Case 5: new user LAN Configuration

Supplements
Precautions:
The NACCS connection router does not exchange routing information with other routers. Users connecting the NACCS user LAN and their intraoffice network must set to static routing information for the user's router which is a gateway for their intraoffice network and set the user router to a default gateway setting for computers within the NACCS user LAN.
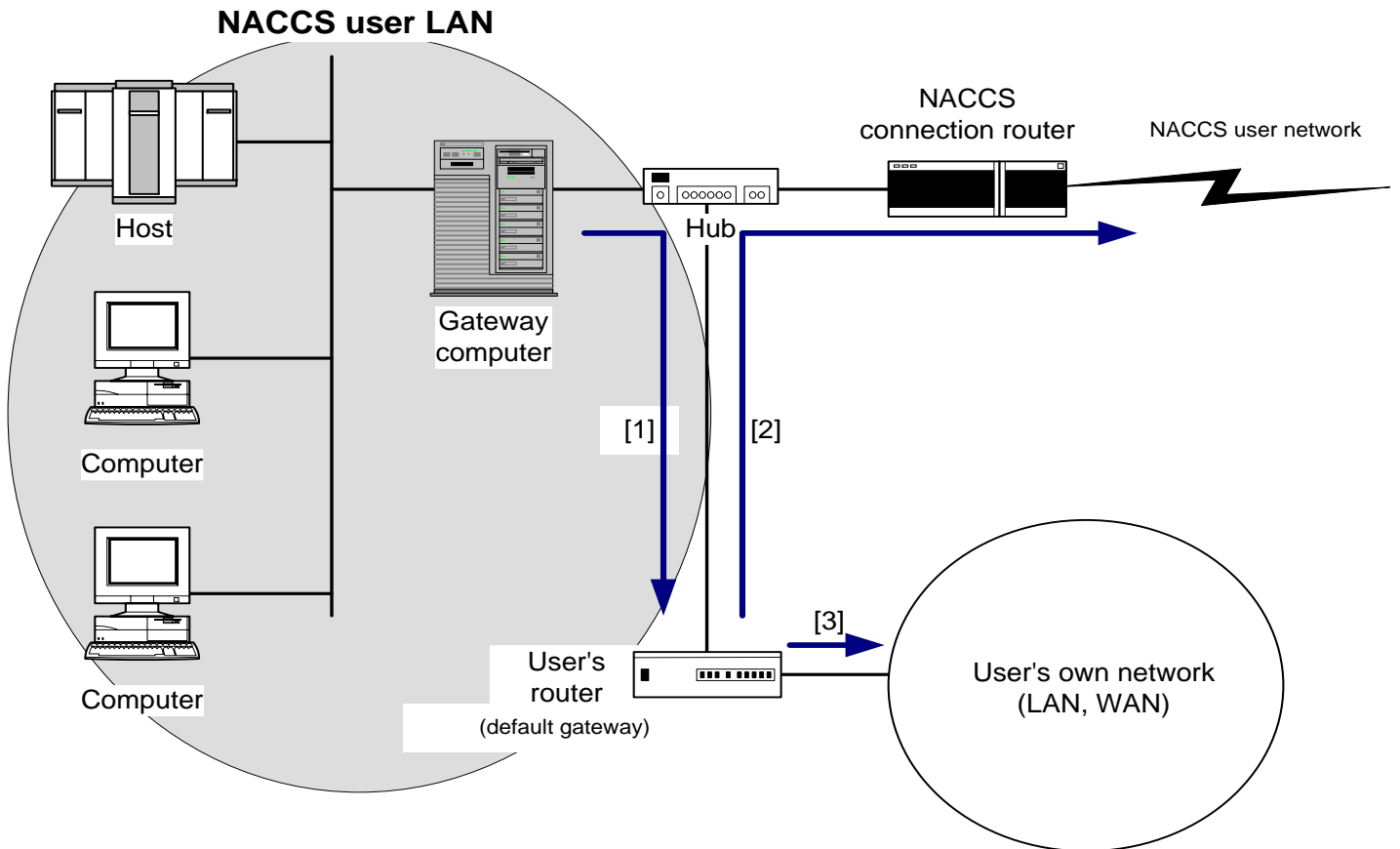

Figure 2.2.13 Setting Routing Information for User's Router

[1] A message (data) sent by the user is first transmitted from the NACCS user LAN to the user router set to the default gateway.

[2] When a message (data) addressed to NACCS is sent by the user, it will be directed to the NACCS connection router in the user router based on the routing information set to static and then transmitted from the NACCS connection router to the NACCS user network.

[3] When a message (data) addressed to the user's intraoffice network is sent by the user, it will be transmitted from the user router to the user's intraoffice network.

2.2.8   IP address translation

(1)   IP address translation

Since NACCS is a system for administrative procedures, users' computers that connect to the NACCS Center server to process export/import and port related procedures must be identified. NACCS Center, for this purpose, will manage IP addresses of NACCS user computers and provide a unique address for each user computer. Note that it is allowable that an IP address assigned by NACCS Center is converted to another IP address at the user's network and is assigned to the user's computer with an assumption that that IP address will uniquely correspond to the IP address assigned by NACCS Center.

(2)   IP address conversion on gateway computer

In the case of gateway connection, IP address conversion on the gateway computer is permitted:
However, due to security reasons, the user must keep a log of messages transmitted to and received by the gateway computer and save the log for a period of one year.
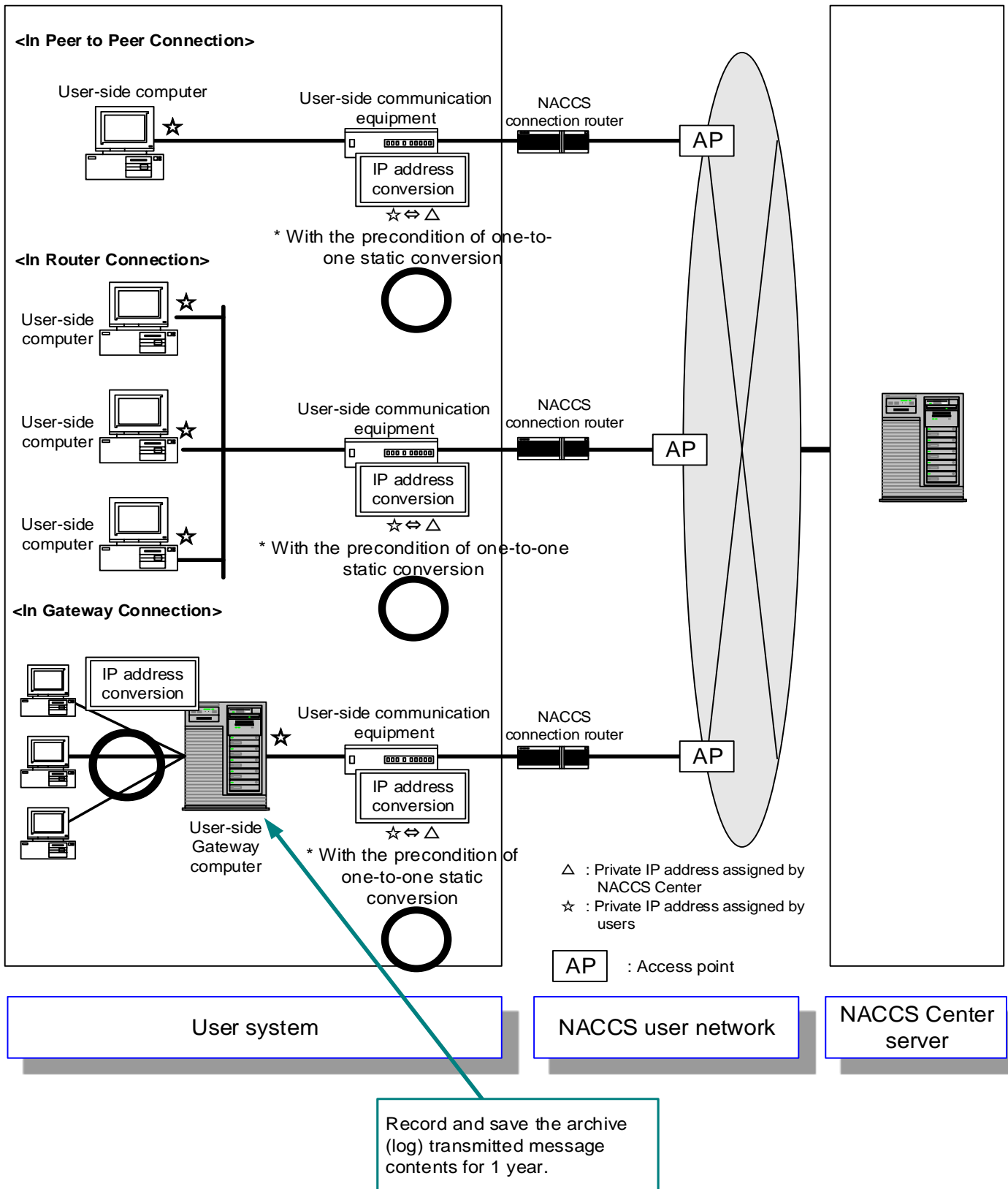
<In Peer to Peer Connection>

User-side computer ☆

User-side communication equipment

NACCS connection router

AP

IP address conversion
☆ ⇔ △

* With the precondition of one-to-one static conversion

<In Router Connection>

User-side computer ☆

User-side computer ☆

User-side computer ☆

User-side communication equipment

NACCS connection router

AP

IP address conversion
☆ ⇔ △

* With the precondition of one-to-one static conversion

<In Gateway Connection>

IP address conversion

User-side Gateway computer ☆

User-side communication equipment

NACCS connection router

AP

IP address conversion
☆ ⇔ △

* With the precondition of one-to-one static conversion

△ : Private IP address assigned by NACCS Center

☆ : Private IP address assigned by users

AP : Access point

User system

NACCS user network

NACCS Center server

Record and save the archive (log) transmitted message contents for 1 year.

Figure 2.2.14 Prohibition of IP Address Translation

2.2.9 Boundaries of liability for failures

NACCS Center shall assume liability for failures between the NACCS Center server and the NACCS connection router on the user side.
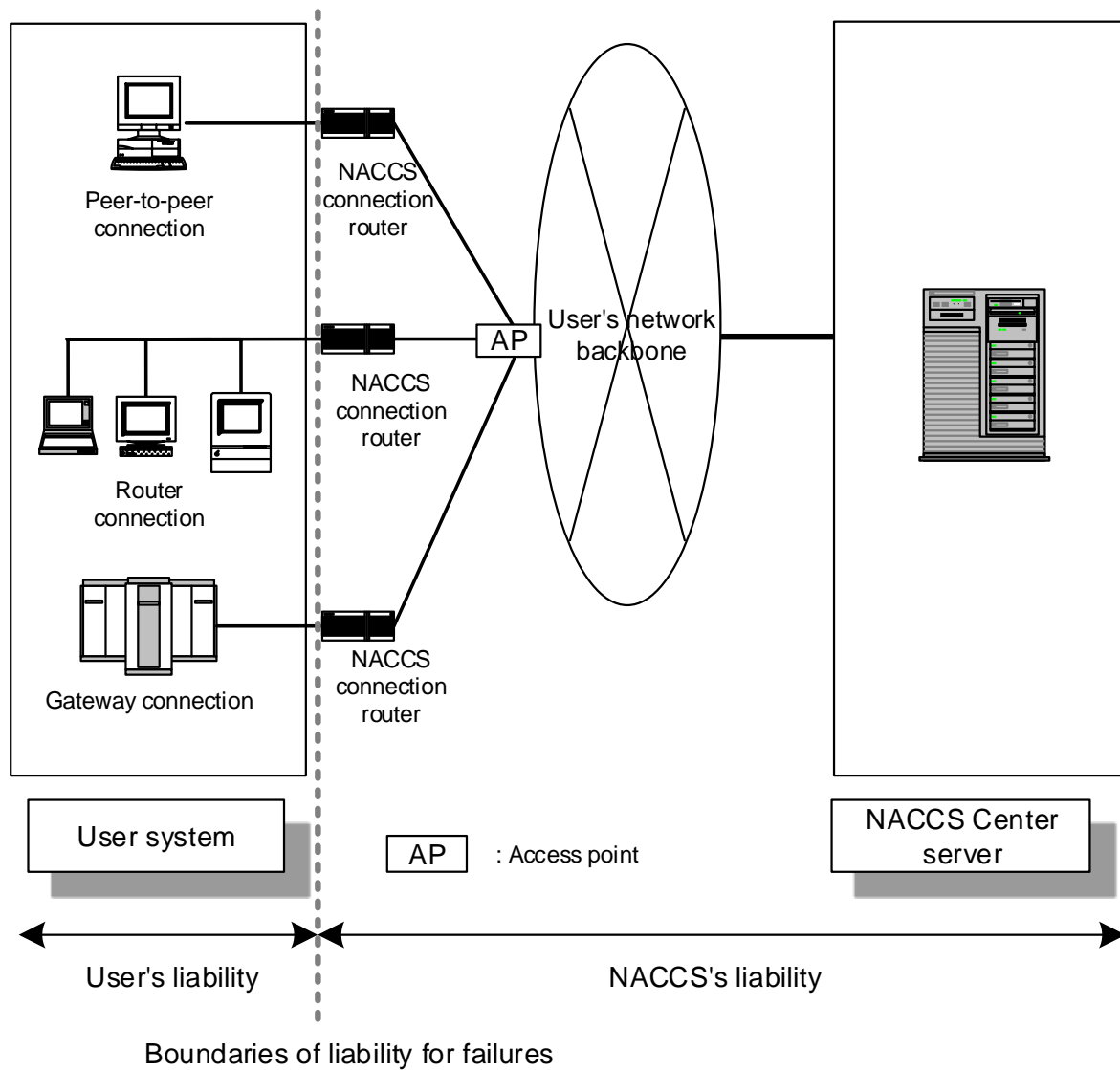

Figure 2.2.15   Liability Coverage for Possible Failures

2.2.10   NACCS Information and IP address

(1) NACCS Information

NACCS Center sets up a website, titled as "NACCS Information" exclusively for NACCS users, aimed at providing latest news and announcements concerning NACCS, status of the NACCS Center server, code updates and latest version of packaged software available. NACCS Information consists of sites for visitors and NACCS users, whose access level and authentication method vary. Information only available to NACCS users, such as the latest version of software packages, is posted only on the NACCS User Website.

Table 2.2.3   Types of NACCS Information and User Authentication Methods

Types	Users	Authentication Method
Visitor's Website	All visitors including non-NACCS users	No authentication necessary. Accessible by all visitors.
NACCS User Website	Closed network users	Authentication by private IP address assigned by NACCS Center
	netNACCS users WebNACCS users	Authentication by digital user certificates for netNACCS users and WebNACCS users

(2) Setting dedicated IP address in the case of gateway connection

Users choosing gateway connection need to build a system to access NACCS information from a gateway computer or a computer connected to the gateway computer.
NACCS Center, upon request from a gateway connection user, issues an IP address solely to access NACCS information, in addition to the one assigned for the use of NACCS.
Users in the gateway connection, when accessing NACCS Information, must comply with the security standards formulated by the NACCS Center, including the implementation of anti-virus scanning on the gateway computer as well as other computers connected to the gateway computer.