



GATEWAY CONTROL SOFTWARE

RS-RP2C

Set Up Instructions

For Revision 2

IMPORTANT

READ THIS INSTRUCTION MANUAL CAREFULLY before attempting to operate the GW software.

SAVE THIS INSTRUCTION MANUAL. This manual contains important safety and operating instructions for the RS-RP2C.

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ABOUT GW CONTROL SOFTWARE

1. Summary

Communications between D-star repeaters across the internet require a D-star Gateway (GW) to be connected to the D-star repeater. A GW is a PC running a Linux operating system with RS-RP2C Gateway Control Software that has two Ethernet ports, one connected to an ID-RP2C (or ID-RP1D) and the other to an internet connection via a router. A D-star repeater system with a GW that is connected to the internet and is equipped with an ID-RP2D (or ID-RP1D) will permit an ID-1 in the DD (Digital Data) mode to access the internet at data rates up to 128 kbps.

A D-star network consists of a D-star Trust Server and one or more GW's interconnected by the internet (public or private).

(1) D-star Trust Servers

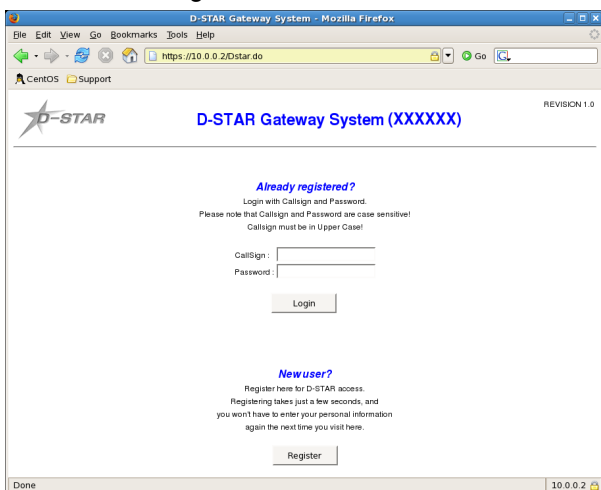
One of the new features of the Revision 2 RS-RP2C Gateway Control Software is that the D-star Trust Server plays a key role in communications between D-star repeaters across the internet. A D-star Trust Server (Trust Server) must be highly reliable system configured in a manner to have virtually no down time.

Contact your regional Icom office for information on currently available national, regional or world Trust Servers. The new GW system administrator should contact the Trust Server administrator to coordinate bringing the new GW system on-line.

2. New features

The following features have been added compared with Revision 1 of the RS-RP2C Gateway Control Software.

- Web browser-based (CGI) user interface and user information management.



- The Revision 2 GW software enables user management through a web browser.

The current world Revision 1 D-star Gateway Software Trust Server network will have a Revision 2 D-star Gateway Software Trust Server complex to facilitate the conversion of Revision 1 D-star Gateway systems to the Revision 2 D-star Gateway Software.

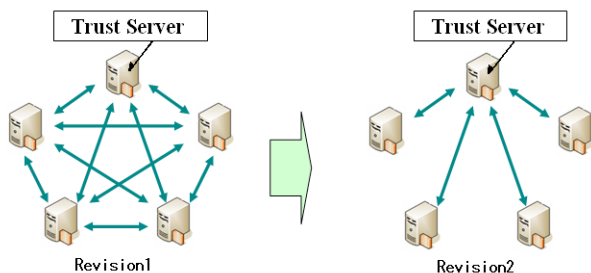
If it is decided that a Trust Server is going to be established in a region the first GW can be designated as the Trust Server. The Trust Server must have a fixed IP internet connection. It is strongly suggested that the new Trust Server administrator coordinate their activity to establish a Trust Server with the world Trust Server administrators to make sure that there are not any network interconnection issues.

(2) Start up the second GW or later

In the case that a Trust Server has already been established in a D-star network the GW would be configured as a GW, rather than a Trust Server, and would specify the established Trust Server IP address in the TRUST_SERVER parameter of the "dsipsvd.conf" file; see page 19.

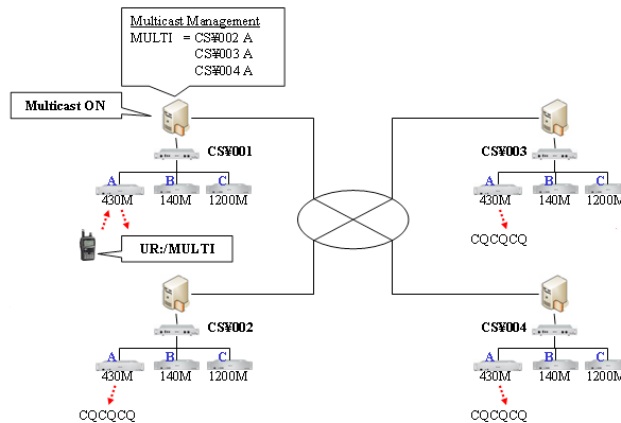
- A user can register for GW access through a web browser, which the GW administrator must approve before access is granted.
- The "reserve" command which is executed manually in the Revision 1 GW software is executed automatically in the background when the new user is approved.
- Approved users can perform a terminal registration assigning or deleting user IP's to their user through a web browser.
- A GW list and user terminal lists may be read through a web browser.
- The Revision 2 GW software reduces the work load for the GW administrator such as assigning the user terminal IP's.
- GW administration is performed through a web browser for the following management functions:
 - User management (reading the user list, registration approval, user deletion)
 - GW management (reading the GW list, connection refuse)
 - Terminal management (reading the terminal list, terminal registration, terminal deletion, etc.)
- The web browser improves both the user interface and the ability to maintain the GW system databases.

- Comply with Dynamic IP address.
 - A significant new feature of the Revision 2 GW software is that the GW can now use a dynamic IP address rather than a fixed IP address. Only the Trust Server is required to have a fixed IP address.
- Introduce Relational Database management system (PostgreSQL).
 - The introduction of RDBMS (Relational Database Management System) contributes to separating the data from the application. This permits the data to be used by applications other than the GW application.
- Improve the synchronization mechanism between GWs.



- Bad data entries will not remain in the database which will improve the GW synchronization process and the speed it takes for each GW synchronization.
- Data synchronization and updating cannot be performed if a Trust Server is not available or functioning with the Revision 2 GW Software, however in a network emergency a GW could be designated as the Trust Server for the network, but every GW on the network would have to update the TRUST_SERVER parameter in their dsipsvd.conf configuration file to point to the “new” Trust Server IP. Note: Remember that a Trust Server must have a fixed IP address.
- DV or DD mode communication without location information updating can be made between available GWs even when no Trust Server is available/functioning.

- Multicast Area CQ call to more than one area.



- In the Revision 1 GW software only a call from one area/port to another area/port can be made. The Revision 2 GW software permits a CQ call to be made up to 10 area/ports at the same time.
- Only one port per repeater controller can be specified if several ports per repeater controller are available in an area.

- Create install shell.
 - The Revision 2 GW software installation has been improved, compared to the Revision 1 GW software, through the use of a semi-automatic shell script.

■ System requirements

The following units and/or environments are required to build D-star gateway server.

| | |
|--|--|
| <p>◇ PC</p> <ul style="list-style-type: none"> • OS : Linux® CentOS 5 (recommended) Compatible software version Linux® Kernel 2.4.20 or later glibc 2.3.2 or later BIND 9.2.1 or later • CPU : 2.4 GHz or faster • Memory : At least 512 MB • LAN board : 2 (NIC from Intel® is recommended) • HDD : At least 10 GB of free space (incl. OS installation) • Middleware : Apache 2.0.59 Tomcat 5.5.20 mod_jk2 2.0.4 OpenSSL 0.9.8d J2SE 5.0 postgresql 8.2.3 (Above middlewares are installed at the same time when installing the GW software.) | <p>◇ Internet line</p> <ul style="list-style-type: none"> • Line speed : Up to 1 Mbps (approximate effective speed*) for both uplink/downlink *Measure typical speed (through put) using with a line speed test site, etc. <p><Maximum through put calculation> The following effective speed is necessary for each operating mode.</p> <ul style="list-style-type: none"> DV mode: 30 kbps/connection DD mode: 180 kbps/connection <ul style="list-style-type: none"> • Example: When connecting three digital voice (multicast operation) and one data repeater; DV mode: multicast (max. 10 areas) 30 kbps × 10 areas × 3 port = 900 kbps DD mode: one port 180 kbps <p>Required maximum effective speed: 900 kbps + 180 kbps = 1080 kbps</p> <p>◇ Fixed IP address (for Trust Server only)</p> <ul style="list-style-type: none"> • Apply to the ISP to acquire a fixed global IP address. <p>◇ Router</p> <p>Following function/s is/are additionally required for the common router.</p> <ul style="list-style-type: none"> • Class A subnet mask (255.0.0.0) can be set for LAN |
|--|--|

■ Linux® downloading

NOTE: If you have Linux OS CD (specified distribution and software version), skip this instruction and refer to “■ CentOS 5 installation” (p. 2).

The following hardware and software are required for Linux® OS downloading.

- **Another PC**
The PC must be connected to internet.
- **CD-R drive**
- **CD writing software**
The software have capability to burning a CD with an ISO image.

| | |
|--|---|
| <p>◇ Downloading the OS</p> <p>Download the Linux® OS ISO images from the appropriate distributor’s site. http://www.centos.org</p> | <p>◇ Recording the CD</p> <p>Records the downloaded ISO image into the CD. The ISO image is the same format as the recorded in a CD. When this ISO image is recorded in CD as a file, OS cannot be installed with the CD.</p> <p>NOTE: See the instruction manual of the CD writing software about a detailed operation, the ISO image recording procedures, etc.</p> |
|--|---|

■ CentOS 5 installation

- ① Insert the CD into the appropriate CD drive.
- ② The screen below appears automatically. Press [Enter] key.



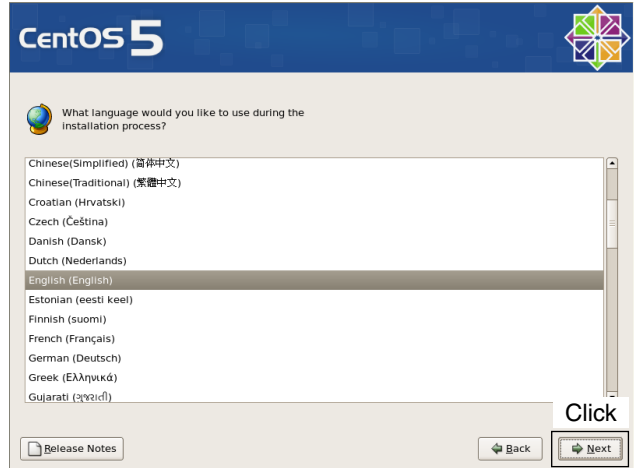
- ③ The “Media test” screen as below appears automatically. Press [Tab] key to select <Skip>, then press [Space] key to skip the media test.



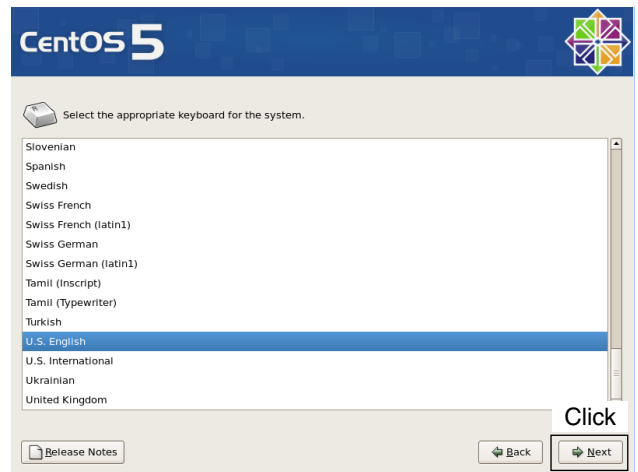
- ④ Click [Next] to start the installation.



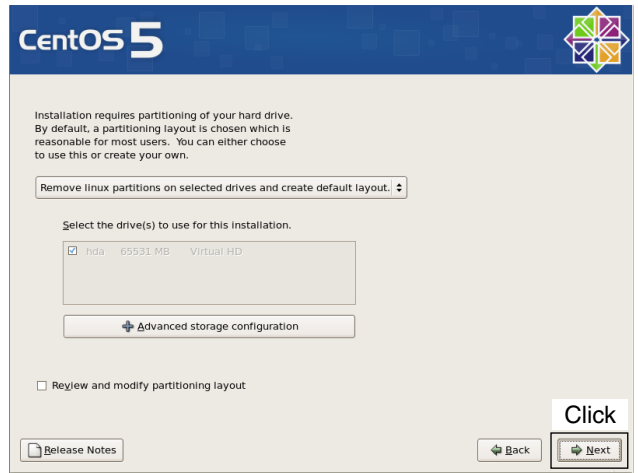
- ⑤ Select the desired language for the installation instruction, then click [Next].



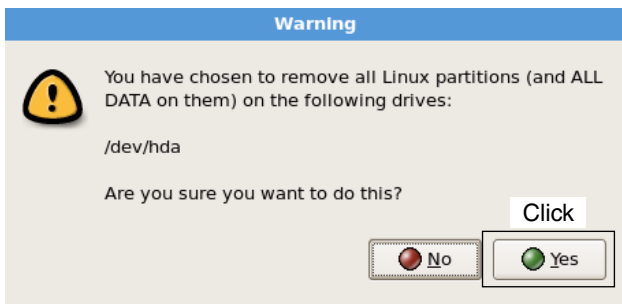
- ⑥ Select the appropriate keyboard type, then click [Next].



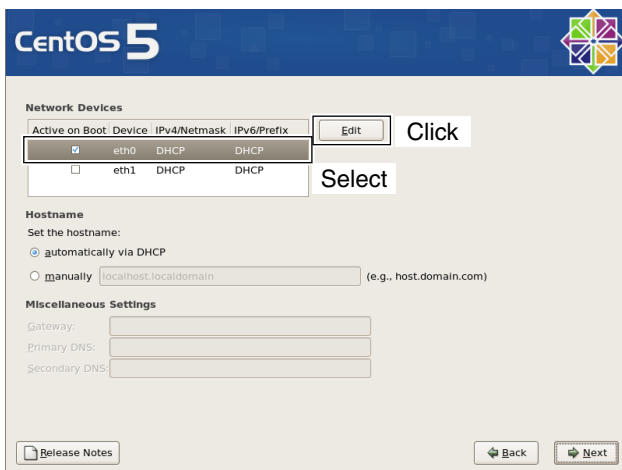
- ⑦ Select the appropriate partitioning and click [Next].



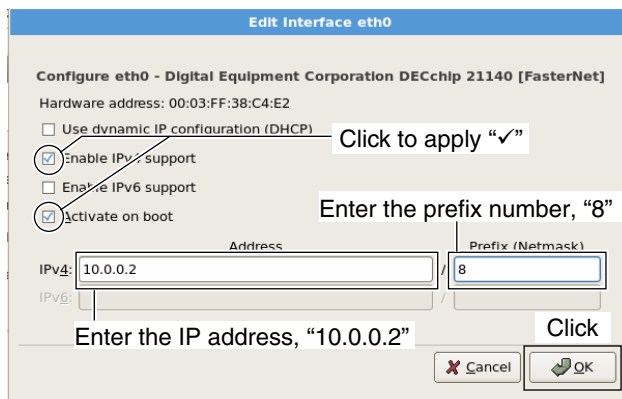
⑧ The “Warning” dialog as below appears, click [●Yes].



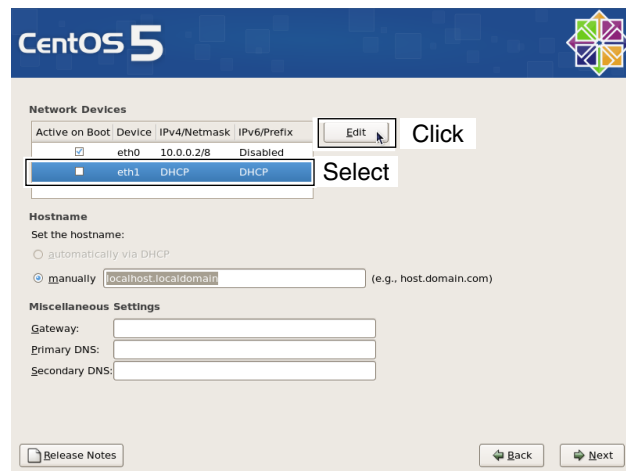
⑨ Select “eth0” then click [Edit].



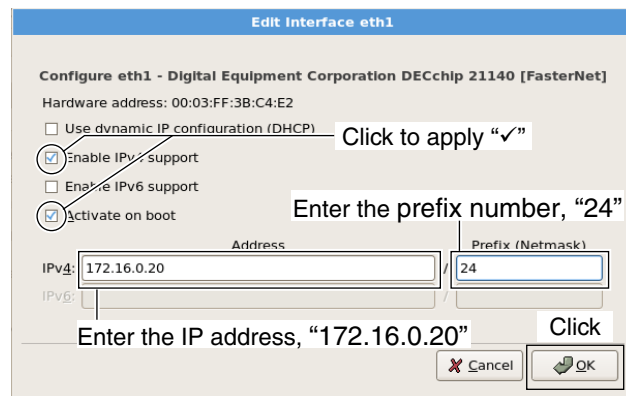
⑩ Click “Enable IPv4 support” and “Activate on boot” to apply check mark, “✓,” and then enter the global IP address, “10.0.0.2,” and the prefix number, “8,” into the “Address” and “Prefix (Netmask)” columns, respectively. Click [↩OK].



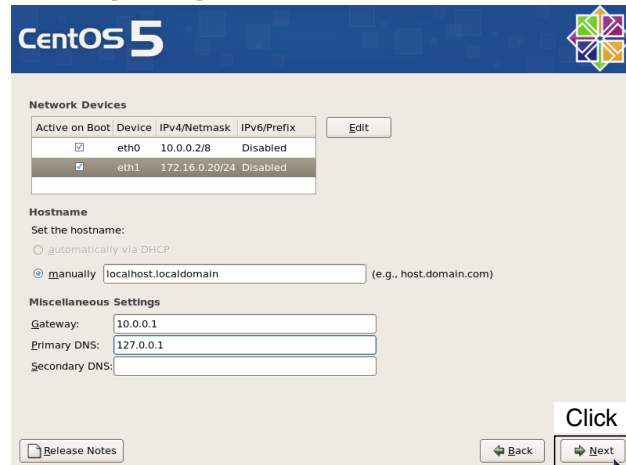
⑪ Select “eth1” then click [Edit].



⑫ Click “Enable IPv4 support” and “Activate on boot” to apply check mark, “✓,” and then enter the IP address (e.g.; “172.16.0.20”) and the prefix number (e.g.; “24”) into the “Address” and “Prefix (Netmask)” columns, respectively. Click [↩OK].



⑬ Enter the gateway address, “10.0.0.1,” and domain name server address into “Gateway:” and “Primary DNS:” columns, respectively. Click [➡Next].



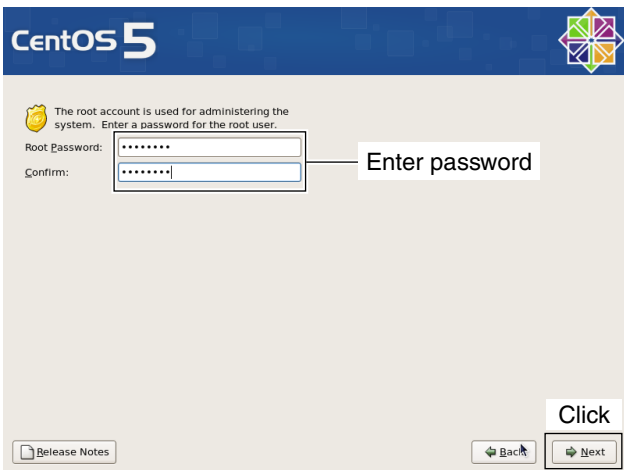
➡ Continue to the next page...

CentOS 5 installation— continued

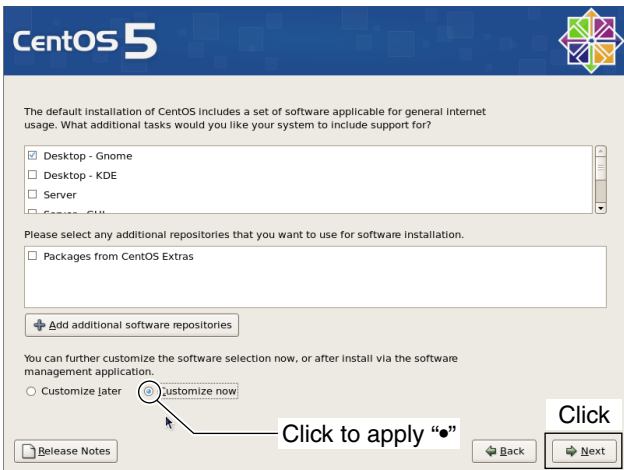
14 Select the time zone, then click [➔Next].



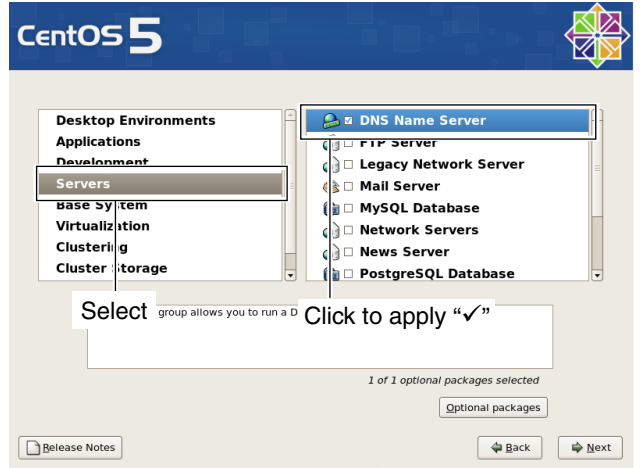
15 Enter the desired password into both the “Root Password:” and “Confirm:,” then click [➔Next].
 • The same password should be entered.



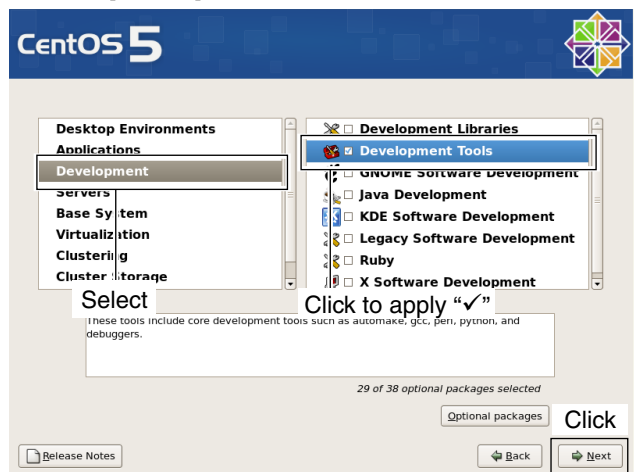
16 Click “Customize now” to apply check mark, “•,” then click [➔Next].



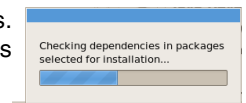
17 Click to select “Servers” then click “DNS Name Server” to apply check mark, “✓.”



18 Click to select “Development” then click “Development Tools” to apply check mark, “✓.” Click [➔Next].



• The dialog as at right appears. Wait until the package check is completed.



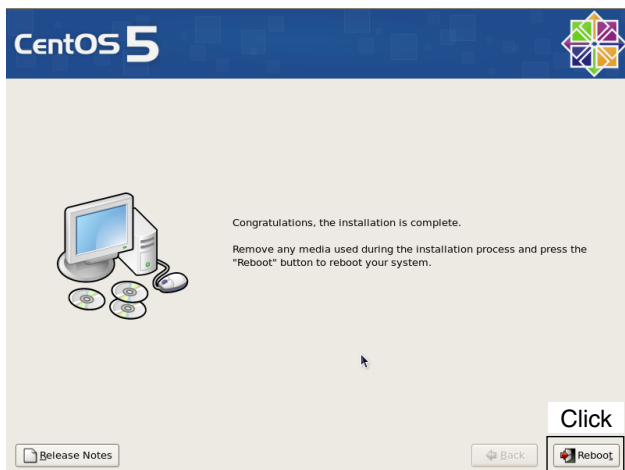
19 Click [➔Next].



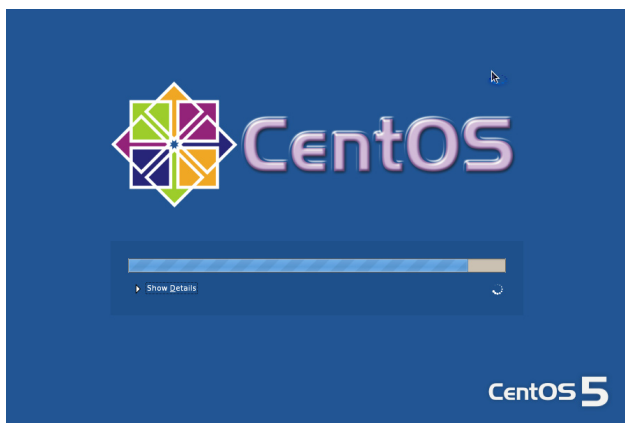
- 20 The dialog, "Required Install Media," appears. Click [Continue] to start the installation.
- Replace the specified CD to follow the installation instruction.



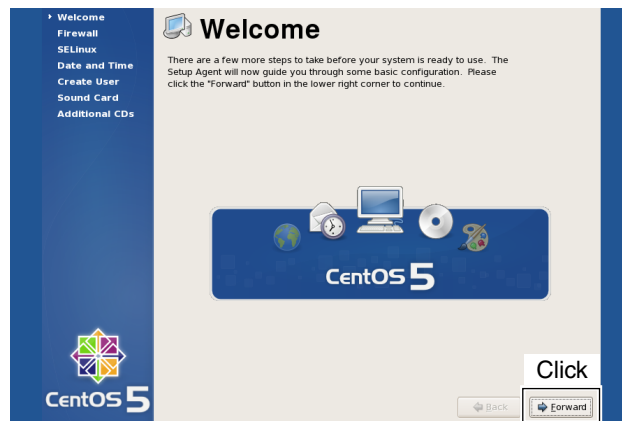
- 21 When the installation is completed, the screen below appears. Click [Reboot] to re-start the PC.



- 22 Starting CentOS.



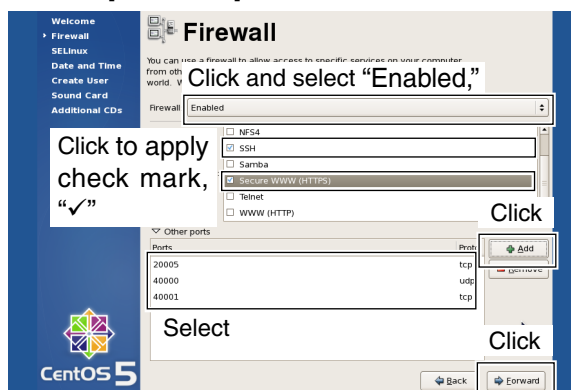
- 23 "Welcome" screen as below appears, click [Forward] to setup various features.



- 24 Set Firewall as desired.
- **When deactivating Firewall;** Click and select "Disabled," then click [Forward].
 - Go to step 25.



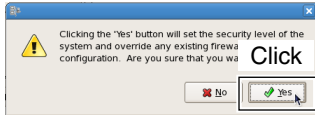
- **When activating Firewall;**
 - 1 Click and select "Enabled."
 - 2 Click to apply check mark, "✓," with "SSH" and "Secure WWW(HTTPS)" in "Trusted services:."
 - 3 Select "20005/tcp," "40000/udp" and "40001/tcp" in other ports, and click [Add] to add ports for particular communication between servers is recommend.
 - 4 Click [Forward].



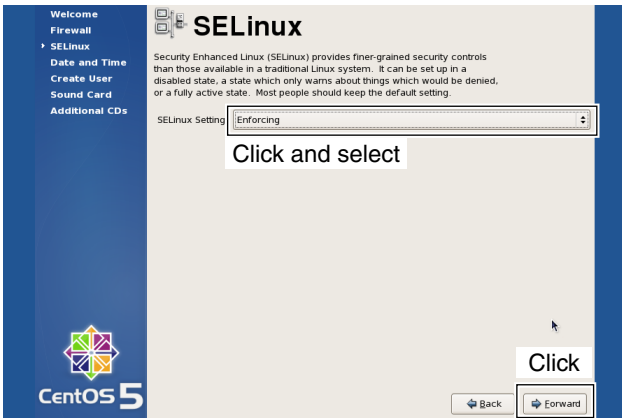
➤ Continue to the next page...

CentOS 5 installation— continued

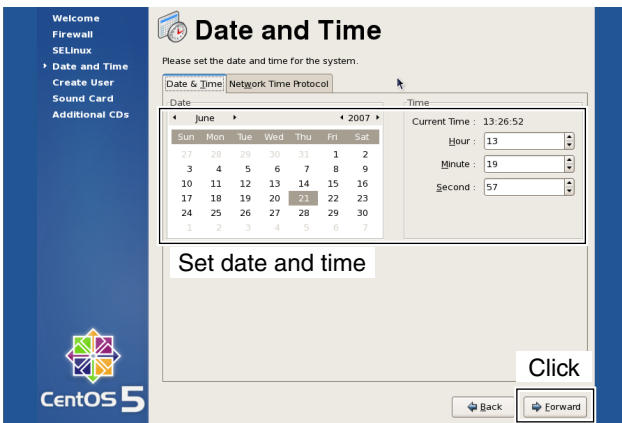
- 5 The dialog below appears, click [✓Yes].
 • Go to step 25.



- 25 Click and select to SELinux security system function from “Disabled” or “Enforcing.”
 Click [➔Forward].
 • Select “Enforcing” is recommended.



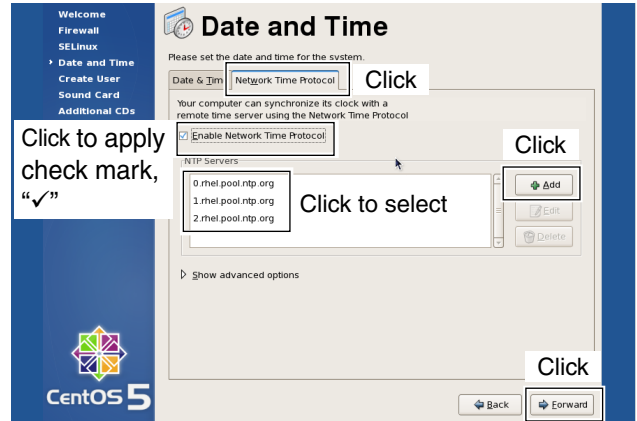
- 26 Set date and time, then click [➔Forward].



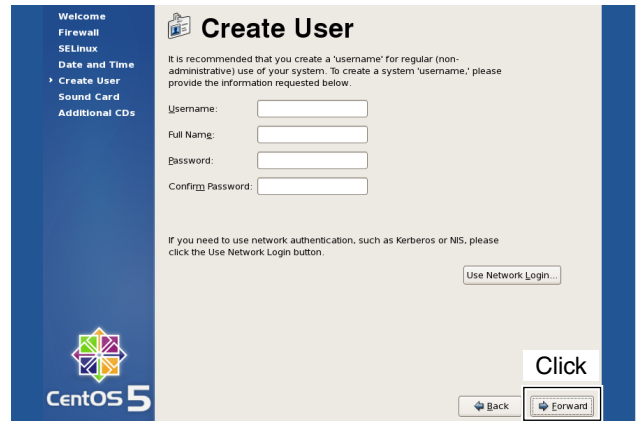
- 27 Click “Network Time Protocol” tab.
 28 Click “Enable Network Time Protocol” to apply check mark, “✓,” and select the desired NTP server then click [+Add].
 Click [➔Forward].

IMPORTANT!:

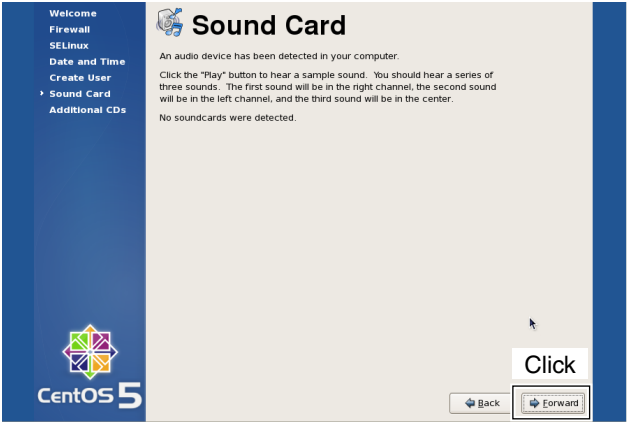
Accurate time must be set to the server’s clock using with the desired NTP server.



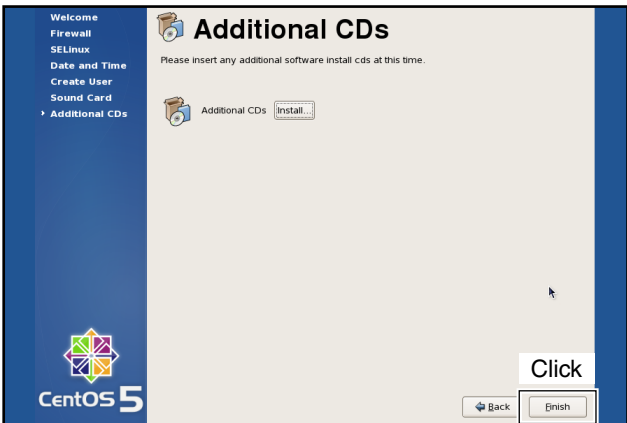
- 29 “Create User” screen appears, click [➔Forward].
 • “dstar” and “postgres” users will be creating later in GW installation (p. 14).



30 "Sound Card" screen appears. Click [Forward].



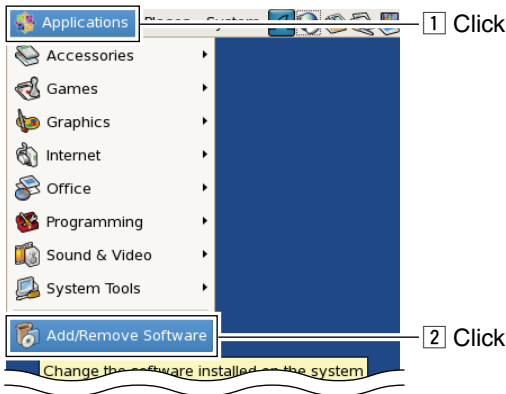
31 "Additional CDs" screen appears. Click [Finish] to complete the installation.



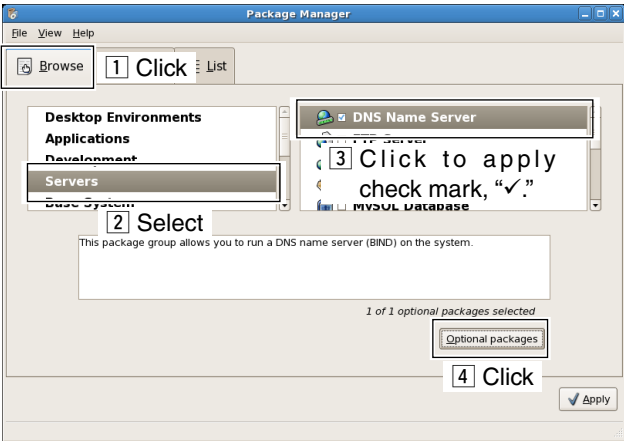
■ DNS name server installation

Install the DNS name server if not installed.

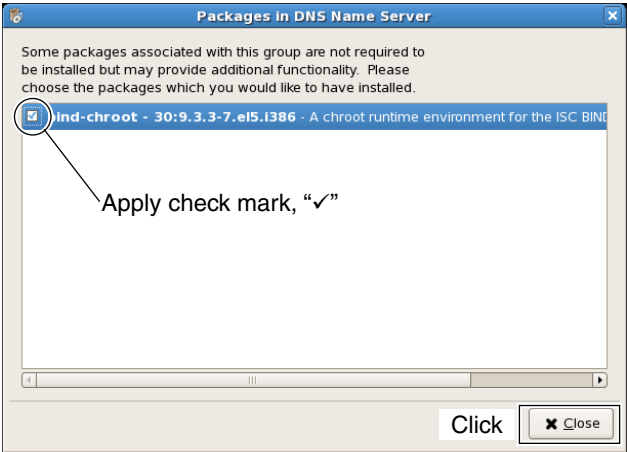
1 Open "Add/Remove Applications" with the following mouse operation.



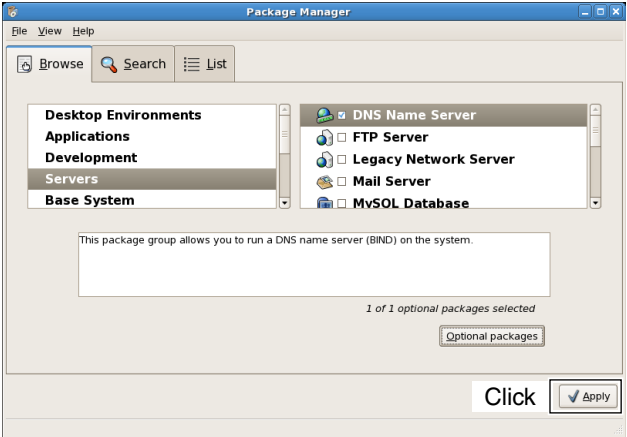
2 "Package Manager" screen as below appears. Click "Browse" tab, if necessary.
3 Click to select "Servers" then click "DNS Name Server" to apply a check mark, "✓," and then click [Optional packages].



4 "Packages in DNS Name Server" screen as below appears, click to apply check mark, "✓," at "Bind-chroot."
• Click [Close] after the setting.



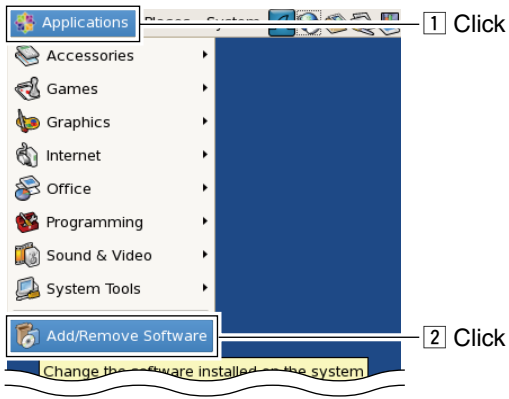
5 Click [Apply] to start the installation.



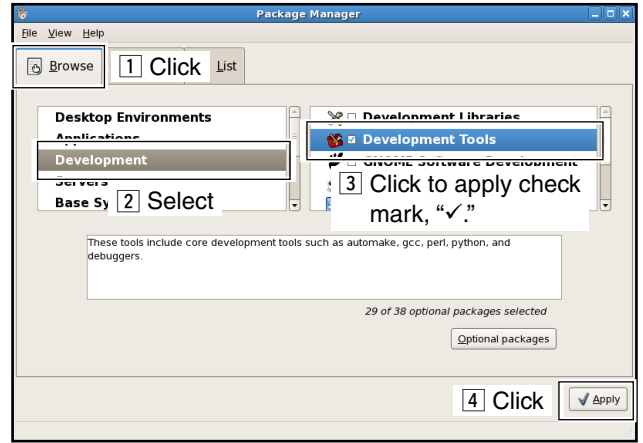
■ Compiler installation

Install the compiler if not installed.

- ① Open “Add/Remove Applications” with the following mouse operation.

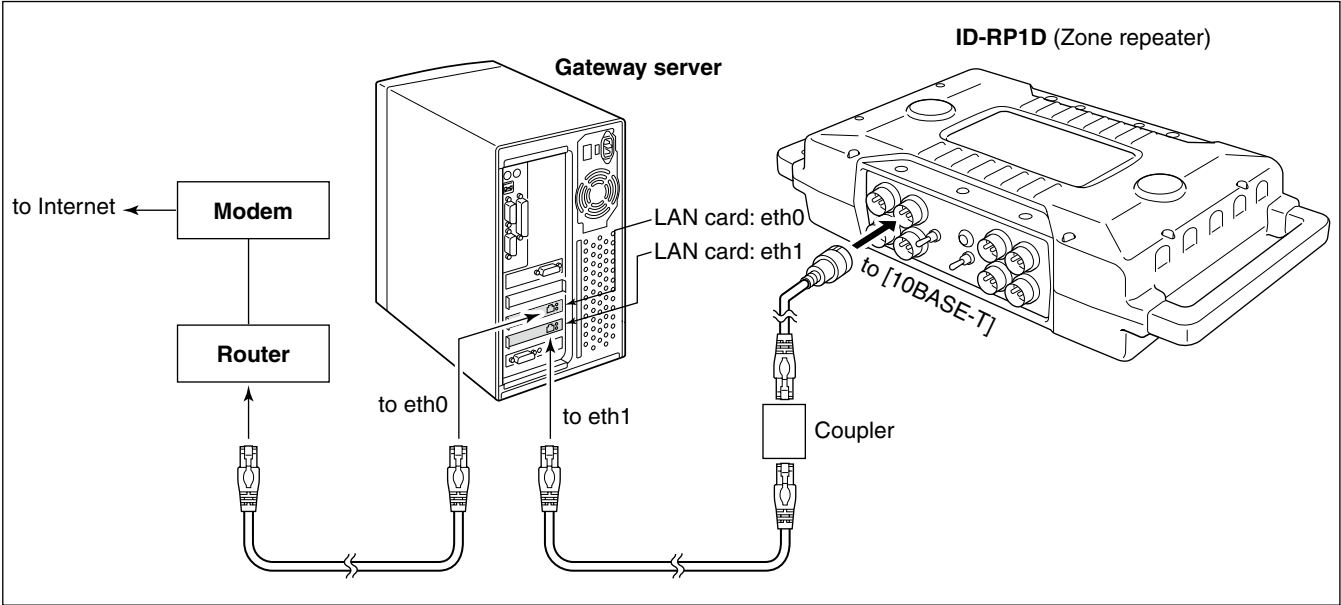


- ② “Package Manager” screen as below appears.
 - Click “Browse” tab, if necessary.
- ③ Click to select “Development” then click “Development Tools” to apply a check mark, “✓,” and then click [✓Apply].

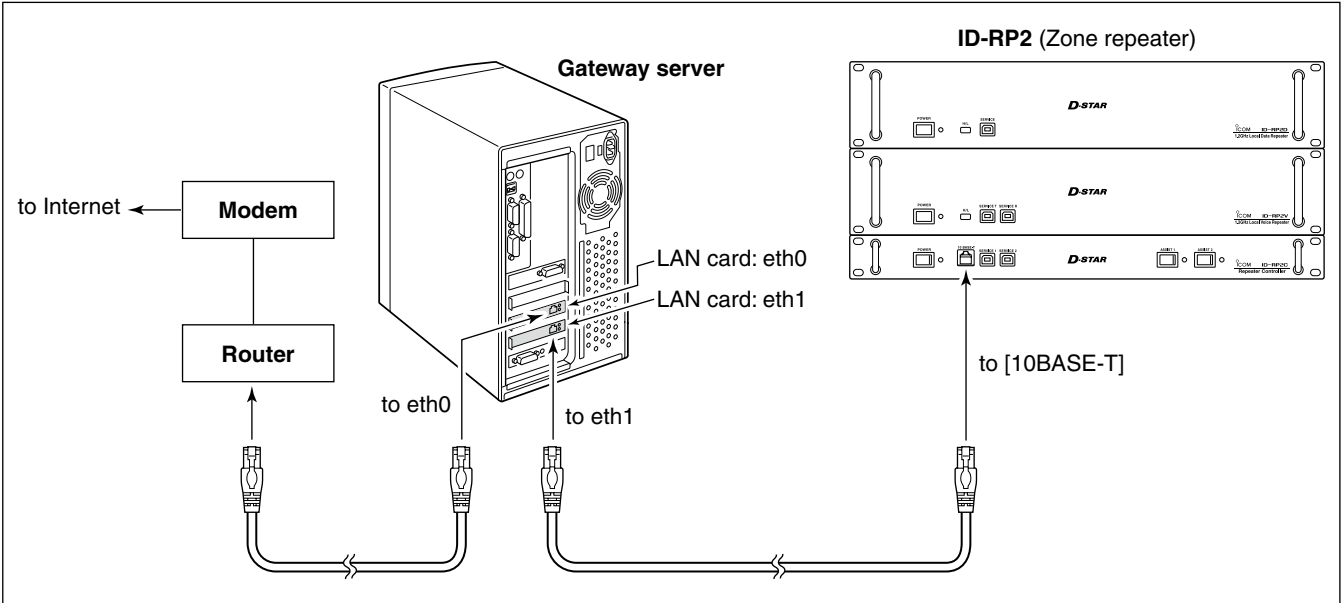


■ Gateway server connections

◇ Connecting to the ID-RP1 system



◇ Connecting to the ID-RP2 system



■ Router settings

◇ IP address setting

Set the specified IP addresses for both WAN and LAN as follows.

IP address (WAN) : Enter the suitable IP address for the D-star system condition.
For Trust Server, enter a fixed IP address.

IP address (LAN) : 10.0.0.1

/// **NOTE:** The same IP address (for LAN; 10.0.0.1) is used for all gateways. **NEVER** use other private IP address.

◇ Port forwarding setting

Set the following port number with protocol to transferring to the IP address "10.0.0.2."

| Port No. /Protocol | Usage | File location |
|--------------------|---------------------------|-------------------------------|
| 20005/TCP | IP server synchronization | PORT_SYNC (/etc/dsipsvd.conf) |
| 40000/UDP | Voice transfer | GW_VCPORT (/etc/dsgwd.conf) |
| 40001/TCP | Data transfer | GW_DTPORT (/etc/dsgwd.conf) |
| 443/TCP | https | — |

/// **NOTE:** IP filter must be set to allowing Internet remote access to local IP address "10.0.0.2."
/// Otherwise the D-star gateway will not work due to the firewall.

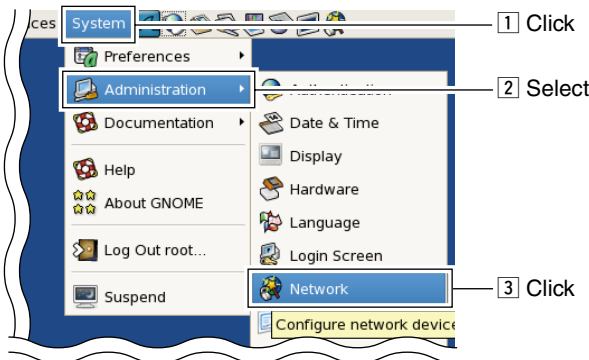
■ Server settings

◇ LAN card settings

Set up the installed LAN card as follows if it has not been set when installing CentOS 5.

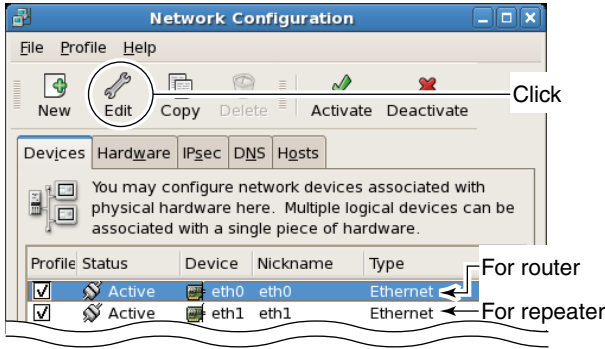
NOTE: The fixed value for both the IP address and subnet mask must be set to both eth0 and eth1. Otherwise the gateway server cannot communicate to another D-star gateway.

① Open "Network Configuration" screen with the following mouse operation.



② Select [eth0] or [eth1] to select router or repeater side respectively, then click [Edit].

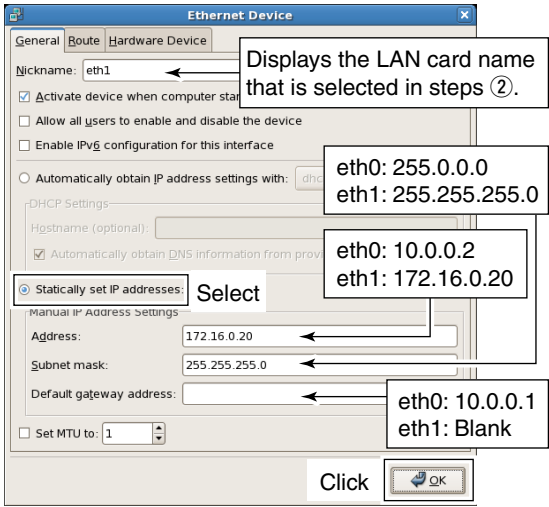
- The "Ethernet Device" screen appears as right above.



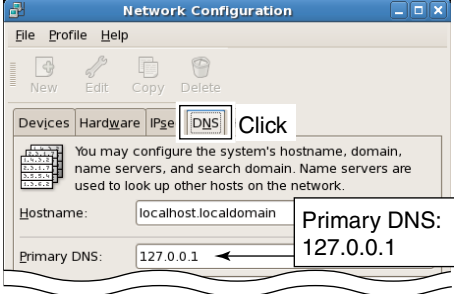
| Profile | Status | Device | Nickname | Type |
|-------------------------------------|--------|--------|----------|----------|
| <input checked="" type="checkbox"/> | Active | eth0 | eth0 | Ethernet |
| <input checked="" type="checkbox"/> | Active | eth1 | eth1 | Ethernet |

For router
For repeater

③ Select [Statically set IP address], then enter the specified IP address, subnet mask and default gateway (router side; eth0 setting only), as below. Click [OK], then close "Ethernet Device" screen.



④ Click [DNS] tab in "Network Configuration" screen, then enter the address "127.0.0.1" (fixed value) into "Primary DNS" column.



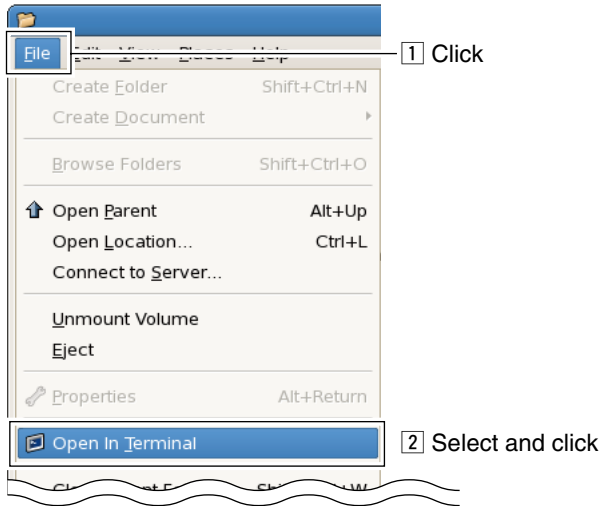
Primary DNS: 127.0.0.1

◇ **Named setting**

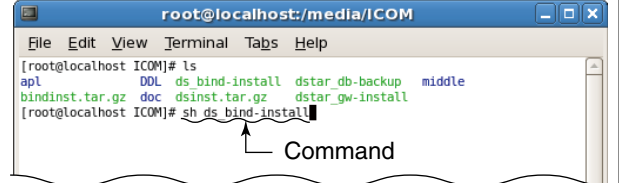
• **Setting with the script**

If executing the following script, the setting completes automatically.

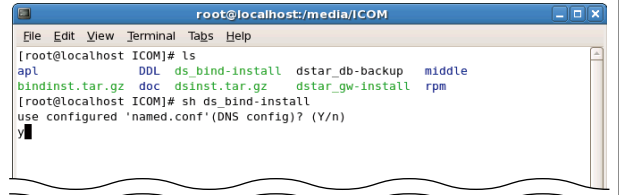
- ① Insert the RS-RP2C CD into the CD drive.
- ② Double click “Computer” icon.
- ③ Double click “CD” icon.
- ④ Click [File] menu then select and click “Open In Terminal.”



- ⑤ Enter the command, “sh ds_bind-install,” then execute.



- ⑥ Enter “y,” and then press [Enter] key on the keyboard to start setting.



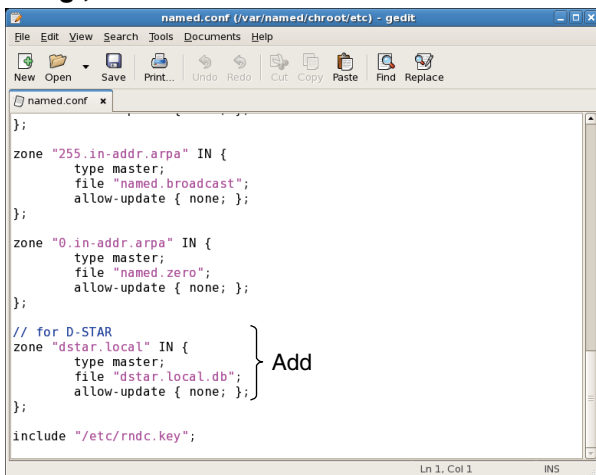
• **Manual setting**

If the Named is not working properly when setting the Named with the script described as above, set the Named manually as follows.

/// **IMPORTANT!:** Master the basis of BIND with a reference book of Linux, before starting the named setting.

- ① Add local zone setting file (dstar.local.) to “/var/named/chroot/etc/named.conf” or “/etc/named.conf”, depending on the setting condition.

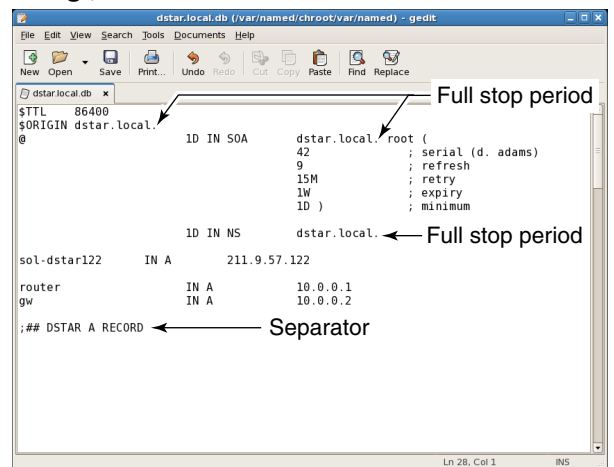
• e.g.; /var/named/chroot/etc/named.conf



- ② Create database, “/var/named/chroot/var/named/dstar.local.db” or “/var/named/dstar.local.db,” for local D-star as the following example.

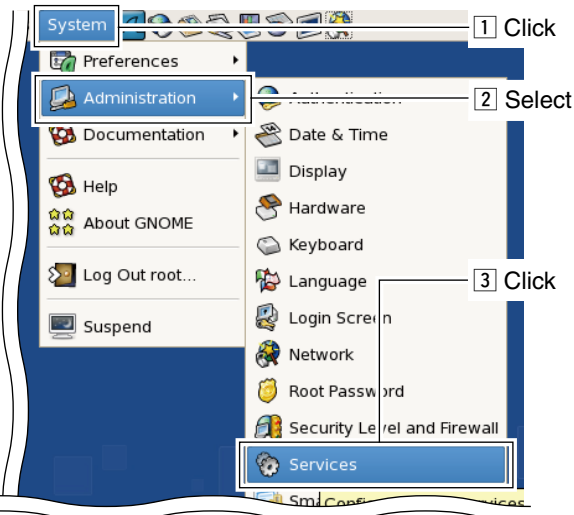
/// **NOTE:** A full-stop period must be applied into 2nd, 3rd and 10th lines. And set the separator as below at the end of the line.
 ///; ##DSTAR A RECORD

• e.g.:/var/named/chroot/var/named/dstar.local.db

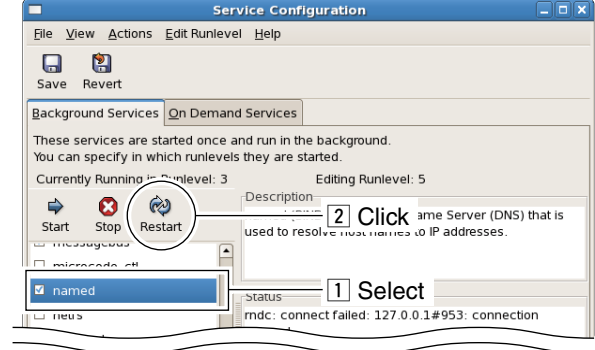


◇ Starting the Named service

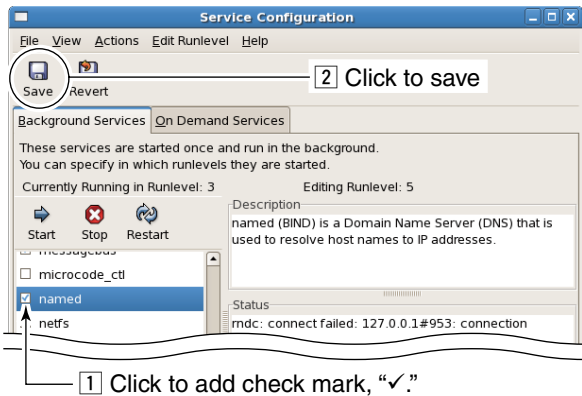
- ① Open “Service Configuration” screen with the following mouse operation.



- ③ Select “named” item, then click [Restart] to restart the named setting.

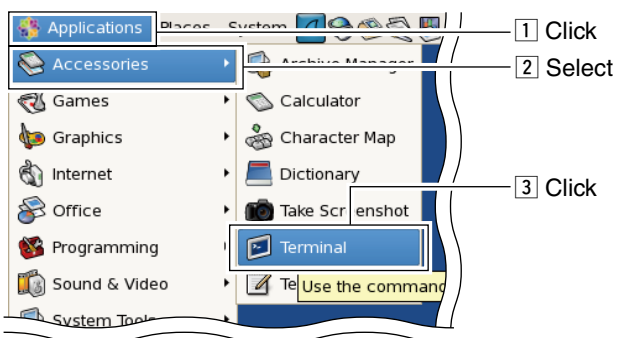


- ② Click the check box beside “named,” then save the changed setting if no check mark, “✓,” is applied.



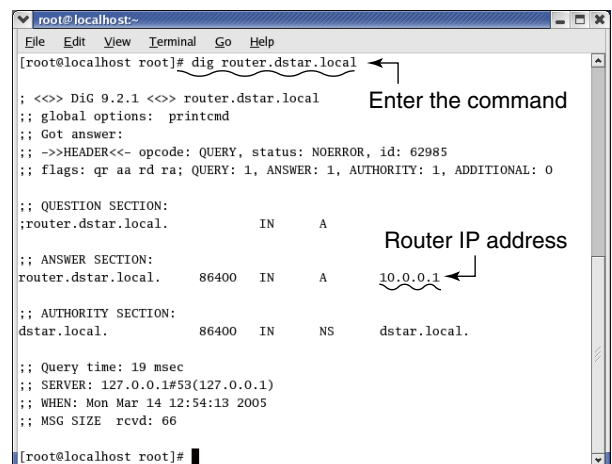
◇ DNS function verification

- ① Start up “Terminal” with the following mouse operation.



- ② The local DNS operation can be verified by entering the following command.
dig router.dstar.local

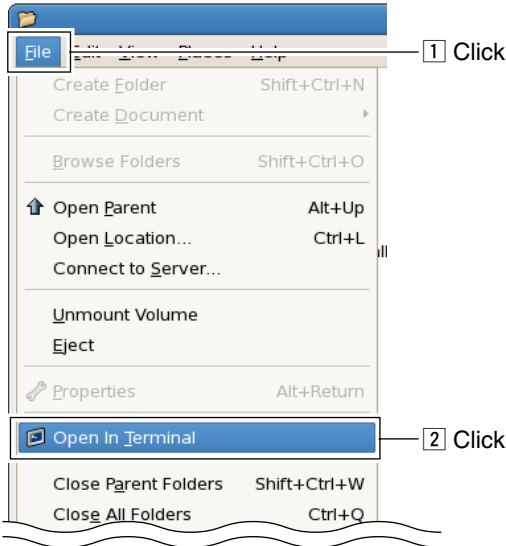
- ③ When the correct router IP address “10.0.0.1” is displayed in the answer section as below, the GW setup is succeeded.



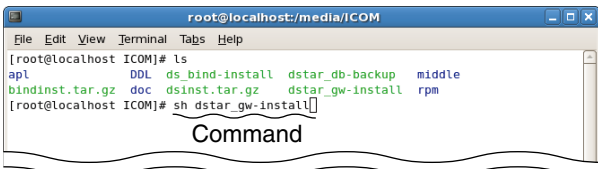
■ Gateway control software

◇ Installation

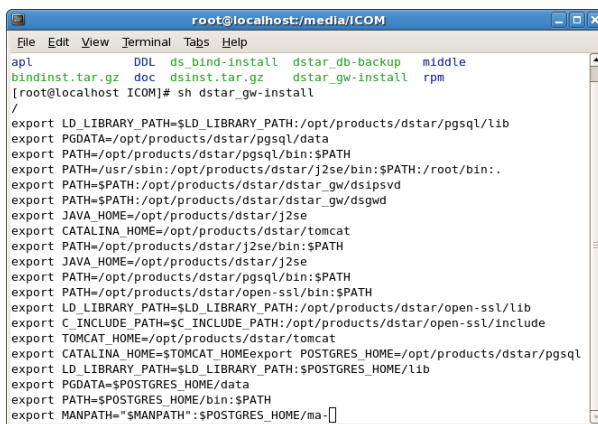
- ① Start up the server and login root.
- ② Insert the RS-RP2C CD into the CD drive.
- ③ Double click “Computer” icon
- ④ Double click “CD” icon.
- ⑤ Start up “Open In Terminal” with the following mouse operation.



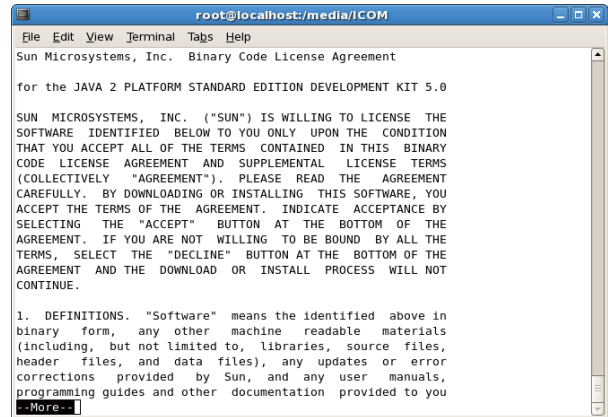
- ⑥ Enter the command “sh dstar_gw-install” as below.



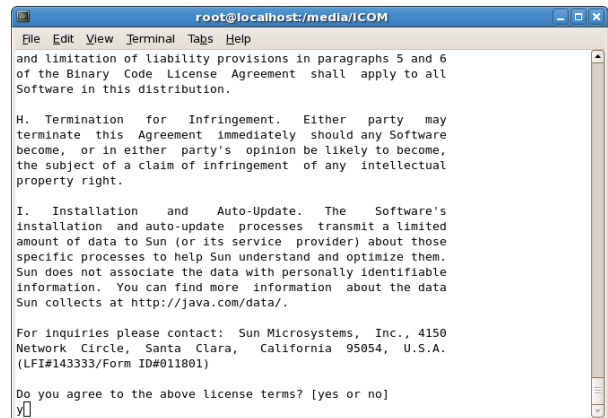
- ⑦ Press [Enter] key on the keyboard to start GW software installation.



- ⑧ License agreement appears. Read all of the term.
 - Press [Space] or [Enter] key on the keyboard to select the next page.



- ⑨ If you agree the license terms, enter “y” then press [Enter].
 - The installation is continued.



- ⑩ DB (Data Base) creation will start. Enter “y,” and press [Enter] key.



11 The message, "install successfully finished.", appears when the first step of the installation is completed. Go to steps 12 to edit "dsgwd.conf" and "dsipsvd.conf".

```

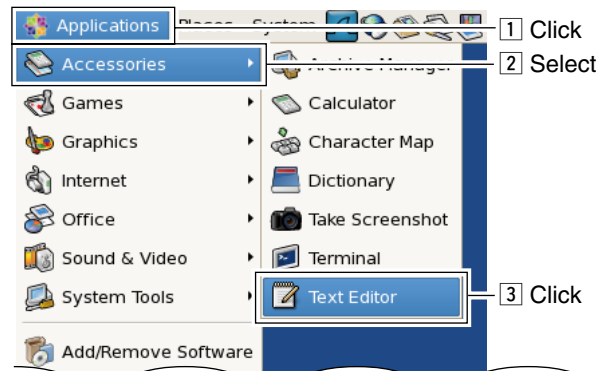
root@localhost:/media/ICOM
File Edit View Terminal Tabs Help
COMMENT
COMMENT
ERROR: table "unsync_user_mng" does not exist
NOTICE: CREATE TABLE / PRIMARY KEY will create implicit index "pk_unsync_user_mng" for table "unsync_user_mng"
CREATE TABLE
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
COMMENT
*** install successfully finished. *** (104)

*****Please edit 'GW server' conf.*****

[root@localhost ICOM]#

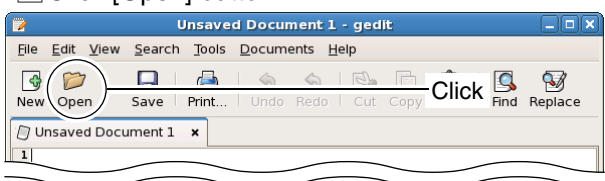
```

12 Open "Text Editor" with the following mouse operation. • "vi editor" can also be usable.

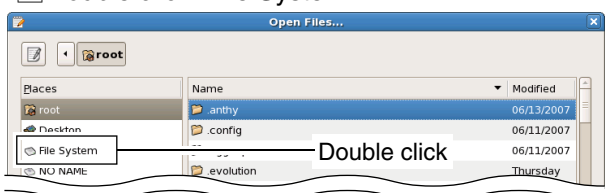


13 Open "dsgwd.conf" file and edit the file as described in "dsgwd.conf screen description" in page 18.

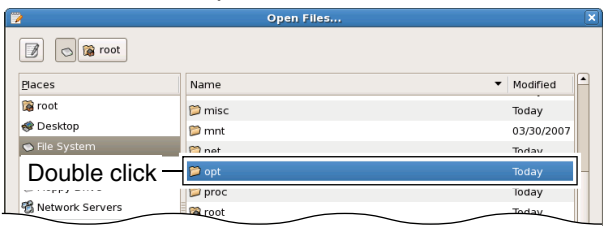
1 Click [Open] button.



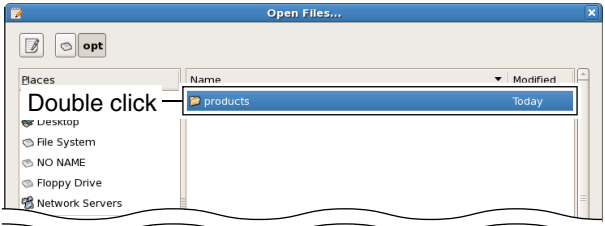
2 Double click "File System."



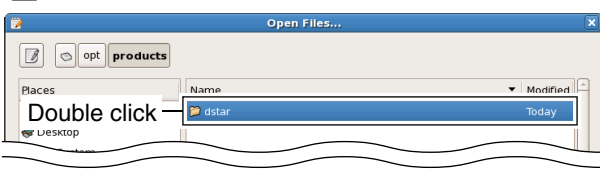
3 Double click "opt."



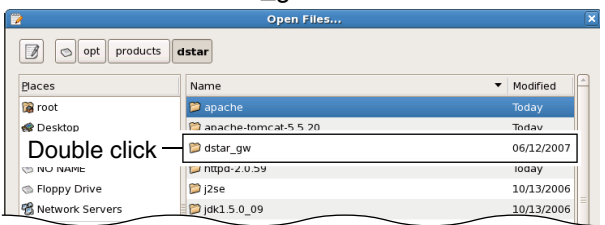
4 Double click "Products."



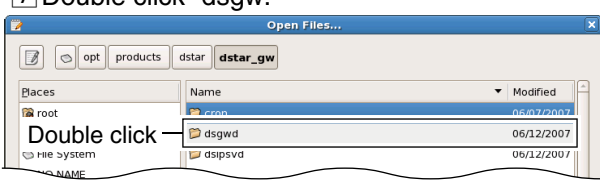
5 Double click "dstar."



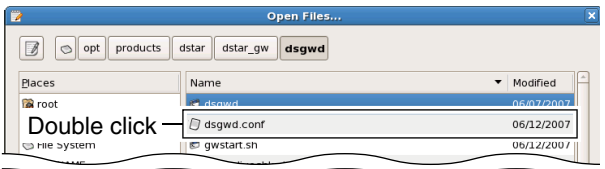
6 Double click "dstar_gw."



7 Double click "dsgw."



8 Double click "dsgw.conf."

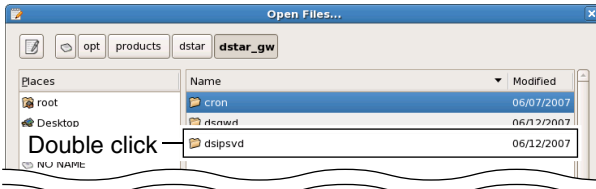


Continue to the next page...

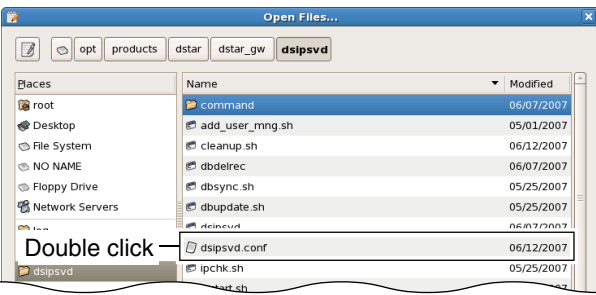
◆ Installation—continued

14 Open “dsipsvd.conf” file and edit the file as described in “◆ dsipsvd.conf screen description” in page 19.

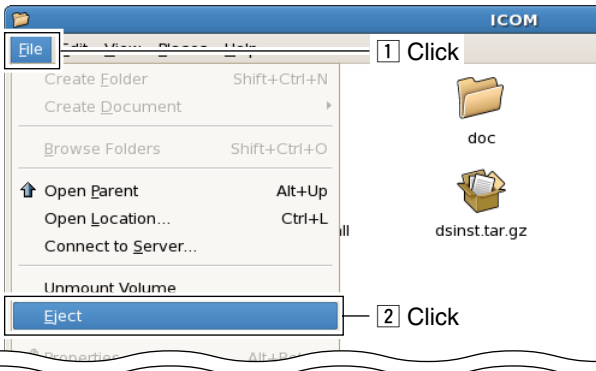
- 1 Perform the same operation as described in steps 1 to 6 in step 13.
- 2 Double click “dsipsvd.”



3 Double click “dsipsvd.conf.”



15 Eject the CD with the following mouse operation.



NOTE: IF the error message, “device is busy,” appears, stops active process using “kill” command.
 Enter the command as below.

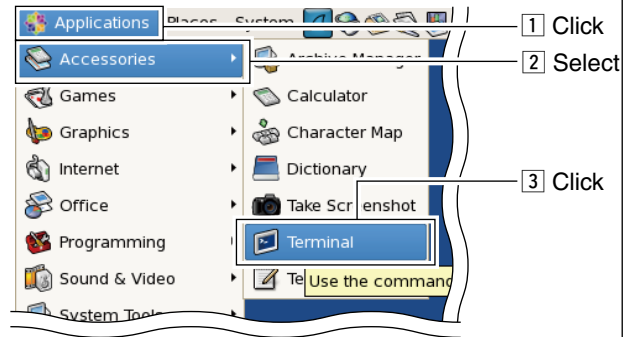
```
# fuser -muv /media/ICOM
```

```
# kill -9 (pid)
```

16 Reboot the server.
 • Reboot command; # shutdown -r now

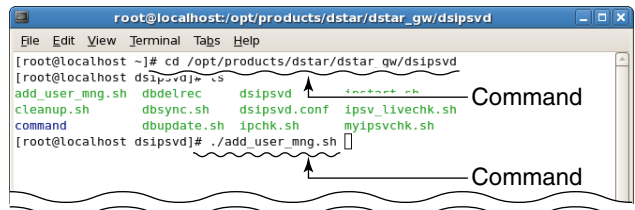
17 Login root.

18 Starts up “Terminal” with the following mouse operation.



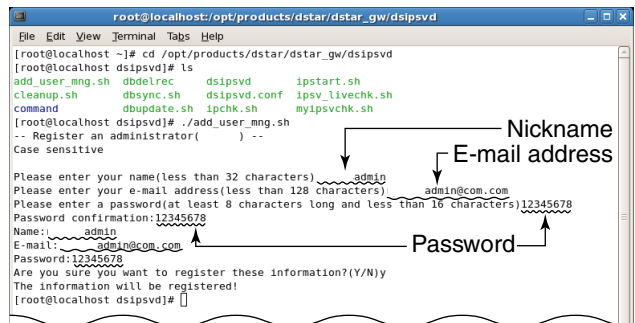
19 Enter the command, “# cd /opt/products/dstar/dstar_gw/dsipsvd,” then enter the command “# ./add_user_mng.sh” as below to create an administrator.

- Each gateway server should be set.
- Use the zone repeater callsign as the administrator callsign



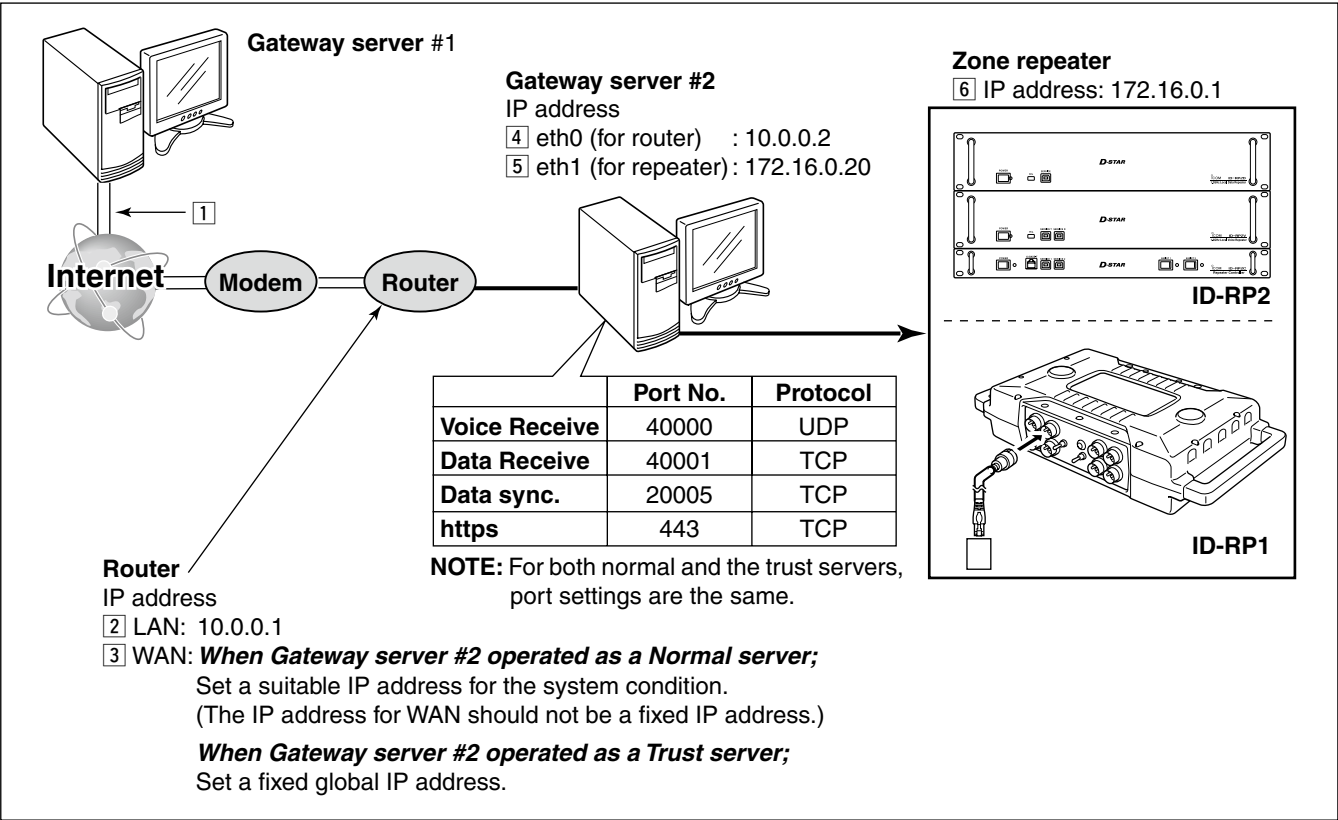
20 Enter the following administrator information as desired.

- Nickname
- E-mail address
- Login password



System setup

Setup example



■ Control software settings

◇ dsgwd.conf screen description

```

#
# dsgwd.conf
# Configuration file for D-STAR GW-Server(type2) Daemon
# (C) 2004-2007 Icom Inc. Revision 2.0
#

# Zone Repeater's Information
ZR_ADDR=172.16.0.1 ← 1
ZR_CALLSIGN=XXXXXX ← 2
ZR_PORT=20000 ← 3

# DNS Server's Information
DNS_ADDR=10.0.0.1 ← 4
DNS_MAC=00-00-00-00-00-00 ← 5

# GW's Information
GW_ETHIFNAME=eth0 ← 6
GW_VCPORT=40000 ← 7
GW_DTPORT=40001 ← 8
GW_ZRPORT=20000 ← 9

# Management Server's Information
MGSV_QRPORT=12345 ← 10
MGSV_UDPORT=12346 ← 11
CON_WAIT_INTERVAL=2 ← 12
CON_REFRESH_INTERVAL=300 ← 13
CON_MAX_GW=50 ← 14

# Ip Server : query polling timeout(msec)
QUERY_POLLING_TIMEOUT=1000 ← 15

```

— Zone Repeater's Information —

① ZR_ADDR

Sets the zone repeater's IP address (the IP address [6] in ◇ Setup Example).

The same IP address that is programmed in "IP" (for the ID-RP1D maintenance) or "IP Address" (for the utility for ID-RP2C) cell in "Communication Settings" should be set.

② ZR_CALLSIGN

Sets the zone repeater's call sign.

The same call sign that is programmed in "Callsign" cell in "General" of the ID-RP1D maintenance or the utility for ID-RP2C should be set.

③ ZR_PORT

Sets the zone repeater's transmit/receive port number (the port number [6] in ◇ Setup Example).

The same port number that is programmed in "Port" cell in "Communication Settings" of the ID-RP1D maintenance or the utility for ID-RP2C should be set.

— DNS Server's Information —

④ DNS_ADDR

Sets the zone DNS server's IP address (the IP address [3] in ◇ Setup Example).

⑤ DNS_MAC

Sets the zone DNS server's MAC address (the MAC address [3] in ◇ Setup Example).

Set the MAC address of the connected router with dividing by hyphen (-).

— GW's Information —

⑥ GW_ETHIFNAME

Sets the interface name of the LAN card (the interface name [4] in ◇ Setup Example).

The interface name can be confirmed with the "ifconfig" command.

⑦ GW_VCPORT

Sets the port number for voice operation (UDP). Use the default setting.

⑧ GW_DTPORT

Sets the port number for data operation (TCP). Use the default setting.

⑨ GW_ZRPORT

Sets the port number of the gateway server self for the communication with the zone repeater (UDP). Use the default setting.

— Management Server's Information —

⑩ MGSV_QRPORT

Sets the port number of the IP address managing server for call sign inquiry (UDP). Use the default setting.

⑪ MGSV_UDPORT

Sets the port number of the IP address managing server for updated location information request (UDP). Use the default setting.

⑫ CON_WAIT_INTERVAL

Sets the application timer.

The application timer is the waiting timer (unit: second) until the connection is succeeded when making a new connection to another gateway in data mode operation.

Use the default setting.

⑬ CON_REFRESH_INTERVAL

Sets the decide timer (unit: second) to impossible to connect to the gateway which is failed in connection once in data mode operation.

Use the default setting.

⑭ CON_MAX_GW

Sets the maximum number of simultaneous connections to another gateway in data mode operation.

Use the default setting.

— IP Server —

⑮ QUERY_POLLING_TIMEOUT

Sets the standby time period (unit: millisecond) when position information retrieval inquiry is send to the IP server.

Use the default setting.

◇ dsipsvd.conf screen description

```

dsipsvd.conf (/opt/products/dstar/dstar_gw/dsipsvd) - gedit
File Edit View Search Tools Documents Help
New Open Save Print... Undo Redo Cut Copy Paste Find Replace
dsipsvd.conf x
#
# dsipsvd.conf
# Configuration file for D-STAR IP-Server Daemon
# (C) 2004-2007 Icom Inc. Revision 2.0
#
# Communication Port Number
PORT_SEARCH=12345 ← 1
PORT_RENEWAL=12346 ← 2
# IP Server comm. Info.
TRUST_SERVER = 0.0.0.0 ← 3
PORT_SYNC = 20005 ← 4
SEND_RECV_TIMEOUT = 10 ← 5
CON_WAIT_INTERVAL=2 ← 6
# My IP Server Info.
ZR_CALLSIGN=XXXXXX ← 7
DNS_ZONE_FILE_PATH = /var/named/chroot/var/named/dstar.local.db ← 8
IS_MY_TRUST_SERVER=0 ← 9
MULTICAST_ENABLE=1 ← 10
# Named Pid File Name
NAMED_PID_FILE = /var/named/chroot/var/run/named/named.pid ← 11
# WEB VERSION
GW_WEB_VERSION=1.0 ← 12
# DataBase Info.
DB_IP=127.0.0.1 ← 13
DB_PORT=5432 ← 14
DB_NAME=dstar_global ← 15
DB_USER=dstar ← 16
DB_PASSWORD=dstar123 ← 17
DB_COMMAND_PATH=/opt/products/dstar/dstar_gw/dsipsvd/command/ ← 18
DB_DRIVER=org.postgresql.Driver ← 19
Ln 1, Col 1
INS

```

— Communication Port Number —

① PORT_SEARCH

Sets the port number of the IP address managing server for call sign inquiry (UDP).
Use the default setting.

② PORT_RENEWAL

Sets the port number of the IP address managing server for updated location information request (UDP).
Use the default setting.

— IP Server comm. Info.—

③ TRUST_SERVER

Sets the IP address of the “TRUST SERVER”.
The Trust Server’s IP address can be set in FQDN format. However, the application restarting is necessary in case of the IP address in FDQN format is changed, because of the read IP address is effected when starting up an application.

④ PORT_SYNC

Sets the port number for the user information in MNG, GIP and RIP table synchronization. (TCP)
Use the default setting.

⑤ SEND_RECV_TIMEOUT

Sets the time-out period for the user information in MNG, GIP and RIP table synchronization.
Use the default setting.

⑥ CON_WAIT_INTERVAL

Sets the application timer.
The application timer is the waiting timer (unit: second) until the connection is succeeded when making a new connection to another gateway.
Use the default setting.

— My IP Server Info. —

⑦ ZR_CALLSIGN

Sets the call sign of the zone repeater.
The same call sign that is programmed in “ZR_CALLSIGN” in “dsgwd.conf” file should be set.

⑧ DNS_ZONE_FILE_PATH

Specifies the DNS zone file for D-star.

⑨ IS_MY_TRUST_SERVER

Sets Trust Server capability.
0: Setup this server as regular gateway server.
1: Setup this server as Trust Server.

⑩ MULTICAST_ENABLE

Sets the multicast operation capability.
0: The server operate in unicast mode.
1: The server operate in multicast mode.

— Named Pid File Name —

⑪ NAMED_PID_FILE

Sets the PID (Process ID) of the named setting.

— WEB VERSION —

⑫ GW_WEB_VERSION

Sets the revision number of the gateway control software.
Use the default setting.

— DataBase Info. —

Sets database accessing condition as follows.
Use the default setting for them.

⑬ DB_IP

Sets the IP address that the database file is stored server.

⑭ DB_PORT

Sets the port number for database connection.

⑮ DB_NAME

Sets the file name of the database.

⑯ DB_USER

Sets the name for database user.

⑰ DB_PASSWORD

Sets the password for database user.

⑱ DB_COMMAND_PATH

Specifies the directory path that the database file is stored in the server.

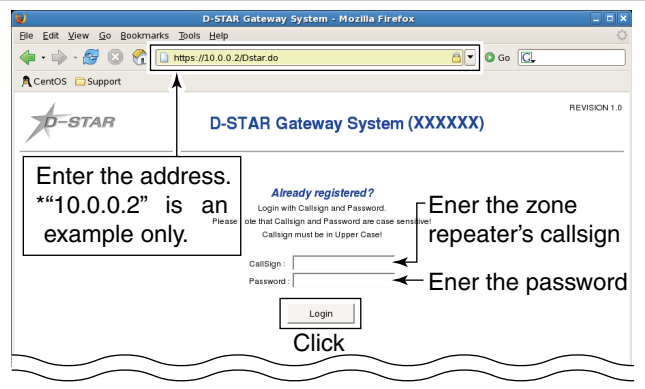
⑲ DB_DRIVER

Specifies the database driver for accessing.

■ IP server operation for administrator

◇ Login

- ① Start up WEB browser and enter “https://xx.xx.xx.xx/Dstar.do” into the address bar.
 - “xx.xx.xx.xx” is the IP address of the gateway server.
 - ② Enter the zone repeater’s callsign and password then click [Login].
- NOTE:** Enter the callsign with capital letters due to the system case sensitive.



◇ User information screen

The following operations can be performed within the User Information screen.

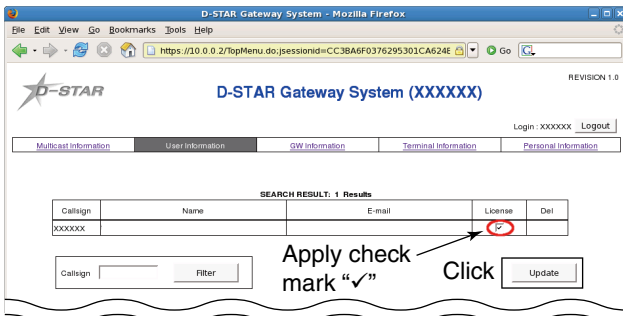
- User list indication*
- User searching
- Registration approval to the gateway server
- User information deletion

*Up to 1,000 users can be displayed in the screen. However, search with the desired condition to refinement the list is recommended for your convenient.

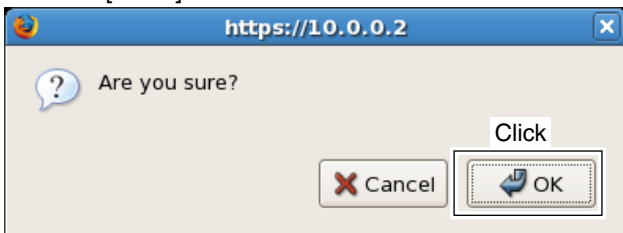
- Administrator registration

Administrator-self should be registered at the first time of accessing the gateway server.

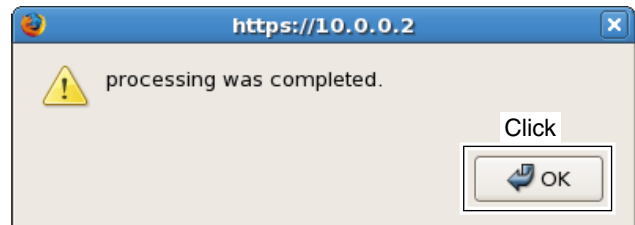
- ① Click “License” check box to apply check mark “✓,” then click [Update].



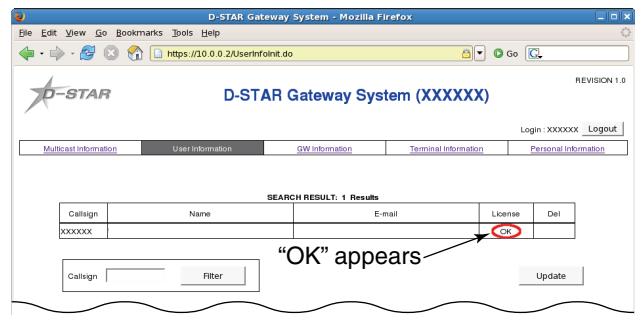
- ② The confirmation dialog appears as below. Click [OK].



- ③ The dialog, “processing was completed.,” appears. Click [OK].



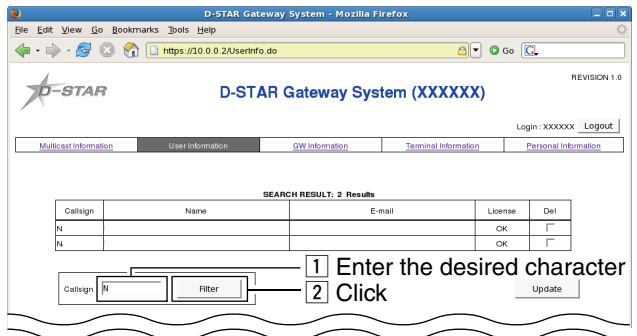
- ④ “OK” appears in “License” cell instead of check mark, “✓.”
 - User can be registered with the same manner.
 - Un-registered user cannot access to the gateway server



- User searching

Registered users can be searched with the desired condition as below.

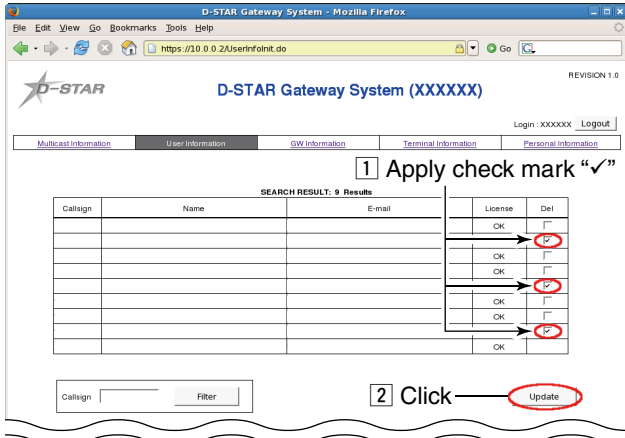
- ➔ Enter the desired of callsign or a part of the call-sign into “Callsign” cell, then click [Filter].



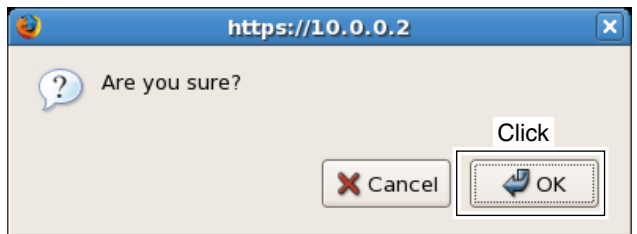
- The callsign, that includes “N,” are listed in the example above.

- User information deletion

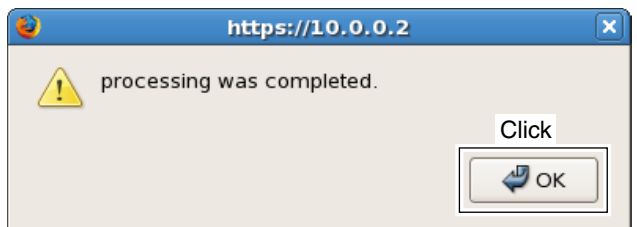
- ① Click to apply check mark, “✓,” into the desired “Del” check box to be deleted, then click [Update].



- ② The confirmation dialog appears as below. Click [↩OK].



- ③ The dialog, “processing was completed.” appears. Click [↩OK].



NOTE: When an user information is deleted, the all information of the user, including terminal information will also be deleted.

◆ **Multicast Information**

The following operations can be performed within the Multicast Information screen.

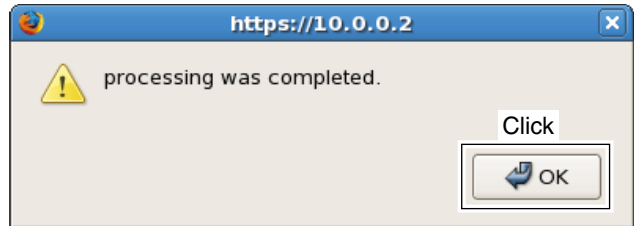
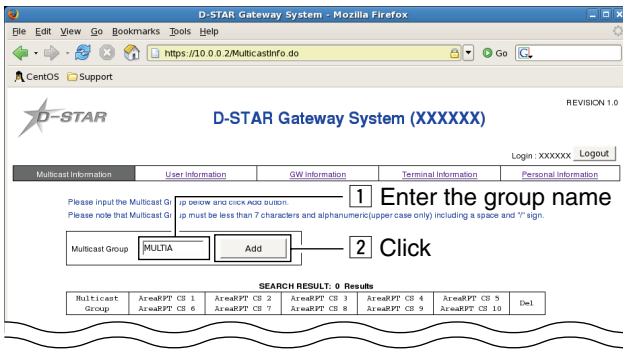
- Multicast group list indication
- Multicast group add and delete
- Area repeater callsign setting

How to make a multicast group call ?
 Enter slash, “/,” then enter the desired group name into “Your Callsign” (“UR” or “U”).
 e.g.: /MULTI A

- Adding multicast group

- ① Enter the desired multicast group name within 7-character, then click [Add].
 - Usable characters: A–Z, 0–9, space and /
 - NEVER** enter “/” at the 1st character, because of “/” at the 1st character stands for to specifying the callsign (group name in this case) is used as area CQ call for the transceiver side setting.

- ② The dialog, “processing was completed.,” appears. Click [←OK].

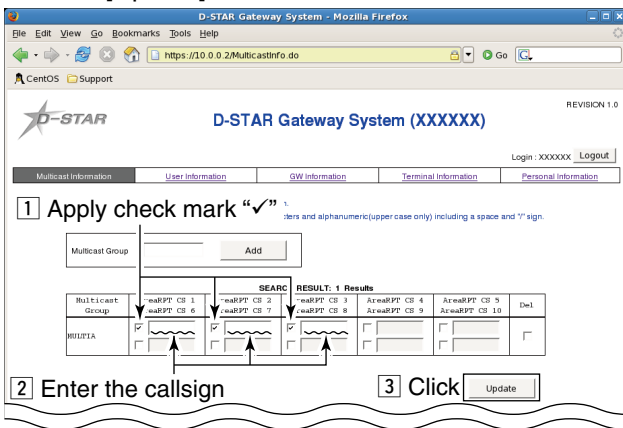
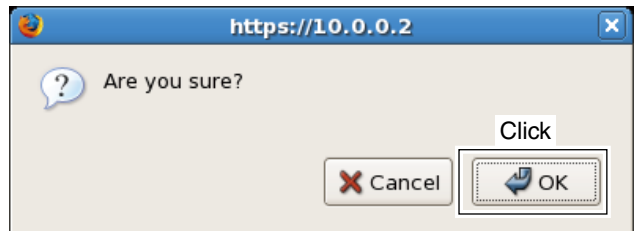


- Area repeater callsign setting

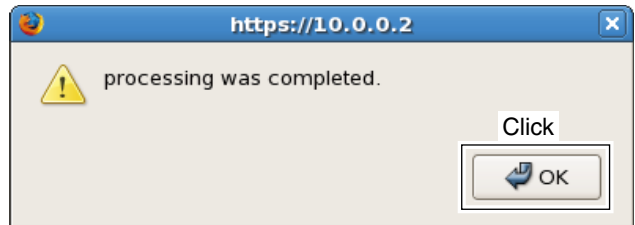
- ① Click to apply check mark, “✓,” into the desired area repeater’s check box, and then enter the desired area repeater’s callsign within 7-character.
 - Usable characters: A–Z, 0–9, space and /
 - NEVER** enter “/” at the 1st character, because of “/” at the 1st character stands for to specifying the callsign is used as area CQ call for the transceiver side setting.
 - ONLY** one port for each area repeater can be specified.
 - If two or more ports are specified in the same area repeater, the first entry is effected only.

- ③ The confirmation dialog appears as below. Click [←OK].

- ② Click [Update].

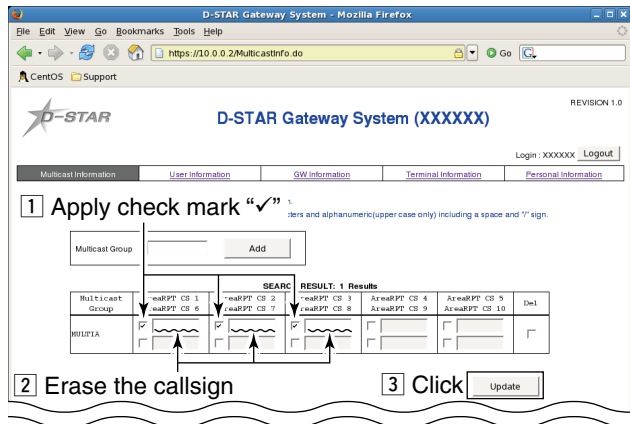


- ④ The dialog, “processing was completed.,” appears. Click [←OK].

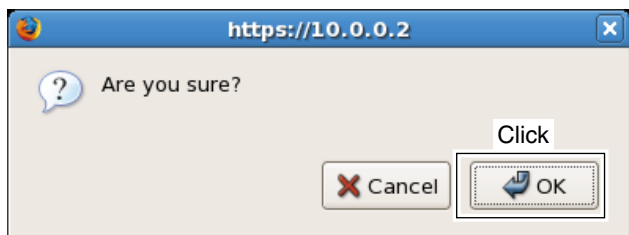


- Area repeater callsign deletion

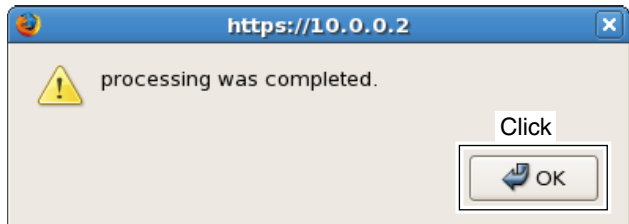
- ① Click to apply check mark, "✓," into the desired check box, and then erase the desired area repeater's callsign.
- ② Click [Update].



- ③ The confirmation dialog appears as below. Click [OK].

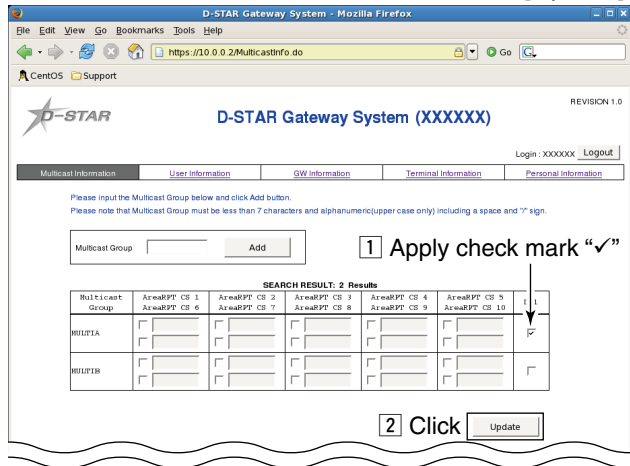


- ④ The dialog, "processing was completed.," appears. Click [OK].

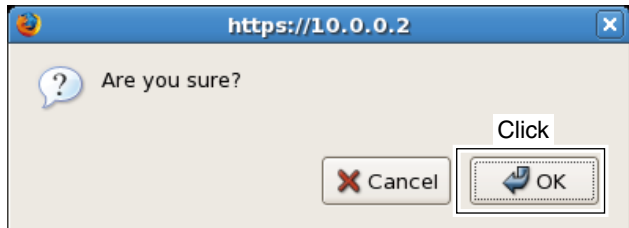


- Deleting multicast group

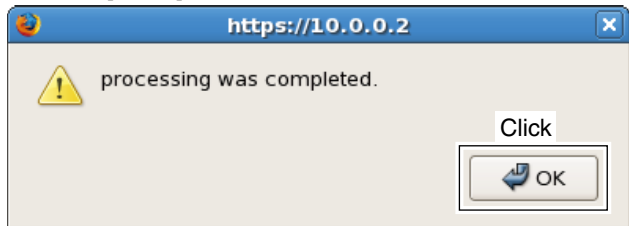
- ① Click to apply check mark, "✓," into the desired "Del" check box to be deleted, then click [Update].



- ② The confirmation dialog appears as below. Click [OK].



- ③ The dialog, "processing was completed.," appears. Click [OK].



◇ **GW Information**

The following operations can be performed within the GW Information screen.

- Gateway list indication
- Gateway searching
- Connection refuse setting

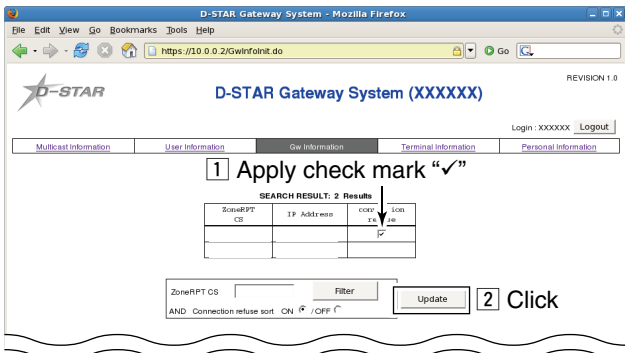
/// **NOTE:** Gateway information deletion can also be performed in the Trust Server.

/// **For the Trust Server administrator:**

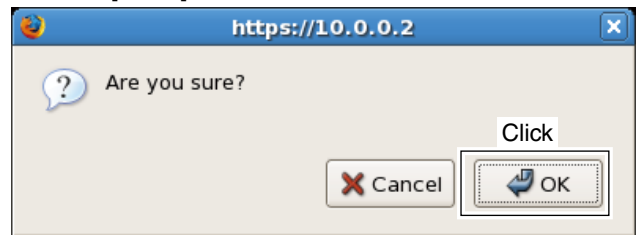
/// When a new GW is registered, check mark, “✓,” is applied in “connection refuse” check box as the default. (The GW not joined into the D-star network yet.) Remove check mark, “✓,” from “connection refuse” check box when the GW registration is approved.

- Connection refuse

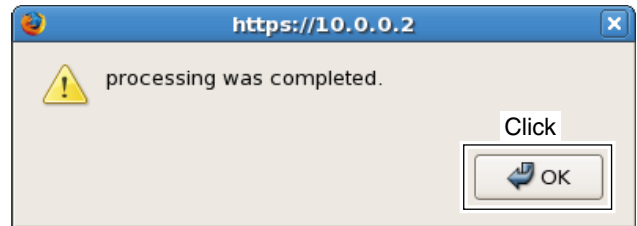
- ① Click to apply check mark, “✓,” into the desired “connection refuse” check box to be refused the communication, then click [Update].
 - When check mark is applied, all of the inbound data of synchronous command, digital voice and data communication should be blocked.
 - Click the “connection refuse” check box again to release check mark when permit the communication.



- ② The confirmation dialog appears as below. Click [↩OK].



- ③ The dialog, “processing was completed.,” appears. Click [↩OK].



/// **NOTE:** When a GW information is deleted, the all information registered in the GW, such as terminal of users, also deleted at the same time.

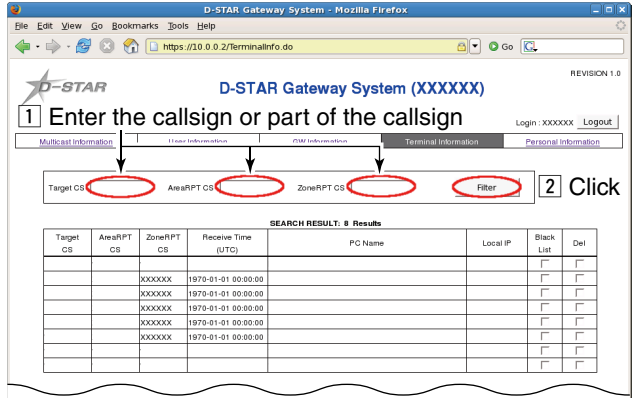
◇ Terminal Information

The following operations can be performed within the Terminal Information screen.

- Terminal list indication
- Terminal searching
- Black list setting
- Terminal information deletion

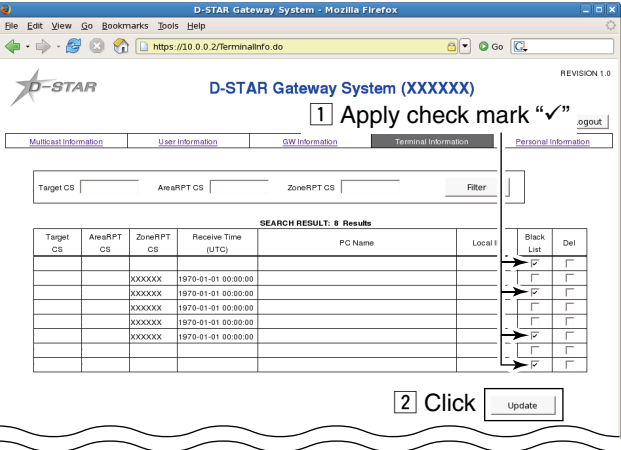
- Terminal searching

- ➔ Enter the desired callsign or a part of the callsign into "Target CS," "AreaRPT CS" and/or "ZoneRPT CS" text boxes, then click [Filter].
 - When no callsign or a part of the callsign is entered, all information will be listed.
 - The latest access time is displayed in "Receive Time" with the repeaters that are in the zone of this gateway server.

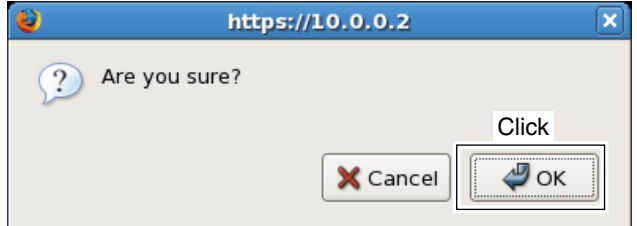


- Black list setting

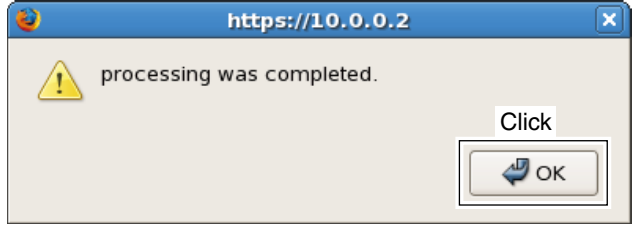
- ① Click to apply check mark, "✓," into the desired "Black List" check box to be prohibited the gateway communication, then click [Update].
 - When check mark is applied, digital voice and data communication to outside is blocked.



- ② The confirmation dialog appears as below. Click [↩OK].



- ③ The dialog, "processing was completed.," appears. Click [↩OK].

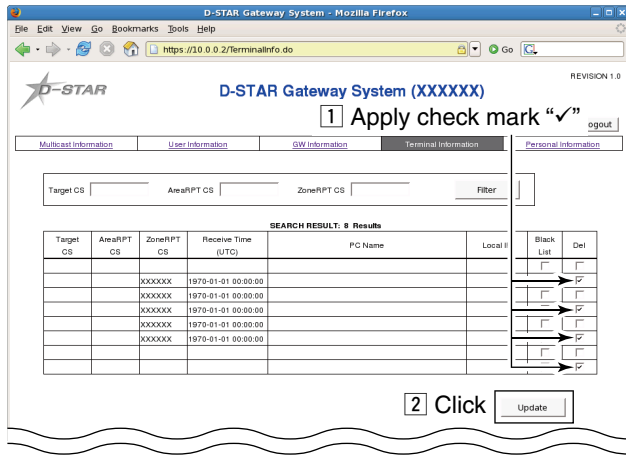


◇ Terminal Information screen— continued

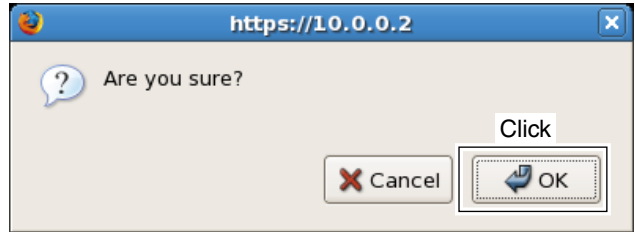
- Deleting terminal information

① Click to apply check mark, “✓,” into the desired “Del” check box to be deleted, then click [Update].

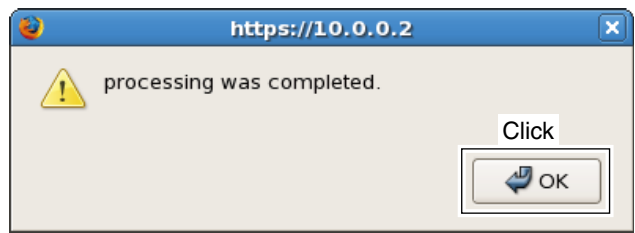
NOTE: The terminal information deletion can be performed to your entry only— cannot be performed to other GW’s entry. All entries can be delete from the Trust Server.



② The confirmation dialog appears as below. Click [↩OK].



③ The dialog, “processing was completed.,” appears. Click [↩OK].



◇ Personal Information

The following operations can be performed within the Personal Information screen.

- Personal information list indication
- Personal information searching
- Terminal registration/deletion

- Terminal registration

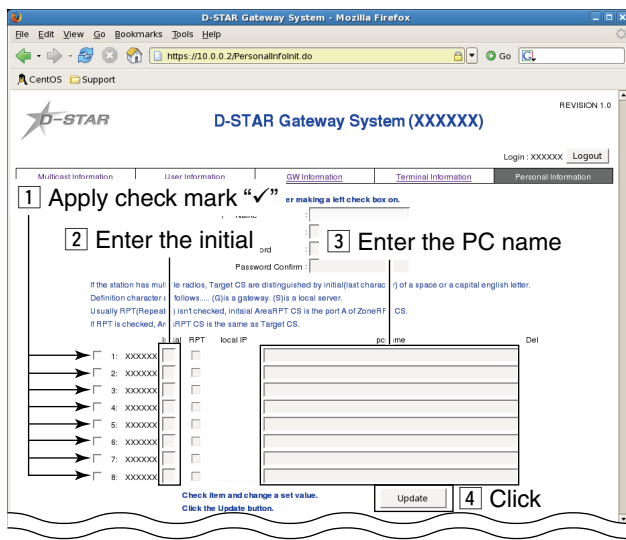
Up to 8 terminals can be registered.

① Click to apply check mark, “✓,” into the desired terminal’s check box to be registered.

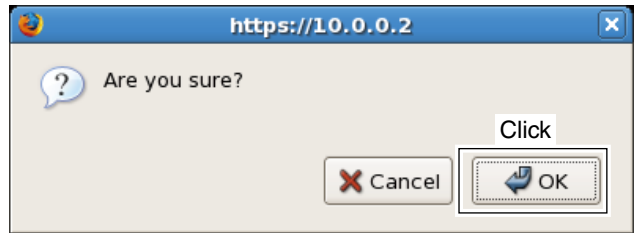
② Enter the initial and PC name into “Initial” and “PC-name” text boxes, respectively.

- Usable character for initial: A–F, H–Z, space
- for PC name: Up to 40-character name; a–z, 0–9, space, / (slash)

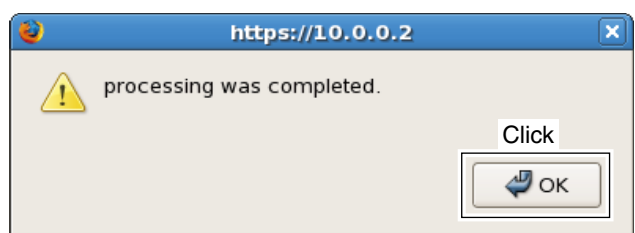
③ Click [Update]



④ The confirmation dialog appears as below. Click [↩OK].




⑤ The dialog, “processing was completed.,” appears. Click [↩OK].



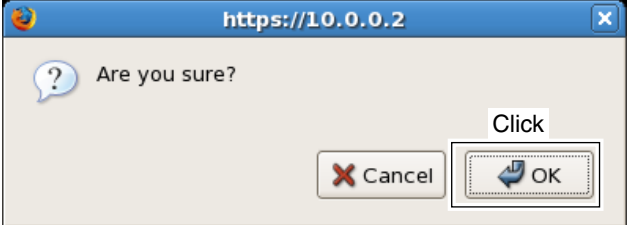
NOTE for repeater administrator:
It is necessary for making an Area CQ call to be existed at least one Area repeater in the database. For this reason, please note that applying check mark, “✓,” into the desired Area repeater’s “RPT” check box will be required to register at least one Area repeater.

◇ Logout

① Click [Logout].



② The confirmation dialog appears as below. Click [OK].



◇ Editing the user registration agreement

If you want to change the user registration agreement content, change the file stored in the following directory.

/opt/products/dstar/tomcat/webapps/D-STAR/WEB-INF/messages/agreement.txt

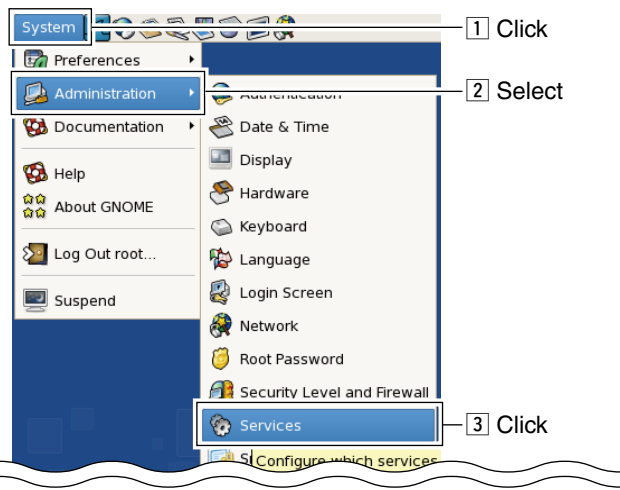
When the agreement contents in the screen does not change, clear the cache.
To clear the cache, delete the files inside of the following directory.

/opt/products/dstar/tomcat/webapps/work/org/apache/jsp/WEB_002dINF/pages

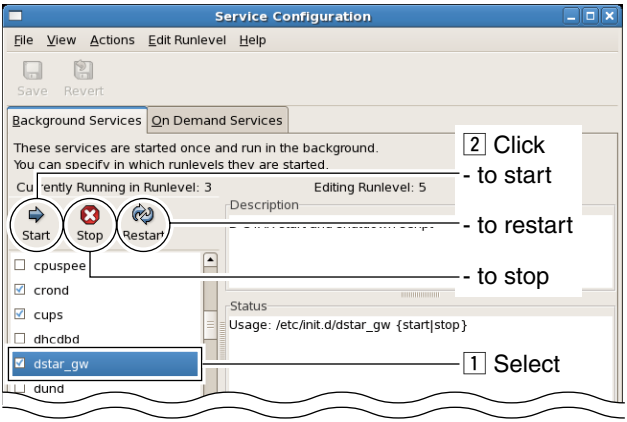
◇ Starts/Stops gateway operation

D-star gateway system operation starts automatically when the installation is completed.
If you want to start or stop the gateway operation manually, perform as follows.

① Start up “Service Configuration” with the following mouse operation.



② Select “dstar_gw,” and click the appropriate button to start or stop the gateway operation.



③ Command operation is also available. Use the command as follow.

To start: >service dstar_gw start
 To stop: >service dstar_gw stop
 To restart: >service dstar_gw restart

◇ **Synchronization encryption**

A part of the synchronization frame, that is used between GW communication, can be encrypted by preparing a key file in AES-256 bit format.

Synchronization is concluded only when the same content of encryption key file is set in each GW.

When a different content of the encryption key file is set, never synchronize.

Only a synchronization frame is encrypted between GWs communication. Actual communications between terminals in DD and DV mode operation never encrypted in GW.

- **The encryption key file directory**
“/opt/products/dstar/dstar_gw/dsipsvd/.dskey”
 (“.(dot)” is necessary before “dskey”)

When no encryption key file is stored in the designated folder, the synchronization frame should be transmitted and received with plane text (without encryption).

In addition, the application rebooting is unnecessary even the encryption key file contents are changed.

- **The contents of the encryption key file**
A 256 bit data is necessary.
Create an encryption key with 32 characters in ASCII format.

(example) abcdefghijklm0123456789ABCDEFGHIJ

- **Example**
A Trust Server administrator creates a different encryption key file every month and distributes it to each GW administrator with e-mail, etc.

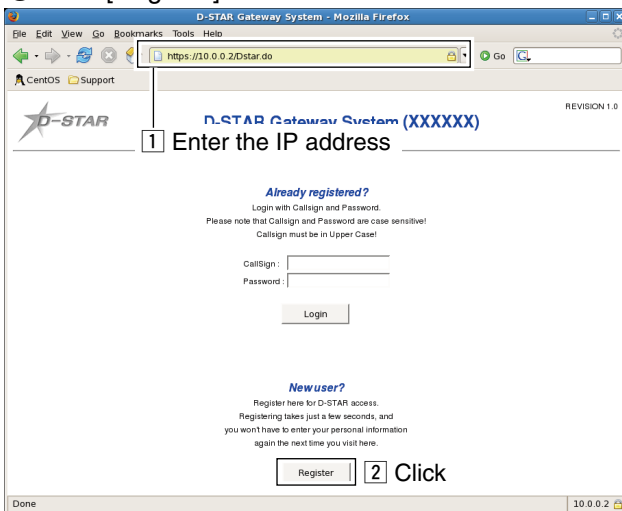
Each GW administrator replaces the encryption key file on the specified date and time.

Much higher secrecy is provided with the D-star network by changing the encryption key file regularly.

■ IP server operation for user

◇ Registration

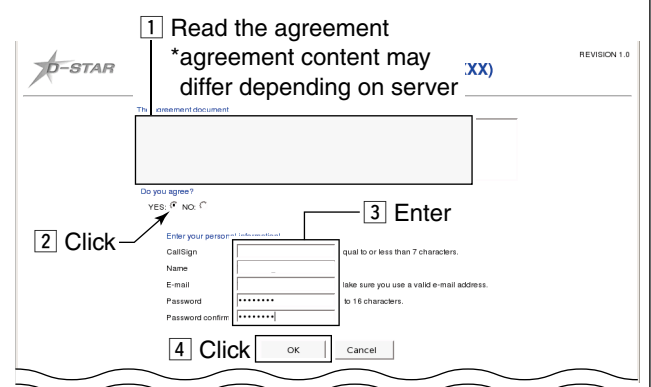
- ① Start up WEB browser.
- ② Enter the IP address of the desired gateway server into address bar.
 - Gateway server's top page will be displayed.
- ③ Click [Register].



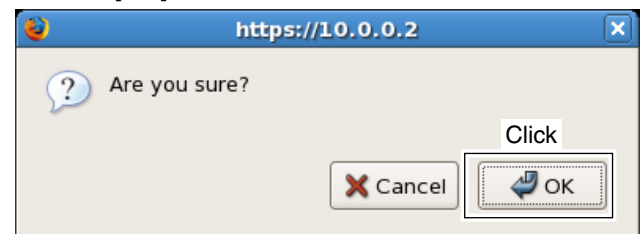
- ④ Register screen as below is displayed. Read the agreement carefully.
- ⑤ If agreed the agreement, click to apply check mark “•,” in the radio button “Yes.”
- ⑥ Enter your callsign, name, E-mail address and password with the following condition, then click [OK].
 - Callsign : Up to 7 characters (usable characters: A–Z, 0–9, space and /)
 - Name : Up to 32 characters (usable characters: all alphabets, numbers and symbols except \ and ')
 - E-mail address : Up to 128 characters
 - Password : Within 8 to 16 characters

IMPORTANT!:

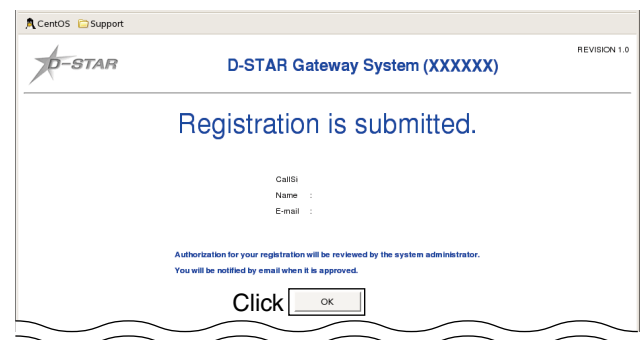
Keep the record of the registered information as above to access the server next time for your personal information maintenance.



- ⑦ The confirmation dialog as below appears. Click [OK].



- ⑧ The “Registration is submitted.” screen appears as below. Click [OK].



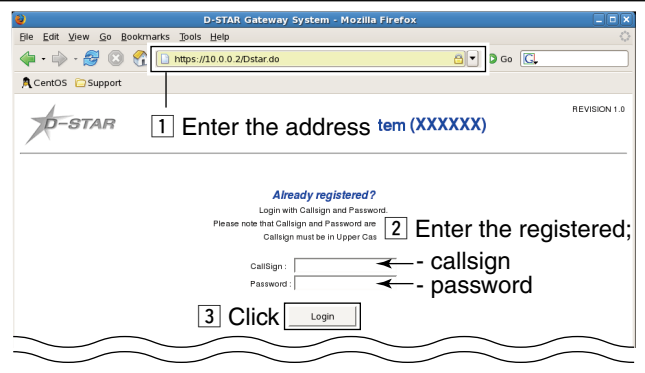
- ⑨ Wait until the gateway server administrator approves the registration.
- ⑩ Access the server again to edit your personal information. (see “◇ Login” and “◇ Personal information” for details.)

2 SYSTEM SETUP

◆ Login

To login the server, your registration should be approved by the server administrator. After the registration, wait a while, then access to the gateway server again.

- ① Start up the WEB browser, then enter the IP address of the server.
- ② Enter the registered your callsign and password into the appropriate text boxes, then click [Login].



◆ User Information screen

The following operations can be performed within the User Information screen.

- User information list indication
- User information searching

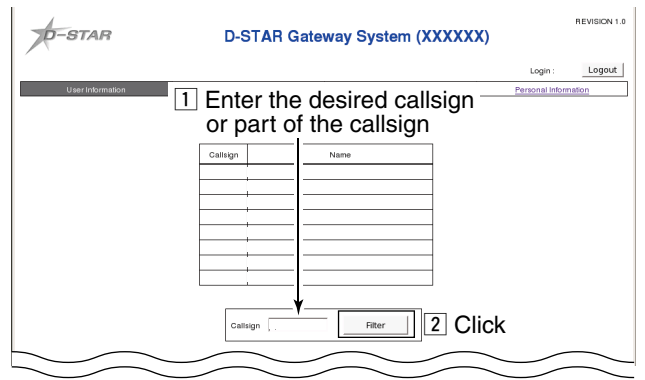
- User Information list

Up to 1,000 users can be displayed in the screen. When the desired callsign cannot be found in the screen, search the user.

- User searching

You can search users with the desired condition in this screen.

- ➔ Enter the desired callsign or a part of the callsign into the text box, then click [Filter].



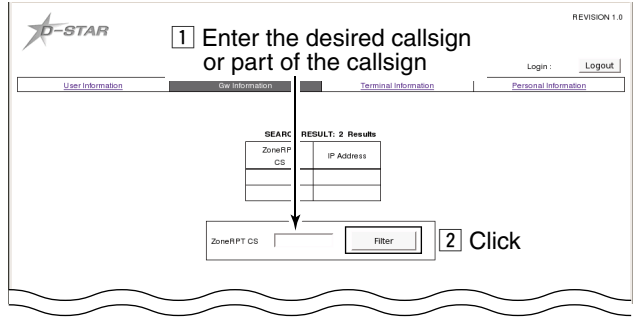
◇ GW Information

The following operations can be performed within the GW Information screen.

- Zone repeater/Gateway server list indication
- Zone repeater/Gateway server searching

- Zone repeater/Gateway server searching

➔ Enter the desired zone repeater’s callsign or a part of the callsign into the text box, then click [Filter].



◇ Terminal Information

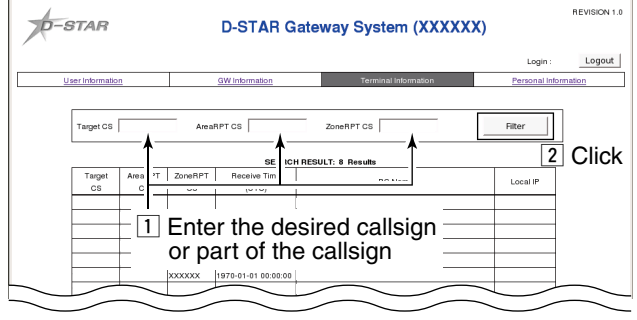
The following operations can be performed within the Terminal Information screen.

- Terminal information list indication
- Terminal information searching

- Terminal information searching

➔ Enter the desired station (user’s), area and/or zone repeater’s callsign or a part of the callsign into Target CS, AreaRPT CS and/or ZoneRPT CS text boxes, respectively, then click [Filter].

- When no callsign or a part of the callsign is entered, all information will be listed.
- The latest access time is displayed in “Receive Time” with the repeaters that are in the zone of this gateway server.



◆ Personal Information

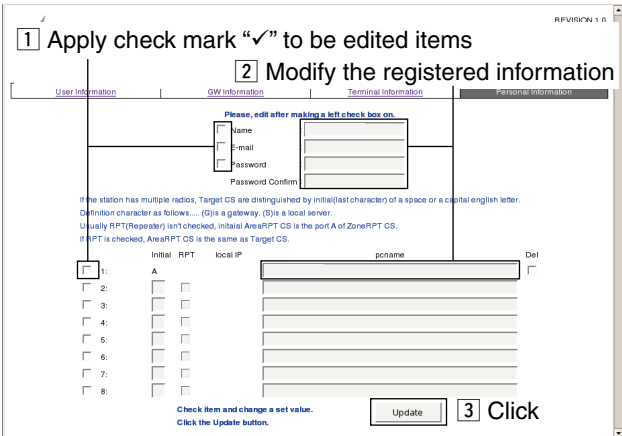
The following operations can be performed within the Personal Information screen.

- Personal information list indication
- Personal information edit

- Personal information edit

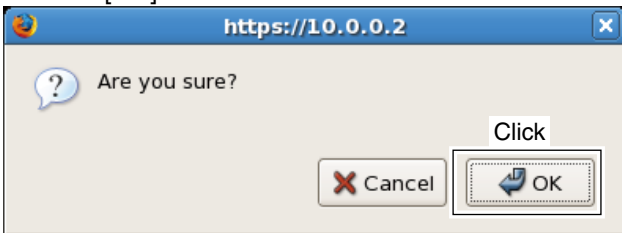
When editing the registered information

- 1 Click to apply check mark into the desired item to be edited from Name, E-mail, Password and your terminal initial.
- 2 Enter the desired name, E-mail address, new password, initial and/or PC name into the appropriate text boxes, respectively.
- 3 Click [Update] to store the edited contents into the server.

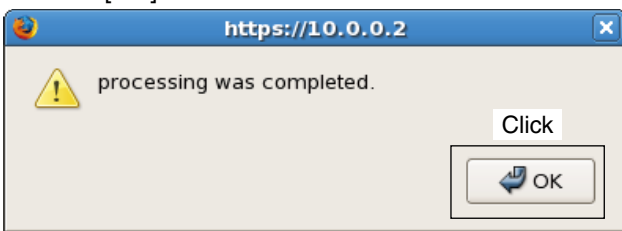


No check mark into "RPT" check box is necessary when an user registers terminal usually. Apply check mark into "RPT" check box when registering a repeater, which microwave link repeater(s) (ID-RP2L/ID-RP1L) is/are connected.

- 4 The confirmation dialog as below appears. Click [OK].

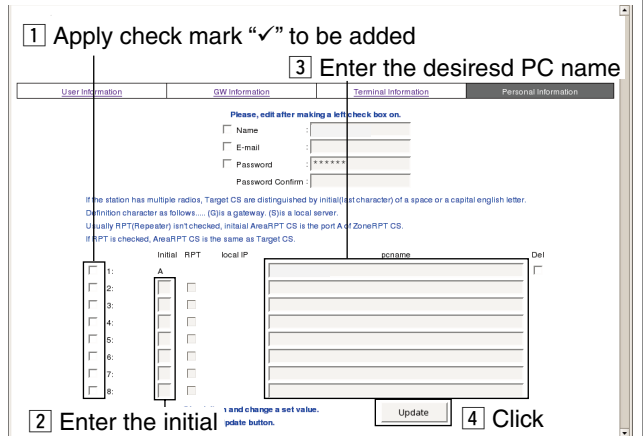


- 5 The dialog, "processing was completed," appears. Click [OK].



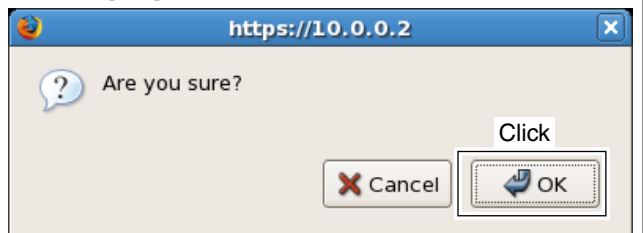
When adding the terminals

- 1 Click to apply check mark into the desired line's check boxes.
- 2 Enter the desired initial and PC name into the appropriate text boxes, respectively.
- 3 Click [Update] to store the edited contents into the server.

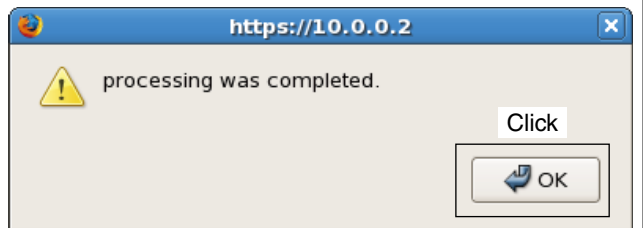


No check mark into "RPT" check box is necessary when an user registers terminal usually. Apply check mark into "RPT" check box when registering a repeater, which microwave link repeater(s) (ID-RP2L/ID-RP1L) is/are connected.

- 4 The confirmation dialog as below appears. Click [OK].

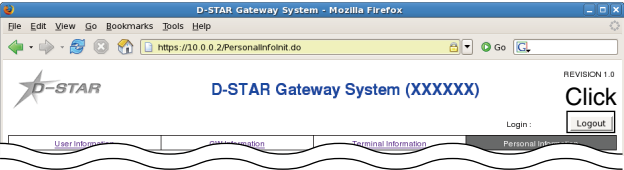


- 5 The dialog, "processing was completed," appears. Click [OK].

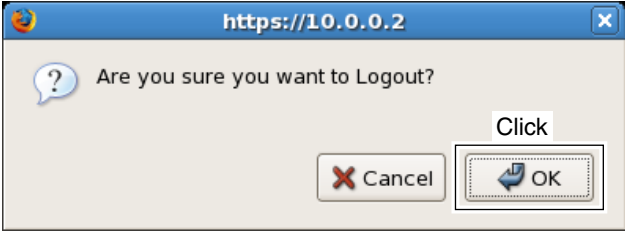


◆ Logout

① Click [Logout].



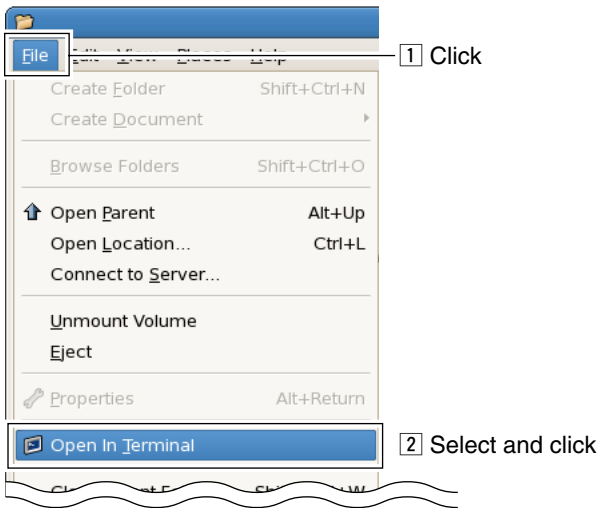
② The confirmation dialog appears as below. Click [OK].



■ Data base maintenance (Backup and Restore)

PostgreSQL is necessary for database backup tool.

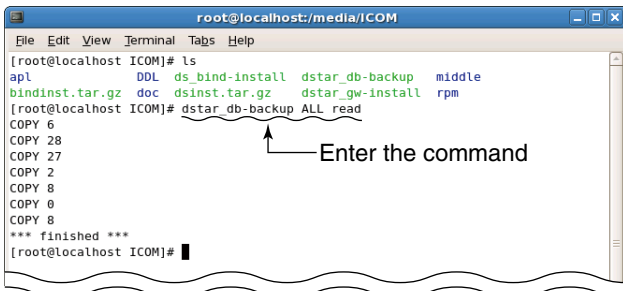
- ① Insert the RS-RP2C CD into the CD drive.
- ② Double click “Computer” icon.
- ③ Double click “CD” icon.
- ④ Click [File] menu then select and click “Open In Terminal.”



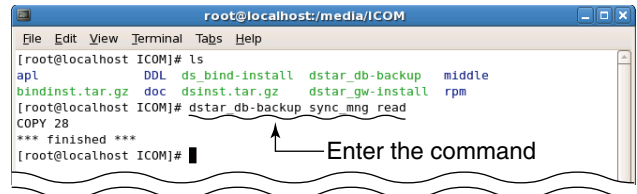
- ⑤ Enter the command, “dstar_db-backup [options1] [option2],” then execute.

- [options1] is target table option.
{ALL|sync_gip|sync_mng|sync_rip|unsync_gip|nync_mng|unsync_multicast_mng|unsync_user_mng}
- [option2] is mode option.
{read|write}

- Example 1: Read all and output files to /home/postgres



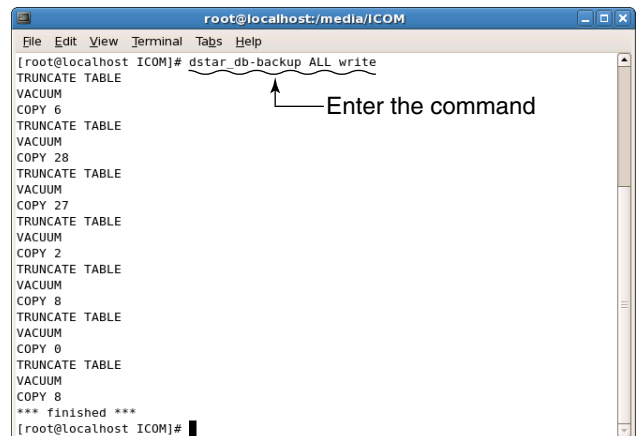
- Example 2: Read sync_mng and output file to /home/postgres/sync_mng.<DATE_TIME>.csv



Other command examples;

- dstar_db-backup sync_gip read
- dstar_db-backup sync_rip read
- dstar_db-backup unsync_gip read
- dstar_db-backup unsync_user_mng read

- Example 3: Write all from file (using last modified file) stored in /home/postgres



- Example 4: Write unsync_user_mng setting from the stored file.
 - Enter the desired file number to use.

```

root@localhost:/media/ICOM
File Edit View Terminal Tabs Help
[root@localhost ICOM]# ls
apl          DDL  ds_bind-install  dstar_db-backup  middle
bindinst.tar.gz  doc  dsinst.tar.gz   dstar_gw-install  rpm
[root@localhost ICOM]# dstar_db-backup unsync_user_mng write
----backup-files-----
0. unsync_user_mng.070807_152015.csv
1. unsync_user_mng.070807_152542.csv
2. unsync_user_mng.csv
Please type number.

```

Annotations: "Enter the command" points to the command line; "Available numbers" points to the list of files.

- When the file number "1" (unsync_user_mng.070807_152542.csv) is selected.

```

root@localhost:/media/ICOM
File Edit View Terminal Tabs Help
[root@localhost ICOM]# ls
apl          DDL  ds_bind-install  dstar_db-backup  middle
bindinst.tar.gz  doc  dsinst.tar.gz   dstar_gw-install  rpm
[root@localhost ICOM]# dstar_db-backup unsync_user_mng write
----backup-files-----
0. unsync_user_mng.070807_152015.csv
1. unsync_user_mng.070807_152542.csv
2. unsync_user_mng.csv
Please type number.
1
TRUNCATE TABLE
VACUUM
COPY 8
*** finished ***
[root@localhost ICOM]#

```

Annotation: "File number '1' is entered" points to the number '1' typed at the prompt.

Other command examples;

```

dstar_db-backup sync_gip write
dstar_db-backup sync_mng write
dstar_db-backup unsync_gip write
dstar_db-backup unsync_multicast_mng
write

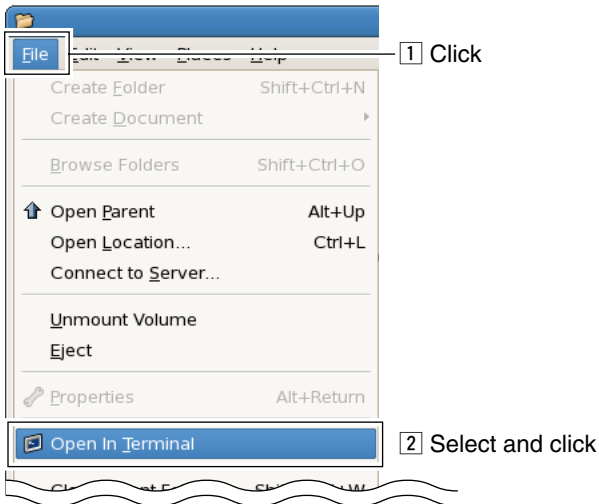
```

3

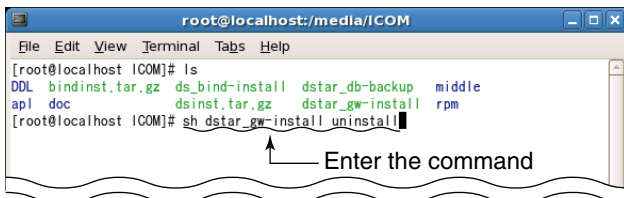
SOFTWARE UNINSTALLATION

■ Uninstallation

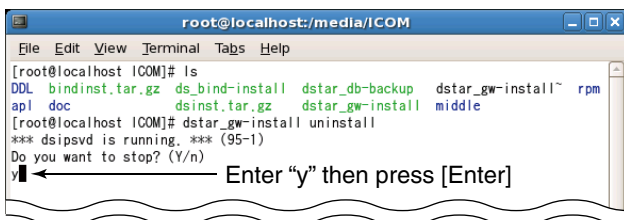
- 1 Login root.
- 2 Insert the RS-RP2C CD into the CD drive.
- 3 Double click “Computer” icon.
- 4 Double click “CD” icon.
- 5 Click [File] menu then select and click “Open In Terminal.”



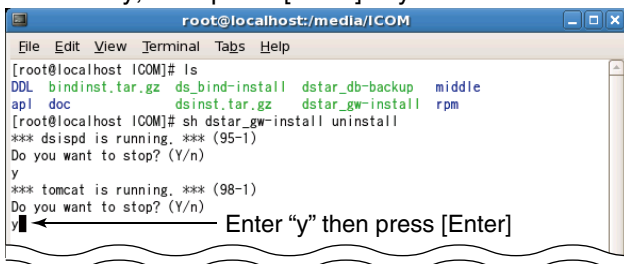
- 6 Enter the command, “sh dstar_gw-install uninstall,” then execute.



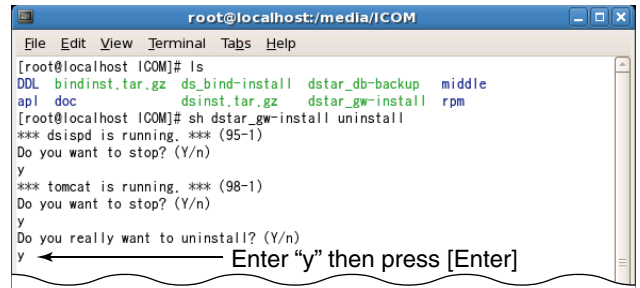
- 7 Deactivating “dsipsvd.”
Enter “y,” and press [Enter] key.



- 8 Deactivating “tomcat.”
Enter “y,” and press [Enter] key.



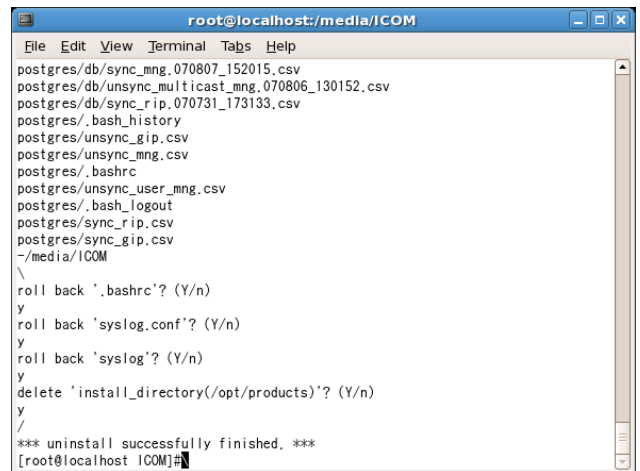
- 9 Confirmation appears.
Enter “y,” and press [Enter] key to start uninstallation.



- 10 Deleting and rolling back the following items and directory.
Enter “y,” and press [Enter] key for each item.

- user “dstar”
- user “postgres”
- “.bashrc”
- “syslog.conf”
- “syslog”
- directory “/opt/products”

- 11 The message, “uninstall successfully finished..” appears as below when the uninstall is completed.



Refer to the following files in the RS-RP2C's CD for each license.

- ◇ **Apache**
/doc/Licence/Apache/LICENSE
- ◇ **Tomcat**
/doc/Licence/Tomcat/LICENSE
- ◇ **mod_jk2**
/doc/Licence/mod_jk2/LICENSE
- ◇ **OpenSSL**
/doc/Licence/OpenSSL/LICENSE
- ◇ **J2SE**
/doc/Licence/J2SE/LICENSE
- ◇ **PostgreSQL**
/doc/Licence/PostgreSQL/LICENSE

Count on us!